Appendix F – Stakeholder Engagement and Communications Plan

Referenced from the Execution Plan Section 3.2 and the Stakeholder Engagement and Communications Plan Characterisation table.

The Initial Stakeholder List section from the Stakeholder Engagement and Communications Plan should only be included in this appendix if the project / programme has been characterised as Simple.

If the project / programme has been characterised as Standard, Significant or Major, then the Initial Stakeholder List should be included in a separate Stakeholder Engagement and Communications Plan, and this appendix in this Execution Plan can be deleted.

Appendix G – Progress Reporting Plan

Referenced from the Execution Plan Section 2.3.3 and the Progress Reporting Plan Characterisation table.

The Local Progress Reporting section from the Progress Reporting Plan should only be included in this appendix if the project / programme has been characterised as Simple or Standard.

If the project / programme has been characterised as Significant or Major, then the Local Progress Reporting should be included in a separate Progress Reporting Plan, and this appendix in this Execution Plan can be deleted.

Appendix H – Next Stage Plan

The **Execution Plan** acts as the central reference document for managing all aspects of the execution of the project or programme. This appendix pays particular attention to the key activities and tasks that need to be undertaken in each subsequent stage of the lifecycle.

To view the standardised key activities and tasks for each lifecycle stage, reference the Pathway **Lifecycle Stage Activities & Tasks** diagrams (located under 'Lifecycle & Gates' on the Pathway Homepage). These diagrams have been created as a best practice generic set of activities and tasks for each specific stage of each lifecycle, along with a 'continuous' set of activities and tasks that are common to all lifecycle stages and 'non-stage specific' activities and tasks for those events that can vary or happen multiple times within the lifecycle (such as procurements).

This **Next Stage Plan** appendix must be updated during each stage of the lifecycle and can be broken up into subsections for each stage (it can also be made into separate documents for Significant and Major characterised projects/programmes, if desired).

Suggested format as follows:

Name of Next Stage

- **1st Activity name**
  - **1st Task name**
  - How will the task will be undertaken?
  - What tailoring (if any) has been applied to the task?
  - Who will undertake the task (e.g. role(s))?
  - Which precursor tasks need to be undertaken, or other inputs?
  - Where will the output from the task be recorded?

  - **2nd Task name**
    etc

- **2nd Activity name**
  - **1st Task name**
    etc

This section is for the use of the TfL PMO Process & Guidance Team only

Product Details

Name:	Execution Plan
Document No:	PD0214
SME:	Senior Process & Guidance Manager
Owned by:	Senior Process & Guidance Manager
Review Date:	September 2023

Product Version History

Revision	Date	Reason for Change
A1	13/04/2017	Capital Delivery Workstream (Pathway Refresh) - Rationalisation of Product Descriptions: PD0042 A6, PD0074 A3, PD0124 A3 and Templates F0857 A6, F0851 A3, F0816 A2 into one product.
A2	26/05/2017	Updates to section 5.2, 5.9 and Appendix A as per the HSE Transformation.
A3	03/07/2019	Guidance updated to reflect change in approval process following action in audit report IA 18 019 - Principal Contractor Arrangements in TfL
A4	23/09/2020	Guidance notes have been updated to reflect: 1. BIM requirements being pan TfL following an action in audit report IA 18 021 (Section 5.10.2) 2. Furthering strengthening of CDM arrangements and HSE guidance following an action in audit report IA 18 091(Sections 2.2.2, 2.3.9, 3.3, 5.9, 5.10 and Appendix A) 3. changes to the document management model (Section 2.3.5) 4. changes as a result of the introduction of the updated Capital Lifecycle diagrams (Sections 1, 2.2.1, 5.1 and Appendix H Next Stage Plan)
A5	16/02/2021	Section 2.2.2 updated to reflect that Appendix A has been withdrawn and the Allocation of CDM Duties Matrix is now listed on the Product Matrix. Guidance in Section 5.9 updated to reflect reference to the Safe System of Work following an action in audit report IA 19 702

TfL Pathway

Part of the TfL Management System

PIx Protocol – IT Assessment

Project * Programme *	Name of Project or Programme

Reference	Recognised reference code (e.g. profit centre, UIP, etc.)

Stage	Pathway Stage

Responsible	Project Engineer	Name
	Signature	Date

Accountable	Project Manager	Name
	Signature	Date

Product History	**Version**	**Date**	**Summary of changes**
	0.1	dd/mm/yy	First draft

This document must be filed in accordance with the **document filing structure**

* Delete as appropriate (the Accountable person should always be at least one management level higher than the Responsible person).

Product Context

Purpose	To capture the Employer and Suppliers Information Exchange capability and IT maturity and identify the level of interoperability achievable between all parties. It identifies if there are any restrictions or limitations for producing, using and managing Production Information and Handover Information and enables all parties to agree information exchange file formats and versions (ensuring compatibility) and aid the development of the project IT Plan.

Applicability	The Project Information Exchange (PIx) Protocol - IT Assessment Form must be completed for all projects that introduce new assets or alter existing assets. A PIx Protocol IT Assessment Form, detailing the Employer's IT capabilities is to be completed by the Employer and issued to all those tendering, for their reference during the ITT stage. A PIx Protocol IT Assessment Form is to be completed by all those tendering during the ITT stage and supplied to the Employer as part of the tender submission.

Consult	**Role**	**Detail**
	Commercial Manager	Needs to know that information exchange capability can be achieved for the project in order to agree / recommend progression of procurement.
	Programme Manager / Project Manager	Needs to ensure that information exchange capability can be achieved for the project in order to approve progression through stage gates.
	Project Engineer	Needs to ensure that information exchange capability can be achieved for the project in order to agree / recommend progression through stage gates.
	Programme BIM Manager	Will work with the Project Engineer to ensure that the required information capability is in place to support the project.

Inform	HSE Advisor	Needs to know that a PIx Protocol IT Assessment Form has been signed off and is in place for the project.
	Sponsor	Needs to know that a PIx Protocol IT Assessment Form has been signed off and is in place for the project.
	TfL BIM Manager	Needs to know that a PIx Protocol IT Assessment Form has been signed off and is in place for the project.

Characterisation Table	**Category Level**			
	Simple	**Standard**	**Significant**	**Major**
1 General Information and Company Policies on information Exchange	Required at all levels			
2 Technical Information on	Required at all levels			

Software and Systems	

Characterisation Notes:

- What is Characterisation? Find out here.
- The amount of effort applied in the production of this product should be proportionate to the size, scale, risk and complexity of the project / programme. The Characterisation Table above states which sections are required to be completed based on the level at which the project / programme was categorised at. A guide to the amount of effort applied is as follows:
    - Simple – one to two sentences per sub-heading.
    - Standard – one to two paragraphs per sub-heading.
    - Significant – one to two pages per sub-heading.
    - Major – greater than two pages per sub-heading to separate documents per heading.
- Where a section has been characterised as not being required (shown by 'X' in the above table), the following note should be entered into the corresponding section in the Product – "not required by characterisation".

If you have any queries, feedback or improvement suggestions about this product, then please contact tflpathway@tfl.gov.uk.

Table of Contents

General Information and Company Policies on Information Exchange

General Information

Please provide the following information on your organisation and your role on the project (if applicable) together with details of key personnel who you propose to be involved in information exchange. The *Employer* requires prior written notification of any removal or appointment of a replacement to the key personnel listed below.

General and Project Information

Project Name*	
Company Name	
Role on Project*	
Your reference number for this project*	

*If known

Organisation and Team Information

Team Member Position	Name	Telephone	Email
Project Manager			
Information Manager			
CAD Manager			
Programme BIM Manager			
IT Manager			
Document Manager			
Other Roles (specify)			
Other Roles (specify)			

Project Information Production & Distribution Policies

Please set out in the table below the information that you would expect to produce on the project and list the types and formats of information that you are prepared to share electronically with other project team members.

In this deliverable, the term 'Reuse' means, in respect of the information listed in this section 1.4,:

a) either (i) the vesting of intellectual property rights in such information in the *Employer* or (ii) the grant of a licence (including a right to sub-licence) to the *Employer* to use such information for a purpose related to the project, as appropriate; and

b) compatibility, information exchange and use of such information with other project team members , including the Employer, consultants, contractors and sub-contractors.

The *Employer* expects that Reuse will be permitted and that your organisation will not seek to qualify or limit Reuse by other team members, including the Employer, consultants, contractors and sub-contractors.

#	Information Production					Information Distribution			Information Sharing and Reuse		
#	Information Type	To be produced on Project		Will be distributed Electronically		Preferred Electronic Distribution Format			Will Permit Reuse		Limitations on Reuse by other Team Members
#		Y	N	Y	N	Software Vendor	Package	Version	Y	N	
1.4.1	Paper Drawings										
1.4.2	Sketch Drawings										
1.4.3	Survey Drawings										

#	Information Production					Information Distribution			Information Sharing and Reuse		
#	Information Type	To be produced on Project		Will be distributed Electronically		Preferred Electronic Distribution Format			Will Permit Reuse		Limitations on Reuse by other Team Members
#		Y	N	Y	N	Software Vendor	Package	Version	Y	N	
1.4.4	Mark Ups										
1.4.5	Drawing Print Files										
1.4.6	Native 2D CAD Models										
1.4.7	Native 3D CAD Models										
1.4.8	Model Renditions										
1.4.9	Specifications										
1.4.10	Schedules										
1.4.11	Bill of Quantities										
1.4.12	Correspondence										
1.4.13	Minutes of Meetings										
1.4.14	Diaries										

#	Information Production					Information Distribution					Information Sharing and Reuse		
#	Information Type	To be produced on Project		Will be distributed Electronically		Preferred Electronic Distribution Format			Will Permit Reuse		Limitations on Reuse by other Team Members		
#		Y	N	Y	N	Software Vendor	Package	Version	Y	N			
1.4.15	Reports												
1.4.16	Surveys												
1.4.17	Site Investigations												
1.4.18	Cost Plans												
1.4.19	Programmes												
1.4.20	Requests for Information												
1.4.21	Change Orders												
1.4.22	Architects Instruction												
1.4.23	Valuations												
1.4.24	Photos/Images												

#	Information Production					Information Distribution			Information Sharing and Reuse		
#	Information Type	To be produced on Project		Will be distributed Electronically		Preferred Electronic Distribution Format			Will Permit Reuse		Limitations on Reuse by other Team Members
#		Y	N	Y	N	Software Vendor	Package	Version	Y	N	
1.4.25	Video										
1.4.26	Tender Documentation										
1.4.27	Tender Package Information										
1.4.28	Tender Submissions										
1.4.29	Tender Returns										
1.4.30	Other (please specify)										
1.4.31	Other (please specify)										
1.4.32	Other (please specify)										

Drawing and CAD Management

Please complete the following table based on your proposals for this project:

1.5.1	Please indicate the drawing production and CAD Modelling approaches that are used in your organisation. Provide an estimate as to the proportion of the Project Information Model (PIM) components that use each method in a typical calendar year.	***Modelling Method***	***Y/N***	***% of the PIM***
		Hand drawn, paper drawings		
		Simple 2D CAD (single line elements usually)		
		Advanced 2D CAD (with predefined objects and blocks) (in this instance cells/blocks are defined and saved as 2D graphical objects within a library, representing the physical characteritics of an asset (or group of), which can be used repeatedly with the need to re-create it)		
		3D CAD		
		Object based modelling (3D graphical objects which represent the physical characteristics of an asset. The graphical objects have attributes assocaited detailing the assets functional characteristics).		
1.5.2	Do you follow standards when producing the component parts of the PIM?If yes, what standard is used? Please describe briefly and attach a copy for reference purposes.	Yes No		
1.5.3	Would it be acceptable for your organisation to adopt project specific CAD standards that are different from your current standards? Note any reservations that may apply.	Yes No		

Experience with Web-Based Project Tools

1.6.1 Which project collaboration tools or web- enabled document management systems have you worked with and out of those what is your preferred tool? Please provide any supporting technical or commercial reasons.

1.6.2 What is your organisation's preferred system to manage project Contractual Administration? Please provide any supporting technical or commercial reasons.

Professional Indemnity Limitations

Please confirm your organisation will have PII (Professional Indemnity Insurance) in place. Please provide details of the basis and level of PII and describe any limitations placed on your ability to exchange electronic information by your PI insurers; e.g. a requirement to send parallel paper copies of electronic documents. If your organisation has a policy statement, please attached it for reference.

Email Distribution Policies

Please describe (or attach your policy / standard) how your organisation ensures that all communications, via email, are controlled to reduce risk and ensure urgent emails are re-routed when project team members are on holiday for example?

Policies on Internet Usage

Please describe any policies your organisation has on limiting Internet usage. If your organisation has a policy document, please attach it for future reference.

Technical Information on Software and Systems

IT Infrastructure

Describe your organisations's IT Infrastructure as required in accordance with the below table.

#	Infrastructure Item	Description
2.1.1	Local Area Network	
2.1.2	Wide Area Network	
2.1.3	Internet connection type and speed. Please list separately for alternative work locations (other than main offices). Advise on number of users accessing connection.	
2.1.4	Mobile access to Internet - describe	
2.1.5	Email System	
2.1.6	Video conferencing	
2.1.7	Presentation facilities including LCD projector (advice lumens and resolution)	
2.1.8	Guest computer hosting facilities, including wireless internet access for guest users	
2.1.9	Website	
2.1.10	Intranet	
2.1.11	Fixed, external IP address	

Operating Systems and Software Applications

Describe your organisation's operating systems and software applications as required in accordance with the below table. Please include any software not listed below for which your organisation may need to export to other team members.

#	Operating System / Software Application	Software Vendor	Package	Version
2.2.1	Network Server Operating System			
2.2.2	PC Operating System			
2.2.3	Word Processing			
2.2.4	Spreadsheet			
2.2.5	Presentation			
2.2.6	Database			
2.2.7	Desktop Publishing			
2.2.8	Graphics			
2.2.9	Design / Engineering Process Mapping (quality and / or process improvement tools			
2.2.10	2D CAD			
2.2.11	3D CAD			
2.2.12	PDF Writer			
2.2.13	PDF Reader			
2.2.14	Document Management System: - Graphical Data - Non Graphical Data			

#	Operating System / Software Application	Software Vendor	Package	Version
	- Documentation			
2.2.15	Internet Browser			
2.2.16	OCR (Optical Character Recognition)			
2.2.17	Scanning			
2.2.18	Antivirus			
2.2.19	Firewall			
2.2.20	CAD Viewers and Model Browsers			
2.2.21	Analysis Software			
2.2.22	Design Software			
2.2.23	Other (Specify)			
2.2.24	Other (Specify)			
2.2.25	Other (Specify)			

ProjectWise (EDMS)

If your organisation is using ProjectWise to manage CAD files, please provide the following details.

2.3.1	Do you use ProjectWise distribution services?	Yes / No
2.3.2	Do you have any of the following ProjectWise customisations?	Document Action Manager Yes / No Reference Manager Yes / No CADQA Yes / No PDF Generation Yes / No Excel Export/Import Yes / No

Information Transport Capabilities

Provide details of how your organisation typically exchanges data and information with all project participants (including the Employer) and highlight your preferred method for data and information exchange for this project.

Disaster Recovery Systems and Procedures

Briefly describe your organisation's disaster recovery systems and procedures including, but not limited to, details of policies relating to corruption of data.

Archiving Systems and Procedures

Briefly describe your organisation's archiving systems and procedures including, but not limited to, details of policies relating to rights of access and recording of audit trails.

Security Systems

Describe your organisation's data security systems and arrangements.

2.7.1	Do you have an anti virus system that continuously monitors all your incoming and outgoing traffic? If no, how do you currently protect your organisation against virus attack?	Yes / No
2.7.2	How often do you update your anti-virus software?	
2.7.3	Do you have systems for protecting against spyware and other covert activity logging systems?	Yes / No
2.7.4	Do you have a firewall system?	Yes / No
2.7.5	If yes, is it mainstream supplier or from another source?	Mainstream / Other (please specify)
2.7.6	What limitations does your firewall place on incoming and outgoing electronic communications? Please describe briefly.	

Remarks / Comments

This section is for the use of the TfL PMO Pathway Team only

Product Details

Name:	PIx Protocol – IT Assessment
Document No:	PD0242
SME:	TfL BIM Manager
Owned by:	Pathway Lead
Review Date:	March 2021

Product Version History

Revision	Date	Reason for Change
A1	06/03/2018	Pathway Refresh – Rationalisation of Product PD0185 A1 and Template F7619 A1 into one product. TMS Change Number – CR-10013. Wording amended to reflect use of the term BIM instead of IM&M or IMM.

TfL Pathway

Part of the TfL Management System

Master Information Delivery Plan (MIDP)

Project	Name of Project
Reference	Recognised reference code (e.g. profit centre, UIP, etc.)
Stage	Pathway Stage

Responsible	Project Engineer	Name
	Signature	Date

Accountable *	Project Manager	Name
	Signature	Date

Product History	**Version**	**Date**	**Author**	**Summary of changes**
	0.1	dd/mm/yy	Insert Name	First draft

This document must be filed in accordance with the document filing structure

* The Accountable person should always be at least one management level higher the the Responsible pe

Product Context

Purpose	To provide a forward looking schedule of the Model File(s), Composite Model(s), Non-Graphical Data, Document Definition(s) and Document Rendition(s) which are to be produced, maintained and delivered during the design and construction project stages (Production Information) and post completion of the project (Handover Information). MIDP is used to capture the level of detail to be delivered through the project regarding the Greomeetrical information and Alphanumerical information required to design, construct and operate the asset(s) (as set out in the EIR). The MIDP is appended to the BIM Protocol and forms part of the contract.

Applicability	This product must be produced for all projects that introduce new assets or alter existing assets.

Consult	Role	Detail
	Commercial Manager	Needs to understand the requirments and know that a MIDP has been accepted by the project in order to agree progression of procurement and

	TfL Programme BIM Manager	Will work with the Project Engineer to ensure that the MIDP is understood and meets the needs of the project.

Inform	Information Manager	Needs to know content and that a MIDP has been signed off and is in place for the project.
	HSE Advisor	Needs to know content and that a MIDP has been signed off and is in place for the project.
	Sponsor	Needs to know content and that a MIDP has been signed off and is in place for the project.
	Document Controller / Document Manager	Needs to know content and that a MIDP has been signed off and is in place for the project.

Characterisation Table	**Category Level**			
	Simple	**Standard**	**Significant**	**Major**
Project Information	Required for all levels			
Delivery Schedule	Required for all levels			

Characterisation Notes:
• What is Characterisation? Find out here.
• Where a section has been characterised as not being required (shown by 'X' in the above table), the following note should be entered into the corresponding section in the Product - "not required by characterisation"

General Notes:
• The MIDP template must be used and all relevant cells populated for the deliverables detailed.
• The Employer must partially complete and issue an MIDP to the supplier, as part of the tender documentation (ITT Stage), detailing data and information that the Employer will provide to the Supplier along with any requirements for matuturity of information deliverables at each stage of the project.
• The Supplier must provide one MIDP per organisation, per discipline.
• All deliverables (Production Information and Handover Information) must be included, as seperate items.
• The MIDP must be completed and submitted to the Project Manager for acceptance, 4 weeks prior to commencement of the contract.
• The Contractor must return a completed MIDP for assessment as part of their Tender submission.
• All updates to the MIDP must follow project change control procedures.

The template contains clear guidance:
• Black text is not to be deleted or amended in any way
• All red and blue text must be deleted prior to issuing the EIR

If you have any queries, feedback or improvement suggestions about this product, then please contact tflpathway@tfl.gov.uk

Contents

Transport for London

Master Information Delivery Plan
Instructions

Tab	Instructions
Front Sheet	Enter name and role against, 'Prepared By', 'Checked By' and 'Approved By'. Where applicable enter details against 'distributed to'. Ensure that 'Revision' and 'Date' are completed and current
Project Information	Complete the 'Project Information' section enter the required information. Only complete the 'Work Package' section if the project is split into separate work packages; Work Package details and the WBS code Select the corresponding "Location" for the Work Package using the filters in the 'Description' column; codes will automatically populate. These codes should relate to the 'Work Package' (where used).
Delivery Schedule	The delivery information must be completed from left to right, starting at column C, using the filters where available. The coloured cells automatically populate depending on values entered in the non-coloured cells. The sequential number (column N) is limited to five digits and is driven by the 'Type Code' (column J). If the number has already been used a message will appear asking for another value to be entered. **Key** **Cells** **Action** To be completed by Author Automatically populated Automatically populated

General Guidance
Black Text: mandatory requirements, **must not** be changed.
Red Text: instructions to the author on how to complete the document, along with lists and suggstions of things to be considered. All red text **must be deleted** before issuing the MIDP to the (potential) Supplier.
Blue Text: example text to demonstrate to the author typical wording / examples. The blue text may be converted to black text if applicable; otherwise the author must develop their own wording to suit their particular programme / project. All blue text **must be deleted** before issuing the documentation.

Transport for London

Project Information	
Project Description	Project name
Project Code	UIP I 234
Project UIP	UIP I 234

Project Package Information				
LCS I Description	Combined WBS - LCS Code	LCS I Code	Work package Description	Work package Breakdown Structure
LU General For LU	WP01 - LU General For LU	A001	Whole Site	WP01
Kenton Stn	WP02 - Kenton Stn	B033	Station Box	WP02
Harrow And Wealdstone Stn	WP03 - Harrow And Wealdstone Stn	B031	Lifts and Escalators	WP03
Kenton To South Kenton	WP06 - Kenton To South Kenton	B034	Platforms and Track	WP06
	WP02 -		Station Box	WP02
	-			
	-			
	-			
	-			
	-			
	-			
	-			

Level of Information Need		
Description		**Code**
Geometrical Information	**Alphanumerical information**	
Overall massing of construction entities; indicative of area, height, colme, location and orientation	Project requirements (form, function, cost and schedule)	L1
Discipline specific model files. Discipline team allocated volumes. Architectural form and space arrangement (including that reserved for MEP) Outline structural / civil spatial arrangements Generic systems, assets or assemblies with approx size, shape, location and orientation	General performance criteria (based on assumed asset . System types) Approx cost data Note: associated to the applicable modelled elements	L2
Discipline team specific model files Primary structural / civil elements developed and frozen Specific systems, assets or assemblies in terms of quantity, form, size, location and orientation	Specific performance critera Specific cost data Note: associated with the applicable modelled elements	L3
Discipline team specific model files Geometrrically represented as a specific system, asset or assembly in terms of quantity, size, shape, location and orientation	Actual performance criteria Actual cost data Note: associated with the applicable modelled elements	L4
Discipline team specific model files Geometrically represented as actual built / constructed / installed system, asset or assembly in terms of quantity, size, shape, location and orientation	Actual performance criteria Actual cost data Note: associated with the applicable modelled elements	L5

This section is for the use of the TfL PMO Process & Guidance Team onl

Product Details

Name:	Master Information Delivery Plan (MIDP)
Docume	PD0241
SME:	TfL BIM Manager
Owned	Senior Process & Guidance Manager
Review	Mar-23

Product Version History

Revisio n	Date	Reason for Change
A1	06/03/2018	Pathway Refresh - Rationalisation of Product Description PD0183 A2 and Template F7617 A1 into one product. Approval under CR-10013. Requirement for the Gate delivery date is now included in the Delivery Plan. Level of Definition drop down options have been adjusted in line with the revised EIR. Delivery Plan section has been ,oved to the middle of
A2	17/09/2018	Stage Names 0 (Initial Proposition) & 2 (Feasibility to Option Selection) updated as per approval by the Pathway Governance Group in July 2018.
A3	01/05/2020	Updated to align with new international standard ISO19650. Terminology change and update reference to other Pathway products; TMS-CR-12905.

TRANSPORT for LONDON – COMMERCIAL SURFACE TRANSPORT

Major Asset Renewals Programme (MARP) - Brent Cross Structures Feasibility Study

---

Scope Appendix H

Health and Safety

Project Reference Number: tfl_scp_001845

1 Appendix H - Health and Safety and Environmental Requirements

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

1.1.2 The *Employer* delivers 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*.

1.1.3 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.

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

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

i. Robust design risk management

ii. Effective processes for assessing risk and developing safe systems of work

iii. 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 (14 days) before commencement on site

iv. Pre Construction Information will be provided by the *Employer*

v. The *Consultant* must ensure that the *Project Manager* has submitted an F10 for the surveying/ construction stages of the scheme

vi. The *Consultant* and Sub-*consultants* must be able to demonstrate a continuous improvement plan throughout the duration of the project

vii. Construction phase plan and emergency preparedness plan

viii. The *Consultant* and Sub-contractors must be able to demonstrate high levels of leadership commitment and supervision and engagement in monitoring and managing the Services, rectifying deficiencies and continuously improving

ix. The *Consultant* and Sub-contractors must provide adequate competent staff, suitably trained and qualified. The *Consultant* must provide the *Employer* with evidence of CV's and qualifications supported by a training matrix showing competence and identifying training needs

x. High levels of leadership commitment and supervision and engagement in monitoring and managing the Services, rectifying deficiencies and continuously improving

xi. Personal competency, development and innovation

xii. 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

xiii. Comprehensive occupational health management scheme

xiv. Pre start meetings

xv. The *Consultant* 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.

xvi. *Consultant*'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*

xvii. "One Team" culture, honesty, openness and engagement

xviii. Rewarding good performance and challenging poor performance

xix. The *Consultant* submits on a 4 weekly basis an incidents summary report of which the *Employer* will provide the template of

1.1.6 The *Consultant* responds promptly if the *Project Manager* requests a meeting with a senior representative from the *Consultant* (typically a Director identified as responsible for the Services) 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.

1.1.7 The *Consultant* 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. T

1.1.8 he *Consultant* ensures that employees do not enter any areas where they are putting themselves or others at risk in doing so.

1.1.9 The *Consultant* ensures that his employees participate in the health and safety initiatives that the *Consultant* 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.

1.1.10 The *Consultant* 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 *Consultant*. Consultant's Health and Safety Management Systems

1.1.11 The *Consultant* 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.

1.1.12 Health and Safety Advice

1.1.13 The *Consultant* 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 Services. The *Consultant* informs the *Project*

Manager of any changes in personnel and provides CV's for new members of the Team.

1.1.14 Procurement and Supply Chain Management

1.1.15 During the procurement process and after the appointment of Sub-contractors, the *Consultant* is responsible for ensuring that Sub-contractors are aware of and understand the health and safety requirements stated within this part of the Scope.

1.1.16 The *Consultant* 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*.

1.1.17 Health and Safety Training

1.1.18 The *Consultant* 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 Services. 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.

1.1.19 The *Consultant* meets all training, assessment and associated costs. The *Consultant* should be able to demonstrate staff competencies via a training matrix or similar which the *Employer* will review.

