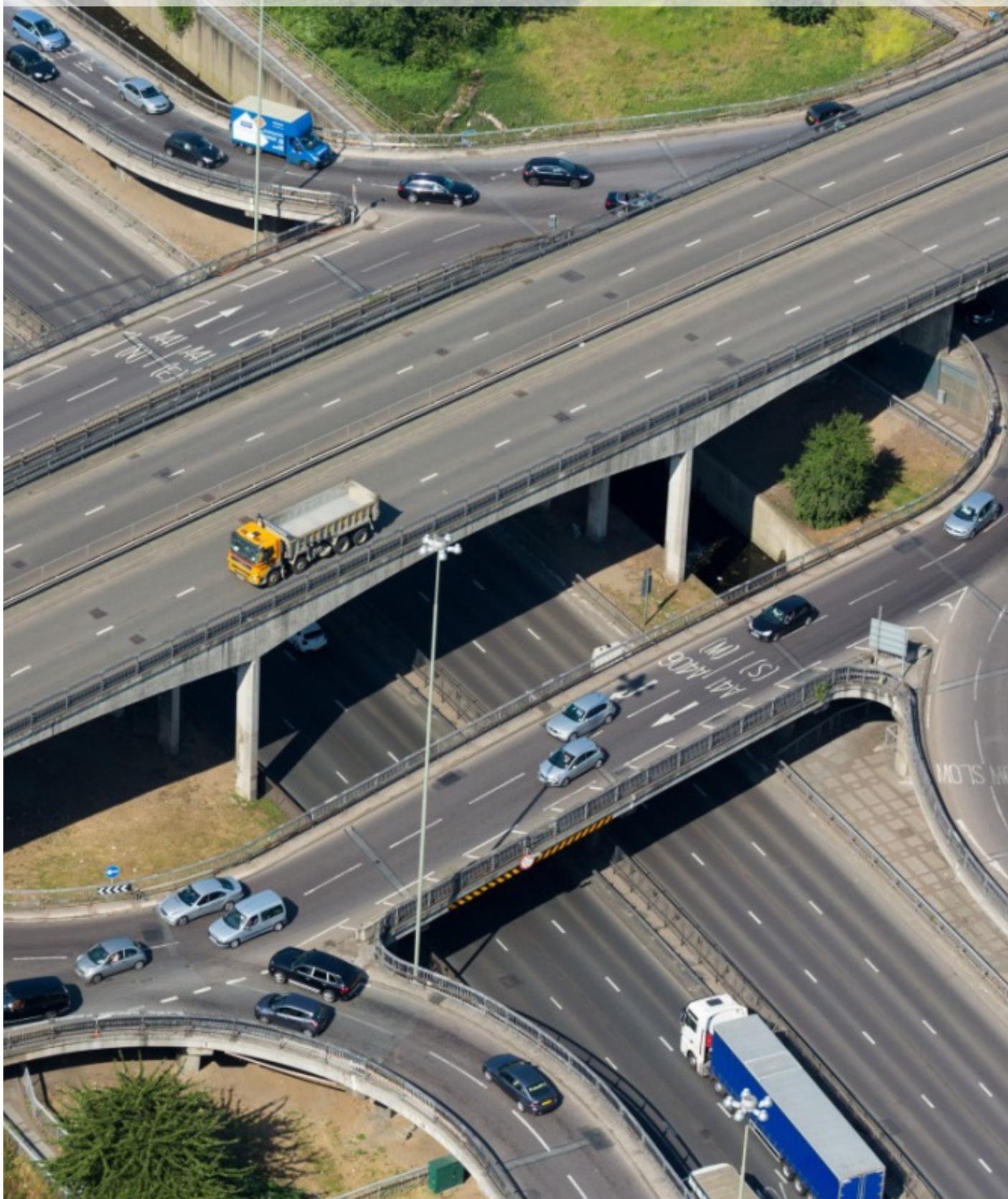


## **SECTION 5 – QUALITY SUBMISSION**

# Brent Cross Structures Investigation and Management Plan - Quality Submission A (Rev A)

March 2017



Commercial in Confidence

Transport for London  
Commercial Surface  
Zone 10G6, Palestra  
197 Blackfriars Road,  
London, SE1 8NJ

Z13316/XX1/230317

27 March 2017

Dear

**Framework Ref: PSF 91313**  
**Project Ref: tfl\_scp\_001144\_co001**  
**Brent Cross Structures Investigation and Management Plan - Clarifications**

Further to the tender clarifications dated 10/03/17 and 23/03/17, please find our Revision-A tender proposal incorporating the associated clarifications and the Collateral Warranty as requested.

Yours sincerely,

Director  
Transport Infrastructure

Offices at: London, Birmingham, Bishop's Stortford, Exeter, Milton Keynes, Wakefield, Warrington, India, Iraq, Ireland, Qatar, Romania, UAE

Pell Frischmann is a trading name of Pell Frischmann Consulting Engineers Ltd and its subsidiaries including Pell Frischmann Consultants Ltd

Registered Office:  
5 Manchester Square London W1U 3PD  
Pell Frischmann Consulting Engineers Ltd  
Registered in England No. 4403030  
Pell Frischmann Consultants Ltd  
Registered in England No 1777946



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ISO9001:2008



OHS500940  
OHSAS18001:2007



EMS80008  
ISO14001:2004



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Form ref: BF026/L

Transport for London  
Commercial Surface  
Zone 10G6, Palestra  
197 Blackfriars Road,  
London, SE1 8NJ

Z13316/XX1

9 February 2017

Dear [REDACTED]

**Framework Ref: PSF 91313**  
**Project Ref: tfl\_scp\_001144\_co001**  
**Brent Cross Structures Investigation and Management Plan**

Thank you for your tender invitation in respect of a proposal offer for the above project. We have pleasure in submitting our tender comprising the Quality Submission 'A' and Financial Submission B, in accordance with the ITT documents. We confirm that the key people identified in our proposal will be committed to delivery of the services in the contract for the duration of the project.

We have put together a fully integrated delivery team, dedicated to the project with plenty of relevant skills and site specific experience of associated structures. These are supported with back-up teams and specialists to provide the resource resilience and skills diversity required for timely delivery of the scope.

For Principal Contractor, we are supported by [REDACTED] to be appointed as subcontractor and under delegated powers for this project. Other subcontractors comprise [REDACTED] for structural investigations and site welfare, [REDACTED] for Asbestos Survey and [REDACTED] for traffic management. We sought 3 quotations for the subcontractors and chose those that offer best value for money to TfL for the project.

Offices at: London, Birmingham, Bishop's Stortford, Exeter, Milton Keynes, Wakefield, Warrington, India, Iraq, Ireland, Qatar, Romania, UAE

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OHSAS18001:2007



EMS80008  
ISO14001:2004



Form ref: BF026/L

Our integrated team have had previous engagement on the project and selected for their knowledge and special suitability. The supply chain subcontractor agreements are already in place and the team can be mobilised rapidly and start planning critical activities from day one.

We are fully aware of the importance of adherence to the project timetable and TfL's integrated approach for delivery of the programme, with due appreciation of TfL's requirements, health and safety, environmental and heritage considerations and the desired approach, in full collaboration with the [REDACTED] and the TfL team.

Our tender proposal will remain open for a period of 3 months and please do not hesitate to contact me if you have any queries or require any clarifications.

Yours sincerely,

[REDACTED]

[REDACTED]

Director  
Transport Infrastructure

[REDACTED]

[REDACTED]

[REDACTED]

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### Section 1 (Methodology and Approach)

- Q.1 Approach to structural investigations
- Q.2 Approach to management plan
- Q.3 Project Management
- Q.4 Collaborative working

### Section 2 (Health & Safety)

- Q.5 Principal Designer and Principal Contractor
- Q.6 Traffic Management

### Section 3 (People and Resources)

- Q.7 Staff

### Freedom of Information

### Appendices

- Appendix 1 - Programme and Table for Project Stages
- Appendix 2 - Resources loaded programme
- Appendix 3 - Methodology Flow Chart / Other Considerations and Innovations table

\* This tender is to be regarded as confidential to our Client and it is intended for their use only. Before the contents or any part of it is reproduced or referred to in any document, our written approval as to the form and context of such a publication or disclosure must be obtained.

## Revision Record

Tender Ref: Z13316/xx1

Revision	Date	Purpose	Originator	Checked	Approved
0	10/02/2017	Tender	AW/VV/NP	RA/EI	SM
A	27/03/2017	Tender	AW/VV/NP	RA/EI	SM

Prepared for:  
**Transport for London (TfL)**  
 Windsor House,  
 42-50 Victoria St,  
 London,  
 SW1H 0TL

Prepared by:  
**Pell Frischman**  
 5 Manchester Square  
 London  
 W1U 3PD





































## Core Team members' CVs



[Redacted contact information and details]

### Biography

[Redacted] has over 29 years of experience in engineering consultancy, management and construction of transport and civil engineering structures and multi-disciplinary schemes throughout London and the UK. This includes extensive experience in integrated design delivery, with focus on TfL, LU and rail schemes. He has worked collaboratively with TfL on both STIP1 and STIP2 projects and has been the Framework Director for TfL multidisciplinary services. He has considerable experience in design, construction, assessment and maintenance of structures in both road and rail environments, with special regard for buildability and best value design.

### Added Value / Achievements

- Extensive working relationship with TfL, on major civil engineering design projects
- Extensive collaborative working with TfL Streets, working on Structures & Tunnels Investment Portfolio, both STIP1 and STIP2 bridge structures (currently Brent Cross 19 Structures)
- Over 20 years of experience on design and assessment of structures in road and rail environments, for TfL Streets, LUL and Network Rail (incl. over 400 bridges under Network Rail BG3 National Assessment Programme)
- Considerable experience with various London Boroughs and rail authorities, including approval processes and stakeholder management
- Considerable experience in buildability, value engineering and WLC, including contractor engagement and ECI processes

### Key Relevant Experience

**TfL Structures and Tunnels Investment Portfolio, both STIP1 and STIP2 (Brent Cross)** - A series of design projects for TfL's £500m Structures Investment Portfolio, including developing designs for reconstruction and refurbishment of significant bridges in the capital. The projects include design, buildability, access/traffic management, health & safety and environment, value management and whole life costing. They are part of the TfL's £3.8bn investment into the capital's road network in the next ten years and forms one of the key strands of investment to deliver vital maintenance and implementation.

**TfL Westway Business Case** - Advising TfL for drafting of the business case for Westway structures (White City to Paddington).

**Assessment Review and Auditing of Network Rail Bridges** - Responsible for review and assessment of over 400 Network Rail bridges, as part of the Bridgeguard-3 National Assessment Programme.

**Silvertown Quay Development, London** – Options review, project auditing and infrastructure development (£80m) in Silvertown Quays Docklands Development, for GLA.

Added Value / Achievements

- Leadership of multi-disciplinary civil engineering projects
- Distinguished technical expertise including Doctorate in Load Deformational Behaviour of Concrete Structures and papers in design and maintenance of structures



Snow Hill Tunnel



Liverpool City Centre Regeneration



TfL STIP1 and STIP 2



New York City East Side Access Rail

Key Relevant Experience

**Snow Hill Tunnel Thameslink, City of London -** Structural assessment and technical advice for structural performance of Snow Hill Tunnel, carrying Thameslink railway.

**London Underground Step Free Access –** Feasibility study for the provision of step-free access and station upgrade for a number of London underground stations.

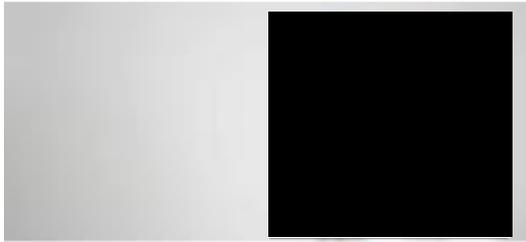
**London Underground Vehicle Incursion Study -** Feasibility, buildability and risk appraisal study of vehicular incursion of structures for 89 London Underground sites across London.

**Daventry International Rail Freight Terminal –** Feasibility study and planning proposals for a rail link from the Daventry-Coventry West Coast Mainline to a new freight terminal facility referred to as DIRFT. This included two highways and one Railway Bridge.

**New York City East Side Access Rail Project -** Responsible for design auditing, options study and value engineering of the rail link from Queens to Manhattan for the New York Metropolitan Transportation Authority.

**Liverpool City Centre Regeneration -** Value Engineering, design review/auditing and full compliance monitoring from concept design to construction, for redevelopment of 42 acres (170,000 m<sup>2</sup>) of land in Liverpool city centre referred to as Liverpool ONE. The construction cost was £500 million with a total investment of £1 billion.

**London Development Agency -** Assessment of Proposals for Development of the Olympic Park at Lower Lea Valley - Invited to assist the London Development Agency in the assessment of proposals from Contractors and Consultants for the development of various parts of the Olympic Park – Lower Lea Valley. To date this has involved the assessment and selection of proposals from consultants for the site-wide infrastructure work. Also the assessment of contractors' proposals for demolition and site-wide remediation, and the pre-qualification of teams for the design of the proposed Velodrome.



### Biography

██████████ is a highly skilled Civil Structures Engineer with plenty of experience in project management, inspection, assessment, design, reconstruction and refurbishment of highway structures. He has been acting as Project Manager for a variety of Transport for London (TfL) and Highways England (HE) projects and is knowledgeable in the use of Eurocode and computer analysis of structures. He is also experienced in health & safety, budgeting, work programming, environmental and site related matters and has had extensive training working in road and rail environments.

### Added Value / Achievements

- Extensive experience in inspection and assessment of highway structures
- Extensive experience in design, structural assessment and reconstruction of highway structures
- Knowledge of CDM Regulations
- Knowledge of wide variety of engineering disciplines
- Extensive experience in Health & Safety
- Plenty of project management experience with TfL and Highways England project
- Extensive experience in the application of Traffic Orders and agreement of road space. Experience in the design of traffic management (particularly with regard to Chapter 8)
- Extensive experience in stakeholder management and engagement

### Key Relevant Experience

**TfL Structures & Tunnels Investment Programme Phase 2 (STIP2)** - Involving the elements of Stage 1 Pre- Feasibility (including site inspections), and some elements of Stage 2 Feasibility (including WLC models, Technical Plan for concrete testing) for 29 bridges, highways and earth retaining structures. Further to production of the two scopes of work, ██████████ led Early Contractor Involvement (ECI) discussions with the Main Contractor appointed by TfL. The purpose of these discussions was to provide TfL with capital costs for both scopes and highlight risks to the design and construction works on site. The ECI process included supporting the Contractor in compiling a cost estimate by providing preliminary design solutions which could be costed and passing on our current knowledge of the structures and surrounding area. ██████████ also organised meetings with the network management team to understand the network constraints for the Brent Cross Structures. This discussions were centred on the traffic management which could be accommodated and network occupancy. We were also instructed by TfL to carry out a Whole Life Costing exercise on each of the Brent Cross Structures. The analysis was for a 60 year period based on the London Bridges Engineering Group (LoBEG) guidance adopted by TfL. The Whole Life Costing encompassed all elements of the structure from Stage 2 (Feasibility) – 6 (Project Close) for three different scopes – Assumptive, Condition Based and Do Nothing. The Assumptive and Condition Based Scopes were developed earlier on in the project.

