

Surface Transport Infrastructure Construction (STIC) Framework

Gallows Corner Flyover Refurbishment Concept Design

Design Hazard Register

STPJ388- CST-MAC-15_XX-REG-HS-00001

C01

A3 – Authorised and Accepted



QUALITY MANAGEMENT

| Document information | | | |
|---|---|---------------------------|---------------|
| Title | Design Hazard Register | | |
| Structure Name: | Gallows Corner Flyover | | |
| Structure Reference No | A127/00.00 | | |
| Date | April 2023 | | |
| Document reference | STPJ388-CST-MAC-15_XX-REG-HS-00001 | Revision | C01 |
| Status | A3 – Authorised and Accepted | | |
| Originator | Client | | |
| Costain Limited Costain House Vanwall Business Park Maidenhead Berkshire SL6 4UB | Transport for London Palestra House 197 Blackfriars Road London, SE1 8NJ | | |
| Authorisation | | | |
| Prepared by | [Redacted] [COS] | [Redacted] | See signature |
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| Checked by | [Redacted] [COS] | [Redacted] | See signature |
| | [Redacted] [PELL] | [Redacted] | See signature |
| Approved for issue | [Redacted] [COS] | [Redacted] | See signature |
| Revision status | | | |
| Revision | Status | Description | Date |
| P01 | S3 | Initial Issue for Comment | 25/05/2023 |
| C01 | A3 | Authorised and Accepted | 18/07/2023 |
| | | | |



| TRANSPORT FOR LONDON ACCEPTANCE | |
|---------------------------------|--------------------------------------|
| Accepted by | Project Manager: Mike Dowding |
| Signature | MikeDowding [Redacted] |
| Date | See Digital Signature |
| Accepted by | SHE Manager: Charles Carew |
| Signature | CharlesCarew [Redacted] |
| Date | See Digital Signature |

Prioritisation / Ranking of Risks*

Likelihood

| Weight | Likelihood | Definition regarding Structure | Definition Regarding Persons |
|--------|----------------|--------------------------------|--------------------------------------|
| 1 | NOT LIKELY | Never – extremely unlikely | Little or no exposure to the risk |
| 2 | POSSIBLE | Every 10 years | Exposure to risk 20% of working time |
| 3 | QUITE POSSIBLE | Every few years | Exposure to risk 40% of working time |
| 4 | LIKELY | Every year | Exposure to risk 60% of working time |
| 5 | VERY LIKELY | Every month | Exposure to risk 80% of working time |

Severity

| Weight | Severity | Safety severity definition | Affect on environment |
|--------|-----------|---|--|
| 1 | LOW | Low risk of injury or disease | Low risk of injury or disease |
| 2 | SLIGHT | Fracture of digits (fingers, toes), strains and sprains, scratches, cuts, abrasions, bruising, minor burn, general discomfort, minor ill health, allergies, minor temporary illness (eye strain, back strain), any injury leading to less than 3 days off work. | Limited short term harm / minor breach of legislation or policy / minor business loss |
| 3 | MODERATE | Fracture to hands, wrist and/or ankles etc. unconsciousness, major burn, amputation of digits (fingers, toes), temporary loss of sight or hearing, any injury leading to between 3 days and a month off work. | Moderate harm / temporary or occasional breach of legislation or policy / moderate business loss |
| 4 | HIGH | Major injury or death to individual | Immediate and / or long term severe harm / breach of legislation or policy / high business loss |
| 5 | VERY HIGH | Multiple death and widespread destruction | Immediate and / or long term catastrophic harm / severe breach of legislation or policy / catastrophic business loss |

Prioritisation / Ranking of Risks*

occur as a result of the incident / accident and the likelihood (L) of the circumstances arising which could

Risk Ranking Matrix

| Severity | Likelihood | | | | |
|----------|------------|----|----|----|----|
| | 1 | 2 | 3 | 4 | 5 |
| 5 | 5 | 10 | 15 | 20 | 25 |
| 4 | 4 | 8 | 12 | 16 | 20 |
| 3 | 3 | 6 | 9 | 12 | 15 |
| 2 | 2 | 4 | 6 | 8 | 10 |
| 1 | 1 | 2 | 3 | 4 | 5 |

Guide to Rankings

| | |
|--------|---|
| HIGH | Risks are intolerable and additional controls must be introduced to reduce risk further |
| MEDIUM | Risks are tolerable, but only if additional control measures identified are not reasonably practicable to implement |
| LOW | Risks are broadly acceptable and risks should be monitored to ensure the level does not change |

Design Hazard Register (C5)

Project No.