1.1.20 The *Consultant* 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 *Consultant* ensures that these are carried out in a suitable place with appropriate visual aids.

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

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

1.1.23 Construction Skills Certification Scheme (CSCS)

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

1.1.25 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 *Consultant* to provide access to visitors when on an accompanied site visit.

1.1.26 Management of Site Hazards

1.1.27 The *Consultant* 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.

1.1.28 The *Consultant* 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.

1.1.29 The *Consultant* 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.

1.1.30 The *Consultant* 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 *Consultant* 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 *Consultant* and their supply chain shall consider the following significant residual risks whilst planning and undertaking the Services;

i. Vehicular and pedestrian traffic

ii. Working at height

iii. Confined spaces

iv. Interface with electrical equipment

v. Interface with services

vi. Known Asbestos presents

1.1.31 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.

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

1.1.33 Compliance with Policies

1.1.34 The *Consultant* 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 Services of which the *Consultant* is aware or ought reasonably to be aware.

1.1.35 The *Consultant* undertakes that all its personnel and those of its Sub-contractors and Indirect supply chain comply with all of the *Employer*'s policies and standards that are relevant to the provision of the Services, 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.

1.1.36 The *Employer* provides the *Consultant* with copies of such policies on request.

1.1.37 The Consultant:

i. undertakes to procure that all the *Consultant*'s Personnel comply with each *Employer*'s policies and standards that are relevant to the performance of the Services, 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 *Consultant* with copies of such policies and standards on request;

ii. provides the Services in compliance and ensures that the *Consultant*'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 *Consultant*'s business or each *Employer*'s business, from time to time in force which are or may become applicable to the Services. The *Consultant* promptly notifies the Framework *Employer* and/or any relevant *Employer* if the *Consultant* is required to make any change to the Services for the purposes of complying with its obligations under this Section

iii. without limiting the generality of this Section, complies with all relevant enactments in force from time to time relating to discrimination in employment and the promotion of equal opportunities;

iv. without prejudice to any other provision of this Section 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 *Consultant* from time to time. For the purposes of this Section, "Traffic Manager" means an *Employer*'s traffic manager appointed in accordance with section 17 of the Traffic Management Act 2004; and

v. promptly notifies the *Consultant*'s Personnel and any relevant *Employer* of any health and safety hazards that exist or may arise in connection with the performance of the Services.

1.1.38 In all cases, the costs of compliance with this Section shall be borne by the *Consultant*.

1.1.39 In providing the Services, the *Consultant* (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 *Consultant*'s activities may impact on the environment) to the need to:

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

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

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

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

1.1.40 The Construction (Design and Management) Regulations 2015

1.1.41 The Employer is the Client. The Consultant is the Principal Designer and the Principal Contractor will be the Consultant, or their sub-consultant as defined in the CDM Regulations and named in the Contract Data.

1.1.42 In accordance with its duties under the CDM Regulations, the *Consultant*, as Principal Designer, is responsible for developing the design(s) that meet the requirements of the CDM Regulations. The project shall be notifiable if there are 20 people or more working on site and last longer than 30 days.

1.1.43 The *Consultant* shall confirm as part of his tender submission that he is also capable to undertake the role of Principal Designer as defined by Construction (Design and Management) Regulations 2015.

1.1.44 Without limitation to its duties under the CDM Regulations, the *Consultant*, as Principal Designer:

i. designs the works so that hazards are considered throughout the project lifecycles of construction, operation/use, maintenance and demolition and ensures that hazards are eliminated or reduced and controlled to ALARP;

ii. the *Consultant*, as Principal Designer and must ensure that regular design and build reviews are carried out and documented throughout the design life of the project in agreement with the *Project Manager*

iii. collates information for the Health and Safety File from others with whom the *Consultant* shares the worksite. The *Consultant* populates the Health and Safety File for each structure that is part of the Services with the information required. Such information will be in a format prescribed by the *Employer* and fulfils the requirements of the CDM Regulations. The Health and Safety File will include those items identified in clause 3 of Appendix 4 of the Health and Safety Executive's guide to the CDM Regulations, Managing Health and Safety in Construction. The format of the Health and Safety File will comply with Surface Transport Standards.

1.1.45 Incident Reporting, Investigation, Performance Monitoring

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

1.1.47 The *Consultant* 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:

i. description of the incident;

ii. immediate actions taken;

iii. immediate causes;

iv. root causes;

v. actions taken to prevent a recurrence;

vi. skills, knowledge and experience of those involved – supervisors and operatives; and

vii. details of plant/equipment used including calibration and maintenance

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

1.1.49 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 *Consultant* and an updated report submitted if required.

1.1.50 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.

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

1.1.52 To support the analysis of health and safety performance, the *Consultant* 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 *Consultant*'s staff and personnel employed on the Services since last report. The cumulative report is broken down by management, site level supervision and operatives.

1.1.53 Non English Speaking Workers

1.1.54 Not applicable.

1.1.55 Personal Protective Equipment (PPE)

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

i. PPE provided shall be free of charge to all personnel, as required and appropriate, for the job task; and

ii. PPE fits the individual and is laundered, maintained and/or replaced to ensure that it remains effective at all time

1.1.57 The *Employer*s minimum requirements are:

i. hard hat with company branding;

ii. eye protection (safety glasses or other suitable eye protection);

iii. hand protection (gloves) (subject to a task specific risk assessment agreed by the *Consultant*, gloves may be omitted);

iv. safety boots with ankle protection/support; and

v. high visibility jacket (Class 3 – EN 471) and trousers with reflective strips for all works undertaken on the highway with company branding.

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

i. respiratory protection equipment (RPE);

ii. hearing protection; and

iii. hot, wet or inclement weather protection.

1.1.59 The *Consultant* 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*.

1.1.60 The *Consultant*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.

1.1.61 First Aid, Occupational Health, Drugs and Alcohol

1.1.62 The *Consultant* 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.

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

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

1.1.65 The *Consultant* 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 *Consultant* shall co-operate with the *Employer* who may require the

execution of random and/or for cause alcohol and drug tests. The *Consultant* shall provide records of testing if requested by the *Employer*.

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

i. testing for drugs and alcohol in individuals in accordance with the *Consultant*s policy;

ii. providing pre-employment medicals;

iii. providing health questionnaires on commencement for all individuals including site and office-based staff;

iv. providing specific health appraisals for those referred following evaluation of questionnaires;

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

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

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

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

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

i. Hand Arm Vibration syndrome surveillance

ii. Fatigue management

iii. Stress management

iv. Respiratory health

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

1.1.69 Equipment, Materials or Substances Hazardous to Health

1.1.70 The *Consultant* 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 *Consultant* identifies the hazards and provides full details of any precautions to be taken on the use of such equipment or materials.

1.1.71 The *Consultant* only specifies substances and materials for incorporation in the Services 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 Services provided that this sub-bullet does not apply where an experienced *Consultant* 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 Services.

1.1.72 The *Employer* will supply all information in his possession in respect of the presence of asbestos containing materials within the site/structure.

1.1.73 The information will be included in the Pre-Construction Information. Based on this information, the *Consultant* shall liaise with the *Project Manager* to

determine where additional surveys will be required and the type of survey to be undertaken.

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

1.1.75 Where the *Consultant* 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 *Consultant* 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.

1.1.76 Emergency Plan and Fire Safety

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

1.1.78 Behavioural Safety

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

i. lead by example;

ii. increase awareness of behaviours;

iii. develop a no name/no blame culture with the workforce;

iv. recognise safe behaviour, challenge and manage unsafe behaviour;

v. identify and remove hazards;

vi. provide positive observations and feedback;

vii. reduce at risk behaviours/conditions; and

viii. increase immediate corrective action.

ix. The *Consultant* appoints behavioural safety leaders from within their workforce. The behavioural safety leaders are required to:

x. attend behavioural safety briefings;

xi. manage behavioural safety logs;

xii. lead by example on site and embody the values of behavioural safety;

xiii. walk the site and raise all safety concerns;

xiv. 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;

xv. liaise with the *Project Manager* and escalate any issues that may need resolving; and

xvi. attend behavioural safety leader meetings.

1.1.80 The *Consultant* recognises and rewards safe behaviours.

1.1.81 Health and Safety Innovation, Best Practice and Campaigns

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

1.1.83 The *Consultant* engages with *Employer* or *Project Manager* to identify and deliver health and safety campaigns.

1.1.84 Site Mobilisation and Start of Services

1.1.85 The *Consultant* shall work collaboratively with the Principal Contractor.

Information

1.1.86 The *Consultant* ensures that:

i. health and safety records relevant to the Services, including induction, training and equipment inspection and testing records, are kept on site and are available for inspection on request;

ii. 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;

iii. 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);

iv. the Services are suitably supervised at all times and that operatives are aware of the person supervising their work activities and their whereabouts at all times;

v. supervisors receive induction on the health and safety requirements and of their specific responsibilities for health and safety aspects; and

vi. 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.

1.1.87 Site Supervision

1.1.88 The *Consultant* may from time to time be required to supervise the *Employer*'s Contractor's works. The *Consultant* 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.

1.1.89 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.

1.1.90 All persons employed by the *Consultant* 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*).

1.1.91 Confined Spaces

1.1.92 The *Consultant* 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.

1.1.93 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.

1.1.94 The *Consultant* eliminates the need to enter confined spaces wherever possible. Where entry to a confined space is necessary the *Consultant* 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.

1.1.95 The *Consultant* ensures their safe system of work includes:

i. 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;

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

iii. 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

iv. 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.

1.1.96 Working at Height

1.1.97 The *Consultant* complies with the Working at Height Regulations and eliminates the need to work at height wherever possible. Where working at height is necessary the *Consultant* 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.

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

1.1.99 The *Consultant* 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.

1.1.100 Method Statements

1.1.101 The *Consultant* is required to submit method statements and risk assessments to the *Employer* for acceptance.

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

TRANSPORT for LONDON – COMMERCIAL SURFACE TRANSPORT

Major Asset Renewals Programme (MARP) - Brent Cross Structures Feasibility Study

---

Scope Appendix I

Quality Management

Project Reference Number: tfl_scp_001845

1 Appendix I – Quality Management

1.1.1 Quality Requirements

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

1.1.3 The *Consultant* shall conform to the BIM quality requirements.

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

1.1.5 The *Consultant* 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.

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

1.1.7 The *Consultant* 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 seven days, of any aspect of the *Consultant*'s carrying out of the services, including, but not limited to, inspection of the *Consultant*'s technical and organisational security measures for the protection of Personal Data.

1.1.8 Quality Management System

1.1.9 The *Consultant* operates a quality management system complying with ISO 9001:2008 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 Services 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 *Consultant* operates a quality system enabling him to comply with the *Consultants* quality management system.

1.1.10 The Quality Management System is to be capable of demonstrating by *Consultant* 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 *Consultant* can demonstrate that all the requirements of the contract have been fulfilled.

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

1.1.12 The *Consultant* shall ensure that suppliers of any tier also supply a quality presence with adequate resources and appropriate authority to ensure the quality of work on this Contract.

1.1.13 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 *Services* that are being executed in connection with their assets by the *Consultant* and to observe the execution of these activities.

1.1.14 The *Consultant* shall contribute to and participate in the identification, discussion and implementation of lessons learned initiatives agreed with the *Project Manager*. The *Consultant* shall make available for audit all records necessary to demonstrate that the *Services* have been executed in accordance with the contract. They also provide the *Project Manager* with documents that demonstrate that the *Services* are progressing in accordance with specified requirements. These documents are to be provided in a timely manner as the work progresses.

1.1.15 The *Consultant* 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.

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

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

1.1.18 Within 2 weeks (14 days) of the *Start Date*, the *Consultant* 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 (14 days) of the date of submission. The *Consultant* 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*.

1.1.19 The *Consultant* shall not start any activity on any part of the *Services* 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 *Services*, the *Project Manager* may give limited acceptance to the *Consultant's* submission in order to allow limited activities to proceed.

1.1.20 Quality Assurance

1.1.21 The *Consultant* shall engage the allocated TfL Technical Approvals Authority (TAA) via the *Project Manager* and consult on all aspects of the surveys and investigations in Stage 2 (Option Selection) including agreeing, endorsing and Approval in Principle (AIP) documents.

1.1.22 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 (Option Selection), the technical approval team shall be engaged by *Consultant* to agree method of working. As a minimum the following requirements should be considered:

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

1. 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.

2. The *Consultant*'s Design Manager shall attend all technical meetings in person with the TAA.

3. 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.

4. Some elements may need technical assurance by other teams such as TAA highways and TAA structures. The *Consultant* 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.

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

1. Design Manual for Roads and Bridges

2. Specification for Highway Works

3. Eurocodes

4. Road Tunnel Safety Requirements

5. EU Directive 2004/54/EC

6. TfL guidance notes:

- SQA-2025 – Technical Approval of Surface and Highway Structures
- SQA 2022 – 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.

1.1.25 Industry good practice guidance for design, maintenance and management of Highways 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.

1.1.26 With regards to the site works, unless otherwise accepted by the *Project Manager,* Plant and Materials forming part of the Services or temporary works incorporated into the *Services* shall be procured from sources that hold appropriate certification from a United Kingdom

1.1.27 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 *Consultant* from ensuring the quality of the products.

1.1.28 The *Consultant* shall make available certification to demonstrate that Plant and Materials used comply with the relevant legal requirements and standards. For *Consultant* designed parts of the Services 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.

1.1.29 Verification of the quality and material traceability of each element of the *Services* shall be the responsibility of the *Consultant* and shall be achieved through checks, tests, inspections, audits and reviews, planned and

implemented in accordance with the contract quality plan developed by the *Consultant*.

1. Subject to the *Scope* and any changes to it the *Consultant* warrants that to the extent the *Consultant* either is obliged to specify or approve products or materials for use in the *Services* or does so specify or approve, the *Consultant* 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 *Consultant* 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 *Consultant* notifies the *Project Manager* in writing immediately. This clause does not create any additional duty for the *Consultant* to inspect or check the work of *Others* which is not required by this contract.

1.1.30 The *Consultant* obtains from and/or gives to others all licences, consents, notices and approvals necessary or appropriate to enable him to provide the Services other than those which the Scope states will be obtained or given by the *Employer* or *Others*. The *Consultant* ensures that, prior to Completion and wherever necessary during the course of the Services, the conditions and requirements of the licences, consents, notices and approvals, whether obtained by the *Consultant* or the *Employer*, are complied with and that the same are renewed whenever necessary or appropriate.

TRANSPORT for LONDON – COMMERCIAL SURFACE TRANSPORT

Major Asset Renewals Programme (MARP) - Brent Cross Structures Feasibility Study

---

Scope Appendix K

Asbestos Desktop Survey Template

Project Reference Number: tfl_scp_001845

Asbestos Desktop Study (generic for all projects relating to asbestos) to be read in conjunction with TfL (surface) Asbestos Procedure and SQA-584 Asbestos Desktop Study Work Instruction

There are two main types of asbestos surveys.

A management survey- this is a standard survey. Its purpose is to locate, as far as reasonably practicable, the presence and extent of any suspect ACMs in the structure which could be damaged or disturbed during normal use, including foreseeable maintenance and installation. It will usually involve sampling and analysis to confirm the presence or absence of ACM's.

A refurbishment and demolition survey- this will be required before **any** works other than day-to-day maintenance is carried out. This type of survey is used to locate and describe, as far as reasonably practicable, **all** ACMs in the areas where works will take place. The survey will be fully intrusive and involve destructive inspection, as necessary, to gain access to all areas, including those that may be difficult to reach.

Purpose of desktop asbestos study

Before **any** survey commences, a pre-survey planning (desktop) meeting shall be held with the TfL Asset Owner, TfL Project Manager, TfL safety manager Asbestos Surveyor, Principal Contractor, Maintenance Contractor and the TfL Duty Holder (or their representative). The template needs to be undertaken by the client (leading) with all other parties in agreement with the strategy. The purpose of the meeting is to clarify and agree:

- The scope of the survey;
- The surveyors sampling strategy, including the number and location of samples to be taken;
- Areas to be included/excluded from the survey;
- The requirement and outcome of the survey;
- The arrangements for accessing the structure its plant and equipment;
- Identifying the level of assistance required from the maintenance contractor – traffic management, access
- The arrangements for making good following the taking of samples;
- Action to be taken should any damaged material suspected to contain asbestos is found; and
- To pass any existing known information about the structure from the client to the surveyor

Site visit

A site visit may be required before or after the desktop. The requirement will be dependant upon the individual scheme and its complexity; if a site visit is made the relevant section on the desktop survey sheet should be completed, highlighting the date, who attended and a statement that all information has been added to the template.

Note: template and guidance are on the following tabs.

Asbestos Desktop Study (generic for all projects relating to suspected asbestos materials being present) to be read in conjunction with TfL's (surface) Asbestos Procedure SQA-0584

1	**Priority Rating (RAG)**	**Red/Amber/Green**	
2	Date of desktop:	*insert date*	
3	Undertaken By:	*insert name*	TfL Client
		insert name	TfL Project Manager
		insert name	TfL Safety Advisor
		insert name	Maintenance Contractor
		insert name	Principal Contractor (if different)
		insert name	Asbestos Surveyor

4	**Structure, building name,section descrpition**	
5	**Approx size of structure/building or section of**	
6	**Location/Grid References**	
7	**Structure No / Bridge Station No.**	
8	**Type of survey**	
9	**Proposed Survey Start Date**	
10	**Principal Contractor/Project Manager**	
11	**Name of approved asbestos surveying company by client**	
12	**Name of lead surveyor and other surveyor**	
13	**Qualification/s**	
14	**Estimated duration of survey**	
15	**Staff Required**	
16	**Client/PC/Safety team Team site visit needed?**	
17	**Existing Information gathered from Bridge Station, Design drawings, CDM DataStore or any other TfL/Contractors databases regarding asbestos information**	
18	**Description of areas to be surveyed and any special requirements**	
19	**Agreed electronic format of survey report / Management plan. List any areas which are to be presumed to contain asbestos & state reason why**	
20	**Asbestos sampling strategy based upon existing information**	
21	**Agreed action following discovery of damaged asbestos and communication plan**	
22	**Construction hazards (if survey being undertaken whilst construction activities are being undertaken):**	
23	**Existing or near electrical/mechanical services?**	
24	**Environmental Considerations and General hazards - i.e. chemical, electrical, biological and noise etc.**	
25	**Surrounding use of land**	
26	**Contaminated land (asbestos or any other known contamination) in or on the surrounding land**	
27	**Access requirements including any traffic management needed**	
28	**Access equipment required**	
29	**Confined spaces**	
30	**Welfare arrangements**	
31	**Emergency Procedures, First Aiders, Name of nearest Hospital A&E**	
32	**Notes**	
33	**Any future planned works on structure**	

Guidance for template completion

Box number on template	Description
1	Where the desktop study is being undertaken as part of an established management programme, the Client shall assign a priority rating (red, amber o green) to indicate the urgency of the asbestos survey. Those structures where little of no information is available shall be classified as red 'High' priority.
2	Date of desktop study to be recorded.
3	Client to ensure that a desktop study is undertaken in conjunction with the Project Manager, TfL Safety Advisor,Asbestos Surveyor, the Principal Contractor/Maintenance Contractor and the Duty Holder or their representative . Record who attendeded the meeting.
4	Record structure name and type of structure.
5	Record approximate size of structure applicable for Bridges and road sections
6	Record location/grid reference.
7	Record structure number or BridgeStation reference number.
8	Record type of survey required. There are two main types: A **management survey** - this is a standard survey. Its purpose is to locate, as far as reasonably practicable, the presence and extent of any suspect ACMs in the structure which could be damaged or disturbed during normal use, including foreseeable maintenance and installation. It will usually involve sampling and analysis to confirm the presence or absence of ACM's. A **refurbishment and/or demolition survey** - this will be required before any works other than day-to-day maintenance is carried out. This type of survey is used to locate and describe, as far as reasonably practicable, all ACMs in the areas where works will take place. The survey will be fully intrusive and involve destructive inspection, as necessary, to gain access to all areas, including those that may be difficult to reach.
9	Record proposed start date of survey.
10	Record name and company of Principal Contractor/Maintenance Contractor, Project Manager.
11	Record name of surveying company. The Client is responsible for ensuring the competence of any company appointed to carry out the works as laid out in AMD's Asbestos Procedure section 5.4.
12	Record name of lead surveyor and any other surveyors who will be involved in the survey.
13	Consultants engaged to undertake surveys of structures for ACM's must be able to demonstrate that they are technically competent to undertake the works. These should be as laid out in AMD's Asbestos Procedure section 5.4.
14	Record estimated duration of survey.
15	Staff required – in addition to the surveyors it should be recorded if any additional staff are required to allow access or to ensure safe working conditions, e.g. electrician, carpenter etc. and who is responsible for supplying them.
16	The study will generally be carried out through an office based meeting though on occasion, for large and complex structures, a preliminary site meeting and walk through inspection may be required. Following the visit it should be recorded when this was undertaken, who attended and confirmed that all relevant information has been added to the template.
17	It is a requirement that all documentary information that can be obtained about the structure is gone through systematically. The study should take the form of a review of all known and available information including but not limited to: • Plans • As built drawings • Principal/general/safety inspection reports • Survey and special inspection reports • Hazard Maintenance Registers • Health and Safety Files • Results from previous surveys It will need to be considered how accurate any existing information is. This would be based on when they were compiled, whether they are up to date, what parts of the structure they cover and if they comply with current requirements of the Asbestos Approved Code of Practice (ACOP).
18	It needs to be clearly laid out exactly what areas are required to be surveyed, any areas that are to be excluded and any special requirements. An accurate drawing/plan of the structure should be provided to the surveyor where possible, and the main features/section marked on it. If
19	Format of survey report and register (in accordance with TfL Asbestos Management Plan) should be agreed, N.B. TfL format to be supplied to surveying company and used. Information should be provided electronically and include plans/drawings showing location of samples taken, results and photographs of any areas surveyed and any found containing asbestos.
20	Detail sampling strategy to be undertaken by the surveyor.
21	Agree action's to be taken by the surveyor if any damaged asbestos is found and how this will be communicated to the Principal/Maintenance Contractor, Client and the \ Safety Manager or their representative e.g. make safe, lock off.
22	If survey will be undertaken whilst construction works are being carried out record any hazards which exist from this and any special requirements.
23	Record whether there are any special considerations regarding plant/ equipment installed in the structure e.g. pump, electrical equipment etc.
24	Record general hazards and environmental considerations relating to the structure and surrounding areas. This information will assist the surveying company to identify any known hazards to enable them to take them into account when undertaking the risk assessment for their works.
25	Identify the surrounding use of land. This information will assist the surveying company to identify any known hazards to enable them to take them into account when undertaking their risk assessment for their works.
26	Record if there is any contaminated land known of in the structure or on the surrounding land e.g. asbestos etc.
27	Detail the access requirements for the structure, whether any traffic management is required an who is responsible for supplying it.
28	Detail any access equipment needed to undertake the survey e.g. MEWP, and who will be responsible for supplying it.
29	Record if there are any confined spaces within the structure which require surveying. If so detail the arrangements for safe working practices.
30	Detail the welfare arrangements for those carrying out the survey.
31	Record emergency arrangements, i.e. arrangements for summoning help, first aid provision, location of nearest accident and emergency department.
32	Use this to records any further notes/comments pertinent to the survey.
33	Identifying if there are any future planned works on the structure will assist the Client with the decision on whether to undertake a management or refurbishment/demolition survey.

Compatibility Report for Copy of Desktop guidance review DR 27 July Copy of SQA-0585 Final hand to LU.xls

Run on 27/07/2017 13:18

The following features in this workbook are not supported by earlier versions of Excel. These features may be lost or degraded when opening this workbook in an earlier version of Excel or if you save this workbook in an earlier file format.

Minor loss of fidelity	# of occurrences	Version
Some cells or styles in this workbook contain formatting that is not supported by the selected file format. These formats will be converted to the closest format available.	10	Excel 97-2003

TRANSPORT for LONDON – COMMERCIAL SURFACE TRANSPORT

Major Asset Renewals Programme (MARP) - Brent Cross Structures Feasibility Study

---

Scope Appendix N

Submission Comments Form

Project Reference Number: tfl_scp_001845

TfL Assurance Review
Submission Comments Form: Part A Comments to Designer/Contractor

Subject / Project							
Rev	TfL Response			Designer Response			Document Review Status Codes
	Date	Prepared By	Reviewed By	Date	Prepared by	Approved by	***A. Accepted*** ***B. Minor comments –report re-submission required:*** Minor comments to be addressed through re-submission ***C. Not Accepted:*** Comments to be addressed through re-submission

Document Reference	Rev	Title	Status

Live comments or responses are shown Black font. Closed out comments and responses are shown in Grey highlight. Subsequent comments and responses are listed beneath the initial comment to which they relate and are numbered as #a, #b etc.

COMMENTS

No	Comment by	Clause/ Section Title	Clause/ Sec. No	TfL Comments	Designer Response (further response in red)
1.					
2.					
3.					

TfL Assurance Review
Submission Comments Form: Part B Recommendations to Project Manager/Sponsor

Subject / Project							
Rev	TfL Response			Designer Response			Document Review Status Codes
	Date	Prepared By	Reviewed By	Date	Prepared by	Approved by	***A. Accepted*** ***B. Minor comments –report re-submission required:*** Minor comments to be addressed through re-submission ***C. Not Accepted:*** Comments to be addressed through re-submission

Document Reference	Rev	Title	Status

Live comments or responses are shown Black font. Closed out comments and responses are shown in Grey highlight. Subsequent comments and responses are listed beneath the initial comment to which they relate and are numbered as #a, #b etc.

TfL Engineering Services Comments	

TRANSPORT for LONDON – COMMERCIAL SURFACE TRANSPORT

Major Asset Renewals Programme (MARP) - Brent Cross Structures Feasibility Study

---

Scope Appendix O

SQA Guidance

Project Reference Number: tfl_scp_001845

Transport for London
Surface Transport

Management System Document – Guidance Note

Requirements for the Development and Acceptance of Proposals for Structures & Tunnels Capital Schemes

Document reference: SQA-2022 - issue: 2.0

CONTENTS

1. Purpose

1.1. This note is aimed at Project Managers, TfL Commercial team, Consultants, Contractors and other parties managing and delivering Highway Structures and Tunnels projects. It provides guidance regarding minimum information required by Asset Operations, Sponsors, Project Managers and TfL Engineering Surface and Highway Structures team at each stage of a project to determine the suitability of proposals, that the project requirements are satisfied and that value for money is demonstrated at all stages. It also forms part of the Technical Approval Process.