### Key Relevant Experience

The Do Nothing approach was an additional scope, which did not include any immediate construction works and was based purely on a reactive approach. [REDACTED] led the Whole Life Costing exercise, regularly meeting with TfL to ensure the output met their requirements – the template produced for the Brent Cross Structures was passed to the Consultants for the other STIP packages to use on their own structures.

**London Trams and Croydon Council Blackhorse Lane Bridges** - Project Manager for both schemes for London Trams and Croydon Council designing for the replacement of two bridges in Croydon. Key activities include structural and geotechnical investigations on site, engagement and meetings with utilities companies to discuss service diversions, and engagement with County Councillors to discuss progress and design considerations. Stakeholder engagement is paramount with these two projects. Arranging the site investigations is also key to the design of both bridges as the information obtained during these site works will inform the design requirements.

**A3 Coombe Lane flyover (TfL)** - Engaged in design and reconstruction of bridges in the Royal Borough of Kingston and the Royal Borough of Greenwich with target costs ranging from £200,000 – £800,000. The projects involved production of contract and construction drawings, site supervision and managing the health & safety / CDM issues and Environmental Management Systems at various design stages.

**Bridge Inspections (TfL and HE)** - Led inspections of highway structures for TfL. These included general and principal inspections of various bridges, Network Rail structures, culverts, subways and retaining walls. The principal inspections entailed a detailed examination of the structure within touching distance and production of a TfL report and BCI scoring sheets. Organised special inspections of bridges in London South region, maintained by TfL, and in Area 3 maintained by the HE. The inspections involved intrusive investigation and sampling of various bridge elements and production of an interpretive report. Also worked on HE schemes in the Area 3 Network, with targets costs in excess of £1 million, responsible for project management and design to Highways Agency standards and

requirements.

**Various structures projects (HCC)** - Lead engineer on various projects from feasibility through to construction. Worked on Capital schemes funded by the Department for Transport and Hertfordshire County Council (HCC). The schemes included the upgrading and reconstruction of various bridges in Hertfordshire. These involved assessment, design and reconstruction of bridges in Welwyn Garden City, Stevenage, Watford, Hitchin, and Kings Langley with target costs ranging from £150,000 – £450,000. The responsibilities also included the handling of CDM issues and Environmental Management Systems, at both preliminary and detailed design stages, and production of contract and construction drawings. For each of these projects, [REDACTED] was also responsible in organising and booking road space and engaging with the Client and stakeholders to arrange network occupancy. In addition, he worked directly with the traffic management companies to produce a traffic management layout which would both satisfy the access requirements on site whilst keeping both the operatives and members of the public safe. Compiled feasibility reports for a number of footbridges in Milton Keynes. The projects involved replacing the existing bridges with new structures. This included liaison with sub-contractors to obtain cost estimates and examine the use of pre-fabricated modular structures. Undertook inspections of highway structures in Hertfordshire, Essex, Suffolk and Dover (within the Eurotunnel compound), including general inspections and principal inspections of various bridges. These included inspections of road over rail structures which were carried out during night time possessions.



A3 Coombe Lane flyover



STIP 2



[Redacted text block]

**Biography**

█ has extensive experience in project planning and programme, stakeholder management and design of Highway and Railway projects. Since graduating in Civil Engineering, he has been as a Civil Structural Engineer on a variety of projects for TfL, Network rail, HS1 and Highways Authorities. He has also been responsible for managerial, financial and quality control aspects of projects.

- Added Value / Achievements**
- Considerable Experience of working with TfL and rail authorities.
  - Key experience in highway structures/stockholder management and maintenance



STIP 2



Silwood Sidings

**Key Relevant Experience**

**TfL Structures & Tunnels Investment Programme Phase 2 (STIP2)** - This is a TfL project for the development of the Brent Cross regeneration area in association with the A41 structures over A406. Having carried out a review of the existing information and proposals for the new Brent Cross Development, █ coordinated and managed the bi-weekly workshops with various stakeholders, including the development partners and their representatives. This was to support TfL to establish an optimum solution that would provide value and ensuring the structures would attain a State of Good Repair. This included commentary process that would eventually be captured in the approval documents. Through frequent meetings and part-time working at TfL's offices █ updated and restructured the existing BCI Pro-forma contained on Bridgestation to current standards in order to reflect the most up to date information / knowledge for each structure. Using the LCP from Bridgestation and in liaison with the TfL Technical Approval manager, █ compiled an Assumptive Scope of Works for the scheme and a Planned Do Minimum Scope of Works. This process assisted in the population of a Risk Matrix associated with safety, reputation, financial, environmental and functionality.

**HA Area 3 Maintenance Schemes** - Design and management of multiple Highways England projects within the Area 3 Network, which included Local Network Management Schemes, Major Maintenance Schemes and a Pilot Audit Study to assess

### Key Relevant Experience

Non-Motorised User facilities. Stakeholder Management to obtain approvals from various parties such as the Environment Agency, Statutory Undertakers, Local authorities and local residents/businesses to ensure the design gained approvals.

**Network Rail High Output Structure Reviews** - Team Leader in Our London Office for the 2015/16 Q3 and Q4 Structures Reviews. Responsible for managing the team in this office and coordinating with our other offices. Responsible for the delivery, quality and cost control in this office. [REDACTED] is also a checker for structure reviews. He is responsible for putting together our programmes for delivery as well as managing innovation and efficiency workshops, which have led him to produce the new HO structures review pro-forma.

**HS1 Technical Adviser** - [REDACTED] was involved with producing a number of technical reports with regards to several bridge structures on the HS1 network. The reports were in connection with a number of defects noted and detailing likely causes, possible remediation and high level cost estimates. As part of this scheme, HS1 later commissioned Pell Frischmann to carry out further analysis of the some of the bridges to obtain a refined cost estimate for potential remedial works. [REDACTED] led a team of 6 Engineers to produce a report detailing the quantum of remedial measures, costs, potential access requirements and traffic management required to facilitate the works.

More recently, he has been working on HS1 Asset Management Model and Whole Life Costing of the associated infrastructure.

**Silwood Sidings** - Co-ordination with third parties for design integration and quality management aspects, along with preparation of Forms 001, 002 and 003 for various structural elements throughout this design and build of railway sidings.

**London Overground Rail Operations** - Engineer responsible for addressing Form B comment process for over 20 London Overground Stations with a view to gaining approval for each. Work included the design of lighting column foundations and steel connections for containment trunking.

**Tottenham Court Road Upgrade Project** - Category 3 Design Check – Design Checks of the Northern Line Escalator Structure and preparation of CAT 3 Design Check Certificates.

**East London Line Dalston Station** - Structural Engineer responsible for the preparation of various design documents across the project including design statements, Operation and Maintenance Manuals, Form Bs and Form Cs. Design of masonry buttresses to provide stability to a party wall. Liaison/workshops with various 3rd parties across the project to produce the final Verification and Validation arguments to confirm that the output at the final stage of work met its defined requirements set out by TfL.

**East London Line Shoreditch High Street Station** – Structural Engineer working alongside a principal Engineer for the new build RC Railway station below Bishopsgate Viaduct. RC elements include lift shafts, staircases, internal pod buildings, station shell, concourse areas and substructure. Steel elements include beams to support the internal pod roofs and a plant room crane beam. Preparation of design documentation (Form As, Bs and Cs) throughout the duration of the detailed design as well as involvement in Interdisciplinary Reviews and co-ordination of design with various disciplines. Produced the final Verification and Validation arguments to confirm that the output at the final stage of work met its defined requirements set out by TfL.

**A34 Climbing Lane** - Work involved the design and costing of safety fences, drainage, earthworks, traffic management and pavement construction, as well as liaison with The



Tottenham Court Rd



### Biography

██████ has significant experience leading and supporting design teams. As CMaPS ██████ can undertake Principal Designer duties and has previously acted as PS and CDMC on a number of projects, including large highways, structures and a railway project.

Expertise includes inspection, assessment, report reviewing, strengthening and new build design of bridges and building structures. ██████ has also led teams preparing preliminary designs for contractors bidding for DBFO projects.

██████ is an ICE CPR and MPR reviewer.

### Added Value / Achievements

- Health and Safety Specialist (acting as Principal Designer)
- Post-Tensioned bridge specialist.
- An ICE CPR and MPR reviewer.
- Over 35 years of experience in inspection, design, assessment, and investigation of concrete bridges.

### Key Relevant Experience

**TfL 4LM** - Ealing Common Depot Enabling Project  
 CDM specialist and Design team member assisting with design and reports for development of the project, reviewing of previous design proposals and development of project to a revised scope. In particular, ██████ was directly involved with the simplification of design proposals, development of appropriate access and work areas, development of Design Risk and Design Assumptions Registers.

**TfL West Anglia Stations Project** - The project consists in Technical Advisor Services for enhancements to 24 stations to improve capacity and enhance customer experience. ██████ undertook the role of Transfer of CDMC duties from TfL to Principal Designer role by Pell Frischmann, developing Principal Design duties schedule; also he agreed with TfL the structure and the contents of Health and Safety File.

**Herts CC** - Croxley Rail Link - This project which consisted in the preliminary design of new rail link between Watford and Croxley with new track and new stations, including bringing some old line back into service. The project also involved the integration of NR and LUL services. ██████ acted as CDM Coordinator for project during preliminary design stage up to appointment of Design and Build Contractor. He was also involved during the tender evaluation of CDM / H&SD aspects.

### Key Relevant Experience

**Essex CC** - Support Contract - CDM Coordination Manager for Chelmsford Office covering highways and structures disciplines.

Active participation in Mouchel's Bridges Community of Practice, Technical Directors' Forum and CDM Impact Group.

**Mouchel** - CDM Coordination Manager - Overall management of CDM Coordination services in Chelmsford office covering highways and structures disciplines. Also responsible for in-house CDM training programme. Delivery of CDM Training to Essex CC, Suffolk CC and Southend-on-Sea Borough Council. CDM Coordinator of a number of highway and bridge projects.

### Branch Office Relocation - Watch Tower

#### **Bible & Tract Society**

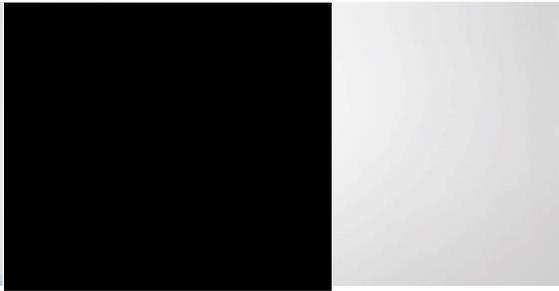
**of Britain** - Mixed live/work campus development covering approx. 16ha within a total site area of 33.5ha and comprising residence and residential service buildings up to 5 floors, some with basement parking; offices on 3 floors; factory, warehousing and maintenance workshops including basement and mezzanine; auditorium; energy centre; sewage pumping station; internal roadways and utilities infrastructure including combined heat and power systems; surface water attenuation; associated landscaping and boundary treatment works. [REDACTED]'s role was Civil Designer and CDM/CDM Advisor providing his direct guidance during the transition of a design/build organisation from CDM2007 to CDM2015. He directly produced Project Risk Registers; set up CDM templates, Designer and Contractor Competence assessment; reviewed PC's Construction Phase Plan; carried out Temporary works reviews; planned ground investigation contracts for contamination and geotechnical aspects of highway and structural design. He also gave a contribution to BREEAM applications.

**A38 Improvements, Liskeard to Bodmin and Saltash to Trerulefoo** - Bridgeworks parts of scheme development including preliminary designs of viaducts in steel and post tensioned concrete.

**M25 Micklefield Green to South Mimms, UK** - Design of reinforced, pretensioned and post tensioned concrete bridges.

**Haywards Heath Station Access Bridge, UK** - Feasibility design for new access bridge from multi-storey car park to station platforms. Preparation of preliminary designs for discussion with client. Full accessibility by means of ramps and lifts. Ease of constructability within confines of platforms.

**A3/A31 Flyover** - Detailed design of Contractor's Temporary external stressing regime involving temporary steel anchor blocks resin bolted into the existing concrete box structure to facilitate installation or permanent external stressing to 2-span post tensioned concrete box structure. [REDACTED] was lead designer for this scheme and was involved in meeting the client's designers to establish design parameters and specialist sub-contractors to develop proposals.



### Biography

An Associate with 28 years of experience in the analysis, design, construction, assessment and maintenance of Railway & Highways Structures. Experience of Contract Supervision and Claims Administration. Project Management control experience and has worked as a Resident Engineer for various Highway Structure Schemes.



#### Added Value / Achievements

- Key working relationship with TfL, working on major Design and Build Projects.
- Key working relationship with TfL working on assessments of bridge structures and a number of design projects.
- Assessment of wide-range of bridge types.
- Considerable experience with various London local authority highways structures assessment programmes.
- Wide specialisation in Civil, Structural, Rail and Highway Engineering projects.
- Considerable experience in managing of civil construction projects of different sizes in an urban environment
- Previous 10-month secondment to NR Anglia route as structure asset Engineer
- CRE (Civils)

#### Key Relevant Experience

**CRE (Civils) Silwood Siding D&B LOCIP Scheme**  
 - Responsible for signing off all the F01, F02 and F03 Form for the Civils Element of this LOCIP Project for TfL. Liaising with other PF sub-consultants and managing their designs with respect to Permanent Way, DC Traction, Communications and M7E Design. Also deputising for the CEM when necessary.

**Edgware Road Station Footbridge D&B, LUL Scheme-** Responsible for the design of the superstructure and the supervision of the substructure design of the replacement footbridge in London. Responsibilities included preparation of the CDS for both the new structure and the Demolition of the existing structure for LUL approval. Also responsible for the reviewing the temporary Works proposals form the Demolition Subcontract, attending progress meetings during both the design and construction phase as well as dealing with a design queries from site.

**Daventry International Rail Freight Terminal -** Responsible for the review of two bridge designs AiP as part of a new freight terminal. Responsibilities also included checking designs of other structural elements that formed part of this scheme. Responsible for the detailed design of Sheet piled Retaining walls and Apron Slab for Heavy Duty Loading from ship containers and Reachstaker loading vehicles.

Key Relevant Experience

**TfL Structures & Tunnels Investment Programme Phase 2 (STIP2)** - Managing a team of Engineers in the Transport Infrastructure team in the London Office which is involved in delivering STIP2 Work Package 4 (Brent Cross Structures) for TfL with respect to improving the structural condition and performance of bridges and structures on the A406/A41 intersection in North London.