Project Name: STIC A127Gallows Corner Flyover Refurbishment - Asbestos

| Ref. | Risk Category (and Phase where appropriate) e.g. location/environment, construction, operation, maintenance, alteration/demolition | Work Element/ Location (where appropriate) | Hazard or Risk Issue Identified | Risk Management Owner | Initial Risk Category | | | Design ERIC Action Required (e.g. hazard elimination/risk mitigation action, information to be provided to others) | Risk Category after Mitigation Measures | | | Significant Temporary Works Requirements/Management Arrangements and/or any Special Erection/Installation Sequences or Requirements | Design Action Status/Final Resolution Notes (e.g. traceability of ERICs action, communication of significant residual risk, critical design criteria, etc) | Significant Residual Risk after Mitigation Measures (Yes/No) | Date Logged/ Reviewed | Raised By | |
|------|---|--|--|-----------------------|-----------------------|--------------|------|---|---|--------------|------|---|---|--|-----------------------|------------|---------|
| | | | | | Likelihood "L" | Severity "S" | Risk | | Likelihood "L" | Severity "S" | Risk | | | | | | |
| 1 | Construction | Southeast Arterial Road, traffic flow North-West | 6" diameter AC Water Pipe running beneath pedestrian walkway and adjacent to edge of carriageway | TIL, Costain | 3 | 5 | 15 | High | Appropriate asbestos test shall be taken prior to any excavation works being conducted | 1 | 5 | 5 | Low | Open | No | 19/05/2023 | Costain |
| 2 | Construction | | PCI states that there is potential ACM's to exist within the existing structure. | TIL, Costain | 3 | 5 | 15 | High | Appropriate asbestos surveys shall be taken in the bridge deck, before any works begin. | 1 | 5 | 5 | Low | Open | No | 19/05/2023 | Costain |

Design Hazard Register (C5)

Project No.

Project Name: STIC A127Gallows Corner Flyover Refurbishment - Demolition

| Ref. | Risk Category (and Phase where appropriate) e.g. location/environment, construction, operation, maintenance, alteration/demolition | Work Element/ Location (where appropriate) | Hazard or Risk Issue Identified | Risk Management Owner | Initial Risk Category | | | Design ERIC Action Required (e.g. hazard elimination/risk mitigation action, information to be provided to others) | Risk Category after Mitigation Measures | | | Significant Temporary Works Requirements/Management Arrangements and/or any Special Erection/Installation Sequences or Requirements | Design Action Status/Final Resolution Notes (e.g. traceability of ERICs action, communication of significant residual risk, critical design criteria, etc) | Significant Residual Risk after Mitigation Measures (Yes/No) | Date Logged/ Reviewed | Raised By | |
|------|---|---|---|-----------------------|-----------------------|--------------|------|---|--|--------------|------|---|---|--|--------------------------|------------|----|
| | | | | | Likelihood "L" | Severity "S" | Risk | | Likelihood "L" | Severity "S" | Risk | | | | | | |
| 1 | Operation | Superstructure | Dismantling/demolition of the existing deck - instability of the structure resulting in an unplanned collapse | Costain | 4 | 5 | 20 | High | ECl and buildability to be checked. Demolition specialist to be appointed, exclusion | 2 | 5 | 10 | Medium | Open | No | 18/05/2023 | PF |
| 2 | Operation | Superstructure | Potential damage to the buried utilities and structures while setting up craneage. | Costain | 4 | 5 | 20 | High | Statutory undertakes information is available upon request to the contractor. | 2 | 5 | 10 | Medium | Open | No | 19/05/2023 | PF |
| 3 | Operation | Superstructure | Dust emissions. | Costain | 4 | 4 | 16 | High | Control measures to reduce dust emissions to be put in place. | 2 | 2 | 4 | Low | Open | No | 18/05/2023 | PF |
| 4 | Operation | Superstructure | Columns and bracings would be unstable | Costain | 4 | 5 | 20 | High | ECl and buildability to be checked. Engineers to routinely check columns and bracing for any signs of movement. | 3 | 3 | 9 | Medium | Open | No | 19/05/2023 | PF |

Design Hazard Register (C5)

Project No.