2. Background and Scope

2.1. The quality of the submissions made to the Sponsors, Project Managers and TfL Engineering for consideration vary considerably, often falling short of the required content or quality, meaning that additional information is required and that delivery of a project is delayed.

2.2. This guidance aims to provide clarity on the minimum information required at each stage, improve consistency and ensure that the various parties involved are aware of the requirements. As a result, the amount of time taken to review and accept submissions should be greatly reduced and thus delays to scheme implementation prevented and costs reduced.

2.3. The guidance in this note is aligned with the Pathway Stages. The information requirements set out in the following sections are in addition to those required by Pathway and are considered the minimum to enable TfL Engineering Surface and Highway Structures (S&HS) team to make a recommendation to the Sponsor, to allow them make a decision at each Stage Gate. This does not remove the requirement for the Project Manager to produce relevant Pathway documents as defined in the PPMP (Pathway Product Management Plan) and as agreed with the Sponsor.

3. Introduction

3.1. The guidance in this note covers all types of Structures and Tunnels capital schemes, including, maintenance, strengthening, replacement and new build.

3.2. The review and acceptance process is outlined below. At each stage the Project Manager must satisfy the project requirements before submitting further details and progressing to the next stage. The stages of development of proposals are as follows:

- **Stage 1** – Outcome Definition
- **Stage 2** – Feasibility
- **Stage 3** – Concept Design
- **Stage 4** – Detailed design
- **Stage 5** – Delivery
- **Stage 6** – Project Close

3.3. During all stages the Project Manager will need to demonstrate that the items below have been considered and that the design mitigates the effects on the Transport for London Road Network (TLRN) and other TfL assets as far as is reasonably practicable, including minimising disruption to all road users during the works. The Project Manager will need to consider the effects on TfL owned assets and assets owned by third parties in the vicinity of the proposed work. These effects will include:

- Effects on safety of the road user
- Effects on functionality of assets
- Effects on the ability of the relevant authority to efficiently and effectively operate the road network, other transport networks, utility service etc.
- Effects on the ability of the asset owner to efficiently and effectively maintain the asset
- Effects on the environment
- Effects on whole-life costs

<u>Development of Proposals</u>

3.4. As stated above the proposals will go through several stages of development and acceptance prior to works commencing on site. The level of detail required will depend on the complexity of the proposal and the potential effect it has on the surrounding environment. A summary of the requirements of each stage is given below. Details of the submissions to be made to obtain

acceptance are given in sections 4 to 9.

3.5. **Stage 1** – Outcome Definition; the initial part of this stage is generally managed by the sponsor with assistance as necessary from TfL Engineering , PPD and other TfL departments to effectively define the project, prepare the business case and produce the Project Requirements for the next part of this stage. Once these documents have been approved, the Sponsor will generally hand the management for the remaining part of this stage over to the Project Manager. This stage is complete once the requirements set out in Section 4 are completed to the satisfaction of the Sponsor. Towards the end of this stage the business case and project requirements will be updated by the Sponsor.

3.6. **Stage 2** – Feasibility; the Project Manager shall submit a detailed feasibility report which considers options for meeting the Project Requirements and recommends a preferred option for development during the concept design stage. This stage is generally managed by the Project Manager with support and assistance from other departments. All reports and technical documents are to be reviewed and accepted by TfL Engineering, who will provide recommendations for the Project Manager and Sponsor to consider. This stage is complete once the requirements set out in Section 5 are completed to the satisfaction of the Sponsor. Towards the end of this stage the business case and Project Requirements will be updated by the Sponsor.

3.7. **Stage 3** – Concept Design; usually commences once the preferred option has been accepted by TfL Engineering and their recommendations have been agreed by the Sponsor. Concept design is the development of the preferred option to the point where the design principles and the accepted solution is agreed. The concept design stage is complete once the requirements set out in Section 6 have been completed to the satisfaction of the Sponsor. As with Stage 2, this stage is generally managed by the Project Manager and all technical documents are reviewed and accepted by TfL Engineering. Towards the end of this stage the business case and Project Requirements will be updated by the Sponsor.

3.8. **Stage 4** – Detailed Design; is the development of the accepted solution to produce information for construction and satisfy the requirements set out in Section 7. Detailed design usually commences once the requirements of Stage 3 have been satisfied. However, in practice there is generally some overlap, with some details needing to be developed earlier, depending on the type and complexity of the proposal, to quantify and reduce risks. An example of this is temporary works which are to be developed sufficiently to ensure a viable solution can be

achieved and to allow robust costing of the project during this stage. As with Stages 2 and 3, this stage is generally managed by the Project Manager and all technical documents are reviewed and accepted by TfL Engineering. Towards the end of this stage the business case and Project Requirements will be updated by the Sponsor.

3.9. **Stage 5** – Delivery; the works may only commence on site once the Sponsor is satisfied that all the requirements have been met in the preceding stages. Any changes to the accepted design that are required during the works that vary from the accepted design or implementation methodology will need to be resubmitted to the Project Manager who will request TfL Engineering to review and accept the proposed changes prior to the affected item of work proceeding. Failure to gain further acceptance to changes as the works proceed may result in the Project Manager and Sponsor not accepting parts or all of the final construction and therefore may cause delay and additional cost to the project.

On completion of the works the Project Manager and Sponsor will need to handover the asset to Asset Operations to enter into normal operation and use. The Project Manager shall submit a Construction Compliance Certificate (SQA-8657) to TfL Engineering for acceptance, confirming that the works have been completed in accordance with the accepted design. For large or complex projects, completion may be phased and the asset in question may be required to be brought into use prior to acceptance of the Construction Compliance certificate. In this situation a Bringing into Use Certificate (SQA-8656) must be accepted by TfL Engineering prior to the asset being brought into operation.

Failure to provide evidence that the works have been completed in accordance with the accepted design may result in Asset Operations not accepting the asset into operation or additional works being required. The requirements for this stage are set out in Section 8.

3.10. **Stage 6 –** Project Close; the requirements for this stage are set out in Section 9.

The Project Manager should agree in advance with the Sponsor and TfL Engineering, as far as is reasonably practicable, the list and type of documents and evidence expected at each stage of the project. Early involvement is encouraged, preferably during the initial part of Stage 1 to ensure that the project requirements are properly conveyed to avoid abortive costs and unnecessary delays.

Engaging TfL Engineering Surface and Timescales

3.11. The Project Manager and Sponsor shall submit an Engineering Services Request (ESR) to request services from TfL Engineering.

ESR's can be raised via the following link:
https://sharelondon.tfl.gov.uk/st/ets/Pages/ER.aspx

3.12. The Project Manager should allow a minimum of 25 working days in their programme for the formal review and acceptance of each submission at each stage by TfL Engineering. In practice the Project Manager should avoid submitting large volumes of information until the end of the stage, but should involve Technical Approvers and the Project Engineers throughout the development of each stage. This will help to ensure that final acceptance is undertaken as quickly as possible. The support required by the Project Manager from TfL Engineering should be clearly stated in the ESR.

3.13. The ability of TfL Engineering to meet the stipulated timescales will depend on many factors including:

a. The size and complexity of the project
b. The quality of submissions received
c. The number of TfL Engineering departments that need to be involved with the review and acceptance process
d. The availability of TfL Engineering resources
e. The number of departures from standards, relaxations, use of non- standard or unusual practices, materials etc.

4. Stage 1 – Outcome Definition

4.1. A number of reports will generally be required at this stage to feed into Stage 2 project requirements. These may include, but not limited to:

- Desk top study to undertake a gap analysis of current known information
- Asbestos desk top study in accordance with SQA-2201 in order to meet the requirement for management of Control of Asbestos Regulations 2012 (CAR 2012)
- Structural review in accordance with BD101.

4.2. The submission of these documents is part of the technical approval process (see TfL guidance note SQA-2025 for more details).

4.3. The desk top study shall, as a minimum, contain the items in accordance with Appendix A.

5. Stage 2 – Feasibility

5.1. The submission of proposals and consideration of feasibility and options is part of the technical approval process (see TfL guidance note SQA-2025 for more details).

5.2. The Consultant/Contractor will need to demonstrate that their proposals are feasible and that options considered demonstrate that the effects of the proposal on the TLRN and associated assets as set out in 3.3 above have been minimised as far as reasonably practicable.

5.3. Early consultation with TfL Engineering is recommended prior to the commencement of the feasibility and options appraisal. This will ensure that the correct options are being evaluated and that all parties are able to properly convey their requirements, all potential conflict between constraints have been resolved and that timescales are understood along with the need for any third party approvals e.g. planning consent.

5.4. Proposals need to cover both permanent and temporary works required that directly affect or have the potential to affect the operation of the TLRN, existing TfL assets or the safety of those using the TLRN. The proposals will also need to consider the effects on assets and infrastructure which is not owned or operated by TfL.

5.5. The feasibility and options appraisal shall, as a minimum, consider aspects relating to the items below:

a. Safety
b. Sustainability
c. Environment
d. Aesthetics (of the asset and the surrounding environment)
e. Buildability (the extent to which the design facilitates the ease and safety of construction, taking into account the need to minimise disruption to the operation of the TLRN and minimise the effects on other assets in the vicinity of the proposed works including constraints on third party assets such as utility providers as an example)
f. Structural robustness (the proposal shall consider the ability of the structure not to be damaged disproportionately in the event of an accident, misuse or deterioration)
g. Structural resilience (the proposal shall consider the ability of the structure to resist deliberate damage which may arise from the action of vandals, thieves and terrorists)
h. Durability (of the TLRN or associated assets)

i. Maintenance and operational impact to TfL and other transport operators. Consideration shall be given to design options and materials etc. that minimise whole life costs and future safety risks (e.g. no confined spaces or hidden elements to be created where at all possible).

j. Provision of safe access for routine inspections and maintenance

k. Consideration of the potential need to procure specialist services, components materials etc., including timescales for procurement and sourcing.

5.6. The aim of the feasibility and options appraisal is to review all available options and where possible agree a single accepted option with TfL Engineering and the Sponsor, which can be taken forward for further development during the concept design stage. In some instances it may be desirable to develop more than one option.

5.7. Depending on the scale and complexity of a particular proposal the Sponsor may require an independent reviewer to be appointed at this stage to challenge the proposals and the assumptions made to verify that the options considered are the most appropriate.

5.8. It is likely that in most instances the most appropriate way of presenting the options considered and the preferred option is in the form of a report. Guidance on the content which TfL Engineering and the Sponsor expects to see included in the report is given in Appendix B. Early engagement to agree the structure and content is encouraged.

5.9. Guidance on the level of detail expected to support the proposals is set out below. This guidance supersedes the requirements set out in Pathway.

a. Front Cover – this should include

- Name of the organisation employed to draft the report
- Proposal name (for large or complex proposals more than one report may be required for discrete elements of the proposal. In this instance the front cover should identify which part of the proposal the report deals with)
- A unique reference for the report that can be used to reference any queries or comments.

b. Signature Sheet – should provide the name, signature, position, job title and qualifications for the following:

- The person and organisation who has produced the report
- The person and organisation reviewing or checking the report
- The approver of the report

- The Project Manager
- Endorsement by TfL Engineering
- Endorsement by the Sponsor

Note that any document submitted to TfL Engineering which does not have review, checked and approved signatures from the organisation producing the report will be automatically rejected.

c. Executive Summary – should provide a summary of the key issues, options considered, conclusions and recommendations. It should enable the reader to obtain a clear understanding of what action is being proposed, estimated costs, timescales and key risks.

d. Location Plan – should be to a minimum scale of 1:10,000. It should enable the reader to clearly identify where the asset is and how to get there. Key road names/numbers, stations and other key features should be shown. The TfL assets under consideration should be clearly identified and the names/asset identification numbers provided. Assets owned by other organisations that are affected by the proposal should also be identified.

e. Introduction – should provide the following details:

    a. Aims of the study
    b. Background to the report being commissioned
    c. Where more than one organisation has contributed to the report, each organisation shall be identified along with their contribution
    d. Description of the asset(s) affected. This should include a description of assets owned by TfL and where applicable those owned by other organisations
    e. Scope of report including exclusions and any key assumptions made
    f. Photographs may be required to assist in setting the context of the assets and areas under consideration which are affected by the proposal
    g. Detailed description of the elements of any TfL assets being considered in the report.
    h. Constraints imposed by TfL or other consultees.

f. Existing Information – existing information may come from a variety of sources, including, TfL, statutory consultees, surveys procured by other departments etc.

    The Sponsor may provide existing information pertaining to the TLRN or associated assets to assist in the development of the proposals. This information is provided in good faith,

but the accuracy or completeness is not guaranteed. It is the responsibility of the Project Manager, in consultation with TfL Engineering, to review any information provided and validate its suitability for use in developing their proposals.

The Consultant/Contractor shall provide the following information relating to any existing information used to develop their proposals:

- Details of existing TfL assets (e.g. inspection and assessment reports; record drawings, H&S files etc.)
- Information about statutory undertakers equipment on or in the vicinity of the proposal
- Inspections, testing and investigations (e.g. ground investigations, trial holes, materials testing etc.)
- Environmental reports
- Traffic models and modelling reports
- Previous consultations undertaken
- The source of any information should be provided along with comment about its completeness and validity

Where existing information is not available or incomplete, details of any assumptions should be given. Details of any additional works, investigations etc. which are proposed in order to fill any gaps in knowledge or validate existing information should also be provided.

g. Inspections, Investigations and Defects - details of current inspections or investigations undertaken by the Consultant/Contractor to aid development of their proposals should be provided. Where investigations are extensive, a summary may be provided with reference made to the full report(s) and their location on BridgeStation. If not already on BridgeStation the report(s) must be uploaded into the relevant folders on BridgeStation.

Where previous inspection, investigations and testing have been undertaken, details should be summarised in this section. Where inspections etc. have been repeated over a period of time, a comparison of the results should be made to detect if there are any patterns or trends that support any assumptions made and also to help ascertain any rate of change.

Where existing defects to TfL assets are evident, factual details should be provided along with an interpretation to the cause. If there are any contributing factors to the cause of a specific defect these should be stated, along with any evidence supporting their inclusion. The Consultant/Contractor will need to submit details to the Project

Manager for acceptance of how they intend to rectify or monitor the defect as part of the proposal. The Project Manager will seek assistance from TfL Engineering in such instances.

h. Summary of Assessment Results – if a structural load assessment to determine the load carrying capacity of an existing TfL or third party asset was required to aid development of the proposal, a summary shall be included in the report with reference made to the full report and its location on BridgeStation. If not already on BridgeStation, the full structural assessment report shall also be uploaded into the relevant folder on BridgeStation by TfL Engineering.

   If existing structural assessments are provided by TfL for information and used by the Consultant/Contractor to aid development of the proposals, the Consultant/Contractor shall justify their use and detail any assumptions made. The Consultant/Contractor shall also detail how they intend to verify these assumptions and at what stage of the project.

i. Options – all possible options should be considered at this stage. There may be many options or just a few, but all permutations should be considered separately and appropriate ones, as agreed with TfL Engineering, should be looked at in detail.

   A baseline option against which all others are compared should be given. In most instances this is likely to be the “do minimum” option and will be to maintain the TLRN and its associated assets in their existing state in perpetuity. If the “do minimum” option is not the preferred option, the Consultant/Contractor shall provide justification for this conclusion.

   For each option the following information should be provided:

   - Description of the option
     - Drawings and/or sketches – these should generally be provided to illustrate each option and enhance the readers understanding of what is being proposed / discussed. Each drawing or sketch shall be given a unique title and reference.
   - Any assumptions made and justification
   - Details of measures that have been considered to minimise the effects on the TLRN and its associated assets: during the works and on completion, during operation and maintenance.
   - Details of measures which have been considered to

minimise the effects on traffic during, construction, maintenance and operation phases.

- Discussion on any proposed departures from standards, relaxations etc.
- Health and safety consideration, hazards and risks
- Environmental consideration, hazards and risks
- Key risks and measures required to mitigate
- Advantages and disadvantages of each option
- Outline timescale for delivery
- Value for Money appraisal in accordance with the requirements of documents SQA-1510
- Whole life costs (the return period should be agreed with the Sponsor and TfL Engineering prior to commencing the WLC analysis).

j. Environment, Health & Safety – records of early hazard identification and risk assessments should be provided. Issues relating to ecology, aesthetics and heritage may be featured. Consultation with groups such as the Environment Agency may be required.

k. Traffic Modelling – details of any traffic models used to develop the proposals shall be provided along with any validation undertaken and whether the output has been accepted by TfL.

l. Crime and Disorder Act – the report shall outline how the options comply with the Crime and Disorder Act. Wherever possible the project should seek to make improvements. When an ideal layout cannot be achieved that complies with the requirements of the Crime and Disorder Act there may be a number of solutions to mitigate these issues and the merits of each will need to be discussed with TfL Engineering and the Sponsor.

m. Equality Act – the report should outline how the options will maintain or enhance provision for those that are less able. Wherever possible the project should seek to make improvements.

n. Discussion – there may be several combinations of options which are viable and the merits of each will need to be discussed in detail. The discussion should focus on how the proposals minimise the impact on TfL assets and the operation and maintenance of the TLRN. Reference should be made to requirements and constraints set by TfL and other consultees and evidence provided of how the options satisfy

them.

o. Conclusions and Recommendations – should be succinct and unambiguous.

p. Value Management – at least one value management (VM) exercise shall be undertaken during this stage of the project. Participants shall be agreed with the Sponsor. The outcome of the VM exercise shall be summarised in the options report and support the selection of the preferred option.

6. Stage 3 – Concept Design

6.1. The concept design stage (also often referred to as the preliminary design stage) will further develop the accepted option, identified and agreed with TfL Engineering and the Sponsor as the outcome from Stage 2. The accepted option shall be optimised to:

- Reduce disruption to the TLRN
- Ensure that whole life costs to TfL do not increase as a result of the proposal, and ideally should reduce.
- Eliminate as far as reasonably practicable any effects on existing TfL assets on completion of the works. Where the effects cannot be eliminated they shall be minimised to the satisfaction of the Asset Operations and TfL Engineering. Where the effects result in additional ongoing maintenance costs a provision should be made within the project budget to cover this. In this event Asset Operations team will need to agree in principle before the concept design is accepted.

6.2. The concept design package shall provide sufficient information and evidence to demonstrate compliance with the project requirements and to justify their viability. Potential risks and hazards during the whole life of the affected asset(s) such as execution, operation, maintenance and demolition must be identified, assessed and considered with a view to eliminating or minimising them to the satisfaction of TfL Engineering.

6.3. The concept design shall consider aspects relating to the items set out in 3.7 above, in respect of the TLRN or TfL asset affected by the proposed works.

6.4. The Consultant/Contractor must provide sufficient information to enable the Project Manager and TfL Engineering to carry out the following aspects where appropriate:

a. Appraise the proposed design or assessment criteria, principles and methods

b. Agree the required working life for the TfL asset and its main components

c. Ensure consideration has been given to any special studies concerning safety and risk assessment and management that have a bearing on the final design or assessment or the construction process

d. Be satisfied that adequate consideration has been given to safety, sustainability, buildability, traffic management, environmental impact, aesthetics, structure robustness, durability, maintainability, access and inspection, upgradeability, whole life costs, demolition and compliance with the project requirements

e. Agree applicable standards, good practice guidance,

departures from standards and relaxations to standards

f. Appraise geotechnical conditions and other relevant investigations

g. Appraise the adequacy of existing records and investigation data and the need for further investigations or studies that have a significant bearing on the concept or detailed design, assessment, execution, operation, maintenance or demolition processes

h. Review the adequacy of consultation with other stakeholders and incorporation of agreed requirements

i. Agree any checking or verification procedures

j. Demonstrate value for money

6.5. The concept design package may comprise the following documents:

a. Approval in Principle (see TfL guidance note SQA-2025)

b. Outline Approval in Principle for temporary works (see guidance note SQA-2025)
c. Details of Statutory Undertakers apparatus
d. Reports justifying approach taken or assumptions made
e. Findings of surveys, investigations, trials, testing and the like
f. Drawings
g. Preliminary specifications
h. Design hazard identification and risk assessments/register
i. Designers environmental risk assessments
j. Programme for the detailed design stage
k. Pathway documentation

6.6. Where an Approval in Principle (AIP) document is required, concept design shall be deemed completed once the AIP has been agreed and endorsed by the Technical Approval Authority (TAA) in TfL Engineering.

6.7. At least one value engineering exercise shall be completed during this phase of the project. Participants to be agreed with the Sponsor. The outcome of the VE exercise shall be used to support the selection of the preferred solution.

6.8. The concept design package forms part of the products required to provide assurance that the design is sufficiently developed and that the project is fit to proceed to the next stage. Other documents and information may be required including those defined in the Pathway process.

7. Stage 4 – Detailed Design

6.1. The Project Manager will not consider detailed design information until the concept design stage has been completed to the satisfaction of TfL Engineering and the Sponsor

6.2. Details of the design shall be submitted to the Project Manager and TAA for review and acceptance. The design package must have sufficient detail to allow the Project Manager and TfL Engineering to:

a. Assess compliance with the project requirements

b. Be confident that stakeholders have been consulted and that their requirements have been taken into account

c. Be confident that any temporary works do not have a detrimental effect on the TLRN or any associated assets

6.3. The detailed design package may comprise:

a. Design/assessment and check certificates
b. Design/assessment and check calculations
c. Temporary works design and check certificates
d. Traffic management details
e. Drawings (which shall include typical details that clearly show the requirements from the specification clauses translated onto the drawing format)
f. Specifications
g. Design hazard identification
h. Proposed construction phasing and methodology
i. Construction phase programme
j. Updated EFC
k. Pre-construction information
l. Third party consents and approvals
m. Pathway documentation

6.4. Where applicable detailed design shall be deemed completed once the design and check certificates have been fully endorsed.

6.5. At least one value engineering exercise shall be completed during this phase of the project; however, depending on the size and complexity of the project more than one may be necessary. The Project Manager shall agree with the Client at the beginning of the stage how many VE exercises are required, the participants and timings. The outcome of the VE exercise shall be used to support the specification of the accepted design.

6.6. The detailed design package forms part of the products required to provide assurance that the design is sufficiently developed and that the project is fit to proceed to the next stage. Other documents and information may be required including those defined in the Pathway process.

8. Stage 5 – Delivery

8.1. Prior to the commencement of works the Project Manager shall submit to the Client the following information:

a. Temporary works drawings and design and check certification
b. Fabrication drawings
c. Inspection and testing plans
d. Method statements
e. Programme
f. Construction phase plan
g. Commissioning and handover plan

8.2. Unless agreed otherwise construction works shall not commence until the accepted design and the documents above have been fully endorsed by TfL.

8.3. Changes to the design made during the delivery stage shall be submitted to TfL Engineering for review and acceptance. In general changes which have an adverse effect on the following generally will not be accepted:

a. Durability
b. Safety
c. Quality
d. Functionality
e. Outcome/benefits
f. Whole life cost
g. Maintenance and operation

9. Stage 6 – Project Close

9.1. Within one month of completion of the works the Project Manager shall submit the following:

a. Health & Safety File and Operation and Maintenance Manuals in accordance with TfL guidance document SQA-2026
b. Construction compliance certificates in accordance with TfL template SQA-8657
c. Project Completion and Handover certificates in accordance with TfL Pathway template.

9.2. Where the works affect an existing TfL asset or relate to a new asset to be adopted by TfL, the Project Manager shall arrange for a joint handover inspection. As a minimum the following shall attend:

a. The Project Manager's representative
b. The Contractor
c. The Designer
d. TfL Engineering staff
e. TfL Asset Operations staff

9.3. Requirements for the handover and acceptance inspection are given in Appendix C.

9.4. Where the handover and acceptance inspection identifies items which are not to the satisfaction of the Project Manager, the Contractor shall submit details of how they intend to rectify them.

10. Quality Assurance

10.1. Design and construction shall comply with Construction (Design and Management) Regulations 2015

10.2. All information and documents submitted to the Project Manager and TfL Engineering and record purposes shall be complete and evidence shall be provided that they are compliant with relevant quality assurance procedures i.e. it should be clear who has produced the documents and that they have been checked, reviewed and approved by competent authorised people within the relevant organisation. Where a document has been produced with contributions by more than organisation, the lead organisation shall endorse the document as if it were their own. Evidence shall be provided that the Project Manager has reviewed the documents to be submitted and that they are fit for submission to TfL Engineering and the Sponsor.

10.3. Information and documents supplied which do not comply with the above may be rejected.

11. Document Control

Issue	Date	Change Summary
00	April 14	Final
1.0	04/07/2016	Document reviewed and reformatted for the new AMD QMS.
2.0	01/10/2019	Document reviewed to check alignment with Organisational changes

[Note: This document supersedes Guidance Note- SMT/GN/02/14.]

.

APPENDIX A

DESK TOP STUDY REPORT CONTENT

The desk top study shall, as a minimum, contain the following items below:

A1 Front Cover – this should include

- Name of the organisation employed to draft the report
- Proposal name
- A unique reference for the report that can be used to reference any queries or comments.

A2 Signature Sheet – should provide the name, signature, position, job title and qualifications for the following:

- The person and organisation who has produced the report
- The person and organisation reviewing or checking the report
- The approver of the report
- The Project Manager
- Endorsement by TfL Engineering
- Endorsement by the Sponsor

A3 Introduction – should provide the following details:

- Aims of the study
- Background to the report being commissioned
- Where more than one organisation has contributed to the report, each organisation shall be identified along with their contribution
- Description of the asset(s) affected. This should include a description of assets owned by TfL and where applicable those owned by other organisations
- Scope of report including exclusions
- Photographs may be required to assist in setting the context of the assets and areas under consideration which are affected by the proposal
- Detailed description of the elements of any TfL assets being considered in the report.
- Constraints imposed by TfL or other consultees.

A4 Location Plan – should be to a minimum scale of 1:10,000. It should enable the reader to clearly identify where the asset is and how to get there. Key road names/numbers, stations and other key features should be shown. The TfL assets under consideration should be clearly identified and the names/asset identification number given. Assets owned by other organisations that are affected by the

proposal should also be identified.

A5 Elements of the Structure – should provide detailed description of each element of the structure in scope. These details should include commentary on previous repairs and maintenance where necessary.

A6 Existing Information – existing information may come from a variety of sources, including, TfL, statutory consultees, surveys procured by other departments etc.

The Project Manager may provide existing information pertaining to the TLRN or associated assets to assist in the development of the proposals. This information is provided in good faith, but the accuracy or completeness is not guaranteed. It is the responsibility of the Consultant/Contractor to review any information provided and validate its suitability for the report.