**NR East Anglia Route Structure Asset Management Team** - [REDACTED] was seconded to Network Rail for more than 18 months, working closely with the East Anglia Structures Asset Management team on the quality of Civils asset data and reviewing assessment work.

Initial duties included working on the Hackney Downs to Bethnal Green track renewal scheme where he was responsible for reviewing structures on the route to ensure that they are safe to take engineering trains, Kirow track crane, and other construction plant. Further duties included help putting together the workbank of structures to be included in the CP5 (2014-2019) Business Plan.

This involved reviewing all the structures on the reviewing Renewal/Strengthen schemes to be included in the business plan. Responsible for approving all Track Renewal proposals for 2013/14 insomuch as the affects structures in the East Anglia Route. Responsible for the DTS register update for Anglia.

**NR High Output Structures Review** - [REDACTED] is responsible for project managing a scheme that require structure review of NR structure with respect to plain line track renewals and passage of the High Output Ballast Cleaning machine and the Dynamic Track Stabiliser machine over a number of structures nationally across the NR network. The purpose of the reviews is to define the risk mitigation. [REDACTED] is responsible for managing two teams of Engineer delivering these reviews across 2 PF Offices. His roles also involves reporting to the Client and liaising with different NR Internal Clients.

**HS1 Technical Adviser** - [REDACTED] was responsible for producing a number of technical reports with regards to a number of bridge structures on the HS1 network. The reports were in connection with a number of defects noted and

detailing likely causes and possible remediation. Also managing and mentoring other Engineers producing similar reports and reviewing their reports before submission to the Client.

**LUL/Metronet Earthworks Stabilisation Schemes** - [REDACTED] was responsible for supervising Graduates with regards to design and production of scheme drawing for various structures on this scheme for LUL, His was responsible for checking designs (including specification and drawings), responding to enquiries from site and attendance of progress meetings on site with the Client and Contractors. [REDACTED] was responsible for the design of some of the of civil structures for the Hainault to Fairlop part of this Scheme.



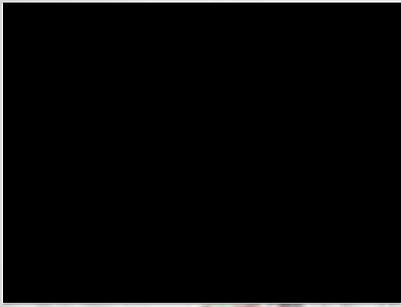
Daventry International Rail Freight Terminal



Edgware Road Station Footbridge



HS1



[Redacted text]

**Biography**

45 years on structural design, assessment, inspection, certification and assessment reviewing of highway and railway structures (including viaducts, retaining walls, culverts etc. and a tunnel), the majority of which incorporated railway crossings. 9 years on overseas site supervision of maritime works including port buildings and infrastructure. 6 years on structural design of maritime works in UK and overseas and on maritime studies.

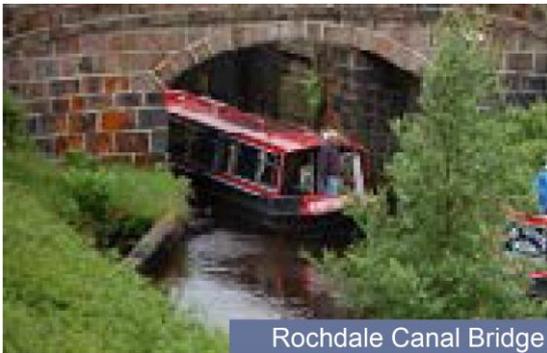
**Added Value / Achievements**

- Key experience in reinforced concrete bridge structures
- Wide ranging expertise in bridge assessment and inspection.

**Key Relevant Experience**

**Structure Assessment Contract for Network Rail**

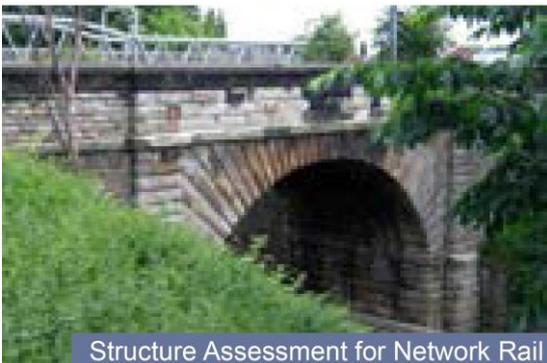
-Reviewing of assessments of mostly railway underline bridges and footbridges, generally in the west of England and Wales. Also including feasibility reports considering possible strengthening measures, where assessed capacity less than required. Consideration also given to adopting advanced analysis methods.



Rochdale Canal Bridge

**Eigenvalue Assessments for Network Rail London**

**North Western Territory** - Reassessment of 3 No. overline bridges in Liverpool, previously assessed by others, using advanced analysis methods, to achieve a greater assessment rating, including proposing appropriate strengthening measures for weak elements. Employed innovative critical buckling analysis using Eigenvalue Extraction for linear and non-linear conditions, to minimise amount of strengthening required.



Structure Assessment for Network Rail

**Brentford Dock Road Bridges for Ballymore**

**Properties** - Inspection and assessment of 3 No. highway bridges over water, including the use of advanced analysis methods, also including proposing appropriate strengthening measures for weak elements.

**Luton Power Court - Crawley Green Road Bridge for Ballymore Properties**

- Outline design for replacement overline bridges across the 4 track London to Bedford railway, and across the trackbed

**Key Relevant Experience**

**Interim Measures for Bridges for Lambeth Borough Council -**

Before formal strengthening was carried out to 3 No. over-line bridges in West Norwood, it was necessary to put in place interim measures to ensure that traffic can be safely carried by the bridges and that trains can also pass safely beneath them. A site survey was carried out, data collected and a report prepared giving various options with their associated risk analyses.

**M4 Brynglas Tunnels / A4042 Malpas Road Relief Scheme, South Wales -** Carried out preliminary and final structural design work and supervision of design work for a number of structures on the M4 Brynglas Tunnels and A4042 Malpas Road Relief Scheme in South Wales, including retaining walls, piled raft and multiple span reinforced concrete, prestressed concrete and composite steel/concrete viaducts up to 400m total length. In addition, responsible for conducting 3 of the large viaducts through their external Category III Check Procedures.

**Lomeshaye Lane Bridge Strengthening for Network Rail London North Western Territory (initially through Contractor Galliford Try) -** Reassessment of overline bridge, previously assessed by others, following a new survey, recommending strengthening measures comprising shear connectors and reinforced concrete overslab, detailed design and implementation.

**Airwave Radio Project for London Underground Limited -**

Structural Assessments of various platform and tunnel elements at numerous London Underground Stations, including devising strengthening measures as required, to enable additional communication equipment to be installed.

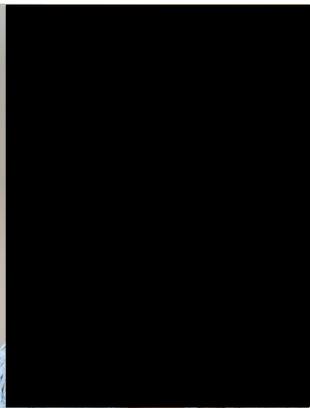
**Limehouse Link Tunnel Inspection -**

Overnight inspections of the tunnel structure, particularly the roof, to investigate the condition of the concrete and to prepare recommendations to ensure/improve the durability and life expectancy of the structure.

**Rochdale Canal Bridge Strengthening for Network Rail London North Western**

**Territory (initially through Contractor Birse) -** Reassessment of underline bridge, previously assessed by others, following a new survey, recommending strengthening measures comprising overplating the existing web splices and replacing the rivets in the splices with tension control bolts, detailed design and implementation.





[Redacted contact information]

### Biography

A Chartered Civil, Structural Engineer with over 15 years of extensive design and maintenance experience in Steel/Composite/RCC/Pre & Post tensioned bridges. Hema has worked on a variety projects for Highways England, Network Rail, TfL, County Councils and the National Highways Authority (India).

[Redacted] has acted as lead Civil Structural Engineer in design of Steel, composite, concrete bridge structures in various stages including feasibility study, concept design and detailed design. She has used British standards and Eurocodes extensively for the design, construction and maintenance of bridges.

### Added Value / Achievements

- Extensive experience of designs, maintenance and buildability of structures.
- Excellent knowledge of software packages like Superstress, SAM, Strap, Lusas, StaadPro and Autocad
- Experience in project management, programme management, and commercial management. Good understanding in value engineering principle and optimization of structures based on the client's requirement without compromising quality and standards.
- Extensive experience in technical reports including structural investigations, structural designs and specification.
- Managing and mentoring structural Engineer and CAD teams for various national and international projects.

### Key Relevant Experience

**STIP Framework** - Review of demolition methodology adopted for the demolition of bridges within STIP framework.

**Lewisham Flyover substructure** - Design of strengthening works.

**Steventon High Street Bridge** - Team leader CAT2 check of Steventon High Street Bridge. The bridge was a replacement bridge as part of the Great Western Mainline Electrification in South Oxfordshire. It was an integral bridge with precast concrete beam in concrete infill.

**Cumbria Bridges** - Assessment of Cumbria bridges affected by flood: two bridges whose substructure was affected by floods were assessed for capacity.

**HS2 ITT** - Team leader working on the preparation and packaging documents for Enabling Works Contract for country north area of HS2 (Phase1). Responsibilities included managing a team of engineers, coordinating with interdisciplinary teams, other consultants and HS2 managers.

**North and Mid Wales Trunk Road Agency** - Team leader for general inspections.

### Key Relevant Experience

#### **Civil Assessment Framework agreement -**

Working as Deputy Project Manager for this project. The project is a framework contract for the assessment of Network Rail structures in the Anglia region.

**Eastway Bridge across River Lee for London Borough of Hackney-** Led a team of engineers in the assessment of the existing bridge and the design of the strengthening and new widening.

**A34 Wolvercote Viaduct Replacement –** Worked as a part of the design team designing the viaduct. The project was the online replacement of the viaduct 250m long that was achieved by sliding the superstructure on a temporary onto the permanent location. Hema was responsible for the design of the substructures. During construction Hema liaised with the engineers on site and coordinated design and construction activities.

#### **River Ithon Bridge carrying A470 -**

This is a two span continuous bridge across River Ithon. Hema was responsible for the design of substructure and coordination with the site engineers.

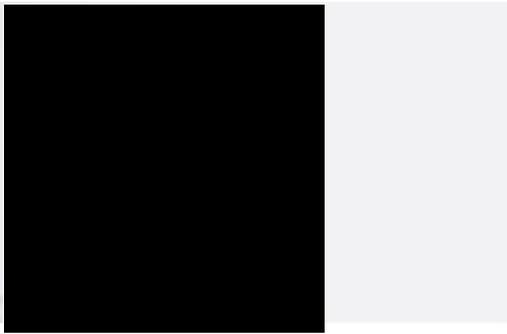
**M20 footbridge in Ashford, Kent -** The structure comprises a three-span cable stayed bridge, combined cycle / footway. Hema was responsible for the design of superstructure comprising of deck with steel plate construction.

**Bexhill to Hastings Link road -** The link road is 5.6km long and there is around 17 bridge structures along the project road. I was responsible for the design of superstructure for one of the bridges, Woodsgate Bridge 15.6m span steel composite. Hema was also responsible for checking design proposals for the Railway Bridge. This bridge is a two span steel composite bridge with main span of 45m.

Teign crossing cable stayed footbridge - CAT3 check. Check and review of the consultant's design of the two span cable stayed footbridge.

**Blackfriars Station -** Common entrance building CAT3 check. The design was part of the redevelopment of Blackfriars station for both the Thameslink railway and the London Underground District and Circle Line. Hema was responsible for the check and review of design proposals for the precast beams spanning across the railways, platforms reconstruction etc.

**London Tramlink Structures Inspections Programme -** Deputy Project Management coordinating the inspection of bridges and structures on the Croydon Tram network. Responsible for project finances, health and safety and submission of deliverables. Lead contact for project affairs for client, sub-consultant and third parties.



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### Biography

█ has qualifications in civil structural engineering, with strong analytical capabilities and understanding of wide range of associated subjects including structural behaviour, dynamic analysis, geo-techniques, environmental engineering, timber, steel and reinforced concrete structures and health & safety. She is a Licensed Professional Engineer (Civil/Environmental Engineering) and a Member of the Civil Engineering Dynamics Society. She is an experienced Design Engineer, specialised in Structural and Dynamic behaviour, having carried out numerous concept and detailed designs within the field of Seismic Engineering. She previously worked at Institution of Structural Engineers advising the Director of Engineering and Technical Services and at University of Naples Federico II as Assistant Professor of Structural Behaviour.

█ worked on several structural designs as freelance Civil Structural Engineer in Italy and implemented a large number of site and assembly plans for bridges and viaducts in Algeria.

### Added Value / Achievements

- Working on a variety of bridges and Civil Infrastructures projects including; STIP2, Brent Cross Structures (TfL), and High Speed 1 (HS1)
- Key experience in highways and highways structures maintenance and assessment
- Co-author of a Method for the dynamic identification of structures.

### Key Relevant Experience

**TfL Structures & Tunnels Investment Programme Phase 2 (STIP2)** - This is a TfL project which started in March 2015 and it comprises some 29 bridges, highways and earth retaining structures including those that are unaffected by the Brent Cross development in the associated regeneration area, structures that are affected by the Brent Cross development and new structures over A406. These include flyovers, underpasses, subways, culverts and retaining walls, covering most types of structural forms and materials (reinforced concrete, post-tensioned, prestressed spans, etc.). The works involve some elements of Stage II – Concept Design and all elements of Stage 1 Pre-feasibility for 18 structures. █ was directly involved in the Stage II and Stage I, including providing different options for future designs and upgrades, attending site to carry out inspections, desktop study, BD101 forms, Risk Analysis, Whole Life Costing, Technical Plan for Concrete Investigations. In addition, in light of the most up to date information and knowledge, █ was involved in updating the existing BCI Pro-forma contained on Bridgestation, in the implementation of the “Assumptive” and a “Planned Do Minimum” Scope of Works. These documents assisted in the population of a Risk Workshop spreadsheet which provided to the Client a specific view of the risks (safety, reputation, financial, environmental,

### Key Relevant Experience

functionality) related to the defects associated to the various structures and all the possible mitigation measures/immediate remedial works required should the defect be deferred.

These exercises assisted in the production of two documents – the Identified Works and Risks Report and the Structure Review Report - which [REDACTED] was directly involved with in addition to input into the Outcome Definition Report.

**Network Rail – High Output and Plain line Reviews - HOBC/ DTS/TRS and track lift/slue/lowering analysis and review –** Review and analyse the High Output and Plain Line Structures based on the standard Network Rail Documents and data. Reviews have been carried out for Anglia, Swindon, LNW South and planned for LNE.

**HS1 Asset Defects - [REDACTED]** assisted in the production of a report detailing the quantum of remedial measures, costs, potential access requirements and traffic management required to facilitate remedial works to several High Speed 1 bridges. She carried out inspections and costing analysis on this project.