Project Name: STIC A127 Gallows Corner Refurbishment - Work Package 1 - Drainage

| Ref. | Risk Category (and Phase where appropriate) e.g. location/environment, construction, operation, maintenance, alteration/demolition | Work Element/ Location (where appropriate) | Hazard or Risk Issue Identified | Risk Management Owner | Initial Risk Category | | | Design ERIC Action Required (e.g. hazard elimination/risk mitigation action, information to be provided to others) | Risk Category after Mitigation Measures | | | Significant Temporary Works Requirements/Management Arrangements and/or any Special Erection/Installation Sequences or Requirements | Design Action Status/Final Resolution Notes (e.g. traceability of ERJs action, communication of significant residual risk, critical design criteria, etc.) | Significant Residual Risk after Mitigation Measures (Yes/No) | Date Logged/ Reviewed | Raised By | | |
|------|---|--|--|-----------------------|-----------------------|--------------|------|--|---|--------------|------|---|--|--|-----------------------|-----------|------------|---------|
| | | | | | Likelihood "L" | Severity "S" | Risk | | Likelihood "L" | Severity "S" | Risk | | | | | | | |
| 1 | Construction | | Risk of flooding | Costain | 2 | 4 | 8 | Medium | Review all as built drawings, Carry out CCTV condition survey. . Check EA flood maps for area. Provide RAMS | 1 | 4 | 4 | Low | Particular care to plan the access and review all site constraints when planning works. Provide necessary temporary emergency pumping during excavation of deep trenches and suitable trench support and means of escape | Open | No | 17/04/2023 | Costain |
| 2 | Construction | | Risk of trench or sewer collapse as a result of overloading from construction plant. | Costain | 3 | 4 | 12 | Medium | Construction plant will not be located above or adjacent to a trench/sewer. If this is not possible, then temporary works will be provided to bridge over the trench/sewer or the applied loading will be spread, using suitable mats to an acceptable ground pressure. All open excavation to be protected by suitable means. Site personnel to be segregated away from open excavations where possible. All excavations to be backfilled as soon as reasonably practicable. | 1 | 4 | 4 | Low | Regular inspections, cleaning of debris and jetting required during the works Contractor to provide RAMS and method statement prior to carrying out any excavation works on site. | Open | No | 17/04/2023 | Costain |

Design Hazard Register (C5)

Project No.

Project Name: STIC A127 Gallows Corner Refurbishment - Work Package 1 - Drainage

| Ref. | Risk Category (and Phase where appropriate) e.g. location/environment, construction, operation, maintenance, alteration/demolition | Work Element/ Location (where appropriate) | Hazard or Risk Issue Identified | Risk Management Owner | Initial Risk Category | | | Design ERIC Action Required (e.g. hazard elimination/risk mitigation action, information to be provided to others) | | | Risk Category after Mitigation Measures | | | Significant Temporary Works Requirements/Management Arrangements and/or any Special Erection/Installation Sequences or Requirements | Design Action Status/Final Resolution Notes (e.g. traceability of ERIs action, communication of significant residual risk, critical design criteria, etc.) | Significant Residual Risk after Mitigation Measures (Yes/No) | Date Logged/ Reviewed | Raised By |
|------|---|--|---|-----------------------|-----------------------|--------------|------|--|---|--------------|---|---------|--------|---|--|--|-----------------------|-----------|
| | | | | | Likelihood "L" | Severity "S" | Risk | Ranking | Likelihood "L" | Severity "S" | Risk | Ranking | | | | | | |
| 3 | Operation | | The capacity and water levels in the existing downstream pipework and culverts, may not have sufficient capacity for extreme rainfall events and may flood onto the highway or into adjacent properties. Condition and efficiency of outfall pipework unknown | TfL, Costain | 3 | 2 | 6 | Low | No historical flooding has been reported and the area is within the low risk flood zone 1. | 3 | 2 | 6 | Low | Inspection and maintenance regime to be provided. | Open | Yes | 17/04/2023 | Costain |
| 4 | Construction | | Utility strikes during excavation works | TfL, Costain | 4 | 4 | 16 | High | Provide copies of all recent (within 6 months) utility record plans to site. Provide all utility contact details for local engineer and emergency contact details. Provide any GPR survey plans. A safe system of work will be implemented that follows the guidance in HSE document HSG47. | 2 | 4 | 8 | Medium | Use dial before you dig facility. Ensure local utility engineer has been contacted and is present during high risk excavations. Hand dug trial trenches to be carried out to locate all recorded and uncharted utilities. | Open | No | 17/04/2023 | Costain |
| 5 | Construction | | Structures below ground /culverts. | Costain | 3 | 5 | 15 | High | Review all as built drawings. Carry out CCTV condition survey. Provide RAMS to Principle Contractor. | 1 | 5 | 5 | Low | Particular care to plan the access and review all site constraints when planning works. Provide necessary temporary emergency pumping during excavation of deep trenches and suitable trench support and means of escape | Open | No | 18/05/2023 | PF |
| 6 | Operation | | Access to water main for maintenance, restricted working room below structure for maintenance activities. | TfL | 3 | 3 | 9 | Medium | Design to incorporate removable deck panels to be provided, to facilitate access for maintenance activities. Stakeholder to be consulted during design phases. | 1 | 3 | 3 | Low | RAMS to be provided to Principle Contractor, and confined space training provided before anyone enters restricted working space below structure. | Open | No | 18/05/2023 | PF |