The Consultant/Contractor shall provide the following information relating to any existing information used to develop their proposals:

- Details from existing TfL reports (e.g. inspection and assessment reports; record drawings, H&S files etc.)
- Information about statutory undertakers equipment on or in the vicinity of the proposal
- Inspections, testing and investigations (e.g. ground investigations, trial holes, materials testing etc.)
- Environmental reports
- Traffic models and modelling reports
- The source of any information should be provided along with comment about its completeness and validity
- A table listing all relevant information that is available on BridgeStation. These documents are not to be copied into appendices in the desk study report as they are readily available on BridgeStation.

A7 Inspections, Investigations and Defects – Where previous inspection, investigations and testing have been undertaken, details should be summarised by the author in this section. Where inspections etc. have been repeated over a period of time, a comparison of the results should be made to detect if there are any patterns or trends that support any assumptions made and also to help ascertain any rate of change.

Where existing defects to TfL assets are evident, factual details should be provided along with an interpretation to the cause. If there are any contributing factors to the cause of a specific defect these should be stated, along with any evidence supporting their inclusion.

A8 Summary of Assessment Results – Where previous structural assessments have been undertaken, details should be summarised by the author in this section. If not already on BridgeStation, the full structural

assessment report shall also be uploaded into the relevant folder on BridgeStation by TfL Engineering.

If existing structural assessments are provided by TfL for information and used by the Consultant/Contractor to aid development of the proposals, the Consultant/Contractor shall justify their use and detail any assumptions made. The Consultant/Contractor shall also detail how they intend to verify these assumptions and at what stage of the project.

The Consultant/Contractor shall recommend if a structural review in accordance with BD101 should be undertaken.

A9 Environment, Health & Safety – records of early hazard identification and risk assessments should be provided. Issues relating to ecology, aesthetics and heritage may be featured. , the Consultant/Contractor will state if they believe future consultation with groups such as the Environment Agency may be required.

A10 Gap Analysis – this section will detail all the existing information or knowledge that is not available or incomplete and state whether the gap needs to be filled in order to progress the scheme. Details of any additional works, investigations etc. which are proposed in order to fill any gaps in knowledge or validate existing information should also be provided.

This information should be provided in a table alongside a summary of the reported condition of each element of the bridge, based on a review of the existing information and observations.

A11 Conclusions and Recommendations – should be succinct and unambiguous.

APPENDIX B

FEASIBILITY AND OPTIONS REPORT CONTENT

B1 A suggested list of content is given below. The actual content will vary depending on the type and complexity of the project and should be agreed in advance with TfL

- Front cover
- Signature sheet
- Executive summary
- Location plan
- Contents
- Introduction
- Existing information
- Summary of inspections, investigations and defects
- Summary of assessment results
- Summary of traffic modelling undertaken to support the preferred option
- Options
- Economic analysis
- Programme
- Health and safety considerations
- Environmental considerations
- Compliance with Section 17a of the Crime and Disorder Act
- Compliance with the Disability and Discrimination Act
- Discussion
- Conclusions
- Recommendations
- Appendices

A. Photographs
B. Results of any investigations, testing etc. e.g. trial hole sketches
C. Drawings
D. Utility plans
E. Outline programme(s)
F. Cost estimates for each option
G. Health and safety risk assessments
H. Environmental risk assessments
I. Whole life cost analysis
J. Bibliography

B2 Further guidance on the content of Appendices:

APPENDIX TITLE	CONTENT
Photographs	i. Each photograph should be given a unique reference number i. A description of the detail each photograph is shall be given
Results of investigations, testing etc	ii. Where investigations, testing, trials holes and other special inspections are undertaken as part of the options appraisal the details and purpose of the tests should be given. iii. Where the results of the special inspection are extensive it may be more appropriate to make reference to a separate report and simply provide key figures and other information which helps the reader's understanding of the issues concerned.
Drawings/sketches	i. Drawings/sketches should be given a unique reference. ii. In general drawings/sketches should be to an appropriate scale
Utility plans	i. Drawings showing the line, level, number, size etc. combining all utilities shall be provided. TfL is particularly interested in the interaction with existing TfL assets. ii. The location of proposed new utility apparatus shall be shown. iii. Details of the statutory undertakers consulted should be provided. iv. Copies of the plans provided by each statutory undertaker should be included. v. The plans should be in colour.
Stakeholder consultation	i. Details shall be provided of any stakeholders consulted and the outcome of each consultation.

APPENDIX TITLE	CONTENT
Outline programme	ii. The outline programme should be of sufficient detail to demonstrate that the key work activities required and the constraints imposed by TfL or other approving bodies have been taken into account. Appropriate allowances for review and approval periods shall be included.
Cost estimates (where required) including WLC	i. The cost estimates for each option should be broken down into their constituent parts to demonstrate how the final cost has been built up. The year on which estimates are based should be stated. ii. The basis for the rates and process used to build up the cost estimate shall be stated iii. In general the breakdown of costs should not be less than the items given on the outline programme. iv. Any assumptions should be clarified and clearly stated. v. Any costs not included should also be clearly stated along with the reason for their omission vi. A detailed breakdown of the WLC analysis shall be given.
Health and Safety Risk Assessments	i. The health and safety risk assessments should be built up by the designer and author of the report as the work progresses. The key risks should be identified along with the measures proposed to mitigate them.
Environmental risk assessments	i. The environmental risk assessments should be developed in a similar manner to the health and safety risk assessments outlined above.

APPENDIX C

REQUIREMENTS FOR HANDOVER AND ACCEPTANCE INSPECTIONS

Introduction

C1 In general, the purpose of a handover and acceptance inspection is to provide a formal mechanism for exchange of information and documentation and agreeing the current status of, and any outstanding work on a TfL asset prior to the Client accepting that the works have been completed to their satisfaction.

C2 The format, content and timing of a handover and acceptance inspection depends on its specific purpose and shall be agreed with the TfL Project Manager in advance.

C3 A handover and acceptance inspection must be undertaken for new structures and reconstructions or major modifications to existing TfL assets. For other projects, the requirement for an acceptance inspection should be agreed prior to commencement of the delivery stage.

C4 An acceptance inspection shall be organised by the Contractor and shall be undertaken jointly between the Contractor's representative and TfL, with TfL staff leading the inspection.

C5 The nature, extent and timing of the inspection shall be agreed in advance with the Project Manager and TfL Engineering. In general, the inspection shall be undertaken within touching distance. The Contractor shall provide suitable access, traffic management etc. to facilitate this.

C6 Wherever possible the opportunity should be taken to make use of existing traffic management and access arrangements or to combine the inspection with inspections/ checks already scheduled to minimise disruption as much as possible.

C7 The inspection shall record any defects or work outstanding and any works that must be undertaken to satisfy the requirements of TfL.

C8 On completion of the inspection a report shall be produced detailing all defects/works outstanding identified during the inspection.

C9 The Project Manager will notify the Contractor of all defects/works outstanding and determine those which need to be completed prior to acceptance of the works. In some instances traffic management may not be removed until the defect has been rectified.

C10 In some instances TfL will have agreed a defects liability period with the Contractor during which the Contractor will be responsible for defects in their work. The defects liability period usually commences once the Project Manager is satisfied that the works are complete.

C11 The Contractor is liable for all defects resulting from the work they have undertaken and includes for making good any latent defects or developing problems that appear.

C12 A further acceptance inspection may be required at the end of the defects

liability period.

Existing TfL Assets

C13 Where existing TfL assets have been altered or affected by the works, the inspection should enable a comparison of the current condition and performance of the asset, against the starting condition or performance prior to the commencement of the works. In general the asset shall be handed over to TfL on completion of the works in the same or better condition than before the works commenced.

Records

C14 Inspection records shall be agreed with TfL prior to the inspection taking place and shall be commensurate with the circumstances and scope of the inspection. As a minimum the records shall comprise:

a. Date and time of the inspection

b. Details of those involved from each organisation involved in the inspection

c. Identification of any defects to be rectified. This should include, as appropriate, the identification of developing problems and work outstanding and securing agreement on any works to be completed before acceptance by TfL.

d. Any permanent access provisions and features affecting general safety and security of the asset. These shall be discussed in detail and agreement reached prior to acceptance by TfL.

e. Any outstanding responsibilities the Contractor retains after completion of the works.

f. Any special inspection requirements.

g. An acceptance inspection must also facilitate the identification and handover of all the necessary records (electronic and/or hard copies), which have an impact on the current and future management of the asset. Details of appropriate records are given in TfL guidance note SQA-2026.

C15 Once the acceptance inspection is complete, a Special Inspection will be completed on BridgeStation to update the system with the new condition of the structure by TfL Engineering.

APPENDIX D

REFERENCES & ADDITIONAL GUIDANCE

Relevant Documentation

Transport for London Guidance:

SQA-2025 - Technical Approval of Highways Structures and Tunnels Schemes

SQA-2026 - Requirements For Tunnels And Structures Health And Safety Files, Records And Maintenance Manuals

SQA- 8657 - Construction Compliance Certificate

SQA- 8656 - Bringing Into Use Certificate

SQA-1510 - Value Management of the Capital Renewals Programme - Part 1 - Overview

SQA-2201 - The Management of Asbestos in TfL Surface Transport (Non-Rail) 2018

TfL Pathway

Streetscape Guidance for the TLRN

London Cycling Design Standards

Highways England Guidance

The Design Manual for Road and Bridges
http://www.dft.gov.uk/ha/standards/dmrb/index.htm

Other Guidance

LoBEG Good Practice Guide: Lifecycle Planning for Highway

Structures

Transport for London
Surface Transport

Management System Document – Guidance Note

Technical Approval of Surface and Highway Structures

Document reference: SQA-2025 - issue: 4.0

1 Purpose

1.1 This document is produced to provide guidance on the Technical Approval procedures to consultants and contractors conducting design and assessment on or near the TfL network that may affect the highway.

2 Background

Background

2.1 This guidance applies to proposals promoted by TfL or Outside Parties.

2.2 TfL Engineering Surface and Highway Structures team is the Technical Approval Authority (TAA) on behalf of TfL.

2.3 TfL Engineering Surface and Highway Structures team generally adopts the Highways England Standards for the design, construction and maintenance of highway structures. It includes the Design Manual for Roads and Bridges (DMRB), Manual of Contract Documents for Highway Works (MCHW) and other supplementary Standards for specific project requirements. TfL Engineering also has its own Standards where applicable, in connection with highways and tunnel safety systems. The Designer is advised to discuss with the TAA prior to commencing design.

Scope

2.4 Technical Approval (TA) applies to all works on or near the TfL Surface Transport Assets including highway, bus and marine structures. It includes all proposals, temporary and permanent, including private development, to construct, assess, improve, repair or demolish a structure within the highway boundary. It shall also be applied to proposals for structures that are outside the highway boundary, where either:

i. The design, construction, maintenance or demolition of the structure may affect the TfL Surface Transport asset or the safety of the highway user including temporary works; or

ii. The structure will be adopted by TfL.

2.5 The TAA may conclude that TA may not be necessary where there are no public safety issues e.g. temporary works in green field sites or works within the highway boundary where there will be no interface with the public.

2.6 This Note is to be read in conjunction with the following documents:

Design Manual for Roads and Bridges, Volume 1

- CG 300 – Technical Approval of Highway Structures
- CD 350 – The Design of Highway Structures

TfL Guidance Notes

- SQA-2022 – Requirements for the Development and Acceptance of Proposals for Structures and Tunnels Capital Schemes
- SQA-2023 – Requirements for the Development and Acceptance of Proposals for Works Affecting the Transport for London Road Network
- SQA- 2046 – Technical Approval to facilitate the mounting of additional equipment onto TfL Minor Structures

2.7 TA does not in any way modify or reduce the contractual and statutory responsibilities of any party for the work carried out, the legal responsibilities of professional engineers or confer any other approval of the proposals. For example, it does not constitute agreement to any proposals that are referred to TfL as a result of planning applications as part of the planning procedures or that the design or other aspect of the submission has been checked.

2.8 The proposer must also provide evidence that appropriate consultation has taken place, including the Asset Owners TfL Asset Investment and Asset Operations, with all relevant parties and that full and proper consideration has been given to risks and hazards which may affect the highway, highway structure or the safety of the highway user.

Objective

2.9 The objectives of the Technical Approval procedures are to give increased assurance that proposals for design, construction, refurbishment or demolition are safe to implement, and that any new structures procured are serviceable in use, economic to build and maintain, comply with the objectives of sustainability, have due regard for the environment, and satisfactorily perform their intended functions. The TA procedures also ensure, as far as reasonably practicable, that highway users and others are protected from adverse effects resulting from work carried out to any Structure or Tunnel Safety System and that there is adequate provision for safety under all circumstances.

Pathway Guidance (TfL schemes only)

2.10 Technical Approval forms part of the assurance that the Project Sponsor needs to enable approval of the Pathway Stage Gates. In order to maintain objectivity and ensure impartiality, Technical Approval and Sponsorship shall be discrete and independent of each other. Where this is ambiguous within a project team the Project Sponsor or Executive Sponsor will have to be satisfied that Technical Approval has been robust.

2.11 The Technical Approval Authority should contribute to the Technical Requirements, which are included in the Project Requirements and updated prior to the commencement of each Pathway Stage.

3 Technical Approval Requirements

3.1 Technical Approval must be obtained from the TAA for all qualifying proposals prior to commencement of construction.

3.2 TA procedures generally require the proposer to submit an Approval in Principle (AIP) to TfL for each structure or tunnel safety system. Generally, submissions comprise a completed AIP using the template in and complying with the requirements of CG 300. This includes, but is not limited to, a location plan, a general arrangement drawing, and relevant parts of the Geotechnical Report, the completed Technical Approval Schedule (TAS), documents relating to consultation and any other relevant information or reports.

3.3 For the design of highway structures where Structural Eurocodes are used, additional guidance and requirements are given in CG 350.

3.4 Unless agreed otherwise with the TAA, the documents (AIP and Certificates) shall be submitted in an electronic format.

3.5 Electronic documentation must be submitted in PDF format. Any electronic report in PDF format submitted must be bound with all appendices in one PDF file. The PDF file shall be created from the documents with original manuscript signatures.

3.6 Drawings submitted with proposals should be specific and relevant and clearly show the general arrangement and key dimensions of the proposed and existing structures. The content of the general arrangement drawing is detailed in Appendix A.

3.7 For each proposal, a single organisation shall assume responsibility for the whole of each activity; the Design, Assessment, Checking or Construction Compliance. Where sub-consultants or sub-contractors have been used to undertake the work, the lead consultant or contractor for the scheme is required to endorse the submission as if it were their own submission.

Design and Construction Requirements

3.8 The technical requirements for the design of highway structures shall comply with the relevant standards and advice notes in the DMRB, Specification for Highway Works (SHW), and relevant British or European Standards including Published Documents, Product Standards and Non- Contradictory Complementary Information (NCCI).

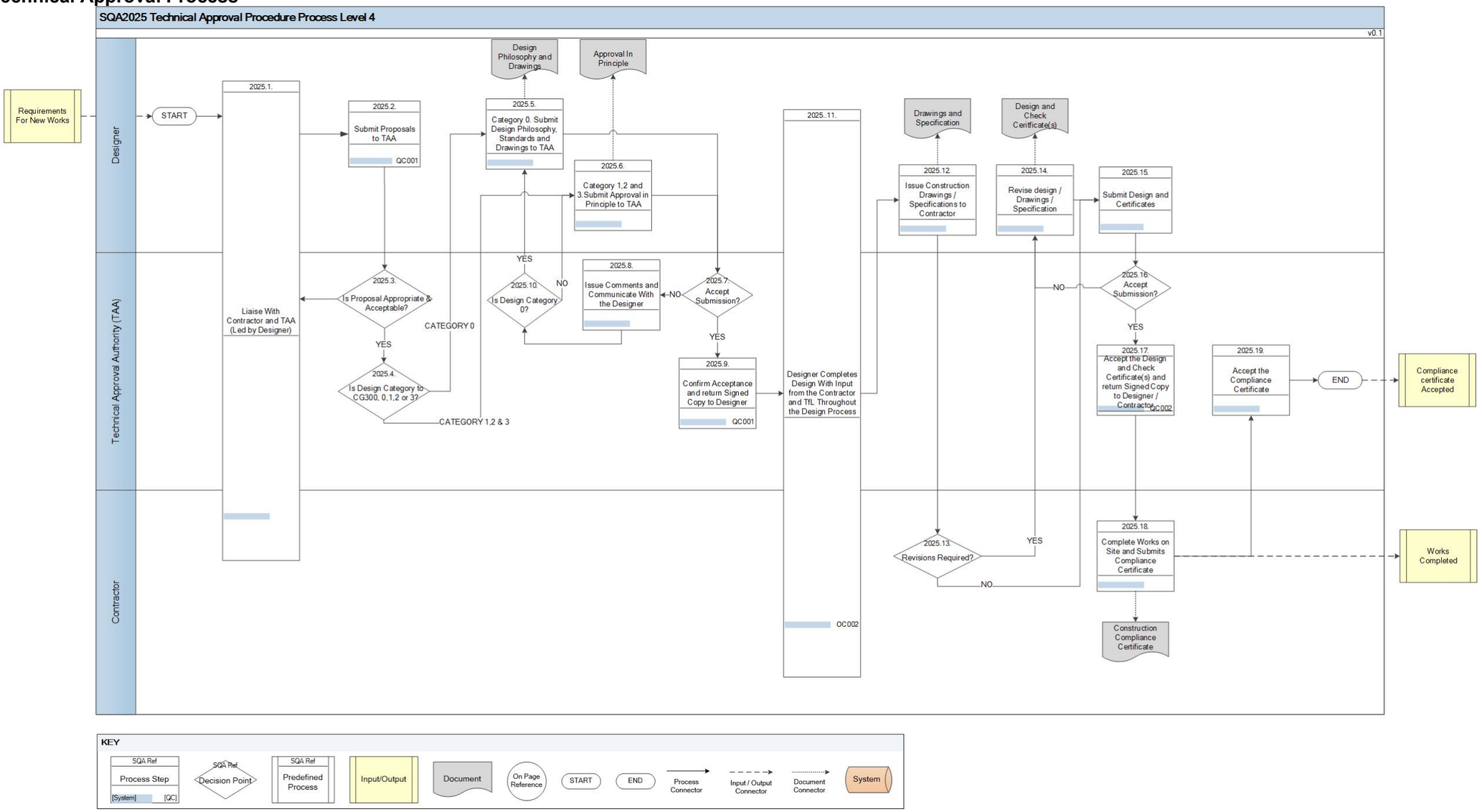
3.9 The construction shall be in accordance with the SHW and Execution Standards. Other Standards, departures from Standards and methods of dealing with aspects not covered by Standard etc. shall be agreed with the TAA through the Technical Approval process.

3.10 The technical requirements for the design of tunnel safety systems shall be agreed with the TAA.

3.11 The designer shall ensure that any hidden components are suitably detailed, and risk assessed so that the structural performance is not adversely affected through the life of the structure. The information shall be recorded under 'risks and hazards' section of the AIP. Refer to 'CIRIA C764 – Hidden Defects in bridges. Guidance for detection and management' for further details.

3.12 The designer shall ensure that sustainability and whole life costs have been considered in the proposal.

4 Technical Approval Process



[Visio diagram available here]

5 Technical Approval Procedures

Inputs:

- Requirement for New Works

2025.1. Early Liaison with Contractor and TfL led by Designer

Designer will liaise with Technical Authority Team and Contractor to discuss proposal.

2025.2. Submit Proposals to TAA

Please refer to technical approval requirements 3.1 to 3.7

Also, the proposal submission should include sufficient information to allow the TAA to agree the category of check. Potential risks and hazards during the whole life of the structure such as construction, operation, maintenance and demolition, shall be identified, assessed and considered, with a view of eliminating or minimising them as far as reasonably practicable. The designer must satisfy themselves that the Principal Designer, if appointed, has reviewed all hazards identified and risks

2025.3. Is Proposal Appropriate & Acceptable?

If the answer is **YES**, please refer to step 2025.4.

If the answer is **NO**, Please refer back to step 2025.1.

2025.4. Is Design Category to CG 300, 0, 1, 2 or 3?

Proposal shall be placed in one of four Categories: 0, 1, 2 or 3, according to criteria in CG 300. These range from Category 0 for minor structures which conform in all aspects of design, assessment and construction to DMRB and MCHW Standards and contain no departures from Standards to Category 3 for larger complex structures which require sophisticated analysis, design or construction techniques or require departures from Standards.

If the Category is **0**, please refer to step 2025.5.

If the category is **1, 2 or 3**, please refer to step 2025.6.

2025.5. Category 0. Submit Design Philosophy, Standards and Drawings to TAA.

Category 0 proposals do not require formal Approval in Principle however Technical Approval shall only be granted by the TAA if all the information specified in CG 300 is submitted with the completed Design and Check Certificate, (i.e. Standards schedule and drawing(s)).

2025.6. Category 1, 2 and 3.Submit Approval in Principle to TAA

Category 1, 2 and 3 proposals should include the information described in Sections 3.1 to 3.7 above and provide sufficient information to demonstrate compliance with design requirements including the Technical Approval Schedule (TAS), i.e. details of all relevant Standards and other documents proposed for use in the design.

2025.7. Accept Submission?

Technical Approval Team to decide if proposal satisfies all technical requirements.

If the answer is **YES**, please refer to step 2025.9.

If the Answer is **NO**, please refer to step 2025.8.

2025.8. Issue Comments and Communicate With the Designer

Technical Approval Authority will issue comments to detail why proposal does not satisfy requirements, so changes can be made and resubmitted by designer.

2025.10. Is Design Category 0?

If the answer is **YES**, please refer to step 2025.5.

If the Answer is **NO**, please refer to step 2025.6.

2025.9. Confirm Acceptance and return Signed Copy to Designer

When satisfied with the proposals, the TAA will sign off the AIP to confirm its agreement which must be received by the proposer before proceeding with any design or assessment. The TAA will require minimum 25 working days review period for each submission and each resubmission

Copies of the signature pages and any other pages which have had amendments or comments added will be returned to the Project Manager or Designer as appropriate

2025.11. Designer Completes Design with Input from the Contractor and TfL throughout the Design Process

Designer is responsible for completing design, however Contractor and TAA could provide inputs.

2025.12. Issue Construction Drawings / Specifications to Contractor

Designer issues drawings and or specifications to Contractor for approval

2025.13. Revisions Required?

Contractor decides if any changes are required to drawings or specification.

If the answer is **YES**, Please refer to step 2025.14

If the answer is **NO**, Please refer to step 2025.15.

2025.14. Revise design / Drawings / Specification

Designer revises drawings and or specification.

2025.15. Submit Design and Certificates

Designer submits Design and Certificates to TAA for approval.

2025.16. Accept Submission?

On completion of the detailed design or assessment, the proposer shall submit the appropriate design/check certificates to the TAA confirming that the design or assessment is accurate, has been checked and is fully in compliance with the requirements of the AIP.

If the answer is **YES**, please refer to step 2025.17.

If the answer is **NO**, Please refer to step 2025.14.

2025.17 Accept the Design and Check Certificate(s) and return Signed Copy to Designer / Contractor

The Design/Check Certificates must have been endorsed as accepted by the TAA before construction will be allowed to commence.

Copies of the endorsed Certificates will be sent to the relevant Project Managers or scheme proposer for record purposes and onward distribution as required.

2025.18. Complete Works on Site and Submits Compliance Certificate

Contractor completes works on site and submits compliance certificate to TAA.

2025.19. Accept the Compliance Certificate

On completion of the Works the Construction Compliance Certificate shall be submitted for acceptance by the TAA, confirming compliance with the AIP and the design as certified. Template is included in Appendix B.

Evidence will need to be provided throughout the execution phase to demonstrate compliance to the TAA. This will usually take the form of a systematic inspection and testing plan being implemented and proof that any tests, inspections or trials are in accordance with the requirements set out in the specifications.

Outputs:

- **Contractor Completes Work**
- **TAA Accepts Compliance Certificate**

Categories of Proposals

4.1 Proposal shall be placed in one of four Categories: 0, 1, 2 or 3, according to criteria in CG 300. These range from Category 0 for minor structures which conform in all aspects of design, assessment and construction to DMRB and MCHW Standards and contain no departures from Standards to Category 3 for larger complex structures which require sophisticated analysis, design or construction techniques or require departures from Standards.

4.2 The proposal submission should include sufficient information to allow the TAA to agree the category of check. Potential risks and hazards during the whole life of the structure such as construction, operation, maintenance and demolition, shall be identified, assessed and considered, with a view of eliminating or minimising them as far as reasonably practicable. The designer must satisfy themselves that the Principal Designer, if appointed, has reviewed all hazards identified and risks

4.3 The Category shall be proposed by the Designer or Assessor according to the criteria described in CG 300 for agreement by the TAA. The category boundaries are not rigid and the TAA will assess each proposal on its merits, having regard to potential consequences of failure and design complexity and relevant experience of the Designer and Contractor.

Approval in Principle

4.4 The AIP submission shall be a record of all matters agreed at the proposal stage.

4.5 More than one AIP may be required. The Designer shall agree the number and content of each AIP with the TAA as the proposals are developed.

4.6 Category 0 proposals do not require formal Approval in Principle however Technical Approval shall only be granted by the TAA if all the information specified in CG 3002 is submitted with the completed Design and Check Certificate, (i.e. Standards schedule and drawing(s)).

4.7 Category 1, 2 and 3 proposals should include the information described in Sections 3.1 to 3.7 above and provide sufficient information to demonstrate compliance with design requirements including the Technical Approval Schedule (TAS), i.e. details of all relevant Standards

and other documents proposed for use in the design.

4.8 CG 300 specifies the required authority for the signatories according to the type of document and stage of the process.

4.9 In addition to the signatories required by CG 300, TfL require the following statements and associated signatures within the document

- *I confirm that I have reviewed this document with respect to buildability and that the design detailed within is a buildable solution* – Contractor Signature
- *I accept this deliverable as the person accountable for its delivery and believe to the best of my knowledge that the above entities have undertaken and fulfilled their legal obligations as required with regard to this product and that the design detailed within satisfies the Project Requirements.* – TfL Project Manager Signature

4.10 When satisfied with the Proposals, the TAA will sign off the AIP to confirm its agreement which must be received by the proposer before proceeding with any design or assessment. The TAA will require minimum 25 working days review period for each submission and each resubmission.

4.11 The endorsement of the AIP may be subject to conditions or amendments which are added by the TAA to the AIP.

4.12 It should be noted that the TAA will not endorse an AIP submission until content with the information / criteria recorded therein, in which case it will be returned marked “Rejected”.

4.13 Copies of the signature pages and any other pages which have had amendments or comments added will be returned to the Project Manager or designer as appropriate.