**The Institution of Structural Engineers -** Project manager, technical advisor, author, researcher and strategist, working directly with the Director of Engineering and Technical Services and the members of the various committee/tasks groups.

**University of Naples Federico II (Italy) -** Assistant Professor of Structural Behaviour and Finite Elements Analysis in the Faculty of Civil Engineering, Mechanical Engineering, Management Engineering. Implementing of a Method for the Dynamic Identification of Structures (period of vibrations, frequencies, damping ratios).

**Campolo s.p.a (Italy - Algeria) -** Civil Engineer carrying out numerous site and assembly plans for a wide range of structures, including bridges and viaducts.

**Ing. Giuseppe Cinque and Partners (Italy) -** Structural Engineer performing numerous detailed designs and structural analysis for

buildings in high seismic areas. The design comprised also studies on the sustainability grade of the architectural solution chosen and energetic analysis.



[Redacted text]

### Biography

Resourceful and energetic graduate engineer with skills in a variety of software design tools and has carried out a number of projects since graduation mostly related to civil structures, rail, road and stations. He has a variety of experiences in bridges, culverts, retaining walls and building structures. These include assessment and review of more than 500 bridges in both rail and highway environment.

#### Added Value / Achievements

- Achieved First Class degree in Civil Engineering
- Key experience in railway and highways structures maintenance and assessment
- Experience and working relationship with TfL and NR
- Software skills: Auto-Cad 2D/3D, MATLAB/Simulink, 2D-Frame, C+ & C++, SAP
- Experience in rail, bridge & station designs and Quality & Control Management

#### Key Relevant Experience

**TfL Structures & Tunnels Investment Programme Phase 2 (STIP2)** - This is a current TfL project which started in March 2015 and it comprises some 29 bridges, highways and earth retaining. The current works involve all elements of Stage 1 Pre-feasibility including attending site to carry out inspections. Following a review of the existing information for various structures within the portfolio, then [Redacted] was involved in updating the existing BCI Pro-forma contained on Bridgestation to reflect most up to date information and knowledge. Based on the LCP from Bridgestation, compiled an Assumptive Scope of Works for the scheme and a Planned Do Minimum Scope of Works. These documents then assisted in the population of a Risk Workshop spreadsheet which provided the Client with the risks (safety, reputation, financial, environmental, functionality) associated with each defect to the various structures, mitigation measures and the immediate remedial works required.

**Network Rail – High Output and Plain line Reviews** - HOBC/DTS/TRS and track lift/slue/lowering analysis and review - Responsible to create, review and analyse the High Output and Plain Line Structures based on the standard Network Rail Documents and data. Reviews have been carried out for Anglia, Swindon, LNW South and planned for LNE.

**Royal Oak Retaining Wall Condition Survey (TfL)** – Project lead for the delivery of a report commenting on the condition of the structure and current defects.

### Key Relevant Experience

The investigation comprised a desk top study, site visit and generation of a report providing guidance on the nature and significance of observed defects.

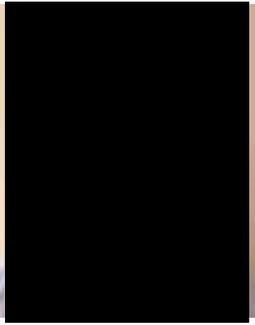
**Edgware road cladding project** - Checking Eurocode calculation based on the wind load and other applied forces for proposed Edgware road cladding project.

**London Underground stations** - Responsible for Writing and Planning Background of Some stations in London (Planning Applications, Feasibility and Design Concept). Prepared Technical specifications for London Underground projects, including ground anchor specifications.

**HS1 Project – Paint Defect Assessment** - Review paint defects of the existing structures in order to produce technical report for HS1/Document Control - Organise and manage the received data from Network-Rail and HS1 for this project.

**Tender documentations and preparation** - such as Barking Riverside Extension, Future station programme, Victoria Coach Station and HOBC/DTS/TRS for Q3&Q4 Structures.

**Alstom** - Research about the railway structures and familiarise with Nottingham Tram-link project of the company.



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**Biography**

Enthusiastic Engineer with experience of preliminary, detailed designs and CAT II checks of Bridges Structures. Preparation of contract documentation for various Network Rail minor works schemes and Highway Schemes. Including preparation of Specification for Highway and Bridges Works. Structural inspection of bridges, including Network Rail Infrastructure, as well as Highway Infrastructure and preparation of Principal Inspection Reports and Structural Investigations Reports.

**Added Value / Achievements**

- Competent in structural design using Eurocodes, NR Codes, BS5400 and ASTM F1216-09
- Competent in assessment using the following codes of practice: BD21/01 and NR/GN/CIV/025
- Experienced in the use of TEDDS, SCALE, ArchieM, AutoCAD, Word, Excel and Access
- Competent in carrying out detailed and visual on-site structural inspections

**Key Relevant Experience**

**Shepherds Chine Bridge, Isle of Wight** – Carried out detailed structural design for the strengthening of the bridge spandrel walls using tie bars to address the assessed failure of the spandrel walls under existing road traffic. Designed new pedestrian parapets and vehicle restraint barriers for the bridge. Prepared contract documents including a full Specification for Highway Works for the scheme.

**Twin Span Culverts** - Carried out detailed structural designs for the construction of two new culverts and headwalls adjacent on either side to the LJT Railway Line at mileage 9.0429 and 9.0430 respectively. The headwalls consisted of a reinforced concrete base slab and a reinforced masonry stem. Carried out a full check on the proprietary HDPE plastic culverts designed by the manufacturer.

**Huntingdon Station Platform Repair and Refurbishment** – Carried out site inspection of platform copings, drainage, expansion joints and surfacing defects. Organised and partly supervised a survey team to carry out topographic survey produced existing and proposed general arrangement drawings, specified asphalt concrete for resurfacing and concrete repairs to copings

### Key Relevant Experience

and tactile pavings using relevant Eurocodes and network rail standards. Prepared contract documents for the scheme.

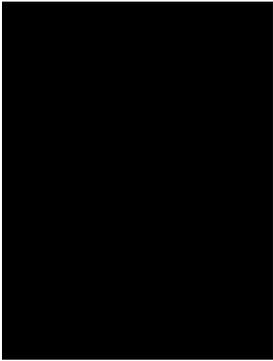
**Woodstock Grove, Widnes Culvert** - Carried out detailed design and drawings for the structural strengthening of the culvert with a cured-in-place pipe (CIPP) liner. A CCTV survey revealed longitudinal deformations and cracks within the culvert with heavy silting due to collapsed internal brick lining. The culvert was therefore analyzed as fully deteriorated and the CIPP liner designed using the ASTM F1216- 09 Codes and relevant network rail codes.

**Penistone Viaduct Collision Mitigation Beam** - Carried out a CAT II check for a steel circular hollow section beam curved to the profile of the arch bridge and connected to the arch barrel using steel plates and chemical anchors.

**Selby Swing Bridge** - Designed two steel stairs with GRP treads to provide access to track level at span five and link the walkway to swing span 4 of Selby Bridge. Carried out detailed design of connections to Eurocode 3 to support the stairs from the vertical face of pier five. Designed lifting anchors for precast elements of the bridge using Deha Lifting Anchor System Technical Information Manual.

**Footbridge Over Rail** - Produced a condition survey Options Report for a footbridge constructed circa 1928. Site notes, archive information and a category 1 assessment results of the precast elements of the bridge were used in the report to determine possible maintenance options for the footbridge.

**North Lincolnshire Council** - Part of Principal Inspection team on several highway bridges and produced Principal Inspection Reports and Proformas for North Lincolnshire Council.



**Biography**

██████ is a competent Project Coordinator, ensuring coordination between team members. She has 20 years of experience on Network Rail, TfL, London Boroughs and NHS projects. A team player who continuously thrives for quality delivery. Her skills base comprise high level administration, document control, coordination and project management.



**Added Value / Achievements**

- Project Management and coordination
- Financial Management
- Minute taking
- Advance Outlook, Excel, Word & PowerPoint
- Analytical and problem solving skills
- Excellent written and spoken communication

**Key Relevant Experience**

**Northern Line Extension Project**

**Project Assistant** – Updated the Project Execution Plan; prepared Board Meeting Minutes.; replied to all internal correspondents e.g Emails/letters; liaised with contractors and stakeholders.

**Network Rail - Assistant Programme Manager - Thameslink Programme**

Updated weekly tracker and liaised with contractors regarding carrying out necessary works; recorded all NCR's and on completion of works being carried out satisfactorily co-ordinated the Programme Managers Diary; organise meetings and booked meeting rooms for Engineers and Contractors; prepared Health & Safety Brief for team staff using PowerPoint; arranged training for all new starters; scheduled interviews and informed HR of any new changes to the team. took minutes at staff disciplinary meeting.

**Network Rail - Team Organiser - Investment Projects/Enhancement & Commercial**

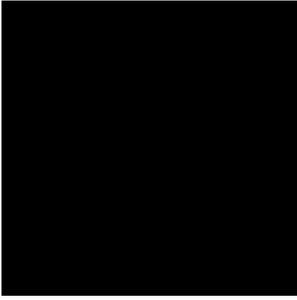
Managed the Diary for the Head of Department; took minutes at department meetings; dealt with all-incoming mail; booked travel for staff; updated programme log; liaised with HR regarding redundancies and updated HR files; monitored the department finances highlighting any inconsistencies.

### Key Relevant Experience

**Southern Railway - Team Co-coordinator – Retail** - Co-ordinated all TOC change request, liaised with supplier and senior managers, and uploaded and updated information on the Cloud database; took minutes for management meetings and produced reports; undertook routine clerical task for Senior Managers; arranged two events ‘Away Day’ and ‘Innovation Day’ for 200 guest; liaised with external agencies to ensure the smooth running of the department.

**NATS (Heathrow) – Assistant to Engineering Team** - Managed the Head of Departments diary; updated Engineers weekly schedule; liaison with internal staff and external agencies regarding moving fibre optic cables to ensure networks were up and running; recorded wind turbine data; took detailed minutes and produced reports from notes.

## Pell Frischmann



## Biography

A Chartered Civil Engineer with extensive experience associated with the operation, maintenance and improvement of UK highway assets. I have led consultancy design teams and acted as a Highways Agency Project Sponsor. More recently I have led consultancy teams and offices delivering asset maintenance advice and solutions to clients in both the public and private sector. As an engineer my key areas of expertise include highway structures, post-tensioned bridges and pavements. As a manager I have developed leadership and project management skills.

## Added Value / Achievements

- Extensive experience and proven capability in structures investigations, traffic management and whole-life-costing of bridges.
- Fully conversant in CDM and Health & Safety issues
- Proven project management capability and value-for-money solutions

## Key Relevant Experience

**Performance Manager Hampshire IESE Efficiency Framework** - Responsibilities included: bid preparation, contract mobilization and preparation of framework tender submissions. I monitored WSP/PB performance and acted as Project Director for secured projects.

**Framework Manager The Royal Parks** - Highway and drainage design. Responsibilities included: scheme identification, resource allocation, design leadership and client liaison. Project locations include Hyde Park, Richmond Park, Regents Park and the Mall.

**Project Director M25 J30 Improvements** - Section 278 developer funded junction improvements. I was the PB Project Director responsible for overall success. Responsibilities included liaison between HA Client and Dubai Ports and management of the PB design teams. Team deliverables included: feasibility design, detailed design and site supervision.

**Project Manager Greenwich Bus Rapid Transit** - Managed the PB teams delivering the design of 15 km length of highway improvements. Responsibilities included: TfL client liaison, team leadership, project management, stakeholder liaison. Design fee £3m.

**Technical Auditor TfL MHCW Contract London Central** - Review of the highway maintenance services contract and the performance of contractor and client. My responsibilities included: audit of systems and outcomes, team interviews, preparation of reports and presentation of findings.

## Key Relevant Experience

**Project Director A38 Resurfacing Devon** - The largest highway recycling scheme delivered in the south west. 65000 tonnes carriageway materials recycled and scheme value £8m. As the PB Project Director my responsibilities included: team mobilisation, early contractor involvement, project delivery, customer care, CDM and quality.

**Highways Designer, Caversham Road Widening Reading** - Widening of a 500m length of the Inner Distribution Road from 2 to 4 lanes in an urban environment. Responsibilities included: alignment and pavement design; drainage design; signing and lining design and managing the relocation of statutory undertakers plant. I also acted as the site supervisor during the construction phase.

**Infrastructure Technician Watford Hospital** - Commercial development of Hospital grounds. My responsibilities included: design of roads, junctions, foundations, utilities, drainage and parking. I carried out site surveys and prepared specifications and drawings.

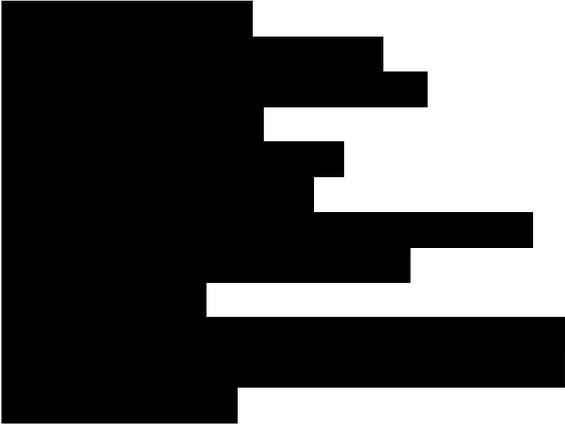
**Project Director Kier Highways TfL Structure Capital Maintenance Programme** - Project management and design of structural maintenance schemes on the TfL network. Responsible for fee and programme development; resource allocation; technical reviews, design and maintenance solutions and client liaison. Portfolio in excess of 50 projects including A3 Footbridge replacement and Kew Bridge refurbishment.

**Structures Designer A34 Trunk Road Lodge Hill Overbridge 2000-2001** - Strengthening measures concrete parapet edge beams and piers. Responsibilities included the preparation of contract specifications and project manager for site delivery.

**Project Manager M4 J10 Interchange Bridges** - Post tension remedials. Design of re-grouting specifications to voided post tension systems. I liaised with client and contractor to develop bespoke solutions and acted as project manager for site delivery.

**Structural Designer Berkshire County Council A33 Relief Road** - Design of highways bridges and subways. Responsible for feasibility design, preliminary design and detailed design. Design of pre-stressed beam decks, abutment and piled foundations.

**Bridge Engineer A1055 North South Route London** - Based on survey information and designer instruction I developed general arrangement drawings of highways and interchange structures.



## Biography

■■■■ has been involved in our largest and most high profile projects across our sectors, including the Hammersmith Flyover (HFO) scheme for TfL, major HE motorway schemes on the M1 and M25, complex viaduct schemes and major rail projects in challenging environments. He has a comprehensive understanding of preparation, completion and implementation of safety, health and environmental (SHE) management strategies and risk mitigation plans.