Design Hazard Register (C5)

Project No.

Project Name: STIC A127Gallows Corner Flyover Refurbishment - Excavation Works

| Ref. | Risk Category (and Phase where appropriate) <i>e.g. location/environment, construction, operation, maintenance, alteration/demolition</i> | Work Element/ Location (where appropriate) | Hazard or Risk Issue Identified | Risk Management Owner | Initial Risk Category | | | Design ERIC Action Required <i>(e.g. hazard elimination/risk mitigation action, information to be provided to others)</i> | | | Risk Category after Mitigation Measures | | | Design Action Status/Final Resolution Notes <i>(e.g. traceability of ERICs action, communication of significant residual risk, critical design criteria, etc)</i> | Significant Residual Risk after Mitigation Measures (Yes/No) | Date Logged/ Reviewed | Raised By |
|------|--|--|---|-----------------------|-----------------------|--------------|------|--|--|------|---|--------------|------|--|--|-----------------------|-----------|
| | | | | | Likelihood "L" | Severity "S" | Risk | Likelihood "L" | Severity "S" | Risk | Likelihood "L" | Severity "S" | Risk | | | | |
| 1 | Construction | | Risk to traffic and site personnel falling into excavation. | TFL, Costain | 3 | 4 | 12 | Medium | <p>lane closure with reduced traffic speed, or full Traffic management to be used during excavation. All excavation shall be backfilled prior to opening road to traffic, and prior to implementation of narrow lanes TM.</p> | 1 | 4 | 4 | Low | The Principal Contractor will need to put in place suitable risk control measures and working methods, if not already included within internal working practises and policies. | 26/04/2023 | Costain | |
| 2 | Construction | | Contamination from the ground during excavation, potential risk to human health. There is also a risk of exposure to potential ground gas. | TFL, Costain | 2 | 4 | 8 | Medium | <p>Trail pits to be carried out includes Waste, and correct testing procedures for ground gas. Acceptance Criteria Test. Materials to be taken off site to a licensed tip. If testing identifies the presence of ground gas, suitable gas detection equipment, ventilation and PPE will be provided.</p> | 1 | 4 | 4 | Low | Trial pits survey report, WAC criteria and Drawings to be given to the site team. | 26/04/2023 | Costain | |
| 3 | Construction | | Possible risk from groundwater when excavation works are taking place. | TFL, Costain | 3 | 4 | 12 | Medium | <p>Control measures to be put in place to reduce risk of groundwater entering excavation works. Dewatering equipment may be required to remove groundwater when works are taking place.</p> | 2 | 3 | 6 | Low | The Principal Contractor will need to put in place suitable risk control measures and working methods, if not already included within internal working practises and policies. | 25/05/2023 | Costain | |

Design Hazard Register (C5)