4.14 Calculations should not be submitted with the AIP.

Design, Assessment and Checking Certification

4.15 On completion of the detailed design or assessment, the proposer shall submit the appropriate design/check certificates to the TAA confirming that the design or assessment is accurate, has been checked and is fully in compliance with the requirements of the AIP.

4.16 Model form of certificates are provided in Appendix B. If the completed certificates consist of more than one page, each page should be identifiable by the name of the project and by the name and reference number of the structure and the date of preparation.

4.17 Category 0 and 1 structures require a combined Design/Assessment and Check Certificate.

4.18 Category 2 and 3 structures require separate Design/Assessment and

Check Certificates.

4.19 For Category 2 and 3 structures where Structural Eurocodes are used, information on options and choice of method adopted shall be recorded in accordance with Appendix A of CG 350.

4.20 The Design/Check Certificates must have been endorsed as accepted by the TAA before construction will be allowed to commence.

Non-structural Acceptance Certificates

4.21 Where elements of design/scheme are non-structural (i.e. lighting, highways etc.) then an acceptance certificate is required from the relevant TAA for that discipline.

Final Design and Check Certificates

4.22 Where sectional approval is undertaken and/or non-structural acceptance certificates are required, a Final Design and Check Certificate shall be required. (See appendix B for model form of certificates).

Technical Approval

4.23 The Technical Approval process applies to all stages of the design development through to completion of the execution of the works.

4.24 Technical Approval of the design shall be deemed to have been granted following the acceptance of the Design and Check Certificate(s) by the TAA.

4.25 Copies of the endorsed Certificates will be sent to the relevant Project Managers or scheme proposer for record purposes and onward distribution as required.

4.26 The Designer / Contractor shall submit any revisions to design and drawings during construction for the TAA acceptance.

Products and Materials

4.27 Technical Approval extends to the selection of proposed materials and products during the design and execution stages. Details of products and materials shall be submitted to the TAA for acceptance before the relevant item of work is executed on site. The Designer and Contractor will need to demonstrate compliance with the Construction Products Regulation (see appendix B for model form of certificates).

Bringing Into Use Certificate

4.28 In some situations the structure in question may be required to be brought into use for its intended purpose prior to acceptance of the Construction Compliance Certificate. In this situation a Bringing into Use Certificate must be accepted by the TAA prior to the structure being brought into operation. (See Appendix B for model form of certificates).

Construction Compliance Certificate

4.29 On completion of the Works the Construction Compliance Certificate shall be submitted for acceptance by the TAA confirming compliance with the AIP and the design as certified. (See Appendix B for model form of certificates).

4.30 Evidence will need to be provided throughout the execution phase to demonstrate compliance to the TAA. This will usually take the form of a systematic inspection and testing plan being implemented and proof that any tests, inspections or trials are in accordance with the requirements set out in the specifications.

6 Relevant Documentation

CG 300 – Technical Approvals of Highway Structures
https://www.standardsforhighways.co.uk/dmrb/search/cd13bfd5-5586-4d42-b182-5db31b504163

CD 350 – The design of Highway Structures
https://www.standardsforhighways.co.uk/dmrb/search/19858eae-6dd2-4669-90a7-38aa8c85a1dd

CIRIA Publication C764
Hidden defects in bridges - guidance for detection and management

QMS: Surface Assets
https://sharelondon.tfl.gov.uk/st/aii/qms/Pages/QMS.aspx

Surface Transport Glossary

7 Document Control

Issue	Date	Change Summary
1.0	27/06/16	First issue

[redacted]

2.0	13/03/17	Second Issue – Updated format and contents check	[redacted]
3.0	16/08/19	Third Issue – Replace IAN124 with BD100	
4.0	11/12/20	Fourth issue – Updated to the current standards	

Appendix A

Composition of General Arrangement Drawings for Surface & Highway Structures

Composition of General Arrangement Drawings for Surface & Highway Structures

To ensure a common method of producing structures General Arrangement Drawings for inclusion with the AIP, the following guidance should be noted:

A1 General

i. A general arrangement (GA) drawing(s) giving existing and proposed structure details should be provided.

ii. Drawings should be fully dimensioned and to scale. Scales should be in accordance with those recommended in BS EN ISO 5455.

iii. A1 size drawings should generally be provided. Due to the ease of electronic issue of drawings each drawing should be clearly marked with the original paper size to aid printing.

iv. Details of statutory undertaker's apparatus in the vicinity of the site that may be affected by the works should be clearly marked on plan and section. Where there is a significant amount of apparatus a separate drawing may be required for clarity.

A2 Location Plan

This should be positioned adjacent the Title Block, clearly labelled and with a scale (preferably 1:2500 or 1:1250) smaller scales may be used with the agreement of the Project Sponsor.

It should include Northings, Eastings and North Point and contain sufficient information to locate the structure in proximity to local landmarks such as roads, rivers, buildings, boundaries, etc. Any boreholes should also be shown and labelled in their approximate positions (provided plan is of a suitable scale).

A3 Elevations – Scale 1:100 or 1:200

Where possible, this should be positioned to form the main focal point and be directly below the plan.

This elevation should be viewed in the direction of the road, rail or river under, and should comprise of the following:

i. Abutments, Wing walls, Bank Seats, Piers, Deck/Parapet Beams, etc., all dimensioned to indicate the spans or length. Both square and skewed dimensions should be given.

ii. The type and extent of the Road Restraint System should be shown, with any infill panels indicated and labelled. Details of any connections between different systems should be given.

iii. If there is any street furniture, they should be shown. The road and verges, etc. under the structure should be shown at the levels adjacent to the structure. Similarly, any embankments should be shown and the fall indicated.

iv. All hidden detail, such as foundations, should be clearly dotted to indicate the cover below finished ground and road levels.

v. If any major service pipework is known and is to be maintained in the road under, it should be indicated.

vi. Any specific architectural details such as fins, brickwork, paviours, feature grooves, etc., should be clearly shown.

vii. Any special requirements with regard to clearances should be indicated E.g. high load clearances for roads/navigation clearances for rivers.

viii. River bridges and walls should have the mean water level shown and the datum for work measured above/below water.

ix. Proposed finishes for permanently exposed and buried surfaces.

x. Existing ground line.

xii. Deck articulation.

xiii. Abutment and pier foundation levels.

xiv. Longitudinal fall.

xv. Substructure drainage proposals.

A4 Plan on Structure – Scale 1:100 or 1:200

Care should be taken to ensure that the plan does not have too much dotted hidden detail of the road and fences under etc.

The plan should be located at the top of the drawing.

I.e. Setting out Point (SOP), labelled with Northings and Eastings, from which all dimensions should emanate. Preferably, this should be located on the

centre line of the structure and in the case of a bridge the centre of the bearings on either of the abutment shelves.

ii. Dimensions should be shown from the SOP to any supporting piers, etc., shown dotted under, to confirm the true spans of the bridge.

iii. The widths of the road over and extent of any kerbing should be clearly defined.

iv. The parapet beam should also be clearly shown with the extent of the parapets.

v. The outline of the abutment and wingwalls should be shown dotted as applicable and the outline of the foundations also shown dotted, in a finer line type if possible.

vi. Any services, both existing and new, should be indicated and labelled.

vii. North sign.

viii. Arrows on carriageway giving directions, if over a watercourse direction of flow or direction of travel of trains.

ix. Embankments adjacent to the structure.

x. Location of the boreholes close to the structure.

xi. The location of the fixed, free and guided bearings, where present, should be shown.

xii. Location of street furniture (including stats cover, drainage, gullies, etc.) if applicable.

xiii. Skew angle.

xiv. Position and type of deck joints, where present.

xv. Clearance to faces of structure supports from edge of carriageway/tracks etc.

xvi. Type and position of road restraint system and their clearance from the structures supports.

A5 Cross-Section through Structure Deck

This section is primarily used to indicate the width of the structure, its depth, and the location of the carriageway. It should also contain the following:

i. Form of structure existing and/or proposed. (separate drawings may be required for both existing and proposed details)

ii. Construction and profile of the carriageway and footway if present.

iii. The widths and falls on the verges (if any) and their proximity in relation to the edge beams.

iv. Complete Road Restraint System details.

v. Services or ducts to be carried by the structure and position of any lighting columns.

vi. Details of `drips' and asphalt tucks, etc. in the edge beam.

vii. Parapet containment, heights and working widths.

viii. Deck finishes including type of waterproofing, thickness of surfacing, height of kerbing, etc.

ix. Forms of drainage proposed.

A6 Section through Abutments, Walls and Supports

Primarily to indicate the size of the abutment, wall or support and the earthworks behind it. Section should include:

i. Drainage holes and weep holes through the support.

ii. Waterproofing and drainage to rear of support.

iii. Earthworks behind support.

iv. Details of any observation chambers

v. Bearing plinths.

vi. Proximity of the footings to the carriageway.

vii. Fill definitions for measurement purposes.

viii. Dimension of the carriageway from the support and its retained height if applicable.

ix. Proposed impregnation to exposed concrete surfaces.

A7 BOREHOLE LOG

This should be kept as small as possible and where possible ensure that all definitions are at the same level as the core noted.

Appendix B

Model form of certificates

Links to the word versions of the model templates are available from the link below.

For external parties the model templates can be provided on request from the TAA .

Design and Check Certificate - Category 0	SQA-8652
Design and Check Certificate - Category 1	SQA-8653
Check Certificate - Category 2 and 3	SQA-8654
Design Assessment Certificate Category 2 and 3	SQA-8655
Bringing Into Use Declaration	SQA-8656
Construction Compliance Certificate	SQA-8657
Departure From Standard Submission Form	SQA-8658
Final Design and Check Certificate	SQA-8659
Material and Product Approval Request Form	SQA-8660
Type ‘S’ Temporary Works Certificate	SQA - 8711
Type ‘P’ Temporary Works Certificate	SQA -8712
CS 451 Structural Review Form	SQA-8713

Transport for London
Surface Transport

Management System Document – Guidance Note

Requirements for Surface Tunnels and Structures Health and Safety Files, Records and Maintenance Manuals – Guidance for Clients, Project Managers, Principal Designers and Principal Contractors

Document reference: SQA-2026 - issue: 5.0

Contents

1. Purpose

This guidance note sets out the requirements for Health and Safety File and Maintenance Manual creation and update. It covers capture of information generated during the design and construction phases which could have possible implications for future construction and maintenance; all of which must be provided for upload to TfL's structures database, BridgeStation**.** The document also defines the format and content of the Health and Safety File and Maintenance Manual.

2. Background and Scope

2.1. The Health and Safety File and Maintenance Manual information is essential for the safe operation and maintenance of the asset, and to allow the Client to fulfil the obligation to provide pre-construction information for future construction and maintenance work**.**

2.2. All information relevant to the management and operation of Surface structures and tunnels is kept and maintained on BridgeStation. **http://www.bridgestation.co.uk/TFL/Login.aspx.**

2.3. During the design and construction process, additional information may be held on project files; this will not normally be stored on BridgeStation until completion of the project.

3. Structure File Contents

3.1. The BridgeStation folder structure is shown in Table 1 below. All files must be uploaded and stored in the appropriate folder, adopting the appropriate document type. Additional subfolders should be created where relevant, for example a scheme subfolder under 'design information' and 'as-built drawings' should be set up for information relating to a particular scheme or element of work.

3.2. During the design and construction process, additional information may be held on the scheme files; this will not normally be stored on BridgeStation until completion of the project**.**

3.3. At scheme completion, all documentation relevant to the ongoing maintenance of the asset must be transferred to BridgeStation.

3.4. Specific guidance for Health and Safety Files is presented in section 4, and for Maintenance Manual and other records in section 5 of this guidance note.

3.5. Surface & Highway Structures (S&HS) team in TfL Engineering shall be consulted as to the exact record requirements for any scheme.

Table 1 - BridgeStation Folders

Default Folder (Level 1)	Default Sub-Folder (Level 2)	Document Types
Assessment Results	Load Parapet Scour Resilience Interim Measures	Approval in Principle Assessment Calculations Assessment Certificate Assessment Report Departure from Standards Inspection for Assessment Interim Measures Assessment Interim Measures Inspection Load Management Plan Parapet Assessment Resilience Assessment Scour Assessment
Design information	[None]	Approval in Principle Calculations Construction Compliance Certificate Design Drawings Design/Check Certificate Feasibility/Options Study Geotechnical Report Key correspondence Models and geometric data Risk assessment/method statement Topographical Survey
As-built Drawings	New build/Original Refurbishment/Maintenance Whole structure replacement	As-Built Drawings As-Built Photographs General Arrangement Drawings Site Location Plan
Environment	[None]	Statutory constraints Environmental information
Health and Safety	Description of work carried out Residual hazards Key structural principles Hazardous materials - Asbestos Hazardous materials - General Removal & dismantling of installed plant and equipment Equipment for cleaning and maintenance Significant services Reference information Fire Risk Assessments DSEAR Risk Assessments	H&S File Records Risk Assessments & Method Statements H&S Photographs
Inspections	Historic Inspection Records	General Arrangement Drawings General Inspection Report Height Proforma Inspection Photographs Joint Proforma Monitoring Inspection Report Photo Location Plan Post-Tensioned Special Inspection Report Principal Inspection Report Risk Assessments & Method Statements Site Location Plan Special Inspection Report Traffic Management Plans
Legal	[None]	Ownership documentation Access rights documentation Maintenance liability documentation Third party rights documentation Traffic Orders/Prohibitions Non-categorised
Maintenance	Maintenance Manual Historic Maintenance Records	277 Form Asset Management Plan Cyclic Maintenance records Maintenance Manual - 2013 on (to TfL GN) Maintenance Manual - pre 2013 Maintenance Photographs Non-categorised
Structure Summary Photograph	[None]	Summary Photograph

4. BridgeStation Health and Safety File Requirements

4.1. Provision of Information

- A Health and Safety File is to be provided, or existing document updated, for all schemes regardless of the number of contractors. This requirement exceeds the requirements of the CDM (2015) regulations which does not require a H&S File where the scheme involves only one contractor.
- Health and Safety File information is to be provided in Microsoft Word format on the templates provided in this document, either as updates to existing templates already held on BridgeStation, or as new templates if none pre-exist. **Each template is to be provided as an individual file.**

4.2. Templates:

- Health and Safety File information must be provided on the standard BridgeStation Health and Safety File Templates described in 4.6 below and shown in Appendix A.
- If standard templates, as appended to this document, are already loaded on BridgeStation, they are to be downloaded and updated offline for submission.
- If standard templates, as appended to this document, are not loaded on BridgeStation, new standard templates are to be created offline for submission. These new templates will be uploaded as base documents and will be updated for future schemes to provide a continuous record.

4.3. Content and Format

- The information held in the Health and Safety File should be restricted to that relevant to the health and safety of any future construction or maintenance work. The level of detail should allow the likely risks to be identified and addressed by those carrying out the work.
- Information must be clear, concise and easily understandable.
- The file **should not include** things that will be of no help when planning future construction or maintenance work, for example:
  - pre-construction information
  - construction phase plan
  - construction phase risk assessments
  - systems of work
  - COSHH assessments
  - details about the normal operation of the completed structure
  - construction phase accident statistics
  - contractual documents
  - information about structures, or parts of structures, that have been demolished – unless there are any implications for remaining or future structures, e.g., voids
  - Information contained in other documents, (but include relevant cross-references)

Much of the above information, although not required for the Health and Safety File, is relevant to structures records and maintenance manuals (see Section 5 below) and will need to be stored elsewhere on BridgeStation.

- Reference Information documents shall be submitted in Portable Document Format (PDF) and shall be fully indexed and searchable.
- As-constructed drawings shall be electronically marked-up copies of the final drawings and shall be submitted in both PDF and AutoCAD *.dwg formats. All necessary supporting AutoCAD files shall be included and referenced into the drawing such that it will open as the original. AutoCAD files shall be provided in a single zip file including associated x-refs.
- Electronic copies of as built drawings shall be individually named and shall adopt the file naming convention set out in the Information Modelling and Management (IMM) requirements for the scheme.
- **Drawings and documents uploaded to BridgeStation shall include in the comments field the full drawing or document title**.

4.4. Folder structure

- The Health and Safety File elements of the BridgeStation folder structure are shown highlighted in Table 2 below.

4.5. Submission and Update Procedure

- The procedure for update/submission/approval is dependent on the contractual arrangements applicable to the scheme and is to be agreed with the Surface & Highway Structures (S&HS) team in TfL Engineering.

Table 2 - BridgeStation Folder Structure (H&S File folders highlighted)

Default Folder (Level 1)	Default Sub-Folder (Level.2)
Assessment Results	Assessment and Load Management
Design information	[None]
As-built Drawings	New build/Original Refurbishment/Maintenance Whole structure replacement
Environment	[None]
Health and Safety	Description of work carried out Residual hazards Key structural principles Hazardous materials - Asbestos Hazardous materials - General Removal & dismantling of installed plant and equipment Equipment for cleaning and maintenance Significant services Reference information Fire Risk Assessments DSEAR Risk Assessments
Inspections	Historic Inspection Records
Legal	[None]
Maintenance	Maintenance Manual Historic Maintenance Records
Non-Inspection Photos	[None]

4.6. BridgeStation Health and Safety File Templates

- The following templates are to be adopted for Health and Safety File entries in BridgeStation.

01 - Description of work carried out
02 - Residual hazards
03 - Key structural principles
04 - Hazardous materials - Asbestos
05 - Hazardous materials - General
06 - Removal & dismantling of installed plant and equipment
07 - Equipment for cleaning and maintenance

08 - Significant services
09 - Reference information

- At the completion of each scheme, including significant maintenance works, the complete set of all templates is to be updated.
- If the works do not give rise to the need for revised Health and Safety File information for any particular template, the template is still required to be updated. The scheme description is to be entered and other entries recorded as 'No Change'.
- The agreed final versions of the templates are to be uploaded to BridgeStation as a complete set in Microsoft Word format – all 9 templates are to be uploaded to their relevant subfolders, replacing any pre-existing versions. Once uploaded, the templates will be updated to record future works so that a structure's history is visible.

Templates are attached in Appendix A.

5. Maintenance Manual and Other Records

5.1. Maintenance Manual General Requirements

- Records are generally required in accordance with Highways England document BD 62 As Built, Operational and Maintenance Records for Highway Structures, or successor document, and the following guidance. The Surface & Highway Structures (S&HS) team in TfL Engineering shall be consulted as to the exact record requirements for the scheme.

5.2. Structure File Contents

- A Structures scheme will typically generate a number of document types, which should be stored in the appropriate folder in BridgeStation. See Section 3 above.

5.3. Maintenance Manual Contents

- The Maintenance Manual shall contain information from the design and construction phases which could have possible implications for the future maintenance. Any special maintenance or inspection needs which have been assumed in the conception and design of a structure must be recorded in the Maintenance Manual with full information on the actions required and the frequency of these actions e.g. a method statement for the inspection and maintenance work on structurally significant details with difficult access
- Information which is also relevant to the Health and Safety File should be included in both Health and Safety File and Maintenance Manual.

The Maintenance Manual shall comprise the following information:

1. Works information
   - An outline description of the works including a location plan.
2. Special Features
   - Any special features or precautions are to be itemised. This shall include hidden critical elements, advice on any special procedures that may need to be adopted on demolition, modification, or jacking of the structure, or when extensive modifications are envisaged.
3. Materials
   - The following items shall be considered for inclusion as appropriate. The list is not exhaustive and the Project Team shall consider adding other items which could be of value. The list should give the name and address of the supplier, sub-contractors and where appropriate, the source and location within the structure.
     i. For concrete, the list should include: Cement; GGBFS; PFA; aggregates; ready mixed concrete; admixtures; mix proportions; reinforcing bars; prestressing wire, strand or bar. Where a number of concrete mixes are supplied, their destinations shall be recorded within each element and records of concrete cube test results provided for each structural element. Areas where impregnation or anti-graffiti

coating has been applied shall be shown on the as constructed drawings.

ii. For steel, the list shall include: plate; rolled sections; prefabricated steelwork, etc. weathering steel, type of fixings and torque settings for bolts.

iii. Sources of imported fill shall be included and their location within the structure recorded.

iv. Compliance test certificates~~,~~ for mechanical/electrical/hydraulic aspects shall be included.

4. Components
   - The list shall give the name of the manufacturer/supplier/sub-contractor; the part number and manufacturer's drawing/literature.
   - Items shall include: expansion joints; drainage systems; bearings; parapets; waterproofing systems; precast units; reinforced soil components; brick, masonry or precast facings; fixings; lighting systems; and moving bridge equipment with any test results.
5. Certification and Test Records
   - These shall be grouped in appendices and shall include mill certificates, welding certificates, cement analyses, concrete cube test results, equivalent sodium oxide and chloride content, concrete mix, concrete fresh analysis, air entrainment, impregnants (e.g. silane), load tests on components and elements where appropriate including mechanical and electrical records. Also tests on fill adjacent to a structure.
6. Paint
   - A copy of the contract specification Appendices. Particulars of site trials.
7. Problems occurring during construction
   - A short report, supplemented with instrument readings, photographs or sketches as appropriate, of problems encountered and solutions adopted during construction or application which could have repercussions on future maintenance.
8. Access and Security
   - Details, including drawings of access to the site, walkways, ladders, manholes etc.
   - Traffic management arrangements
   - Security measures to prevent unauthorised access
   - Arrangements with other stakeholders e.g. Network Rail.
9. Future Assessments
   - Adequate records shall be provided of the construction sequence and the construction joint positions where these may influence future assessment.
10. Routine Maintenance Schedule
    - A copy of the recommended routine maintenance schedule shall be supplied for new structures.
    - For existing structures the routine maintenance schedule shall be updated.

11. Inspection Regime
    - Any advised amendment to the Principal or General Inspection frequency shall be stated, ensuring that additional requirements for inspection of individual elements or machinery follow these intervals as far as possible.

5.4. Format and Submission of Records

The Maintenance Manual and other records should be submitted to the Surface & Highway Structures (S&HS) team in TfL Engineering at the same time as the Health and Safety File.

One set of electronic copies of the above documents shall be submitted. All documents shall be submitted in Portable Document Format (PDF) and shall be fully indexed and searchable.

As constructed drawings shall be electronically marked-up copies of the final drawings and shall be submitted in both PDF and AutoCAD *.dwg formats. All necessary supporting AutoCAD files shall be included and referenced into the drawing such that it will open as the original. AutoCAD files shall be provided in a single zip file including associated x-refs.

Electronic copies of as constructed drawings shall be individually named and shall adopt the file naming convention set out in the Information Modelling and Management (IMM) requirements for the scheme.

5.5. BridgeStation Data Update

In addition to Health and Safety File and Maintenance Manual updates, at scheme completion the structure's BridgeStation record data must be reviewed and updated to reflect changes resulting from the scheme.

Items commonly requiring update include:

- Bridge condition indicator - Ensure that score reflects condition at completion of scheme via a completed Special Inspection proforma
- Structure description – Ensure that description given accurately describes the structure (any changes to be agreed with S&HS team)
- Operational Hazards – ensure that comments are updated to reflect any hazards to inform future inspection/maintenance activities
- Dimension – Ensure that dimensions are updated to account for any widening, reduction in headroom etc.
- Component/Element – Update material type for any components affected, ensure that element inventory is updated to reflect amended, removed or added elements.

An event should be added, providing a brief summary of the nature of the work

done and the date of completion. [Note: This is an interim arrangement; additional functionality will become available to record maintenance history].
Superseded information shall be archived as appropriate.

The S&HS team in TfL Engineering shall be consulted to establish the exact record requirements, format and upload procedures.

6. Document Control

Issue	Date	Change Summary
0.0	26/01/15	Minor reformatting and edits. For issue.
1.0	04/07/2016	Document reviewed and reformatted for the new AMD QMS.
2.0	05/10/2016	Aligned with CDM 2015 and BIM requirements, BridgeStation data update and flow charts added.
3.0		Reformatting
4.0	22/02/2018	Revised as a result of Asset Management Directorate reorganisation; minor updates.
5.0	03/10/2019	Revised as a result of TfL Transformation ; minor updates

[Note: This document supersedes Guidance Note- SMT/GN/11/15.]

APPENDIX A: **HEALTH AND SAFETY FILE TEMPLATES**

Templates are provided as downloads below and displayed beneath.


01 - Description of Works rev 08.doc

01 - Description of Works


02 - Residual Hazards rev 09.doc

02 - Residual Hazards


03 - Key Structural Principles rev 06.doc

03 - Key Structural Principles


04 - Hazardous Materials - Asbestos r

04 - Hazardous Materials - Asbestos


05 - Hazardous Materials rev 06.doc

05 - Hazardous Materials


06 - Installed Plant & Equipment rev 06.doc

06 - Installed Plant & Equipment


07 - Equipment for Cleaning & Maintenar

07 - Equipment for Cleaning & Maintenance


08 - Significant Services rev 04.doc

08 - Significant Services


09 - Reference Information rev 07.dc

09 - Reference Information

A333/33.3/3 TYPICAL TfL BRIDGE
HEALTH AND SAFETY FILE
DESCRIPTION OF WORK CARRIED OUT

Any work to the structure, whether notifiable under CDM or not, should be recorded here to provide a continuous works history. Each scheme should generate an entry in **all** H&S File sections *(Residual Hazards; Key Structural Principles; Hazardous Materials – Asbestos; Hazardous Materials; Removal & Dismantling of Plant & Equipment; Equipment for Cleaning & Maintenance; Significant Services; Reference Information)*. If the scheme has no effect in a particular section it should be recorded as "No change".