■■■■ successful SHE strategy implementation at Hammersmith Flyover led to the project achieving TfL's maximum SHE scores throughout.

As Group SHE Strategy Programme Manager, ■■■■ contributes to our group SHE strategy, helping define our vision and setting specific objectives and targets to roll out to our projects. He takes learning from across industry to inform our SHE goals, as well as listening to our customers and stakeholders, so that our SHE activity focuses on helping customers achieve their own goals.

## Added Value / Achievements

- Key member of the TfL CLOCs logistics working group: ■■■■ co-presented a section of TfL's Work Related Road Risk standard to Sir Peter Hendy to gain support to continue its development. Costain appears in the WRRR as a best practice case study alongside rising uptake in the industry.
- Infrastructure Safety Liaison Group – ■■■■ represented Costain on this forum for rail contractors to work together and with the wider industry to produce SHE best practice. He was selected to work with the Rail Safety Standards Board (RSSB) via ISLG on the Health and Well-being programme for Train Operating Companies, Freight Operating Companies and the Construction industry. ■■■■ was nominated by ISLG group members to be the only contractor representative to participate in the internal Network Rail Safety and Sustainability Integration meeting, to ensure that Network Rail policies and procedures could be integrated into industry.

## Key Relevant Experience

**Group SHE Strategy Programme Manager** – ■■■■ is currently involved in setting our group SHE strategy, informed by his wealth of project experience and the relationships he holds with our customers, stakeholders and industry peers. He develops relevant and challenging objectives and expectations of performance across our sectors and projects, ensuring our SHE strategy enables consistently outstanding performance.

**Rail Sector SHE Manager** – ■■■■ was responsible for providing strategic leadership and support to all major projects and SHE Advisers in the Rail Sector. He kept his knowledge current via membership of specialist Rail SHE groups. He advised on the Thameslink Farringdon Station redevelopment project, LU's Bond Street Station Upgrade project and Crossrail's Royal Oak and Pudding Mill Lane portal projects and Bond Street advanced works project.

■■■■ convened weekly section head meetings to share knowledge and SHE best practice, and ensured outstanding subcontractor performance with monthly review meetings discussing SHE aspects and impacts and setting ongoing performance targets.

**Regional Environmental Advisor** – Highways, Water, Waste and Airports – ■■■■ supported operational teams across our sectors with SSHE guidance and advice, and provided information to our customers throughout project lifecycles from public inquiry to handover.

### Added Value / Achievements

- Management systems deliver customer benefits: [REDACTED] collaborated with the EA on the A2/A282 and M25 projects to develop a standard product and acceptance protocol for materials produced under the WRAP Protocol. His effective action plan on the A2/A282 and M25 J1-3 resulted in recognition in the Environment Agency 'Spotlight on Business' as a best practice case study.
- Developing future talent: [REDACTED] has acted as a coach, mentor and line manager to a number of SHE graduates, helping familiarise them with the construction process from ECI to handover and providing support in their developing careers.

### Key Relevant Experience

**Hammersmith Flyover, SHE Manager** – [REDACTED] led all SHE activity on this high profile project and took responsibility for overall SHE delivery. He collaborated closely with TfL to introduce our Costain SHE standards, driving continuous improvement and leading on innovation to achieve excellence. He set the project SHE vision with a behavioural and cultural approach to achieving safety by desire. HFO achieved one million hours worked without a reportable incident and won a Gold RoSPA award in 2015. [REDACTED] developed Safe Systems of Work to manage working safely at busy public interfaces in a congested urban setting, as well as high-risk activities such as working at height and in confined spaces, facilitating delivery of specialised emergency rescue training to TfL's rescue team. He led a team of four safety professionals including an Occupational Health Nurse, undertaking data analysis to minimise risks by identifying trends and root causes and assign specific mitigation actions. His team provided SHE advice, guidance and support to the operational team. [REDACTED] used his understanding of the CDM regulations to assist the project CDMC discharge his regulatory duties, by ensuring the Design Hazard Log was up to date and risks were managed out as far as possible in design iterations. [REDACTED] supported the project supply chain to improved SHE performance throughout their involvement. He delivered specialist training to supply chain staff alongside Costain teams, and left them a legacy of stronger SHE competencies than when they joined, for example by inclusion in our Supply Chain Academy.

#### **Environmental Manager; Safety & Health Adviser**

– During this period [REDACTED] worked on the A2/A282 Dartford Improvements and M25 Junction 1b–3 Widening schemes, and the A34 Wolvercote Viaduct. He was responsible for all site SHE advice, as well as taking charge of a sensitive wildlife translocation and an initiative to reuse 18,000m<sup>3</sup> of soil, diverting it from landfill. He achieved an 'Excellent' CEEQUAL Whole Project Award for the A2/M25 working with the Client and the Designer. In 2006 the project received an 'Environment Award for Kent Business, Responsible Construction Award and Site Management' for best performing contractor in the county.

## Biography

██████████ most respected, experienced and qualified traffic management expert with a reputation for providing innovative and effective TM solutions. He specialises in managing traffic in constrained, congested urban environments, overseeing multiple projects to produce a coherent groupwide traffic strategy. ██████████'s strength lies in his ability to engage with stakeholders of major London civil engineering projects, gaining support and enabling his complex traffic management schemes to succeed. ██████████ works with police services and independent client auditors while auditing his own and others' TM plans. Audits begin with the design drawings and continue with onsite inspections of closures, signage and health and safety measures. Graham designs his TM plans to exceed the requirements of Chapter 8 of the Traffic Signs Manual, of the Crossrail Act 2008, of the New Roads and Street Works Act 1991 and the Traffic Signs Regulations and General Directions 2002, so that his schemes pass the audits without comment. He considers both motorised and non-motorised traffic with special attention to the safety of vulnerable road users.

## Added Value / Achievements

- Experience of working with TfL to deliver acoustic assessments.
- Experience delivering Environmental Impact Assessments for development projects.
- Experience working with various Planning Authorities, including London authorities

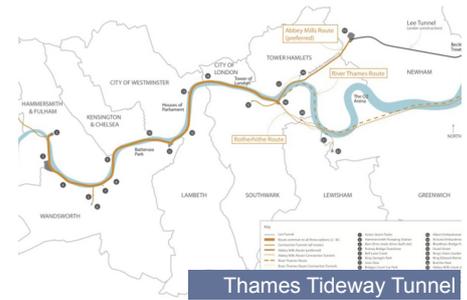
## Key Relevant Experience

**Thames Tideway Tunnel, Senior Logistics and Traffic Manager** – ██████████ complex TM solutions across this critical London project requires careful management of numerous and diverse stakeholders. He has established an open and collaborative approach in which all JV partners and specialist subcontractors are empowered to contribute to the optimum solution development.

**Hammersmith Flyover Refurbishment, Senior Traffic Manager/Stakeholder Manager** – ██████████ designed and implemented all TM under the TfL Pathway, managing relationships with the London Boroughs, LU and other key Fulham and Hammersmith area stakeholders, and maintaining our commitment to CLOCS and FORS. He coordinated the works programme to enable all lanes to remain open safely through peak times and hand back every possession on time.

**Key Relevant Experience**

**2010-2011: Major London projects, Traffic Safety Control Officer** – Major projects in central London including London Bridge, Paddington Station, Farringdon Station, Bond St Stations and C360 Tunnel Vent Shafts. [REDACTED] was responsible for devising TM strategies and systems for projects and individual work packages. He introduced a web-based vehicle delivery management system to coordinate deliveries and reduce congestion on busy, inner London streets; introduction of Stage 2 & 3 safety audits on TM schemes in central London and worked closely with LU (on Bond St Station) to instigate additional signing within the station directing pedestrians to use alternative exits, reducing overcrowding outside the main station entrance/ exit during construction. On the A2/A282 [REDACTED] introduced the innovative Quick Movable Barrier system, significantly increasing the safety of TM operatives and saving three months against the programme.



## Biography

██████████ has comprehensive knowledge of the Brent Cross environment and the diverse range of stakeholders involved. He delivered the Brent Cross Stage 1 works to TfL and will bring his knowledge of the structures and their context to the Stage 2 works.

He is highly experienced in the role of Project Manager, liaising directly with TfL's Structures and Tunnels teams, and holds established relationships with TfL PPD and AMD. He understands the TfL Surface Transport Directorate's responsibilities and knows how best to involve them in developing best value solutions, unlocking constraints.

## Added Value / Achievements

- Experience of working with TfL to deliver acoustic assessments.
- Experience delivering Environmental Impact Assessments for development projects.
- Experience working with various Planning Authorities, including London authorities

## Key Relevant Experience

**Brent Cross ECI Stage 1, Project Manager** – First stage of the Brent Cross, procured under the ECI&C Framework and involving delivery of project programmes and schedules, project cost estimates, risk identification, evaluation and proposing mitigation measures, and providing gaps and assumptions information. Closely collaborated with Pell Frischmann to deliver the products on time and within budget.

**A40 Westway Structures Refurbishment Stage 1, Project Manager** – Stage 1, procured under the ECI&C Framework, involved carrying out targeted surveys, investigation and testing works of the Westway structures and complex stakeholder management with London boroughs, occupiers (local businesses and residents). Managed and coordinated the designer's surveyors for the NIVI. At Brent Cross Stage 1, he liaised directly with TfL's Programme Manager and managed our team of engineers, planners and estimators in developing engineering solutions for the Pathway Stage 1 products. Managed the Targeted Investigations (bearing and concrete inspections, trial holes) and the NIVI. Overall responsibility for stakeholder management, worked with PLO to engage occupiers and successfully gain access/consents.

## Key Relevant Experience

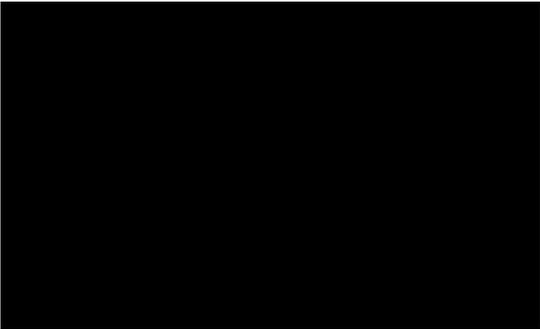
**Milestones hit for Pathway Stage 1 products** - detailed information on construction methodology, cost estimate, programme and risk assessment delivered within eight weeks of our team starting work. Worked with the designer to develop smart, innovative access/data capture e.g. 3D scanning and BIM 360, significantly reducing post processing work and achieving no complaints from over 200 affected occupiers. Oversaw the work of site based teams.

**2013-2015: Hammersmith Flyover Refurbishment, Construction Manager** – HFO was procured under TfL Structures and Tunnel ECI Framework, followed TfL Pathway and used a two-stage open book D&B approach. Works included surveys and investigations under the Flyover with complex stakeholder interfaces. Construction Manager with day-to-day responsibilities for specialist high risk works to strengthen and refurbish the 623m long flyover structure. Managed the development, testing and installation of a bespoke temporary expansion joint product that was trafficked by over 90,000 vehicles a day. Worked collaboratively to lead the designers, checker and specialist subcontractors, accelerating development of an intricate grouting solution adjacent to the London Underground, limiting settlement to under 1mm while transferring over 2,800t of bridge loading.

**2010-2013: Gravitas Offshore Gravity Base, Project Manager** – Collaboration and coordination with diverse internal and external stakeholders. Supervised and managed multi-disciplinary team including product development, marketing and serial production planning of large concrete foundations (up to 80m tall) for offshore wind turbines based within European waters. Established a European high performing team and worked collaboratively to develop a product and factory thinking methodology with the supply chain, reducing Levelled Cost of Energy resulting in several contracts for consultancy work.

**STIP2 – A40 Westway and Brent Cross - [REDACTED]** has made technical key contributions to TfL to allow Pathway Stage 1 products to be prepared for the A40 Westway and Brent Cross both STIP2 projects. The detailed information prepared in under eight weeks included the methodology, cost estimate, programme and risk assessment for various structural and non-structural works item. He also led the targeted investigations that allowed the project team to review assumptions made earlier and commence the prioritisation of the assumed scope. He also managed the non-intrusive visual inspection and 3D scanning of 122 occupied premises with 742 rooms without complaints collaborating closely with the Design Consultant and Public Liaison Officer.





### Biography

██████ has had over thirty year's experience of investigation, inspection and assessment of civil engineering structures and buildings, throughout the UK and overseas.

This has involved extensive project management, mainly specialising in large scale concrete and bridge/building investigation, Rail and LUL inspection programmes, all involving inspection and testing of an array of building materials. Trained to work in confined spaces and on the railways and LUL.



### Added Value / Achievements

- Experience of working with TfL on Brent Cross Stage 1. Previous experience on Brent Cross Structures over the last 20 years
- Experience of working in confined spaces, railways, LUL.
- Experience of working in large-scale concrete and bridges/buildings investigations

### Major Commissions Undertaken

Date	Client	Project
Jan-July 93	Highways Agency	Testing of 100 Structures M25 Motorway
May 95	Thorburn Colquhoun	Condition Survey of 4 Viaducts, SW Poland
July 95	Gloucester CC	Inspection of Post Tensioned Structures M5
Nov 96	Thorburn Colquhoun	Investigation of Frost Damage of 4 Viaducts, SW Poland
May 96	DHV UK Ltd	Underwater survey of sub-sea piles, Bahrain
Dec 99	Highways Agency	Inspection of Post Tensioned Structures M3, M27
Feb 2000	Highways Agency	Inspection of Post tensioned Structures Devon/Cornwall
March – Oct 02	URS Corp	LUL Connect Project, examination of floor slabs
2002-2003	Faber Maunsell	Inspection of over 500 London Underground Assets including confined spaces inspection
2005-2006	CEI Collins Engs	PTSI and standard assessment investigation work to 35 No structures in Eire
2007	Faber Maunsell	Inspection and intrusive investigation of numerous LUL stations and assets
2008	Watermans	PTSI to Harrow Manorway Road Complex
2009	Rohan O'Donovan	Eirespan Bridge Investigations to 35 structures in Eire
2010	RPS	PTSI to Coolock I/C, Dublin
2011	JBA	Scour Investigation to 56 Bridges

## Major Commissions Undertaken

Date	Client	Project
2012	Hammersons	PTSI to Springburn MSCP, Glasgow
2013	Osbornes	Investigations into Herts CC bridge stock
2014	FM Conway	Brent X I/C Testing Contract
2015	Arup	Earls Court Apron Investigations
2016	FM Conway	FM Conway

## Freedom of Information

## **APPENDIX 1 - FREEDOM OF INFORMATION ACT**

### **GUIDANCE TO TENDERERS AND CONTRACTORS ON TFL'S POLICY FOR ACCESS TO INFORMATION**

#### **BACKGROUND**

The Freedom of Information Act 2000 (FOIA) gives the public a legal right of access to information held by public authorities. The public now has a right to know about our work and it is our duty to operate with openness and transparency.