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|---|--------------|--|--------------|---|---|----|------|--|---|---|---|-----|--|------|----|------------|---------|
| 4 | Construction | Potential for live services to harm site operatives if a service is struck. Loss of service to 3rd parties. | TfL, Costain | 4 | 5 | 20 | High | Statutory undertakes information is available upon request to the contractor. A safe system of work will be implemented that follows the guidance in HSE document HSG47 | 1 | 5 | 5 | Low | The Principal Contractor will need to put in place suitable risk control measures and working methods if not already included within internal working practises and policies. The Principal Contractor should satisfy themselves of the exact locations of statutory undertakers apparatus and clearly mark them on site. There will be no mechanical digging - all excavations to be hand dug to determine the location of stats. | Open | No | 26/04/2023 | Costain |
| 5 | Construction | Potential for excavation works to undermine the existing structure. | TfL, Costain | 2 | 3 | 6 | Low | Minimal excavation required around existing structures, mainly for new curb alignment. Pile caps to be monitored when exposed and throughout works | 2 | 3 | 6 | Low | The Principal Contractor will need to put in place suitable risk control measures and working methods if not already included within internal working practises and policies. Condition of Pile caps to be assessed when exposed by specialist. | Open | No | 25/05/2023 | Costain |
| 6 | Construction | Construction near a live watercourse resulting in a possible strike or weakening of the watercourse. | TfL, Costain | 4 | 4 | 16 | High | Statutory undertakes information is available upon request to the contractor. Review all as built drawings. Carry out CCTV condition survey. Provide RAMS to Principle Contractor. Control measures to be put in place to reduce risk of groundwater entering excavation works. Dewatering equipment may be required to remove groundwater when works are taking place. | 1 | 4 | 4 | Low | The Principal Contractor will need to put in place suitable risk control measures and working methods if not already included within internal working practises and policies. The Principal Contractor should satisfy themselves of the exact locations of statutory undertakers apparatus and clearly mark them on site. There will be no mechanical digging - all excavations to be hand dug to determine the location of stats. | Open | No | 26/04/2023 | Costain |

Project No.

Project Name: STIC A127 Gallows Corner Flyover Refurbishment - Work Package 1 - Foundations and Pavement

| Ref. | Risk Category (and Phase where appropriate) e.g. location/element, construction, operation, maintenance, alteration/demolition | Work Element/ Location (where appropriate) | Hazard or Risk Issue Identified | Risk Management Owner | Initial Risk Category | | | Design ERIC Action Required (e.g. hazard elimination/risk mitigation action, information to be provided to others) | Risk Category after Mitigation Measures | | | Significant Residual Risk after Mitigation Measures (Yes/No) | Date Logged/ Reviewed | Raised By | |
|------|---|--|---|-----------------------|-----------------------|--------------|------|---|---|--------------|------|--|-----------------------|------------|---------|
| | | | | | Likelihood "L" | Severity "S" | Risk | | Likelihood "L" | Severity "S" | Risk | | | | |
| 1 | Construction | | Working adjacent to live traffic | TIL, Costain | 3 | 5 | 15 | High | Provision of suitable barriers to prevent access and conflict leading to interaction. | 1 | 5 | 5 | Low | 26/04/2023 | Costain |
| 2 | Construction | | Groundwater contamination | TIL, Costain | 3 | 4 | 12 | Medium | Trial pits to be excavated at various locations throughout the site and testing carried out including Waste Acceptance Criteria Test (WAC Test). All open excavation to be protected by suitable means. Site personnel to be segregated away from open excavations where possible. All excavations to be backfilled as soon as reasonably practicable. | 1 | 4 | 4 | Low | 26/04/2023 | Costain |
| 3 | Construction | | Excavation for the works, resulting in falls from height. | TIL, Costain | 3 | 4 | 12 | Medium | | 2 | 4 | 8 | Medium | 26/04/2023 | Costain |

Project No.

Project Name: STIC A127 Gallows Corner Flyover Refurbishment - Work Package 1 - Foundations and Pavement

| Ref. | Risk Category (and Phase where appropriate) e.g. location/enhancement, construction, operation, maintenance, alteration/demolition | Work Element/ Location (where appropriate) | Hazard or Risk Issue Identified | Risk Management Owner | Initial Risk Category | | | Design ERIC Action Required (e.g. hazard elimination/risk mitigation action, information to be provided to others) | Risk Category after Mitigation Measures | | | Significant Residual Risk after Mitigation Measures (Yes/No) | Design Action Status/Final Resolution Notes (e.g. traceability of ERICs action, communication of significant residual risk, critical design criteria, etc) | Date Logged/ Reviewed | Raised By | | |
|------|---|--|---|-----------------------|-----------------------|--------------|------|--|---|--------------|------|--|--|-----------------------|-----------|------------|---------|
| | | | | | Likelihood "L" | Severity "S" | Risk | | Likelihood "L" | Severity "S" | Risk | | | | | | |
| 4 | Construction | | Unexpected poor ground conditions | TIL, Costain | 4 | 5 | 20 | High | Foundation re-design at short notice. Trial holes to be carried out, soil to be tested and results provided to designer. | 1 | 3 | 3 | Low | Open | No | 26/04/2023 | Costain |
| 5 | Construction | | Presence of Asbestos in the made ground | TIL, Costain | 2 | 5 | 10 | Medium | Appropriate asbestos test shall be taken prior to any excavation works being conducted. | 1 | 5 | 5 | Low | Open | No | 26/04/2023 | Costain |
| 6 | Construction | | Possibility of a services strike taking place. | TIL, Costain | 4 | 5 | 20 | High | Statutory undertakes information is available upon request to the contractor to show location of existing services, A safe system of work will be implemented that follows the guidance in HSE document HSG47. | 2 | 5 | 10 | Medium | Open | No | 25/05/2023 | Costain |
| 7 | Design | | Unknown condition or capacity of the foundation, pile caps, and ground beam can lead to instability of the structure. Condition of the hidden elements such as ground beams and precast panels and columns supporting the ramps around the water main. Uncertainty of the fill behind the abutment. | Pell Frischmann | 3 | 4 | 12 | Medium | Ground surveys and concrete testing will be carried out, Concrete cores and test for compressive strength and petrographic analysis, exploratory investigation will be carried out. | 1 | 4 | 4 | Low | Open | No | 18/05/2023 | PF |