Works Completion Date	Scheme Title/ Description of Works	Participants		
		Role	**Name/Address**	**Responsibility**
11/11/2011	**Scheme Title:** Typical Bridge – Bearing replacement **Description of Works:** • Strengthen main beams to provide jacking points • Construct foundation for jacking trestles • Reconstruct bearing shelf and new plinths • Install new bearings • Replace expansion joints • Rewaterproof deck • Resurface deck	Client Project Sponsor	[redacted] TfL Tunnels & Structures	
		Designer	Anne Allasis and Partners Loaded Lane N21 7AP	Main designer
		Principal Contractor	LoHAC Contractors plc Local Depot N11 5EW	Managing contractor. Traffic management. TMA permits
		Contractor 1	Tier Two Regional Office Somewhere Near London AB1 6DE	Main Contractor. Manage other contractors under subcontract, provide HS&W facilities.
		Contractor 2	Jack Bridge Ltd Prop Street SE3 4AL	Temporary supports and lifting
		Contractor 3	SU Port 123 [illegible] PT[illegible]	Bearing design, supply and installation
		Contractor 4	[illegible]il Gap Ltd 1 East Lastomer Road GO2 4MB	Expansion joint supply and install
		Contractor [illegible]	Albe[illegible] [illegible] Lane Shepherds Bush NW23 3AS	Surfacing removal and replacement
		Contractor [illegible]	MM Brain Ltd Seal Works SP4 5MA	Waterproofing
12/12/2012	**Scheme Title:** Typical Bridge – Replacement [illegible] Barrier **Description of Works:** • Replace safety barrier approaches and features to parapets	Client Project Sponsor	Elaine Marking TfL Tunnels & Structures	
		Designer	Road Barriers Ltd N2 0BB	Barrier design and installation
		Principal Contractor	LoHAC Contractors plc Local Depot N11 5EW	Managing contractor. Traffic management. TMA permits
		Contractor 1	Road Barriers Ltd N2 0BB	Barrier design and installation
dd/mm/yyyy	**Scheme Title:** **Description of Works:** •	Client Project Sponsor		
		Designer		
		Principal Contractor		
		Contractor 1		
		Contractor 2		
		Contractor 3		
		Contractor 4		
		Contractor 5		
		Contractor 6		

A333/33.3/3 TYPICAL TfL BRIDGE HEALTH AND SAFETY FILE RESIDUAL HAZARDS

Record any residual hazards which remain and how they have been dealt with, for example surveys or other information concerning asbestos; contaminated land; water bearing strata; buried services.
Information held in this section should be duplicated where applicable under **all** relevant H&S File sections *(Key Structural Principles; Hazardous Materials – Asbestos; Hazardous Materials - General; Removal & Dismantling of Plant & Equipment; Equipment for Cleaning & Maintenance; Significant Services; Reference Information).*

Completion date	Scheme Title/ Description of Works	Description and Location of Residual Hazard	Control Measures	Comments	Relevant documentation (to be stored by default in the 'H&S\Residual Hazards' BridgeStation folder in which this file resides unless noted otherwise below)	
					Title/description	Document date
11/11/2011	**Scheme Title:** Typical Bridge – Bearing replacement	Asbestos pipe in weep holes to ballast wall impossible/impractical to remove - left in place. Bottom of East and West abutments Weep holes are accessible from bearing shelf but asbestos pipe not exposed.	Recorded under 'Hazardous Materials – Asbestos'. Noted on BridgeStation front page.		See 'Hazardous Materials – Asbestos' section	
		Services in south footway: Electricity, Gas, BT, Street lighting supply.	Surveyed and mapped for future reference. This information is accurate at the works completion date, but should not be relied upon for future schemes; NRSWA enquiries will be required.		See 'Significant Services' section and as-built drawings	
12/12/2012	**Scheme Title:** Typical Bridge – Replacement Safety Barrier	No change				
dd/mm/yyyy						

A333/33.3/3 TYPICAL TfL BRIDGE HEALTH AND SAFETY FILE KEY STRUCTURAL PRINCIPLES

Record structural principles such as bracing; sources of substantial stored energy e.g. prestressed members; safe working loads, particularly where these may preclude placing scaffolding or other equipment. This information may be found in the AIP (if one exists) but the AIP description will in many cases not adequately describe the principles in the context of the H&S File.
Information held in this section should be duplicated where applicable under all relevant H&S File sections *(Residual Hazards; Hazardous Materials – Asbestos; Hazardous Materials - General; Removal & Dismantling of Plant & Equipment; Equipment for Cleaning & Maintenance; Significant Services; Reference Information).*
Information)

Completion date	Scheme Title/ Description of Works	Key Structural Principles	Relevant documentation (add details and location of information to 'Reference Documents' section)
11/11/2011	**Scheme Title:** Typical Bridge – Bearing replacement	4 span bridge. Fabricated steel trough main girders with composite reinforced concrete deck slab, forming closed boxes. Fixed at east end, free at west end. General structural form unchanged in this scheme.	Original as-built drawings, AIP, calculations.
		Strengthening and external stiffeners added to provide jacking points close to abutments to allow replacement of abutment bearings. Foundations for jacking trestles left in place and buried. Jacking points designed for jacking abutment bearings alone – not for jacking in combination with pier bearings.	Bearing replacement as-built drawings, AIP, calculations.
12/12/2012	**Scheme Title:** Typical Bridge – Replacement Safety Barrier	No change	
dd/mm/yy	**Scheme Title:**		

A333/33.3/3 TYPICAL TfL BRIDGE HEALTH AND SAFETY FILE HAZARDOUS MATERIALS - ASBESTOS

ASBESTOS ONLY TO BE RECORDED HERE
Record any asbestos which remains, and how it has been dealt with.
Information held in this section should be duplicated where applicable under **all** relevant H&S File sections *(Residual Hazards; Key Structural Principles; Hazardous Materials - General; Removal & Dismantling of Plant & Equipment; Equipment for Cleaning & Maintenance; Significant Services; Reference Information).*
).

Completion date	Scheme Title/ Description of Works	Description and Location of Asbestos	Control Measures	Comments	Relevant documentation (to be stored by default in the 'Hazardous Materials – Asbestos' BridgeStation folder in which this file resides unless noted otherwise below)	
					Title/description	Document date
11/11/2011	**Scheme Title:** Typical Bridge – Bearing replacement	Asbestos pipe in weep holes to ballast wall impossible/impractical to remove - left in place. Bottom of East and West abutments Weep holes are accessible from bearing shelf but asbestos pipe not exposed.	Noted on BridgeStation front page. Asbestos surveys stored in this sub folder.		Asbestos desk study 2011 Asbestos management study report	2011 2011
		Asbestos cement water main - 200mm dia in east footway service bay.	Noted on BridgeStation front page. Asbestos surveys stored in this sub folder.	See 'Significant Services' section and as-built drawings	Asbestos management study report	2011
12/12/2012	**Scheme Title:** Typical Bridge – Replacement Safety Barrier	No change				
dd/mm/yy	**Scheme Title:**					

This template is populated with fictitious data to illustrate typical expected information. On initial population with actual data, please delete all illustrative data and this text box

A333/33.3/3 TYPICAL TfL BRIDGE HEALTH AND SAFETY FILE HAZARDOUS MATERIALS

Record any hazardous materials which remain, e.g. lead paint, special coatings which must not be burnt off, and how they have been dealt with.
ASBESTOS IS TO BE SEPARATELY RECORDED UNDER 'HAZARDOUS MATERIALS – ASBESTOS'
Information held in this section should be duplicated where applicable under **all** relevant H&S File sections *(Residual Hazards; Key Structural Principles; Hazardous Materials – Asbestos; Removal & Dismantling of Plant & Equipment; Equipment for Cleaning & Maintenance; Significant Services; Reference Information*

Completion date	Scheme Title/ Description of Works	Description and Location of Hazardous Material	Control Measures	Comments	Relevant documentation (to be stored by default in the 'Hazardous Materials' BridgeStation folder in which this file resides unless noted otherwise below)	
					Title/description	Document date
11/11/2011	**Scheme Title:** Typical Bridge – Bearing replacement	Lead-based paint encountered on whole of main girders. Not disturbed under this scheme.	Paint survey record stored. Noted on BridgeStation front page.		Paint survey	1998
		Joint nosing material – East and west joints	COSSH data sheet stored		COSSH data sheet – Resin Nosing	2011
12/12/2012	**Scheme Title:** Typical Bridge – Replacement Safety Barrier	No change				
dd/mm/yyyy	**Scheme Title**					

This template is populated with fictitious data to illustrate typical expected information.
On initial population with actual data, please delete all illustrative data and this text box

A333/33.3/3 TYPICAL TfL BRIDGE HEALTH AND SAFETY FILE REMOVAL AND DISMANTLING OF INSTALLED PLANT AND EQUIPMENT

Provide information regarding the removal or dismantling of installed plant and equipment (for example any special arrangements for lifting, order or other special instructions for dismantling etc).
Information held in this section should be duplicated where applicable under **all** relevant H&S File sections *(Residual Hazards; Key Structural Principles; Hazardous Materials – Asbestos; Hazardous Materials - General; Equipment for Cleaning & Maintenance; Significant Services; Reference Information).*
Items may typically include: lighting installations; pump equipment; CCTV; traffic signals.

Completion date	Scheme Title/ Description of Works	Description and Location of Plant & Equipment	Arrangements	Relevant documentation (to be stored by default in the 'Installed Plant & Equipment' BridgeStation folder in which this file resides unless noted otherwise below)	
				Title/description	Document date
11/11/2011	**Scheme Title:** Typical Bridge – Bearing replacement	Soffit lighting under east span replaced.	Details held on as-built drawing no 1234/001A	As-built drawing no 1234/001A stored under 'As-built Drawings'	2011
12/12/2012	**Scheme Title:** Typical Bridge – Replacement Safety Barrier	No change			
d/mm/yy	**Scheme Title:**				

A333/33.3/3 TYPICAL TfL BRIDGE HEALTH AND SAFETY FILE EQUIPMENT PROVIDED FOR CLEANING AND MAINTENANCE

Provide health and safety information about equipment provided for cleaning or maintenance of the structure.
Information held in this section should be duplicated where applicable under **all** relevant H&S File sections *(Residual Hazards; Key Structural Principles; Hazardous Materials – Asbestos; Hazardous Materials - General; Removal & Dismantling of Plant & Equipment; Significant Services; Reference Information).*

Items may typically include: high level access equipment (including anchor points, paths designed for the use of MEWP or access towers, travelling gantries, latchways and safety lines); specialist tools and equipment; and keys.

.

Completion date	Scheme Title/ Description of Works	Description and Location of Equipment and Arrangements for Use	Relevant documentation (to be stored by default in the 'Equipment for Cleaning & Maintenance' BridgeStation folder in which this file resides unless noted otherwise below)	
			Title/description	Document date
11/11/2011	**Scheme Title:** Typical Bridge – Bearing replacement	Strengthening and external stiffeners added to provide jacking points close to abutments to allow replacement of abutment bearings. Foundations for jacking trestles left in place and buried. Jacking points designed for jacking abutment bearings alone – not for jacking in combination with pier bearings. See as-built drawings for locations of foundations and jacking points.	As-built drawing no 1234/011B stored under 'As-built Drawings'	2011
12/12/2012	**Scheme Title:** Typical Bridge – Replacement Safety Barrier	No change.		
dd/mm/yyyy	[redacted]			

A333/33.3/3 TYPICAL TfL BRIDGE HEALTH AND SAFETY FILE SIGNIFICANT SERVICES

Record nature, location and markings of significant services, including underground cables, gas supply equipment, fire-fighting services etc
Information held in this section should be duplicated where applicable under all relevant H&S File sections *(Residual Hazards; Key Structural Principles; Hazardous Materials – Asbestos; Hazardous Materials - General; Removal & Dismantling of Plant & Equipment; Equipment for Cleaning & Maintenance; Reference Information).*

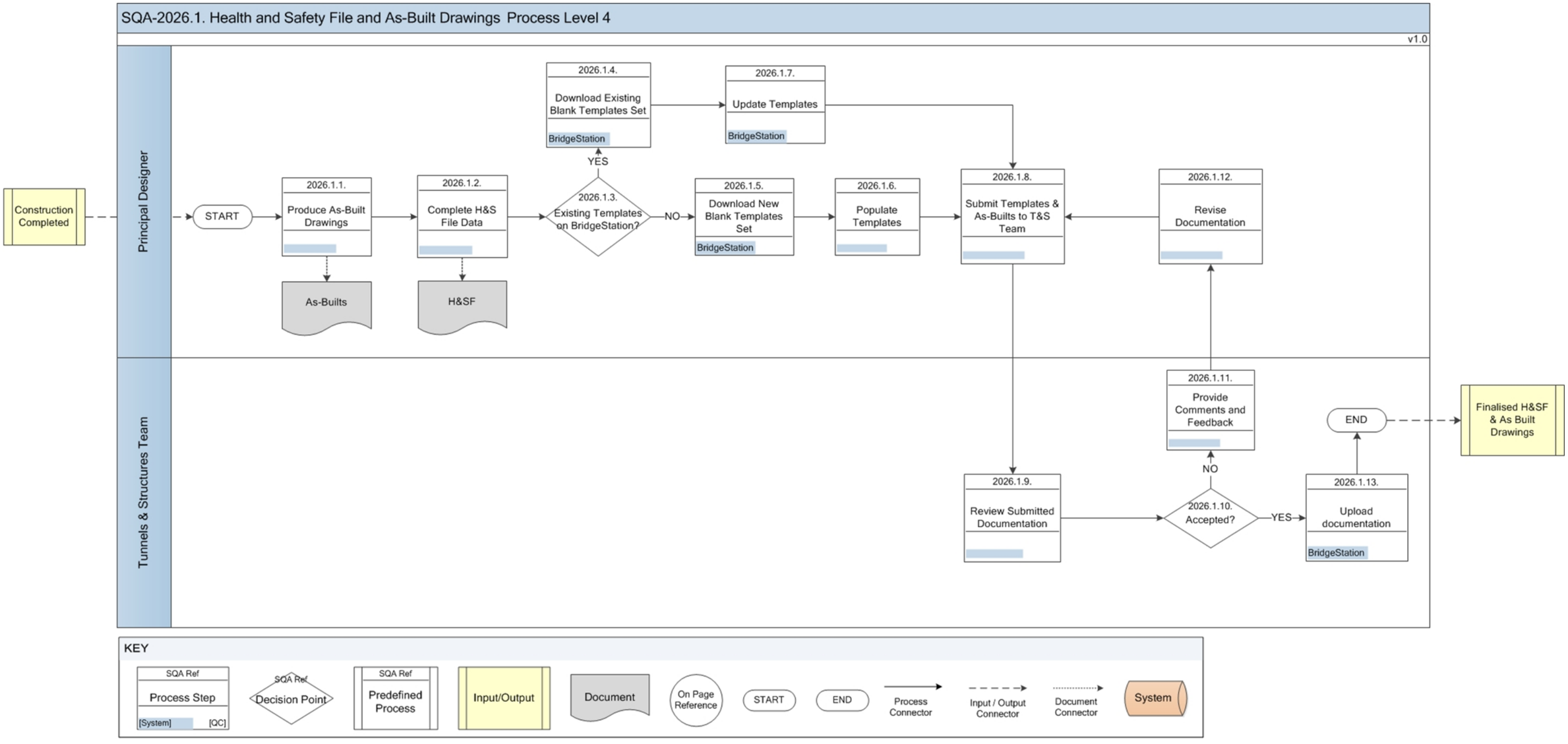
Completion date	Scheme Title/ Description of Works	Description of Service	Owner (include address and contact details if available)	Location	Marking	Comments	Relevant documentation (to be stored by default in the 'Significant Services' BridgeStation folder in which this file resides unless noted otherwise below)	
							Title/description	Document date
11/11/2011	**Scheme Title:** Typical Bridge – Bearing replacement	40kV electricity supply cable	UK Power Networks Head House Electra City AC24 0VA Tel: 01234 567890	West footway in service bay	Warning tape and concrete slaBridgeStation laid directly above cable.		As-built drawings	
		Asbestos cement water main - 200mm dia	Thames Water	East footway service bay	None found	Noted under 'Hazardous Materials – Asbestos'	See 'Hazardous Materials – Asbestos'	
12/12/2012	**Scheme Title:** Typical Bridge – Replacement Safety Barrier	No change						
dd/mm/yyyy	**Scheme Title:**							

A333/33.3/3 TYPICAL TfL BRIDGE HEALTH AND SAFETY FILE REFERENCE INFORMATION

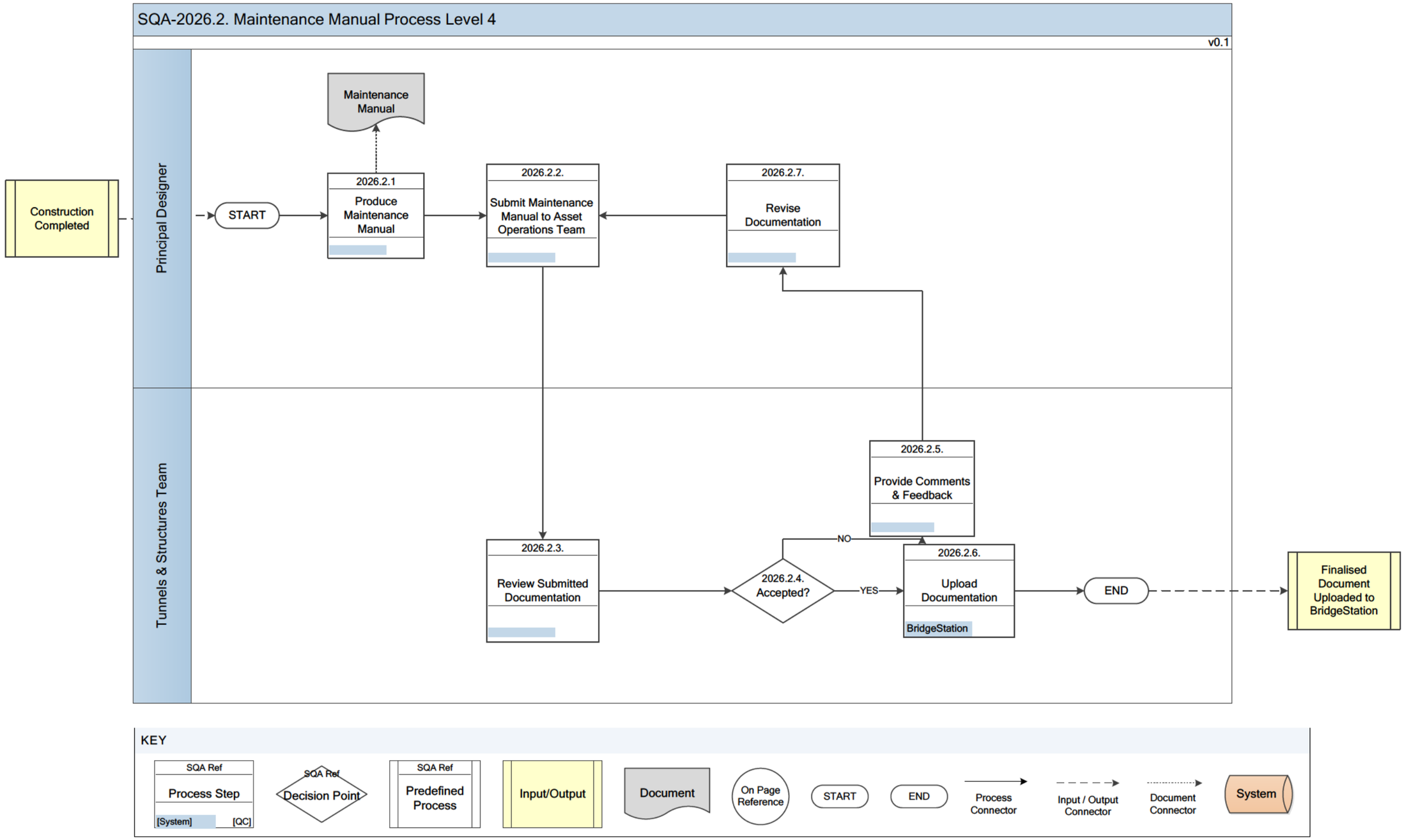
Record here information relevant to the health and safety of any future construction work and which is **not stored elsewhere in the BridgeStation H&S folders**.
By default this information should be stored in BridgeStation, but may by exception be stored elsewhere, or reference made to external sites.
NOTE: AS-BUILT DRAWINGS MUST BE STORED IN THE 'AS-BUILT DRAWINGS' BRIDGESTATION FOLDER
Information referenced in 'Key Structural Principles' will normally be recorded here.

Completion date	Scheme Title/ Description of Works	Description of reference information		Storage location	Comments
		Title/description	Document date		
11/11/2011	**Scheme Title:** Typical Bridge – Bearing replacement	Original (pre-scheme) as-built drawings	1985	BridgeStation - 'As-built Drawings' folder	
		AIP – original design	1985	BridgeStation - 'Design Information' folder	
		Design calcs	1985	BridgeStation - 'Design Information' folder	
		Bearing replacement drawings	2013	BridgeStation - 'As-built Drawings' folder	
		Bearing replacement AIP and calcs	2013	BridgeStation - 'Design Information' folder	
		Electrical test certificates	2013	BridgeStation – Maintenance Manual	
12/12/2012	**Scheme Title:** Typical Bridge – Replacement Safety Barrier	No change			
dd/mm/yyyy	**Scheme Title:**				

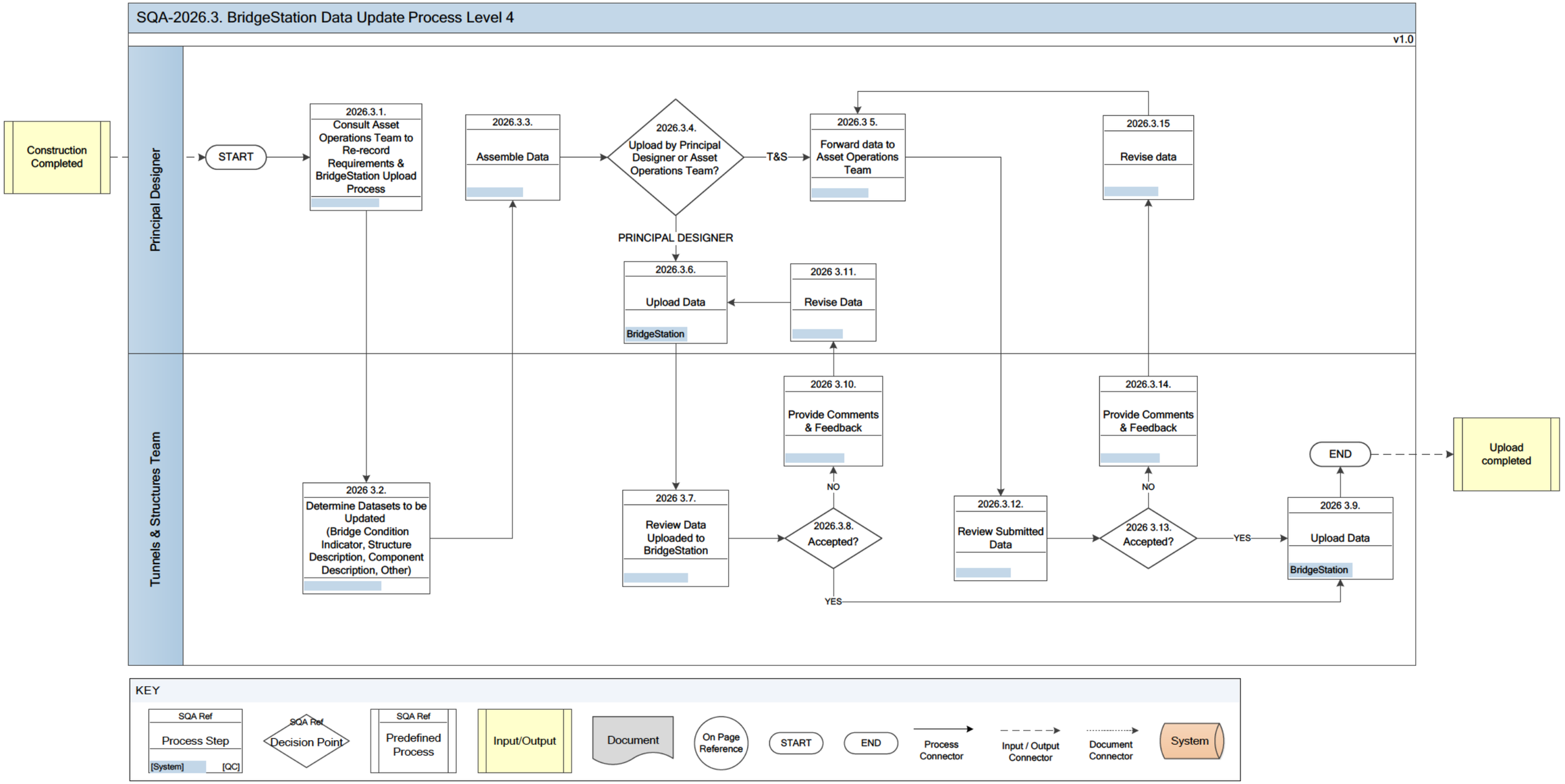
APPENDIX B**: PROCESS FLOWCHARTS**



A Visio Version can be found here



A Visio Version can be found here



A Visio Version can be found here

TRANSPORT for LONDON – COMMERCIAL SURFACE TRANSPORT

Major Asset Renewals Programme (MARP) - Brent Cross Structures Feasibility Study

---

Scope Appendix P

Whole Life Cost Template

Project Reference Number: tfl_scp_001845

Transport for London

Surface Transport: Asset Management Directorate
Whole Life Cost (WLC) Assessment Template - Cover Sheet

Version	Release date	Description
01	11 October 2013	Initial Release
02	19 February 2015	Added in discount rate and maintenance spend past analysis period.

Project Name		
Purpose and Scope		
Date		
Analysis version	1.00	
	Name	Role
Consultees		
Concluding Statement - summarise the outcome of the WLC assessment		

Conta	[redacted]
e-m	

Whole Life Cost Assessment Process

1) Complete this cover sheet (bar the concluding statement)

2) In the sheet for the first option, input the the start year of the analysis (most commonly the current year), analysis period (which cannot be more than 60 years), option name, description and the discount rate (this can be up to 2 for different lifecycle stages).

3) The sheet will update to produce a number of blue and grey cells, underneath the titles Capital Works and Maintainance Activities. Column headers will also be updated to represent the years to be analysed.

4) Use column B to enter the name of the different lifecycle activities for the asset. These are divided into general activity types - Feasibility, Concept Design, Detailed Design, Delivery, Project Close, Inspection / Surveys, Reactive Maintainance, and Cyclic Maintainance

5) The investment required to deliver each lifecycle activity, over the defined analysis period, should be added below the appropriate year. Entries should be in current costs (today's costs), the tool will automatically calculate the discounted costs based on these entries. The dates for the project which is being assessed should be included, for a do nothing the start and end date of the projects may be left blank.

6) Once all the investment needs have been added, enter the 'Residual Life' in cell G9. The 'Residual Life' is the time (in years) until the next major capital intervention after the end of the analysis period.

7) Any comments related to the WLC analysis for this option should be added to the comments box at the bottom of the sheet.

8) Steps 4 - 7 should be followed for each option (stored on a seperate tab). The year and the analysis period will automatically populate from the first option, but the title and description of the option will need to be added.

9) For each option the total cost and the discounted costs are calculated and presented at the bottom of the sheet.