A person making a FOIA request is entitled to two things, unless an exemption applies. These are:

- a) To be informed whether we hold information of the description requested;  
and
- b) If so, to have that information communicated to him or her.

How does this affect you?

All information held by TfL is caught by the FOIA. The rules about disclosure apply regardless of where the information originated. This means that all the following types of information may be subject to disclosure:

- Information in any tender submitted to us;
- Information in any contract to which we are a party (including information generated under a contract or in the course of its performance);
- Information about costs, including invoices submitted to us;
- Correspondence and other papers generated in any dealing with the private sector whether before or after contract award; and
- This means TfL will be obliged by law to disclose such information unless an exemption applies.

The legal obligation to respond to requests from the public under the FOIA rests with TfL. TfL must therefore respond to requests as we see fit in our sole discretion. This Guidance explains our policy on the disclosure to the public of information about our private sector suppliers.

#### **GENERAL RULES ON DISCLOSURE**

In the absence of special circumstances:

- a) All Invitations to Tender published by TfL will be available to the public on request;
- b) Responses to tenders will be held in confidence until award;

- c) Information about the total value of bids will be made available to the public on request, but only in response to requests made after contract award.

Any person tendering for or contracting with TfL must notify TfL during the tendering or negotiating process of information that they consider being eligible for exemption from disclosure under the FOIA. Such notification must be made in the form of the Appendix to this Guidance Note. Such information must be referred to as reserved information.

Information not identified as reserved information in the way described above will be made available by TfL on request.

## **RESERVED INFORMATION**

Information which you wish to put forward as reserved information must clearly describe, with supporting detail:

- a) The information itself, or the class(es) of information; and
- b) Why, in your opinion, that information is exempt from disclosure. Grounds for exemption may be one or more of the following:
  - The information is a trade secret;
  - The disclosure of the information would prejudice the commercial interests of any person or organisation;
  - The information will be disclosed by you to TfL, and the nature of the information, or the circumstances of its disclosure, or other circumstances, justify the acceptance by TfL of an obligation of confidence in relation to that information;
  - The information is personal data or otherwise relates to the private life of an individual and is therefore appropriate for protection; or
  - Any other specific exemption under the FOIA.

All decisions about disclosure of information will be made at the sole discretion of TfL. The exemption that applies to trade secrets and to information that would prejudice commercial interests if disclosed is a 'qualified' exemption under the FOIA. This means that TfL is required to consider whether, in all the circumstances prevailing at the time a request is received, the public interest in disclosure outweighs the public interest in upholding the exemption.

Information that is agreed by TfL to be reserved information will be listed in a document that will also:

- a) Specify which exemption(s) may apply to each piece or class of information; and
- b) Indicate when it is likely information can be made available, or (if this is the case) that it is unlikely ever to be made available.

TfL may disclose your justification for classifying information as reserved information.

Information that is exempt under the rules governing commercial matters will not normally be withheld for more than seven years after completion of the contract supply.

Information relating to the overall value, performance or completion of a contract will not be accepted as reserved information, although TfL may choose to withhold such information in appropriate cases, at its sole discretion.

You may designate unit prices or more detailed pricing information as reserved information.

## **OTHER GUIDANCE**

Although TfL is not under any obligation to consult you in relation to requests for information made under the FOIA, we will endeavour to inform you of requests wherever it is reasonably practicable to do so.

Contracts with TfL may require you to supply information to us, or provide other assistance, pursuant to any FOIA request received by TfL.

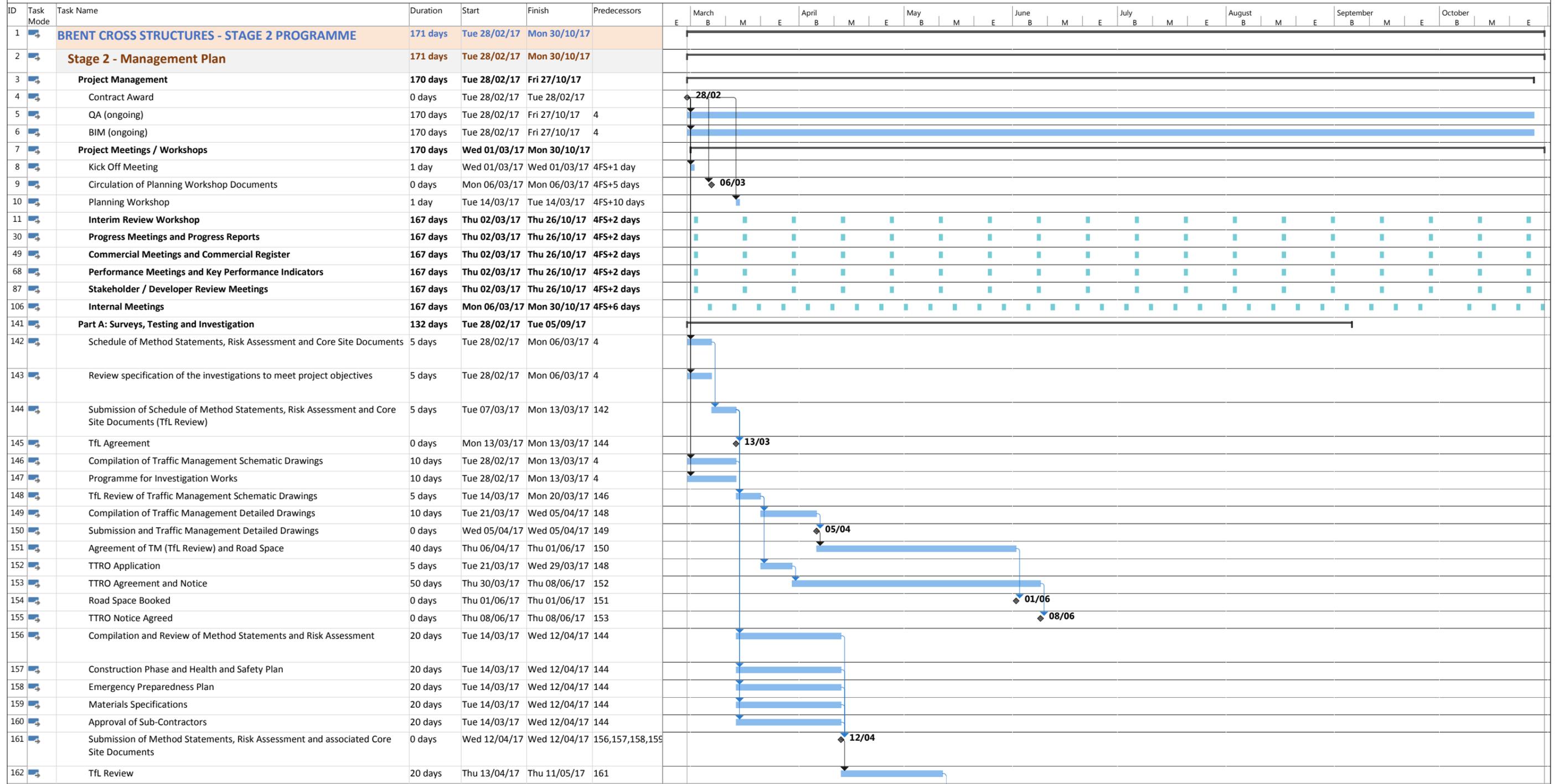
You should be aware that TfL's decision on applying an exemption and, therefore, refusing a request for information by a member of the public may be challenged by way of appeal to the Information Commissioner. The Information Commissioner has the statutory power to direct that the information be disclosed.



## Appendix 1 - Programme and Table for Project Stages

# STIP2 - A41/A406 Brent Cross Structures Refurbishment

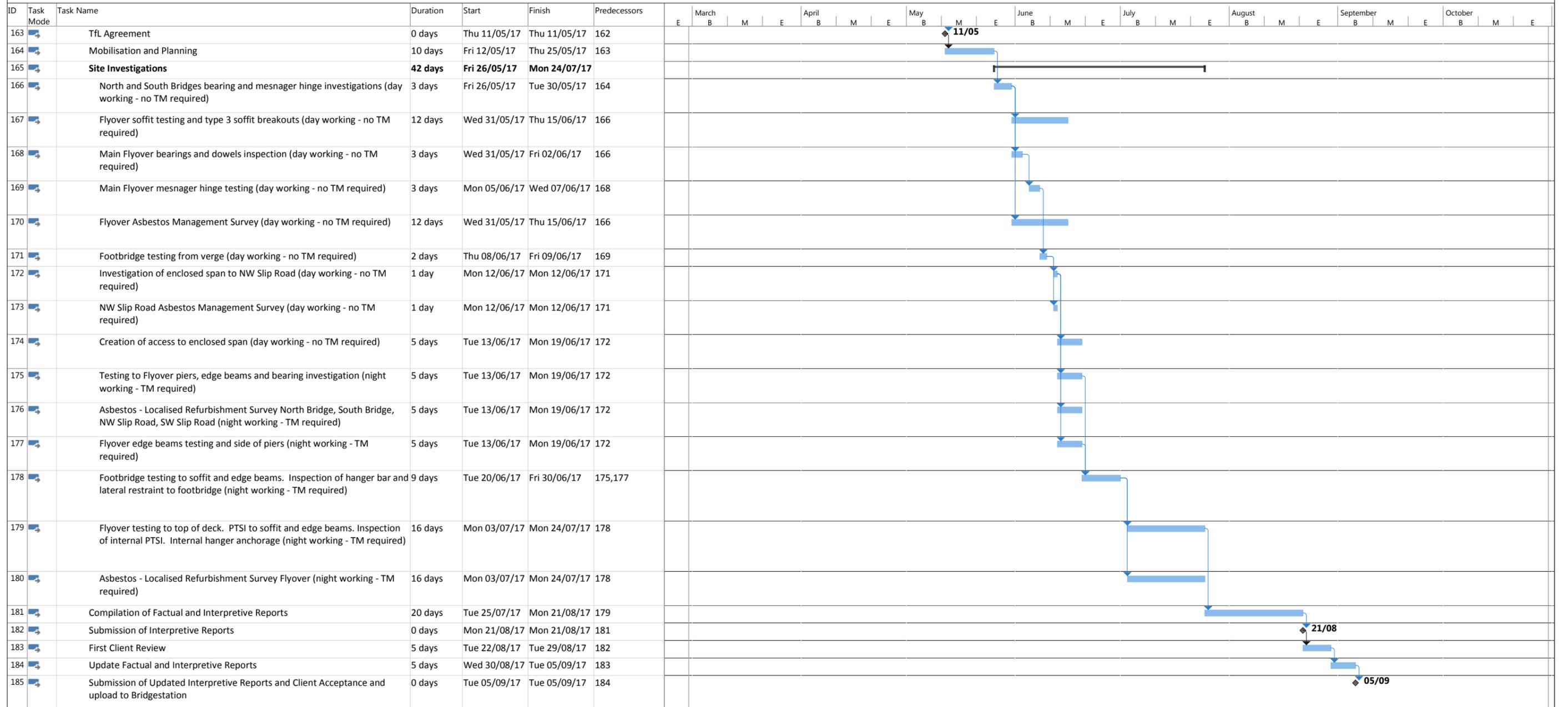
## Programme for Stage 2 - Investigations and Management Plan



Project: STIP2 CAT 1 & 2 High L  
Date: Fri 10/02/17

Task	Summary	Inactive Milestone	Duration-only	Start-only	External Milestone	Critical Split
Split	Project Summary	Inactive Summary	Manual Summary Rollup	Finish-only	Deadline	Progress
Milestone	Inactive Task	Manual Task	Manual Summary	External Tasks	Critical	Manual Progress

# STIP2 - A41/A406 Brent Cross Structures Refurbishment Programme for Stage 2 - Investigations and Management Plan



Project: STIP2 CAT 1 & 2 High L  
Date: Fri 10/02/17

Task	Summary	Inactive Milestone	Duration-only	Start-only	External Milestone	Critical Split
Split	Project Summary	Inactive Summary	Manual Summary Rollup	Finish-only	Deadline	Progress
Milestone	Inactive Task	Manual Task	Manual Summary	External Tasks	Critical	Manual Progress

**Appendix 1 Table – Approach to various Stages**

**Desk Study**

1. Collate and review all relevant data
2. Site visit
3. Review scope of proposed investigations - Identify potential efficiencies/opportunities – traffic management optimisation, relocate testing areas to minimise disruption.
4. Delivery Risk Register
5. Technical Review to include client sponsor and client technical approval authority (TAA).
6. Asbestos Desk Study
7. Stats Enquiries
8. Traffic Management Strategy ECI Costain
9. Traffic Orders (TfL, local and HE Network M1)
10. Stakeholder Management Plan (rail, road, river, emergency services, pedestrians, local commerce, Wembley stadium etc.
11. Agree special inspection technical plan with client.
12. Review scope, programme and budget and agree with client.