Design Hazard Register (C5)

Project No.

Project Name: STIC A127Gallows Corner Flyover Refurbishment - Health and Safety

| Ref. | Risk Category (and Phase where appropriate) e.g. location/environment, construction, operation, maintenance, alteration/demolition | Work Element/ Location (where appropriate) | Hazard or Risk Issue Identified | Risk Management Owner | Initial Risk Category | | | Design ERIC Action Required (e.g. hazard elimination/risk mitigation action, information to be provided to others) | | | Risk Category after Mitigation Measures | | | Significant Residual Risk after Mitigation Measures (Yes/No) | Date Logged/ Reviewed | Raised By |
|------|---|--|---|-----------------------|-----------------------|--------------|------|---|--|------|---|---------|---------|--|-----------------------|-----------|
| | | | | | Likelihood "L" | Severity "S" | Risk | Likelihood "L" | Severity "S" | Risk | Ranking | Ranking | Ranking | | | |
| 1 | Construction | | Fire and other emergencies (Entrapment, explosions, flooding, and structural collapse). | Costain | 2 | 5 | 10 | Medium | Assembly point to be established. | 1 | 5 | 5 | Low | 18/05/2023 | PF | |
| 2 | Construction | | Potential risk of human accidents due to fatigue of staff. Reduction in quality. | Costain | 3 | 3 | 9 | Medium | Shift hours during weekend and nights to be reduced. | 1 | 3 | 3 | Low | 18/05/2023 | PF | |
| 3 | Construction | | Injury from hydro demolition works causing dust and flying debris due to partial demolition of abutment pile caps and removal of mass concrete fill to ramps. | Costain | 4 | 4 | 16 | High | Solid enclosures will be positioned around the hydro-demolition works. | 2 | 4 | 8 | Medium | 18/05/2023 | PF | |
| 4 | Construction | | Potential presence of lead paint. | Costain | 4 | 4 | 16 | High | (CLAW) Regulation 2002 advises following the assess, control and review model to minimise potential exposure to lead. Tanking during removal paint and appropriate PPE. | 2 | 4 | 8 | Medium | 18/05/2023 | PF | |

Design Hazard Register (C5)

Project No.

Project Name: STIC A127Gallows Corner Flyover Refurbishment - Lighting and Signage

| Ref. | Risk Category (and Phase where appropriate) e.g. location/environment, construction, operation, maintenance, alteration/demolition | Work Element/Location (where appropriate) | Hazard or Risk Issue Identified | Risk Management Owner | Initial Risk Category | | | Design ERIC Action Required (e.g. hazard elimination/risk mitigation action, information to be provided to others) | Risk Category after Mitigation Measures | | | Significant Temporary Works Requirements/Management Arrangements and/or any Special Erection/Installation Sequences or Requirements | Design Action Status/Final Resolution Notes (e.g. traceability of ERICs action, communication of significant residual risk, critical design criteria, etc) | Significant Residual Risk after Mitigation Measures (Yes/No) | Date Logged/Reviewed | Raised By | |
|------|---|---|--|-----------------------|-----------------------|--------------|------|---|--|--------------|------|---|---|--|----------------------|------------|---------|
| | | | | | Likelihood "L" | Severity "S" | Risk | | Likelihood "L" | Severity "S" | Risk | | | | | | |
| 1 | Highway | | Lighting cable strike | TfL, Costain | 3 | 4 | 12 | Medium | Statutory undertakes information is available upon request to the contractor. A safe system of work will be implemented that follows the guidance in HSE document HSG47. | 2 | 4 | 8 | Medium | Open | No | 24/05/2023 | Costain |
| 2 | Highway | | The Existing lighting may need to be removed temporarily as part of the works, resulting in low lighting level increasing the risk of trips, falls and near miss occurrences taking place. | TfL, Costain | 3 | 4 | 12 | Medium | Temporary lighting will be provided to compensate for the removal of existing lighting columns. | 1 | 4 | 4 | Low | Open | No | 25/05/2023 | Costain |
| 3 | Highway | | Construction works interfacing with lighting columns, traffic signs, and detector loops. Interface with services in excavation. | Costain | 3 | 4 | 12 | Medium | The locations of signs and lightings needs to be considered before setting up the craneage and dismantling the deck. | 2 | 3 | 6 | Low | Open | No | 18/05/2023 | PF |