10) Option summaries are presented on the 'Summary Sheet' tab. On the cover sheet Fill in any concluding statements related to the analysis

Transport for London

Surface Transport: Asset Management Directorate

Whole Life Cost (WLC) Assessment Template

Note: This sheet is automatically populated by information entered in the Options tabs

Option	Description	Project Dates		Cost		Comments
		Project Start	Project End	Project Cost	Discounted WLC	
Option 1	Keep existing	0	0	£ -	#DIV/0!	0
Option 2	0	0	0	£ -	#DIV/0!	0
Option 3	0	0	0	£ -	#DIV/0!	0

Transport for London

Surface Transport: Asset Management Directorate

Whole Life Cost (WLC) Assessment Template

Current Year		**Project Start Year**		**Option Name**	**Option 1**
Analysis Period		**Project End Year**		**Option Description**	Keep existing
Residual Life is the time (in years) until the next major capital intervention after the end of the defined analysis period.		**Project Costs**	£ -		
		Residual Life			
		Discount Rate up to year 30	3.50%		
		Discount rate after year	3.00%		

Capital Works	**0**
Feasibility	£ -
Concept Design	£ -
Detailed Design	£ -
Delivery	£ -
Project Close	£ -
Total Costs	£ -
Total Discounted Costs	£ -

Maintenance Activities	**0**
Inspection / Surveys	£ -
Maintenance	£ -
Revenue	£ -
Total Costs	£ -
Total Discounted Costs	£ -

	Current	**Discounted**
Total Capital cost	£ -	£ -
Total Maintenance cost	£ -	£ -

Annual capital works value from time of project	#DIV/0!	#DIV/0!
Maintenance cost from end of analysis period to end of residual life		

Total Cost	**#DIV/0!**	**#DIV/0!**

WLC Comments

Transport for London

Surface Transport: Asset Management Directorate

Whole Life Cost (WLC) Assessment Template

Current Year	0	**Project Start Year**		**Option Name**	Option 2
Analysis Period	0	**Project End Year**			
Residual Life is the time (in years) until the next major capital intervention after the end of the defined analysis period.		**Project Costs**	£ -	**Option Description**	
		Residual Life			
		Discount Rate up to year 30	3.50%		
		Discount rate after year	3.00%		

Capital Works	0
Feasibility	£ -
Concept Design	£ -
Detailed Design	£ -
Delivery	£ -
Project Close	£ -
Total Costs	£ -
Total Discounted Costs	£ -

Maintenance Activities	0
Inspection / Surveys	£ -
Reactive Maintenance	£ -
Revenue	£ -
Total Costs	£ -
Total Discounted Costs	£ -

	Current	**Discounted**
Total Capital cost	£ -	£ -
Total Maintenance cost	£ -	£ -

Annual capital works value from time of project	#DIV/0!	#DIV/0!
Maintenance cost from end of analysis period to end of residual life		

Total Cost	**#DIV/0!**	**#DIV/0!**

WLC Comments

Transport for London

Surface Transport: Asset Management Directorate

Whole Life Cost (WLC) Assessment Template

Current Year	0	**Project Start Year**		**Option Name**	Option 3
Analysis Period	0	**Project End Year**			
Residual Life is the time (in years) until the next major capital intervention after the end of the defined analysis period.		**Project Costs**	£ -	**Option Description**	
		Residual Life			
		Discount Rate up to year 30	3.50%		
		Discount rate after year	3.00%		

Capital Works	0
Feasibility	£ -
Concept Design	£ -
Detailed Design	£ -
Delivery	£ -
Project Close	£ -
Total Costs	£ -
Total Discounted Costs	£ -

Maintenance Activities	0
Inspection / Surveys	£ -
Reactive Maintenance	£ -
Cyclic Maintenance	£ -
Total Costs	£ -
Total Discounted Costs	£ -

	Current	**Discounted**
Total Capital cost	£ -	£ -
Total Maintenance cost	£ -	£ -

Annual capital works value from time of project	#DIV/0!	#DIV/0!
Annual maintenance cost from end of analysis period to end of residual		

Total Cost	**#DIV/0!**	**#DIV/0!**

WLC Comments

Version	Release date	Description
01	11-Oct-13	Initial Release
01a	06-Nov-13	Minor changes to formatting following comments from PB
2	12-Nov-13	Changes to the WLC calculations due to error in formula

TRANSPORT for LONDON – COMMERCIAL SURFACE TRANSPORT

Major Asset Renewals Programme (MARP) - Brent Cross Structures Feasibility Study

---

Scope Appendix Q

VFM Assessment Summary

Project Reference Number: tfl_scp_001845

Transport for London

Surface Transport: Asset Management Directorate
Value Assessment - Cover Sheet

Version	Release date	Description
03	11 October 2013	Reassessment of the Weighted VfM ratio

Project Name	FIVEWAYS - Bridge Concept Design	
Purpose and Scope of Assessment	Appraisal for single option selection for concept design	
Date	TBA	
Analysis version	1.00	
	Name	**Role**
Consultees	[redacted]	RSM S sponsor
	[redacted]	AMD Structures TAA
	[redacted]	AMD Structures operations
	[redacted]	PPD Project Manager
	Ramboll Bridge Design Lead	Concept Design Consultatnt
	[redacted]	AMD Asset Investiment
Concluding Statement - summarise the outcome of the VE assessment		
Contact	[redacted]	
tel	[redacted]	
e-mail	[redacted]	

Contact	[redacted]
tel	[redacted]
e-mail	

Value Assessment Process

1) Complete this cover sheet (bar the summary statement)

2) At the top of the 'Scoring Matrix', describe up to five options to be assessed

3) In the 'Scoring Matrix' tab, define and describe the Level 1 assessment criteria - some common examples have been provided, these should be amended as required. A maximum of six Level 1 criteria can be defined, but typically less will be adequate - the more Level 1 criteria that are used the more it dilutes the assessment, so be sure to focus on the important criteria

4) Enter weightings for the Level 1 criteria - they must sum to 100%. The higher the weighting the greater the influence on the value score

5) In the 'Scoring Matrix' tab, enter the Level 2 criteria (names and explanations) that inform each Level 1 indicator - there must be at least one Level 2 criteria per Level 1 criteria, with a maximum limit of five Level 2 criteria per Level 1 criteria

6) Enter weightings for the Level 2 criteria. The Level 2 weightings for each Level 1 criteria must add up to 100%, i.e. they sum to 100% of their parent Level 1 criteria

7) Each Level 2 criteria, per option, is scored on a 1 to 10 scale. The scale is described generically at the top of the 'Scoring Scales' tab. If required, more detailed descriptions for Level 2 criteria can be added. These descriptions are not mandatory but they may aid the assessment as all stakeholders have a common understanding. Frequently, it is sufficient to describe the lower and upper bounds (i.e. 1 and 5) for some key Level 2 criteria

8) In the 'Scoring Matrix', enter a score, from 1 to 10, for Level 2 criteria per option. A comments field is provided to capture any discussions relevant to the scoring

9) Enter the Whole life Costs at the bottom of the 'Scoring Matrix' tab. These should then be assessed to score each on a 1-10 scale.

10) Summarise the concensus outcome on this Cover Sheet in the space provided

Transport for London

Surface Transport: Asset Management Directorate FIVEWAYS

Value Assessment - Scoring Matrix PREFERRED OPTION WS 07/10/2016 Rev B

Option	Description
1. Option 4a	Option meets the TfL base case alignment (Base case)
2. Option 1a	Extends slightly more to the east compated to 4a.
3. Option 3a	Greater bridge extent to the east and utilities corridor to the west
4. Option 3b	Maximum extent to the east and utilites corridor to the west.
5. Option 3c	Maximum extent to the east and short utilites corridor to the west, with minimum land impact.
6. Option 3d	Maximum extent to the east and short utilites corridor to the south-west (minimum land impact to Porcelanosa plot).
7. Option 5a	Similar to option 4a but with dutilities corridor built to the west.
8. Option 8a	New bridge built entirely to the west (driven in) and existing bridge demolished
9. Option 8b	New bridge built entirely to the west (dropped in) and existing bridge demolished

Generic Scoring Scale Description	Score	WLC Scoring Description
Worst, Strong Negative or Very Poor	1-2	Very Poor
Negative or Poor	3-4	Poor
Neutral or Fair	5-6	Fair
Positive or Good	7-8	Good
Best, Strong Positive or Excellent	9-10	Excellent

Explanations	
Value Score	The Value Score is the weighted summation of the contributing criteria scores. The score is between 1 and 10, with 1 being the worst score and 10 being the best. A Value Score of greater than 7 is generally taken as being good, while a Value Score of less than 3.5 is generally taken as being poor.
Value for Money Ratio	The Value for Money (VfM) ratio is the relationship between the benefits and actual WLC. The higher the ratio the better the benefits of that option in relation to the other options being analysed.
Weighted Value for Money Score	The Weighted Value for Money Score is the Value Score weighted with regard to the importance of the benefits and the costs of the scheme (as shown to the left of the results cells). This is calculated by scoring the WLC of the option out of 10 and then adding the value score to this.

Level	ID	Criteria	Explanation	Weighting
Level 1	1	Fundamental Requirements that scheme will deliver - TfL Outcomes and/or project benefits	How does the option align with or support the achievement of the outcomes and/or benefits	0%
Level 2	1.1	Improves/simplifies routes for pedestrians	variation to footway provision for pedestrians, crossings on desire lines. i.e. mark 10 for feasibility layout and reduce in accordance with poorer provision.	33%
	1.2	Improves routes and perception of safety for cyclists	variation to the provisions for cyclists (mandatory/segregated lane/ASLs), i.e. mark 10 for feasibility layout with 2m wide cycle lanes and reduce in accordance with poorer provision.	33%
	1.3	Increases capacity, reduced congestion	variation to the performance of the approved VISSIM model for feasibility design, i.e. it meets this same performance hence the mark should be 10 and reduce in accordance with poorer performance.	34%
	1.4	Influence on Structure Financial Risk to TfL **(calculated by TfL AMD Value Manager/Client Manager)**	calculated structure VfM ratio = annual Risk Reduction to TfL discounted over 120 year return period divided by cost to construct new bridge. 5= baseline value calculated at Stage 2, higher mark should be allowed for better/higher ration	0%
	1.5	Influence on Benefit Cost Ratio for whole scheme		0%
Level 1	2	Buildability	What aspects need to be considered that adversely or positively impact buildability	30%
Level 2	2.1	Special Equipment	Specialist Equipment required for works taking place, causing some risks to programme with regards to availability	20%
	2.2	Rail Infrastructure impact	Avoid temporary/permanent diversion to existing rail/ station infrastructure. worst=GSM-R mast and cabinet diversion	30%
Level 2	2.3	Structure interface with adjacent highway	Variance between old and new road levels at structure/road interface. Set option with smallest difference in levels as best mark and work back	10%

ID	1. Option 4a Score	1. Option 4a Comment	2. Option 1a Score	2. Option 1a Comment	3. Option 3a Score	3. Option 3a Comment
1	0.00		0.00		0.00	
1.1		Input required from ODE. However, if 10 is given to the feasibility layout as per explanation, how can improved layout be quantified?		Input required from ODE		Input required from ODE
1.2		Input required from ODE. However, if 10 is given to the feasibility layout as per explanation, how can improved layout be quantified?		Input required from ODE		Input required from ODE
1.3		Input required from ODE. However, if 10 is given to the feasibility layout as per explanation, how can improved layout be quantified?		Input required from ODE		Input required from ODE
1.4		input data required for each option to calculate new structure risk				
1.5		see input data required from designer for each option for financial risk.				
2	3.30		4.40		4.60	
2.1	10	None envisaged that is different to other options.	10	None envisaged that is different to other options.	10	None envisaged that is different to other options.
2.2	2	GSM-R base is impacted due to the proposed new bridge alignment and will require permanent diversion. Furthermore, bridge construction will be carried out over Waddon Station, which might impact on platform use. No other diversion of NR assets is required assuming new foundations constructed behind the existing bridge abutments. Otherwise, parts of Platform 1 will need to be demolished and hence the platform extents will require to be shifted to the east. Additionally, services/cables might need to be relocated if new substructure is constructed in front of the existing abutments. Deck construction works are assumed to be carried out outside railway operational hours.	2	GSM-R base is impacted due to the proposed new bridge alignment and will require permanent diversion. Furthermore, bridge construction will be carried out over Waddon Station, which might impact on platform use. No other diversion of NR assets is required assuming new foundations constructed behind the existing bridge abutments. Otherwise, parts of Platform 1 will need to be demolished and hence the platform extents will require to be shifted to the east. Additionally, services/cables might need to be relocated if new substructure is constructed in front of the existing abutments. Deck construction works are assumed to be carried out outside railway operational hours.	2	GSM-R base is impacted due to the proposed new bridge alignment and will require permanent diversion. Furthermore, bridge construction will be carried out over Waddon Station, which might impact on platform use. No other diversion of NR assets is required assuming new foundations constructed behind the existing bridge abutments. Otherwise, parts of Platform 1 will need to be demolished and hence the platform extents will require to be shifted to the east. Additionally, services/cables might need to be relocated if new substructure is constructed in front of the existing abutments. Deck construction works are assumed to be carried out outside railway operational hours.
2.3	3	Structure extends eastwards the least (except option 8a), hence less impact on Epsom road from options assuming bridge construction to the east. Vertical clearance of new bridge carriageway from Epsom Road carriageway approximately 1060mm in the temporary case assuming new foundations constructed behind existing bridge abutments. Final vertical alignment on A23 is similar for all options.	1	Structure extends marginally to the east compared to base option but permanent highway alignment remains per base option. Vertical clearance of new bridge carriageway from Epsom Road carriageway approximately 1400mm in the temporary case assuming new foundations constructed behind existing bridge abutments. Final vertical alignment on A23 is similar for all options.	1	Structure extends marginally to the east compared to base option but permanent highway alignment remains per base option. Vertical clearance of new bridge carriageway from Epsom Road carriageway approximately 1400mm in the temporary case assuming new foundations constructed behind existing bridge abutments. Final vertical alignment on A23 is similar for all options.

ID	4. Option 3b Score	4. Option 3b Comment	5. Option 3c Score	5. Option 3c Comment	6. Option 3d Score	6. Option 3d Comment
1	0.00		0.00		0.00	
1.1		Input required from ODE		Input required from ODE		Input required from ODE
1.2		Input required from ODE		Input required from ODE		Input required from ODE
1.3		Input required from ODE		Input required from ODE		Input required from ODE
1.4						
1.5						
2	4.30		3.80		3.90	
2.1	10	None envisaged that is different to other options.	8	Sheet piling will be required to allow construction of retaining wall to the west without having to access Skoda and Porcelanosa. Operation will be carried out from carriageway level using specialist cranes and equipment. However these can be booked well in advance so is not a significant risk to programme.	8	Sheet piling will be required to allow construction of retaining wall to the west without having to access Porcelanosa. Operation will be carried out from carriageway level using specialist cranes and equipment. However these can be booked well in advance so is not a significant risk to programme.
2.2	1	GSM-R base is impacted due to the proposed new bridge alignment and will require permanent diversion. Furthermore, bridge construction will be carried out over Waddon Station, which might impact on platform use. No other diversion of NR assets is required assuming new foundations constructed behind the existing bridge abutments. This is the worst option in terms of NR impact as it extends the furthest to the east towards the station. Otherwise, parts of Platform 1 will need to be demolished and hence the platform extents will require to be shifted to the east. Additionally, services/cables might need to be relocated if new substructure is constructed in front of the existing abutments. Deck construction works are assumed to be carried out outside railway operational hours.	1	GSM-R base is impacted due to the proposed new bridge alignment and will require permanent diversion. Furthermore, bridge construction will be carried out over Waddon Station, which might impact on platform use. No other diversion of NR assets is required assuming new foundations constructed behind the existing bridge abutments. This is the worst option in terms of NR impact as it extends the furthest to the east towards the station. Otherwise, parts of Platform 1 will need to be demolished and hence the platform extents will require to be shifted to the east. Additionally, services/cables might need to be relocated if new substructure is constructed in front of the existing abutments. Deck construction works are assumed to be carried out outside railway operational hours.	1	GSM-R base is impacted due to the proposed new bridge alignment and will require permanent diversion. Furthermore, bridge construction will be carried out over Waddon Station, which might impact on platform use. No other diversion of NR assets is required assuming new foundations constructed behind the existing bridge abutments. This is the worst option in terms of NR impact as it extends the furthest to the east towards the station. Otherwise, parts of Platform 1 will need to be demolished and hence the platform extents will require to be shifted to the east. Additionally, services/cables might need to be relocated if new substructure is constructed in front of the existing abutments. Deck construction works are assumed to be carried out outside railway operational hours.
2.3	1	Structure extends the furthest to the east but permanent highway alignment remains per base option. Vertical clearance of new bridge carriageway from Epsom Road carriageway approximately 1400mm in the temporary case assuming new foundations constructed behind existing bridge abutments. Final vertical alignment on A23 is similar for all options.	1	Structure extends the furthest to the east but permanent highway alignment remains per base option. Vertical clearance of new bridge carriageway from Epsom Road carriageway approximately 1400mm in the temporary case assuming new foundations constructed behind existing bridge abutments. Final vertical alignment on A23 is similar for all options.	1	Structure extends the furthest to the east but permanent highway alignment remains per base option. Vertical clearance of new bridge carriageway from Epsom Road carriageway approximately 1400mm in the temporary case assuming new foundations constructed behind existing bridge abutments. Final vertical alignment on A23 is similar for all options.

ID	7. Option 5a Score	7. Option 5a Comment	8. Option 8a Score	8. Option 8a Comment	9. Option 8b Score	9. Option 8b Comment
1	0.00		0.00		0.00	
1.1		Input required from ODE		Input required from ODE		Input required from ODE
1.2		Input required from ODE		Input required from ODE		Input required from ODE
1.3		Input required from ODE		Input required from ODE		Input required from ODE
1.4						
1.5						
2	3.50		8.10		9.30	
2.1	10	None envisaged that is different to other options.	6	SMPT will be required to lift the bridge deck in place. However this can be booked well in advance to align with possessions so is not a significant risk to programme.	10	None envisaged that is different to other options.
2.2	2	GSM-R base is impacted due to the proposed new bridge alignment and will require permanent diversion. Furthermore, bridge construction will be carried out over Waddon Station, which might impact on platform use. No other diversion of NR assets is required assuming new foundations constructed behind the existing bridge abutments. Otherwise, parts of Platform 1 will need to be demolished and hence the platform extents will require to be shifted to the east. Additionally, services/cables might need to be relocated if new substructure is constructed in front of the existing abutments. Deck construction works are assumed to be carried out outside railway operational hours.	8	Unknown cabinet could potentially require relocation. Should sight lines be affected, new signalling might need to be installed. Deck construction and demolition works are assumed to be carried out outside railway operational hours.	8	Unknown cabinet could potentially require relocation. Should sight lines be affected, new signalling might need to be installed. Deck construction and demolition works are assumed to be carried out outside railway operational hours.
2.3	3	Structure extends eastwards the least (except option 8a), hence less impact on Epsom road from options assuming bridge construction to the east. Vertical clearance of new bridge carriageway from Epsom Road carriageway approximately 1060mm in the temporary case assuming new foundations constructed behind existing bridge abutments. Final vertical alignment on A23 is similar for all options.	9	New structure constructed to the west of existing bridge therefore no significant adverse effect on Epsom road anticipated. Minor works will be required to tie in Epsom Road with the new alignment both in the temporary and the permanent case but no major impact is expected on the existing vertical alignment. Final vertical alignment on A23 is similar for all options.	9	New structure constructed to the west of existing bridge therefore no significant adverse effect on Epsom road anticipated. Minor works will be required to tie in Epsom Road with the new alignment both in the temporary and the permanent case but no major impact is expected on the existing vertical alignment. Final vertical alignment on A23 is similar for all options.

Transport for London

Surface Transport: Asset Management Directorate FIVEWAYS

Value Assessment - Scoring Matrix PREFERRED OPTION WS 07/10/2016 Rev B

Option	Description
1. Option 4a	Option meets the TfL base case alignment (Base case)
2. Option 1a	Extends slightly more to the east compated to 4a.
3. Option 3a	Greater bridge extent to the east and utilities corridor to the west
4. Option 3b	Maximum extent to the east and utilites corridor to the west.
5. Option 3c	Maximum extent to the east and short utilites corridor to the west, with minimum land impact.
6. Option 3d	Maximum extent to the east and short utilites corridor to the south-west (minimum land impact to Porcelanosa plot).
7. Option 5a	Similar to option 4a but with dutilities corridor built to the west.
8. Option 8a	New bridge built entirely to the west (driven in) and existing bridge demolished
9. Option 8b	New bridge built entirely to the west (dropped in) and existing bridge demolished

Generic Scoring Scale	Score	WLC Scoring
Description		Description
Worst, Strong Negative or Very Poor	1-2	Very Poor
Negative or Poor	3-4	Poor
Neutral or Fair	5-6	Fair
Positive or Good	7-8	Good
Best, Strong Positive or Excellent	9-10	Excellent

Explanations	
Value Score	The Value Score is the weighted summation of the contributing criteria scores. The score is between 1 and 10, with 1 being the worst score and 10 being the best. A Value Score of greater than 7 is generally taken as being good, while a Value Score of less than 3.5 is generally taken as being poor.
Value for Money Ratio	The Value for Money (VfM) ratio is the relationship between the benefits and actual WLC. The higher the ratio the better the benefits of that option in relation to the other options being analysed.
Weighted Value for Money Score	The Weighted Value for Money Score is the Value Score weighted with regard to the importance of the benefits and the costs of the scheme (as shown to the left of the results cells). This is calculated by scoring the WLC of the option out of 10 and then adding the value score to this.

Level	ID	Criteria	Explanation	Weighting	1. Option 4a		2. Option 1a		3. Option 3a	
					Score	Comment	Score	Comment	Score	Comment
	2.4	Technical Approvals complexity	Simplify TA by minimising number and complexity of Technical Approval phases required to achieve construction. 10=option with least number of TA phases	10%	1	Maximum number and highest complexity of TA phases required to achieve construction. TA required as existing NR assets are impacted during construction and will require relocation such as the GSM-R mast (all easterly options impact on the GSM-R mast regardless of their extent). Utilities are to be moved twice and will require additional TA phases and finally the multiple construction and demolition stages will require TA from both TAA and NR, with the demolition and hence construction stages being the most from all options.	2	TA required as existing NR assets are impacted during construction and will require relocation such as the GSM-R mast. Utilities are to be moved twice and will require additional TA phases and finally the multiple construction and demolition stages will require TA from both TAA and NR; however, the demolition stages are less than the base case option.	4	Similar to option 1a but with utilities moved once rather than twice. Furthermore, existing bridge is demolished in one go.
	2.5	Construction sequence	How many major changes are there to the road layout to deliver the option. 10=option with least number of changes	30%	1	Three major changes required in road layout as bridge is built in multiple stages, each time diverting the traffic to a temporary alignment before the final option is delivered. Other temporary road layout adjustments will be needed to enable works to be carried out to tie in the new alignment with the existing around Epsom Road in particular.	5	Two major changes required in road layout as bridge is built in multiple stages, each time diverting the traffic to a temporary alignment before the final option is delivered. Other temporary road layout adjustments will be needed to enable works to be carried out to tie in the new alignment with the existing around Epsom Road in particular.	5	Two major changes required in road layout as bridge is built in multiple stages, each time diverting the traffic to a temporary alignment before the final option is delivered. Other temporary road layout adjustments will be needed to enable works to be carried out to tie in the new alignment with the existing around Epsom Road in particular.
Level 1	3	Programme (refers only to construction)		25%	1.00		1.50		7.00	
Level 2	3.1	Scheme can be delivered within current agreed programme	5=as per programme, higher number for shorter duration should be allowed for in marking	50%	1	Base construction programme, including STATS diversions, assumed to be 2 years. Estimated programme for option 4a is 163 weeks, making it the least favourable option from a time perspective.	2	Base construction programme, including STATS diversions, assumed to be 2 years. Estimated programme for option 1a is 138 weeks, making it an unfavourable option from a time perspective as programme duration is more than 2 years.	6	Base construction programme, including STATS diversions, assumed to be 2 years. Estimated programme for option 3a is 95 weeks, making it the 2nd best option from a time perspective, being a little under 2 years..
	3.2	Requires multiple utility moves to deliver	Minimises number of utility moves required to construct the new bridge. 8=option with single move, higher number should be allowed for no moves, i.e. off line build leaving existing bridge in place.	50%	1	West services diverted twice with services diverted on structure, while traffic may run over services during the temporary case.	1	West services diverted twice with services diverted on structure, while traffic may run over services during the temporary case.	8	West services moved only once and a permanent utilities bridge is used to the west. Traffic may run over services in the east during the temporary case.
	3.4									
	3.5									
Level 1	4	Maintainability	What on-going maintenance aspects need to be considered? Cost issues should be covered in a whole life cost analysis	15%	5.68		6.01		6.67	
Level 2	4.1	Access Rail/Road	Minimise access requirements for planned inspection and routine maintenance activities	33%	6	Access requirements for maintenance and inspection activites are similar for all options, with option 8a varying slightly. All options will require access to NR land.	6	Access requirements for maintenance and inspection activites are similar for all options, with option 8a varying slightly. All options will require access to NR land.	6	Access requirements for maintenance and inspection activites are similar for all options, with option 8a varying slightly. All options will require access to NR land.
	4.2	Utility Location	Where will utilities be located in end state? It would be preferable to locate under footway rather than carriageway. Score ease of access under highway Act.	33%	4	Due to number of services and specified footway widths, it will be difficult to locate all utilities under footway and some will be under carriageway. As this option provides the narrowest bridge deck width, the number of services located underneath the carriageway will be greatest.	5	Due to number of services and specified footway widths, it will be difficult to locate all utilities under footway and some will be under carriageway. This option provides a wider deck - and hence footpath - than base Option 4a, hence scores better as less services are located beneath carriageway.	7	Use of dedicated utilities corridor will remove some of the major services away from the main highway bridge, particularly those to the west and will allow greater flexibility in fitting most services under the footway rather than the carriageway. Extended bridge footprint to the east allows for more space under footway compared to base option. Access to the services within the utilities corridor will be easier.