*Evidence:* our input for ODR, BCI, WLC, and ECI for Stage 1

*Value:* Key team members familiar with TfL requirements, infrastructure condition and its local context, thus benefits in quality and cost saving

**Mobilisation and Set Up**

13. Traffic Management & Pedestrian Management
  14. Stakeholder Liaison
  15. Access
  16. Lighting
- Evidence:* PF/Costain developed TM for BX1  
*Value:* Experience working on this asset

**Site Investigations and Site Supervision**

17. Site induction – health and safety/technical plan
18. Accredited Test House
19. Supervision
20. Continually review progress against programme/road-space occupancy restrictions
21. Float in site inspection programme

*Evidence:* PF/HTA optimised Technical Plan for BX1

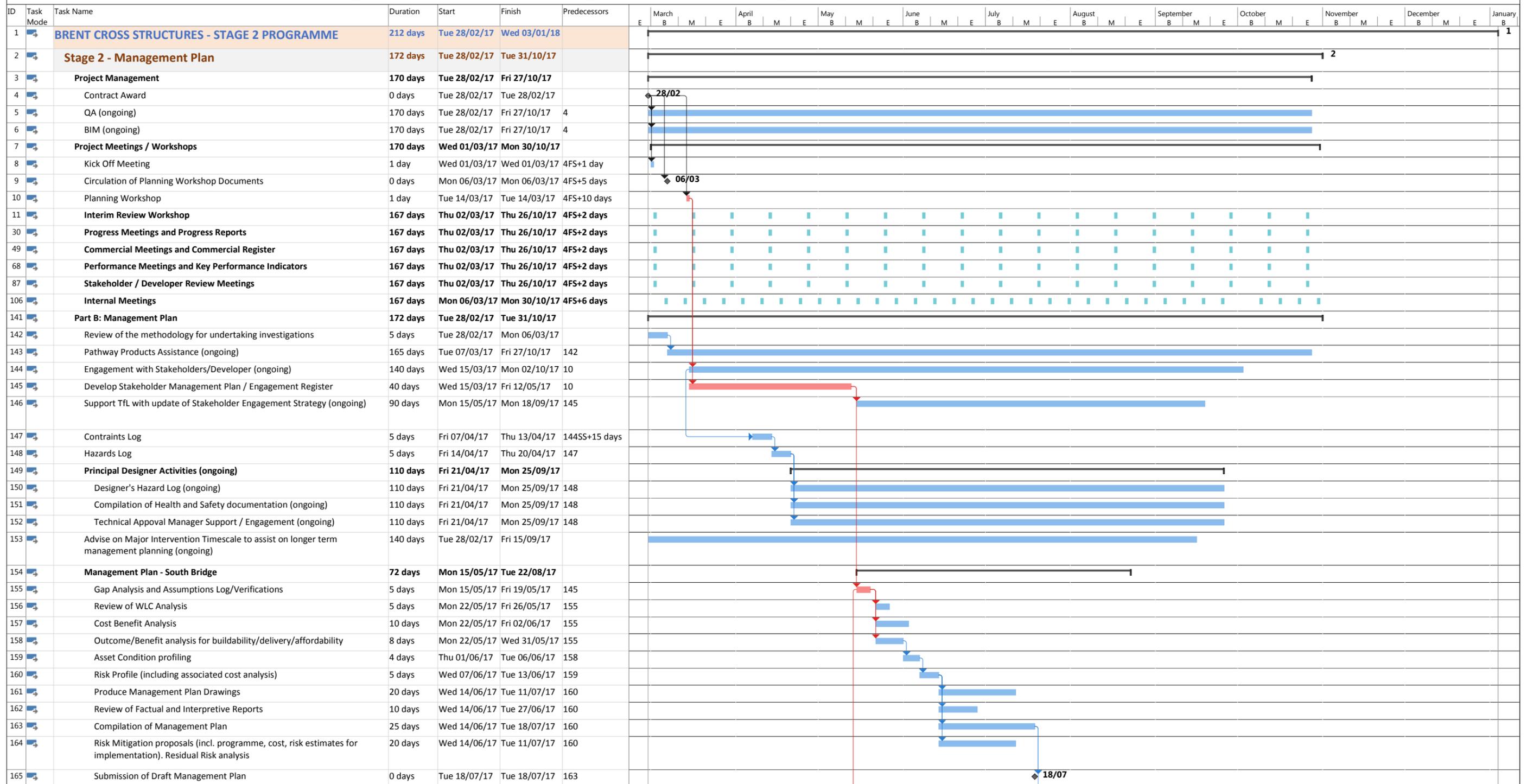
*Value:* Experience working on this asset, HTA carried out Stage 1(A) testing on BX1, HTA has historical and local experience of the structures.

**Review & Documentation**

22. We will review the available documentation and agree an appropriate special inspection technical plan with the client at the outset. Further to a study of the available asset information we will review the technical plan developed during Stage 1. We will carry out all the necessary SI documentation and upload them onto the TfL BridgStation database.

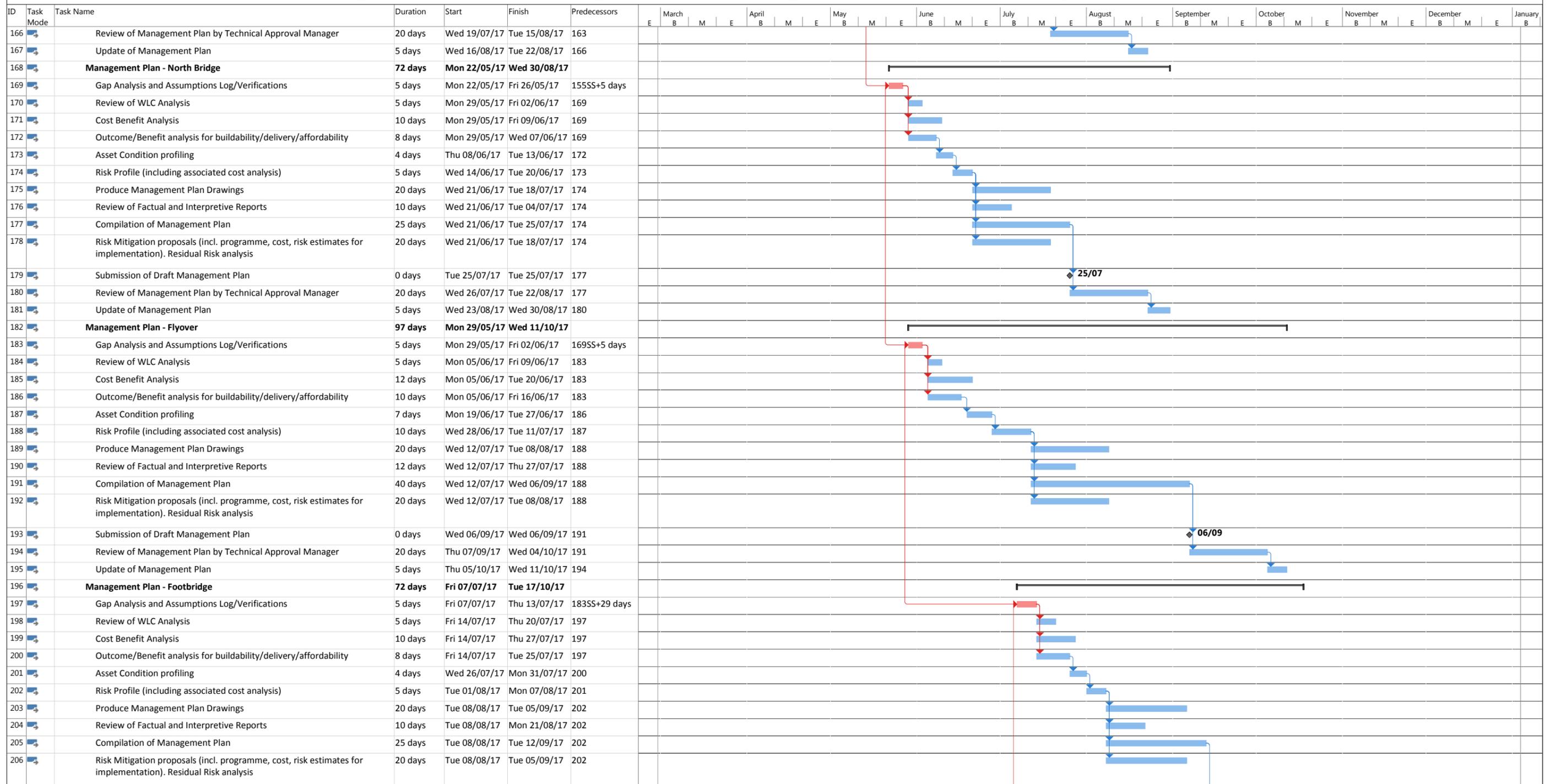
## Appendix 2 - Resources loaded programme

# STIP2 - A41/A406 Brent Cross Structures Refurbishment Programme for Stage 2 - Investigations and Management Plan



Project: STIP2 CAT 1 & 2 High L Date: Fri 10/02/17	Task:  Summary	Inactive Milestone:  Inactive Milestone	Duration-only:  Start-only	External Milestone:  External Milestone	Critical Split:  Critical Split
	Split:  Project Summary	Inactive Summary:  Inactive Summary	Manual Summary Rollup:  Finish-only	Deadline:  Deadline	Progress:  Progress
	Milestone:  Milestone	Manual Task:  Manual Task	Manual Summary:  Manual Summary	Critical:  Critical	Manual Progress:  Manual Progress

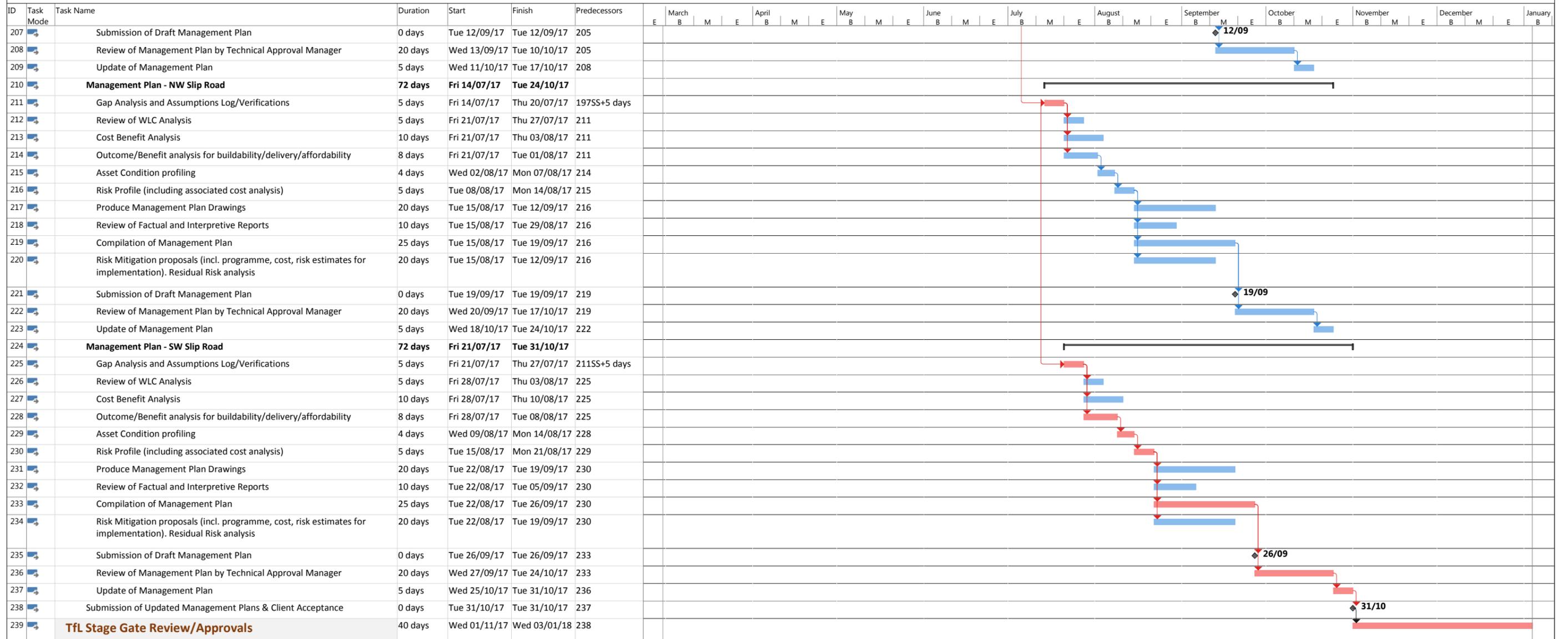
# STIP2 - A41/A406 Brent Cross Structures Refurbishment Programme for Stage 2 - Investigations and Management Plan



Project: STIP2 CAT 1 & 2 High L  
Date: Fri 10/02/17

Task		Summary		Inactive Milestone		Duration-only		Start-only		External Milestone		Critical Split	
Split		Project Summary		Inactive Summary		Manual Summary Rollup		Finish-only		Deadline		Progress	
Milestone		Inactive Task		Manual Task		Manual Summary		External Tasks		Critical		Manual Progress	

# STIP2 - A41/A406 Brent Cross Structures Refurbishment Programme for Stage 2 - Investigations and Management Plan

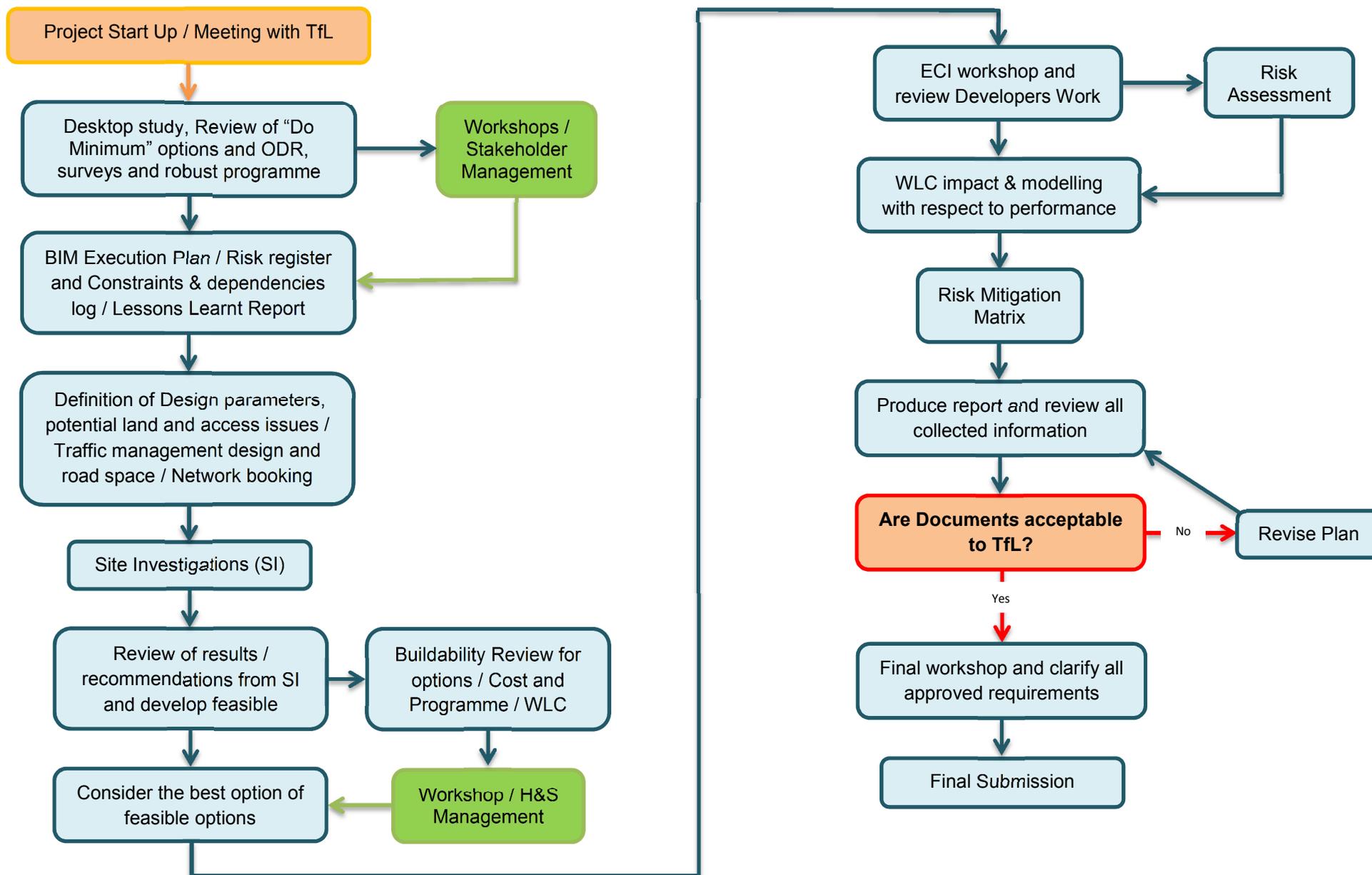


Project: STIP2 CAT 1 & 2 High L  
Date: Fri 10/02/17

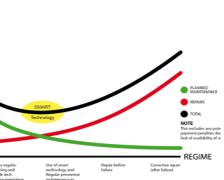
Task		Summary		Inactive Milestone		Duration-only		Start-only		External Milestone		Critical Split	
Split		Project Summary		Inactive Summary		Manual Summary Rollup		Finish-only		Deadline		Progress	
Milestone		Inactive Task		Manual Task		Manual Summary		External Tasks		Critical		Manual Progress	