Design Hazard Register (C5)

Project No.

Project Name: STIC A127Gallows Corner Flyover Refurbishment - Procurement

| Ref. | Risk Category (and Phase where appropriate) e.g. location/environment, construction, operation, maintenance, alteration/demolition | Work Element/ Location (where appropriate) | Hazard or Risk Issue Identified | Risk Management Owner | Initial Risk Category | | | Design ERIC Action Required (e.g. hazard elimination/risk mitigation action, information to be provided to others) | Risk Category after Mitigation Measures | | | Significant Temporary Works Requirements/Management Arrangements and/or any Special Erection/Installation Sequences or Requirements | Design Action Status/Final Resolution Notes (e.g. traceability of ERICs action, communication of significant residual risk, critical design criteria, etc) | Significant Residual Risk after Mitigation Measures (Yes/No) | Date Logged/Reviewed | Raised By | |
|------|---|---|--|-----------------------|-----------------------|--------------|------|---|---|--------------|------|---|---|--|----------------------|------------|----|
| | | | | | Likelihood "L" | Severity "S" | Risk | | Likelihood "L" | Severity "S" | Risk | | | | | | |
| 1 | Procurement | | Delay to construction start date, due to supplier delays and change of client scope. Potential delay to the completion of the detailed design and to start of the construction phase. | Costain, TIL | 4 | 3 | 12 | Medium | Detailed Design to progress to facilitate ordering the necessary construction materials and bespoke design elements before the construction phase. | 2 | 3 | 6 | Low | Open | No | 18/05/2023 | PF |
| 2 | Construction | | Inflation/risk of difference material price in tenders and construction period. Procurement cost greater than anticipated. | Costain | 4 | 4 | 16 | High | Estimation of cost due to regular annual inflation to get closer price of materials and pre-cast deck units. | 3 | 4 | 12 | Medium | Open | No | 18/05/2023 | PF |
| 3 | Stakeholders | | High noise and vibration during the construction to stakeholders and residents. Destruction to local businesses. | Costain, TIL | 3 | 4 | 12 | Medium | Control measures will be agreed to maintain acceptable levels, to avoid any unnecessary noise nuisance to residents. Day and night-time noise surveys will be required to set base line noise levels. | 2 | 3 | 6 | Low | Open | Yes | 18/05/2023 | PF |

Design Hazard Register (C5)

Project No.

object Name: STIC A127 Gallows Corner Refurbishment - Work Package 1 - Safety Barriers and Fence

| Ref. | Risk Category (and Phase where appropriate) e.g. location/environment, construction, operation, maintenance, alteration/demolition | Work Element/ Location (where appropriate) | Hazard or Risk Issue Identified | Risk Management Owner | Initial Risk Category | | | Design ERIC Action Required (e.g. hazard elimination/risk mitigation action, information to be provided to others) | Risk Category after Mitigation Measures | | | Significant Temporary Works Requirements/Management Arrangements and/or any Special Erection/Installation Sequences or Requirements | Design Action Status/Final Resolution Notes (e.g. traceability of ERICs action, communication of significant residual risk, critical design criteria, etc) | Significant Residual Risk after Mitigation Measures (Yes/No) | Date Logged/ Reviewed | Raised By |
|------|---|--|---|-----------------------|-----------------------|--------------|------|---|---|--------------|------|---|---|--|-----------------------|-----------|
| | | | | | Likelihood "L" | Severity "S" | Risk | | Likelihood "L" | Severity "S" | Risk | | | | | |
| 1 | Operational | | Working in close proximity to the public, public safety (injury / noise etc) | TIL, Costain | 3 | 3 | 9 | Medium | 1 | 3 | 3 | Low | Open | No | 26/04/2023 | Costain |
| 2 | Operational | | Public safety from adjacent working operations and noise | TIL, Costain | 3 | 4 | 12 | Medium | 1 | 3 | 3 | Low | Open | No | 26/04/2023 | Costain |
| 3 | Construction | | Maintenance and construction work adjacent to live carriageways. Vehicle strikes maintenance and construction personnel. Public could be harmed during execution. | Costain | 3 | 4 | 12 | Medium | 1 | 4 | 3 | Low | Open | No | 18/05/2023 | PF |
| 4 | Construction | | Working from height/Falling from height/ Loss of control and points of contact | Costain | 4 | 5 | 20 | High | 2 | 5 | 10 | Medium | Open | No | 18/05/2023 | PF |
| 5 | Design | | Potential risk of closure to flyover if columns and pile caps experience vehicle impact. | Pell Frischmann | 4 | 4 | 16 | High | 1 | 4 | 4 | Low | Open | No | 18/05/2023 | PF |