ID	4. Option 3b		5. Option 3c		6. Option 3d	
	Score	Comment	Score	Comment	Score	Comment
2.4	4	Similar to option 1a but with utilities moved once rather than twice. Furthermore, existing bridge is demolished in one go.	3	Similar to option 1a but with utilities moved once rather than twice. Furthermore, existing bridge is demolished in one go. Complex methodology required to sheet pile the west retaining walls therefore scores slightly worse than options 3a/3b/3d	4	Similar to option 1a but with utilities moved once rather than twice. Furthermore, existing bridge is demolished in one go.
2.5	5	Two major changes required in road layout as bridge is built in multiple stages, each time diverting the traffic to a temporary alignment before the final option is delivered. Other temporary road layout adjustments will be needed to enable works to be carried out to tie in the new alignment with the existing around Epsom Road in particular.	5	Two major changes required in road layout as bridge is built in multiple stages, each time diverting the traffic to a temporary alignment before the final option is delivered. Other temporary road layout adjustments will be needed to enable works to be carried out to tie in the new alignment with the existing around Epsom Road in particular.	5	Two major changes required in road layout as bridge is built in multiple stages, each time diverting the traffic to a temporary alignment before the final option is delivered. Other temporary road layout adjustments will be needed to enable works to be carried out to tie in the new alignment with the existing around Epsom Road in particular.
3	7.00		6.50		6.00	
3.1	6	Base construction programme, including STATS diversions, assumed to be 2 years. Estimated programme for option 3b is 95 weeks, making it the 2nd best option from a time perspective, being a little under 2 years..	5	Base construction programme, including STATS diversions, assumed to be 2 years. Estimated programme for option 3c is 114 weeks, meeting roughly the base case programme.	4	Base construction programme, including STATS diversions, assumed to be 2 years. Estimated programme for option 3d is 124 weeks, making it a slightly unfavourable option from a time perspective as programme duration is just over 2 years.
3.2	8	West services moved only once and a permanent utilities bridge is used to the west. Traffic does not run over services in the east during the temporary case.	8	West services moved only once and a permanent utilities bridge is used to the west. Traffic does not run over services in the east during the temporary case.	8	West services moved only once and a permanent utilities bridge is used to the west. Traffic does not run over services in the east during the temporary case.
3.4						
3.5						
4	7.00		6.67		7.00	
4.1	6	Access requirements for maintenance and inspection activites are similar for all options, with option 8a varying slightly. All options will require access to NR land.	6	Access requirements for maintenance and inspection activites are similar for all options, with option 8 varying slightly. All options will require access to NR land.	6	Access requirements for maintenance and inspection activites are similar for all options, with option 8 varying slightly. All options will require access to NR land.
4.2	8	Use of dedicated utilities corridor will remove some of the major services away from the main highway bridge, particularly those to the west and will allow greater flexibility in fitting most services under the footway rather than the carriageway. Maximum extent (compared to all options) of bridge footprint to the east allows for maximum space under footway compared to base option. Access to the services within the utilities corridor will be easier.	7	Use of dedicated utilities corridor will remove some of the major services away from the main highway bridge, particularly those to the west and will allow greater flexibility in fitting most services under the footway rather than the carriageway. However, utilities corridor to be provided to the west is narrower and shorter than the one assumed for 3a and 3b, meaning that there could be spatial issues to consider which are not present in the other options. Maximum extent (compared to all options) of bridge footprint to the east allows for maximum space under footway compared to base option. Access to the services within the utilities corridor will be easier, but possibly more difficult than for options 3a and 3b.	8	Use of dedicated utilities corridor will remove some of the major services away from the main highway bridge, particularly those to the west and will allow greater flexibility in fitting most services under the footway rather than the carriageway. However, utilities corridor to be provided to the west is narrower and shorter than the one assumed for 3a and 3b, meaning that there could be spatial issues to consider which are not present in the other options. Maximum extent (compared to all options) of bridge footprint to the east allows for maximum space under footway compared to base option. Access to the services within the utilities corridor will be easier, but possibly more difficult than for options 3a and 3b.

ID	7. Option 5a		8. Option 8a		9. Option 8b	
	Score	Comment	Score	Comment	Score	Comment
2.4	3	Similar to option 4a but with utilities moved once rather than twice.	6	Low complexity relative to the online options as bridge is constructed entirely to the west with minimum impact to NR assets during construction and a single construction phase. TA is needed for STATS diversions and demolition of existing bridge from NR. Due to complexity of NR approvals for a weekend blockade to drive in an SPMT, score is lower than Option 8a.	10	Minimum number and lowest complexity of TA phases, as bridge is constructed entirely to the west with minimum impact to NR assets during construction and a single construction phase. TA is needed for STATS diversions and demolition of existing bridge from NR.
2.5	1	Three major changes required in road layout as bridge is built in multiple stages, each time diverting the traffic to a temporary alignment before the final option is delivered. Other temporary road layout adjustments will be needed to enable works to be carried out to tie in the new alignment with the existing around Epsom Road in particular.	10	One major change in road layout in order to deliver the final alignment. The new bridge is built to the west and the traffic is then diverted from the existing on to the new bridge. Minor temporary road layout adjustments will be needed to enable works to be carried out to tie in the new alignment with the existing around Epsom Road in particular.	10	One major change in road layout in order to deliver the final alignment. The new bridge is built to the west and the traffic is then diverted from the existing on to the new bridge. Minor temporary road layout adjustments will be needed to enable works to be carried out to tie in the new alignment with the existing around Epsom Road in particular.
3	6.00		8.00		7.50	
3.1	4	Base construction programme, including STATS diversions, assumed to be 2 years. Estimated programme for option 5a is 119 weeks, making it a slightly unfavourable option from a time perspective as programme duration is just over 2 years.	8	Base construction programme, including STATS diversions, assumed to be 2 years. Estimated programme for option 8a is 87 weeks, making it the most favourable option from a time perspective.	7	Base construction programme, including STATS diversions, assumed to be 2 years. Estimated programme for option 8b is 89 weeks, making it the second most favourable option from a time perspective.
3.2	8	West services moved only once with permanent utilities bridge used; however traffic may run over services in the east during the temporary case	8	Services diverted once into permanent alignment of new bridge and traffic not run on services in temporary case.	8	Services diverted once into permanent alignment of new bridge and traffic not run on services in temporary case.
3.4						
3.5						
4	6.34		5.35		5.35	
4.1	6	Access requirements for maintenance and inspection activites are similar for all options, with option 8a varying slightly. All options will require access to NR land.	5	Option 8a varies slightly as abutments of existing bridge are to remain in place, resulting in having two separate structures to maintain and inspect and hence corresponding access routes. All options will require access to NR land.	5	Option 8a varies slightly as abutments of existing bridge are to remain in place, resulting in having two separate structures to maintain and inspect and hence corresponding access routes. All options will require access to NR land.
4.2	6	Use of dedicated utilities corridor will remove some of the major services away from the main highway bridge, particularly those to the west and will allow greater flexibility in fitting all services under the footway rather than the carriageway. However, limited bridge extent to the east results in less footway extent compared to options 3a and 3b. Access to the services within the utilities corridor will be easier.	4	Due to number of services and specified footway widths, it will be difficult to locate all utilities under footway and some will be under carriageway. As this option provides the narrowest bridge deck width, the number of services located underneath the carriageway will be greatest.	4	Due to number of services and specified footway widths, it will be difficult to locate all utilities under footway and some will be under carriageway. As this option provides the narrowest bridge deck width, the number of services located underneath the carriageway will be greatest.

Transport for London

Surface Transport: Asset Management Directorate FIVEWAYS

Value Assessment - Scoring Matrix PREFERRED OPTION WS 07/10/2016 Rev B

Option	Description
1. Option 4a	Option meets the TfL base case alignment (Base case)
2. Option 1a	Extends slightly more to the east compated to 4a.
3. Option 3a	Greater bridge extent to the east and utilities corridor to the west
4. Option 3b	Maximum extent to the east and utilites corridor to the west.
5. Option 3c	Maximum extent to the east and short utilites corridor to the west, with minimum land impact.
6. Option 3d	Maximum extent to the east and short utilites corridor to the south-west (minimum land impact to Porcelanosa plot).
7. Option 5a	Similar to option 4a but with dutilities corridor built to the west.
8. Option 8a	New bridge built entirely to the west (driven in) and existing bridge demolished
9. Option 8b	New bridge built entirely to the west (dropped in) and existing bridge demolished

Generic Scoring Scale	Score	WLC Scoring
Description		Description
Worst, Strong Negative or Very Poor	1-2	Very Poor
Negative or Poor	3-4	Poor
Neutral or Fair	5-6	Fair
Positive or Good	7-8	Good
Best, Strong Positive or Excellent	9-10	Excellent

Explanations	
Value Score	The Value Score is the weighted summation of the contributing criteria scores. The score is between 1 and 10, with 1 being the worst score and 10 being the best. A Value Score of greater than 7 is generally taken as being good, while a Value Score of less than 3.5 is generally taken as being poor.
Value for Money Ratio	The Value for Money (VfM) ratio is the relationship between the benefits and actual WLC. The higher the ratio the better the benefits of that option in relation to the other options being analysed.
Weighted Value for Money Score	The Weighted Value for Money Score is the Value Score weighted with regard to the importance of the benefits and the costs of the scheme (as shown to the left of the results cells). This is calculated by scoring the WLC of the option out of 10 and then adding the value score to this.

Level	ID	Criteria	Explanation	Weighting	1. Option 4a Score	1. Option 4a Comment	2. Option 1a Score	2. Option 1a Comment	3. Option 3a Score	3. Option 3a Comment
	4.3	Traffic Management	Does option require lane closures to facilitate routine maintenance	34%	7	All options will require similar traffic management regime for inspection and maintenance purposes. Lanes closures might be required for future replacement of bridge waterproofing and inspection/access to utilities.	7	All options will require similar traffic management regime for inspection and maintenance purposes. Lanes closures might be required for future replacement of bridge waterproofing and inspection/access to utilities.	7	All options will require similar traffic management regime for inspection and maintenance purposes. Lanes closures might be required for future replacement of bridge waterproofing and inspection/access to utilities.
	4.4									
	4.5									
Level 1	5	Construction Impact	Any impacts on the local area during the works	15%	3.96		5.94		8.25	
Level 2	5.1	HS&E	Minimise personal health and safety impacts and noise disruption for local residents	33%	1	Option with most service diversion, construction/demolition steps and traffic diversions, as only 2 lanes are moved at once. Significant works over railway and in close proximity to station and live trafffic; thus option with largest impact on Health and Safety.	3	Most service diversions and associated works as utilities moved twice but fewer construction/demolition steps and traffic diversions, as 4 lanes are moved at once. Less works over railway and in close proximity to station and live trafffic compared to options 4a and 5a.	5	Fewer service diversions and associated works as utilities moved once, as well as fewer construction/demolition steps and traffic diversions, as 4 lanes are moved at once. Less works over railway and in close proximity to station and live trafffic compared to options 4a and 5a.
	5.2	Traffic Impact	TM Plans must be acceptable to NIMT. set 4 lanes throughout build as a best mark then we reduce this for options that have 3 lanes in operation and so on.	33%	10	Minimum of 4 lanes open to live traffic applies for all options throughout construction, subject to night time lane closures.	10	Minimum of 4 lanes open to live traffic applies for all options throughout construction, subject to night time lane closures.	10	Minimum of 4 lanes open to live traffic applies for all options throughout construction, subject to night time lane closures.
	5.3	Rail operation Impact	number and type of possessions required to construct bridge. 10=option needing least number of abnormal blocks/possessions	33%	1	3 no of disruptive possessions. Disruptive possessions are those that require a line blockage, whereas non-disruptive are those that can be undertaken during normal engineering hours.	5	2 no of disruptive possessions. Disruptive possessions are those that require a line blockage, whereas non-disruptive are those that can be undertaken during normal engineering hours.	10	1 no of disruptive possession needed for demolition of existing bridge. Disruptive possessions are those that require a line blockage, whereas non-disruptive are those that can be undertaken during normal engineering hours. Scores highest per TfL explanation notes, as no option can be achieved without a minimum of one disruptive possession for demolition.
	4.5									
Level 1	6	Land & Legal		15%	10.00		8.00		1.00	
Level 2	6.1	Temporary & Permanent Land impacts	Option demonstrates a compelling case for land take	100%	10	Base case with minimum temporary and permanent land impact.	8	Increased extension of bridge structure compared to the base case option, resulting in additional temporary and permanent land take towards the south of Epsom road.	1	Option requires maximum number/extent of temporary and permanent land take, both to the east and west of the existing bridge, as well as south of Epsom road, due to increased bridge extention towards the east.
				Value Score	4.19		4.69		5.52	

Level	ID	Criteria	4. Option 3b Score	4. Option 3b Comment	5. Option 3c Score	5. Option 3c Comment	6. Option 3d Score	6. Option 3d Comment
	4.3	Traffic Management	7	All options will require similar traffic management regime for inspection and maintenance purposes. Lanes closures might be required for future replacement of bridge waterproofing and inspection/access to utilities.	7	All options will require similar traffic management regime for inspection and maintenance purposes. Lanes closures might be required for future replacement of bridge waterproofing and inspection/access to utilities.	7	All options will require similar traffic management regime for inspection and maintenance purposes. Lanes closures might be required for future replacement of bridge waterproofing and inspection/access to utilities.
	4.4							
	4.5							
Level 1	5	Construction Impact	8.25		8.25		8.25	
Level 2	5.1	HS&E	5	Fewer service diversions and associated works as utilities moved once, as well as fewer construction/demolition steps and traffic diversions, as 4 lanes are moved at once. Less works over railway and in close proximity to station and live trafffic compared to options 4a and 5a.	5	Fewer service diversions and associated works as utilities moved once, as well as fewer construction/demolition steps and traffic diversions, as 4 lanes are moved at once. Less works over railway and in close proximity to station and live trafffic compared to options 4a and 5a.	5	Fewer service diversions and associated works as utilities moved once, as well as fewer construction/demolition steps and traffic diversions, as 4 lanes are moved at once. Less works over railway and in close proximity to station and live trafffic compared to options 4a and 5a.
	5.2	Traffic Impact	10	Minimum of 4 lanes open to live traffic applies for all options throughout construction, subject to night time lane closures.	10	Minimum of 4 lanes open to live traffic applies for all options throughout construction, subject to night time lane closures.	10	Minimum of 4 lanes open to live traffic applies for all options throughout construction, subject to night time lane closures.
	5.3	Rail operation Impact	10	1 no of disruptive possession needed for demolition of existing bridge. Disruptive possessions are those that require a line blockage, whereas non-disruptive are those that can be undertaken during normal engineering hours. Scores highest per TfL explanation notes, as no option can be achieved without a minimum of one disruptive possession for demolition.	10	1 no of disruptive possession needed for demolition of existing bridge. Disruptive possessions are those that require a line blockage, whereas non-disruptive are those that can be undertaken during normal engineering hours. Scores highest per TfL explanation notes, as no option can be achieved without a minimum of one disruptive possession for demolition.	10	1 no of disruptive possession needed for demolition of existing bridge. Disruptive possessions are those that require a line blockage, whereas non-disruptive are those that can be undertaken during normal engineering hours. Scores highest per TfL explanation notes, as no option can be achieved without a minimum of one disruptive possession for demolition.
	4.5							
Level 1	6	Land & Legal	1.00		3.00		2.00	
Level 2	6.1	Temporary & Permanent Land impacts	1	Option requires maximum number of temporary and permanent land take, both to the east and west of the existing bridge, as well as south of Epsom road, due to increased bridge extention towards the east.	3	Option requires maximum number of temporary and permanent land take, both to the east and west of the existing bridge, as well as south of Epsom road, due to increased bridge extention towards the east. However, when compared to Options 3a and 3b, the area of western plots affected is significantly less, hence it is assumed that negotiations could be carried out with the landowners and avoid having to acquire the land.	2	Option requires maximum number of temporary and permanent land take, both to the east and west of the existing bridge, as well as south of Epsom road, due to increased bridge extention towards the east. However, when compared to Options 3a and 3b, the area of western plots affected is less, as it is assumed that negotiations could be carried out with Porcelanosa and avoid having to acquire their entire plot.
		Value Score	5.48		5.45		5.26	

Level	ID	Criteria	7. Option 5a Score	7. Option 5a Comment	8. Option 8a Score	8. Option 8a Comment	9. Option 8b Score	9. Option 8b Comment
	4.3	Traffic Management	7	All options will require similar traffic management regime for inspection and maintenance purposes. Lanes closures might be required for future replacement of bridge waterproofing and inspection/access to utilities.	7	All options will require similar traffic management regime for inspection and maintenance purposes. Lanes closures might be required for future replacement of bridge waterproofing and inspection/access to utilities.	7	All options will require similar traffic management regime for inspection and maintenance purposes. Lanes closures might be required for future replacement of bridge waterproofing and inspection/access to utilities.
	4.4							
	4.5							
Level 1	5	Construction Impact	4.29		7.59		8.58	
Level 2	5.1	HS&E	2	Option with most construction/demolition steps and traffic diversions, as only 2 lanes are moved at once but utilities moved only once. Significant works over railway and in close proximity to station and live trafffic.	8	Bridge launched from offline including new abutments, retaining walls, approaches etc in open space. Working at height is minimised and no working over rail. Single traffic diversion of A23 onto new bridge with existing traffic lane widths maintained until that stage; hence, minimum risks to travelling public. Least amount of work carried close to live traffic.Demolition of existing bridge and associated works (such as diversion of utilities) will still be required. Noise impact on residents will be higher due to proximity of works.	6	Fewer service diversions and associated works as utilities moved once, as well as fewer construction/demolition steps, although not as safe as 8a because working from height required. Single traffic diversion of A23 onto new bridge with existing traffic lane widths maintained until that stage; hence, minimum risks to travelling public. Least amount of work carried close to live traffic along with 8a. Demolition of existing bridge and associated works (such as diversion of utilities) will still be required. Noise impact on residents will be higher due to proximity of
	5.2	Traffic Impact	10	Minimum of 4 lanes open to live traffic applies for all options throughout construction, subject to night time lane closures.	10	Minimum of 4 lanes open to live traffic applies for all options throughout construction, subject to night time lane closures.	10	Minimum of 4 lanes open to live traffic applies for all options throughout construction, subject to night time lane closures.
	5.3	Rail operation Impact	1	3 no of disruptive possessions. Disruptive possessions are those that require a line blockage, whereas non-disruptive are those that can be undertaken during normal engineering hours.	5	2 no of disruptive possessions. Disruptive possessions are those that require a line blockage, whereas non-disruptive are those that can be undertaken during normal engineering hours.	10	1 no of disruptive possession required for demolition of existing bridge. Disruptive possessions are those that require a line blockage, whereas non-disruptive are those that can be undertaken during normal engineering hours.
	4.5							
Level 1	6	Land & Legal	2.00		5.00		5.00	
Level 2	6.1	Temporary & Permanent Land impacts	2	Highway alignment identical to bridge base case option 4a keeping land extent towards the east to a minimum and does not require land-take towards the south of Epsom road; however, separate utilities corridor constructed to the west of the existing bridge. This leads to temporary and permanent land take requirements to both east and west of the existing bridge.	5	Bridge constructed entirely to the west. Permanent and Temporary Land-take restricted to plots to the west of the existing bridge (Skoda garage and Porcelanosa). No impact to the east of the existing bridge, except for plot to the north of junction with Epsom Road, which is required nevertheless for all options.	5	Bridge constructed entirely to the west. Permanent and Temporary Land-take restricted to plots to the west of the existing bridge (Skoda garage and Porcelanosa). No impact to the east of the existing bridge, except for plot to the north of junction with Epsom Road, which is required nevertheless for all options.
		Value Score	4.44		7.12		7.50	

Transport for London

Surface Transport: Asset Management Directorate FIVEWAYS

Value Assessment - Scoring Matrix PREFERRED OPTION WS 07/10/2016 Rev B

Option	Description
1. Option 4a	Option meets the TfL base case alignment (Base case)
2. Option 1a	Extends slightly more to the east compated to 4a.
3. Option 3a	Greater bridge extent to the east and utilities corridor to the west
4. Option 3b	Maximum extent to the east and utilites corridor to the west.
5. Option 3c	Maximum extent to the east and short utilites corridor to the west, with minimum land impact.
6. Option 3d	Maximum extent to the east and short utilites corridor to the south-west (minimum land impact to Porcelanosa plot).
7. Option 5a	Similar to option 4a but with dutilities corridor built to the west.
8. Option 8a	New bridge built entirely to the west (driven in) and existing bridge demolished
9. Option 8b	New bridge built entirely to the west (dropped in) and existing bridge demolished

Generic Scoring Scale	Score	WLC Scoring
Description		Description
Worst, Strong Negative or Very Poor	1-2	Very Poor
Negative or Poor	3-4	Poor
Neutral or Fair	5-6	Fair
Positive or Good	7-8	Good
Best, Strong Positive or Excellent	9-10	Excellent

Explanations	
Value Score	The Value Score is the weighted summation of the contributing criteria scores. The score is between 1 and 10, with 1 being the worst score and 10 being the best. A Value Score of greater than 7 is generally taken as being good, while a Value Score of less than 3.5 is generally taken as being poor.
Value for Money Ratio	The Value for Money (VfM) ratio is the relationship between the benefits and actual WLC. The higher the ratio the better the benefits of that option in relation to the other options being analysed.
Weighted Value for Money Score	The Weighted Value for Money Score is the Value Score weighted with regard to the importance of the benefits and the costs of the scheme (as shown to the left of the results cells). This is calculated by scoring the WLC of the option out of 10 and then adding the value score to this.

Level	ID	Criteria	Explanation	Weighting	1. Option 4a		2. Option 1a		3. Option 3a		4. Option 3b		5. Option 3c		6. Option 3d		7. Option 5a		8. Option 8a		9. Option 8b	
					Score	Comment	Score	Comment	Score	Comment	Score	Comment	Score	Comment	Score	Comment	Score	Comment	Score	Comment	Score	Comment
			Total Discounted WLC (£m)		£ 34.40	Figure quoted is the TOTAL CAPITAL COST ESTIMATE and excludes TfL direct costs and land related costs. Maintenance costs are also not included; however these are expected to be similar for all 7 options and hence will not alter the final ranking and relative scoring of the options. Please note that cost covers concept development through to close for the bridge but the programme is for the bridge construction only.	£ 33.76	Figure quoted is the TOTAL CAPITAL COST ESTIMATE and excludes TfL direct costs and land related costs. Maintenance costs are also not included; however these are expected to be similar for all 7 options and hence will not alter the final ranking and relative scoring of the options. Please note that cost covers concept development through to close for the bridge but the programme is for the bridge construction only.	£ 31.92	Figure quoted is the TOTAL CAPITAL COST ESTIMATE and excludes TfL direct costs and land related costs. Maintenance costs are also not included; however these are expected to be similar for all 7 options and hence will not alter the final ranking and relative scoring of the options. Please note that cost covers concept development through to close for the bridge but the programme is for the bridge construction only.	£ 31.67	Figure quoted is the TOTAL CAPITAL COST ESTIMATE and excludes TfL direct costs and land related costs. Maintenance costs are also not included; however these are expected to be similar for all 7 options and hence will not alter the final ranking and relative scoring of the options. Please note that cost covers concept development through to close for the bridge but the programme is for the bridge construction only.	£ 33.02	Figure quoted is the TOTAL CAPITAL COST ESTIMATE and excludes TfL direct costs and land related costs. Maintenance costs are also not included; however these are expected to be similar for all 7 options and hence will not alter the final ranking and relative scoring of the options. Please note that cost covers concept development through to close for the bridge but the programme is for the bridge construction only.	£ 37.29		£ 33.37	Figure quoted is the TOTAL CAPITAL COST ESTIMATE and excludes TfL direct costs and land related costs. Maintenance costs are also not included; however these are expected to be similar for all 7 options and hence will not alter the final ranking and relative scoring of the options. Please note that cost covers concept development through to close for the bridge but the programme is for the bridge construction only.	£ 34.12	Figure quoted is the TOTAL CAPITAL COST ESTIMATE and excludes TfL direct costs and land related costs. Maintenance costs are also not included; however these are expected to be similar for all 7 options and hence will not alter the final ranking and relative scoring of the options. Please note that cost covers concept development through to close for the bridge but the programme is for the bridge construction only.	£ 33.68	Figure quoted is the TOTAL CAPITAL COST ESTIMATE and excludes TfL direct costs and land related costs. Maintenance costs are also not included; however these are expected to be similar for all 7 options and hence will not alter the final ranking and relative scoring of the options. Note that Option 8b is priced based on Option 8a + 1% to give a fair comparison with the other options. .
WLC Weightings	70%	Benefits	Whole Life Cost score		9.14		9.34		9.92		10.00		9.58		8.23		9.46		9.23		9.37	
	30%	WLC	Value for Money (VfM) Ratio		0.122		0.139		0.173		0.173		0.165		0.141		0.133		0.209		0.223	
	100%		Weighted VfM Score		5.67		6.08		6.84		6.83		6.69		6.15		5.95		7.75		8.06	

		Generic Scoring Scales	Worst Case								Best Case	
			Strong Negative		Negative		Neutral		Positive		Strong Positive	
			Very Poor		Poor		Fair		Good		Excellent	
Level 1	**Level 2**	**unit/measure**	1	2	3	4	5	6	7	8	9	10
Fundamental Requirements that scheme will deliver - TfL Outcomes and/or project benefits	Improves/simplifies routes for pedestrians											
	Increases capacity, reduced congestion											
	#REF!											
	#REF!											
	Influence on Benefit Cost Ratio for whole scheme											
Buildability	Special Equipment											
	Rail Infrastructure impact											
	#REF!											
	Structure interface with adjacent highway											
	#REF!											
Programme (refers only to construction)	Scheme can be delivered within current agreed programme											
	#REF!											
	Requires multiple utility moves to deliver											
Maintainability	#REF!											
	Access Rail/Road											
	Utility Location											
	Traffic Management											

Construction Impact	HS&E						
	Traffic Impact						
	Rail operation Impact						
	#REF!						
Land & Legal	Temporary & Permanent Land impacts						
	#REF!						
	#REF!						
	#REF!						
	#REF!						

Version	Release date	Description
01	04 October 2013	Initial Release
02	07 October 2013	Scoring scale changed to 1-10 to align with MoV

TRANSPORT for LONDON – COMMERCIAL SURFACE TRANSPORT

Major Asset Renewals Programme (MARP) - Brent Cross Structures Feasibility Study

---

Scope Appendix D

Site Information

Project Reference Number: tfl_scp_001845

TRANSPORT for LONDON – COMMERCIAL SURFACE TRANSPORT

Scope Appendix D

Site Information Table of Contents

Item	Description
Scope Appendix D	Detailed Structure Information
Drainage Survey	Conway Aecom Report 2016
General Arrangements	Packages 1 - 7
Parapet Risk Assessments	Brent Cross CS461 Risk Assessment & A406 Surveys – Site 45 BX Interchange
Principal Inspection Reports	Documents - A41 and A406
STIP 2 Stage 1 Reports	- Concrete Report
	- Developer Report
	- Gaps and Assumptions Log
	- Identified Works and Risks
	- Investigation Reports
	- Structural Review Reports
	- PdF drawings
STIP 2 Stage 2 Reports	- Management Plan Excel Files
	- PdF drawings