Transport for London - Brent Cross Structures Investigation and Management Plan								
Resource Loaded Programme								
Part B - Management Plan								
 			PD	PC	SC	C	JC	
DISCIPLINES								
	Start	Finish	G1	G2	G3	G4	G5	
<b>Manage the Project</b>								
1	Quality Assurance and BIM							
1.1	QA Plan and Documentation	Tue 28/02/17	Fri 27/10/17	16.0		16.0	32.0	16.0
1.2	BIM	Tue 28/02/17	Fri 27/10/17	16.0		32.0	64.0	64.0
1.3	Programmer Activities for part A and B	Tue 28/02/17	Fri 27/10/17				128.0	
2	Meetings							
2.1	Kick Off Meeting	Wed 01/03/17	Wed 01/03/17	4.0	4.0	4.0	4.0	
2.2	Planning Workshop	Tue 14/03/17	Tue 14/03/17	3.0	3.0	4.0	4.0	4.0
2.3	Interim Review Workshops	Thu 02/03/17	Thu 26/10/17	54.0	27.0	54.0	54.0	72.0
2.4	Progress Meetings / Stakeholder and Developer Review Meetings / Commercial Meetings/ Performance Meetings	Thu 02/03/17	Thu 26/10/17	36.0		36.0	36.0	36.0
2.5	Internal Meetings	Mon 06/03/17	Mon 30/10/17	17.0	17.0	17.0	17.0	17.0
<b>Management Plan</b>								
3	Methodology							
3.1	Review of the methodology for undertaking investigations	Tue 28/02/17	Mon 06/03/17	10.0		20.0	40.0	40.0
3.2	Pathways Products Assistance (ongoing) : Provisional Activity see below	Tue 07/03/17	Fri 27/10/17					
4	Constraints / Hazards/ Risk Assessment and Mitigation Log							
4.1	Production of Constraints log	Fri 07/04/17	Thu 13/04/17	5.0		10.0	20.0	20.0
4.2	Production of Hazards Log	Fri 14/04/17	Thu 20/04/17	5.0		8.0	15.0	15.0
4.3	Advising on Major Intervention Timescale to assist on longer term management planning	Tue 28/02/17	Fri 15/09/17	5.0		12.0	25.0	25.0
5	Stakeholders Engagement							
5.1	Stakeholder management plan	Wed 15/03/17	Fri 12/05/17				36.0	48.0
5.2	Support TIL with Stakeholder Engagement during management study (ongoing) : Provisional Activity see below	Mon 15/05/17	Mon 18/09/17					
6	Principal Designer Activities (H&S)							
6.1	Review Designer Hazard's Log	Fri 21/04/17	Mon 25/09/17	10.0		20.0	40.0	40.0
6.2	H&S Documents	Fri 21/04/17	Mon 25/09/17	30.0	20.0	30.0	40.0	40.0
6.3	TIL Technical Approval Manager Support / Engagement (TAA) (ongoing) : Provisional Activity see below	Fri 21/04/17	Mon 25/09/17					
7	Management Plan - South Bridge							
7.1	Review of Structure Investigation Reports, WLC Analysis, Gap Analysis & Assumptions Log/Verifications	Mon 15/05/17	Tue 27/06/17	2.0		12.0	24.0	24.0
7.2	Cost Benefit Analysis	Mon 22/05/17	Fri 02/06/17	2.0		12.0	20.0	30.0
7.3	Outcome/Benefit analysis for buildability/delivery/affordability	Mon 22/05/17	Wed 31/05/17	2.0		24.0	32.0	32.0
7.4	Risk Profile Asset	Wed 07/06/17	Tue 13/06/17	3.0		20.0	24.0	32.0
7.5	Produce Management Plan Drawings	Wed 14/06/17	Tue 11/07/17			8.0	40.0	40.0
7.6	Compilation of Management Plan	Wed 14/06/17	Tue 18/07/17	5.0		32.0	40.0	40.0
7.7	Risk mitigation proposals (inc. programme, cost, risk estimates for implementation)/Residual Risk	Wed 14/06/17	Tue 11/07/17	2.0		40.0	40.0	40.0
7.8	Submission of Draft Management Plan	Tue 18/07/17	Tue 18/07/17				4.0	
7.9	Update of Management Plan	Wed 16/08/17	Tue 22/08/17	2.0		16.0	20.0	20.0
8	Management Plan - North Bridge							
8.1	Review of Structure Investigation Reports, WLC Analysis, Gap Analysis & Assumptions Log/Verifications	Mon 22/05/17	Tue 04/07/17	2.0		12.0	24.0	24.0
8.2	Cost Benefit Analysis	Mon 29/05/17	Fri 09/06/17	2.0		12.0	20.0	30.0
8.3	Outcome/Benefit analysis for buildability/delivery/affordability	Mon 29/05/17	Wed 07/06/17	2.0		16.0	16.0	16.0
8.4	Risk Profile Asset	Wed 14/06/17	Tue 20/06/17	3.0		20.0	24.0	32.0
8.5	Produce Management Plan Drawings	Wed 21/06/17	Tue 18/07/17			8.0	40.0	40.0
8.6	Compilation of Management Plan	Wed 21/06/17	Tue 25/07/17	5.0		32.0	40.0	40.0
8.7	Risk mitigation proposals (inc. programme, cost, risk estimates for implementation)/Residual Risk	Wed 21/06/17	Tue 18/07/17	2.0		20.0	40.0	40.0
8.8	Submission of Draft Management Plan	Tue 25/07/17	Tue 25/07/17				4.0	
8.9	Update of Management Plan	Wed 23/08/17	Wed 30/08/17	2.0		16.0	20.0	20.0
9	Management Plan - Flyover							
9.1	Review of Structure Investigation Reports, WLC Analysis, Gap Analysis & Assumptions Log/Verifications	Mon 29/05/17	Thu 27/07/17	4.0		12.0	24.0	24.0
9.2	Cost Benefit Analysis	Mon 05/06/17	Tue 20/06/17	4.0		24.0	40.0	40.0
9.3	Outcome/Benefit analysis for buildability/delivery/affordability	Mon 05/06/17	Fri 16/06/17	4.0		16.0	16.0	16.0
9.4	Risk Profile Asset	Wed 28/06/17	Tue 11/07/17	6.0		24.0	48.0	64.0
9.5	Produce Management Plan Drawings	Wed 12/07/17	Tue 08/08/17			8.0	56.0	56.0
9.6	Compilation of Management Plan	Wed 12/07/17	Wed 06/09/17	8.0		40.0	80.0	40.0
9.7	Risk mitigation proposals (inc. programme, cost, risk estimates for implementation)/Residual Risk	Wed 12/07/17	Tue 08/08/17	4.0		24.0	40.0	40.0
9.8	Submission of Draft Management Plan	Wed 06/09/17	Wed 06/09/17				4.0	
9.9	Update of Management Plan	Thu 05/10/17	Wed 11/10/17	4.0		16.0	20.0	20.0
10	Management Plan - Footbridge							
10.1	Review of Structure Investigation Reports, WLC Analysis, Gap Analysis & Assumptions Log/Verifications	Fri 07/07/17	Mon 21/08/17	2.0		12.0	24.0	24.0
10.2	Cost Benefit Analysis	Fri 14/07/17	Thu 27/07/17	2.0		20.0	30.0	30.0
10.3	Outcome/Benefit analysis for buildability/delivery/affordability	Fri 14/07/17	Tue 25/07/17	2.0		16.0	16.0	16.0
10.4	Risk Profile Asset	Tue 01/08/17	Mon 07/08/17	3.0		24.0	36.0	48.0
10.5	Produce Management Plan Drawings	Tue 08/08/17	Tue 05/09/17			8.0	48.0	48.0
10.6	Compilation of Management Plan	Tue 08/08/17	Tue 12/09/17	5.0		32.0	64.0	40.0
10.7	Risk mitigation proposals (inc. programme, cost, risk estimates for implementation)/Residual Risk	Tue 08/08/17	Tue 05/09/17	2.0		24.0	40.0	40.0
10.8	Submission of Draft Management Plan	Tue 12/09/17	Tue 12/09/17				4.0	
10.9	Update of Management Plan	Wed 11/10/17	Tue 17/10/17	2.0		16.0	20.0	20.0
11	Management Plan - NW Slip Road							
11.1	Review of Structure Investigation Reports, WLC Analysis, Gap Analysis & Assumptions Log/Verifications	Fri 14/07/17	Tue 19/09/17	2.0		12.0	24.0	24.0
11.2	Cost Benefit Analysis	Fri 21/07/17	Thu 03/08/17	2.0		12.0	20.0	20.0
11.3	Outcome/Benefit analysis for buildability/delivery/affordability	Fri 21/07/17	Tue 01/08/17	2.0		16.0	16.0	16.0
11.4	Risk Profile Asset	Tue 08/08/17	Mon 14/08/17	3.0		20.0	24.0	32.0
11.5	Produce Management Plan Drawings	Tue 15/08/17	Tue 12/09/17			8.0	40.0	40.0
11.6	Compilation of Management Plan	Tue 15/08/17	Tue 19/09/17	5.0		32.0	40.0	40.0
11.7	Risk mitigation proposals (inc. programme, cost, risk estimates for implementation)/Residual Risk	Tue 15/08/17	Tue 12/09/17	2.0		12.0	20.0	20.0
11.8	Submission of Draft Management Plan	Tue 19/09/17	Tue 19/09/17				4.0	
11.9	Update of Management Plan	Wed 18/10/17	Tue 24/10/17	2.0		16.0	20.0	20.0
12	Management Plan - SW Slip Road							
12.1	Review of Structure Investigation Reports, WLC Analysis, Gap Analysis & Assumptions Log/Verifications	Fri 21/07/17	Tue 05/09/17	2.0		12.0	24.0	24.0
12.2	Cost Benefit Analysis	Fri 28/07/17	Thu 10/08/17	2.0		12.0	20.0	20.0
12.3	Outcome/Benefit analysis for buildability/delivery/affordability	Fri 28/07/17	Tue 08/08/17	2.0		16.0	16.0	16.0
12.4	Risk Profile Asset	Tue 15/08/17	Mon 21/08/17	3.0		20.0	24.0	32.0
12.5	Produce Management Plan Drawings	Tue 22/08/17	Tue 19/09/17			8.0	40.0	40.0
12.6	Compilation of Management Plan	Tue 22/08/17	Tue 26/09/17	5.0		32.0	40.0	40.0
12.7	Risk mitigation proposals (inc. programme, cost, risk estimates for implementation)/Residual Risk	Tue 22/08/17	Tue 19/09/17	2.0		12.0	20.0	20.0
12.8	Submission of Draft Management Plan	Tue 26/09/17	Tue 26/09/17				4.0	
12.9	Update of Management Plan	Wed 25/10/17	Tue 31/10/17	2.0		16.0	20.0	20.0
<b>SUB-CONTRACTORS</b>								
	Costain Project Manager				15			
	Costain Site Agent					5		
	Costain Senior QS					20		
	Costain Accountant						4	
<b>PROVISIONAL ACTIVITIES</b>								
	Pathways Products Assistance (ongoing)			16.0			64.0	96.0
	Support TIL with Stakeholder Engagement during management study (ongoing)					50.0	96.0	96.0
	TIL Technical Approval Manager Support / Engagement (TAA) (ongoing)			85.0	16.0	40.0		

## Appendix 3 - Methodology Flow Chart / Other Considerations and Innovations table



**Other Considerations and Innovations table for Management Plan**

1	<p>All available reports (Factual and Interpretative) and <b>“Do Minimum Options”</b> of the structures will be reviewed to inform best option of feasible solutions and bring in our knowledge of Stage 1 into planned activities. We have a good working knowledge of TfL procedures and requirements from previous project and engagements. We will therefore bring on board all <b>lessons learnt</b> and <b>innovate</b> to ensure work outcome is of the <b>highest quality and standard</b>.</p>	
2	<p>Activities will be prioritised from the <b>WLC performance model</b>. These activities will be built into a flow chart and programme, with milestones established for the works. The works and progress will <b>be reviewed regularly and communicated to all parties</b>.</p>	
3	<p>There are a number of areas where potential innovations and value added initiatives could be applied to reduce cost, increase efficiency, achieve better value for money and work smarter. <b>These would add value to TfL</b> and its customers. During our earlier experience of STIP2 Brent Cross structures, we developed the basis for such innovative methods.</p>	
4	<p><b>Cost Reduction in Reducing number of Inspections and Concrete Investigations</b> We will review a strategic programme for undertaking structural investigations based on careful statistical approach and significance testing of various structural elements and their locations. As a result, we may be able to reduce the quantity of concrete investigations on areas that could be rationalised without much testing. A coordinated programme would be developed to ensure a minimum number of site traffic management.</p>	
5	<p><b>Design Out High Maintenance Components</b> We would aim to develop innovative alternative concepts and solutions to simplify maintenance and reduce future maintenance costs by considering designing out high maintenance components such continuity joints in the bridge decks, where possible, or adopting sacrificial anode corrosion protection techniques for the existing sub-structures. These should minimize future structural maintenance and expensive concrete repairs. Such corrosion protection solutions could delay major structural interventions associated with reinforcement steel corrosion. We intend to utilise such innovation and provide good value for money for TfL.</p>	
6	<p>We would aim to challenge the use of conventional high maintenance items in the 6 bridges, where possible, and instead develop a strategy for use of durable bridge components. Such innovation could minimise salt-water ingress/leakage through deck joints for example and retard steel reinforcement corrosion in associated bridges. This is part of our ‘Whole Life Performance’ design strategy in designing out and/or improving the high maintenance items, to provide future cost benefits to both TfL and associated stakeholders alike by reducing traffic disruptions and frequent road maintenance.</p>	
7	<p>As part of our design strategy we intend to develop <b>“whole life maintenance models”</b> for improved asset management of the 6 structures in this case. Such asset management approach would consider all the associated structural elements, joints, bearings and waterproofing, traffic and transport issues, environment and construction/ buildability aspects under a combined WLC model, bringing efficiency and rationalisation, economy, future maintenance optimization and environmental considerations on carbon footprint.</p>	
8	<p>We will be using BIM Common Data Environment to improve communication, facilitate efficient document control and avoid Potential information clashes. Using Laser Aided Modelling at a later stage, the survey information could be captured and imported directly into the BIM models.</p>	