Design Hazard Register (C5)

Project No.

Project Name: STIC A127Gallows Corner Flyover Refurbishment - Site Security

| Ref. | Risk Category (and Phase where appropriate) e.g. location/environment, construction, operation, maintenance, alteration/demolition | Work Element/ Location (where appropriate) | Hazard or Risk Issue Identified | Risk Management Owner | Initial Risk Category | | | Design ERIC Action Required (e.g. hazard elimination/risk mitigation action, information to be provided to others) | | | Risk Category after Mitigation Measures | | | Significant Temporary Works Arrangements and/or any Special Erection/Installation Sequences or Requirements | Design Action Status/Final Resolution Notes (e.g. traceability of ERIs action, communication of significant residual risk, critical design criteria, etc) | Significant Residual Risk after Mitigation Measures (Yes/No) | Date Logged/ Reviewed | Raised By |
|------|---|--|---|-----------------------|-----------------------|--------------|------|---|---|------|---|--------------|--------|---|--|--|-----------------------|-----------|
| | | | | | Likelihood "L" | Severity "S" | Risk | Likelihood "L" | Severity "S" | Risk | Likelihood "L" | Severity "S" | Risk | | | | | |
| 1 | Location environment | | Police suspension of work, due to an unforeseen incident. Potential risk to personnel, public or works. | TfL, Costain | 2 | 4 | 8 | Medium | Work with the Police to ensure the area is left safe. | 1 | 4 | 4 | Low | The Principal Contractor will need to put in place suitable risk control measures and working methods if not already included within internal working practises and policies. | Open | 26/04/2023 | Costain | |
| 2 | Location environment | | Risk of unauthorised access to the site. | TfL, Costain | 3 | 5 | 15 | High | Prohibited areas must be clearly demarcated using appropriate signage and fencing, to keep people out of the site who don't have authorised access. | 2 | 5 | 10 | Medium | The Principal Contractor will need to put in place suitable risk control measures and working methods if not already included within internal working practises and policies. | Open | 24/05/2023 | Costain | |
| 3 | Location environment | | Anti social behaviour interfering or stopping works taking place, Potential risk to personnel, public or works. | TfL, Costain | 2 | 4 | 8 | Medium | If appropriate the contractor should contact the local Police and notify the Project Manager. | 1 | 4 | 4 | Low | The Principal Contractor will need to put in place suitable risk control measures and working methods if not already included within internal working practises and policies. | Open | 26/04/2023 | Costain | |

Project No.

Project Name: STIC A127Gallows Corner Flyover Refurbishment - Superstructure

| Ref. | Risk Category (and Phase where appropriate) e.g. location/environment, construction, operation, maintenance, alteration/demolition | Work Element/ Location (where appropriate) | Hazard or Risk Issue Identified | Risk Management Owner | Initial Risk Category | | | Design ERIC Action Required (e.g. hazard elimination/risk mitigation action, information to be provided to others) | Risk Category after Mitigation Measures | | | Significant Temporary Works Requirements/Management Arrangements and/or any Special Erection/Installation Sequences or Requirements | Design Action Status/Final Resolution Notes (e.g. traceability of ERICs action, communication of significant residual risk, critical design criteria, etc) | Significant Residual Risk after Mitigation Measures (Yes/No) | Date Logged/ Reviewed | Raised By | |
|------|---|--|--|-----------------------|-----------------------|--------------|------|---|--|--------------|------|---|---|--|-----------------------|------------|----|
| | | | | | Likelihood "L" | Severity "S" | Risk | | Likelihood "L" | Severity "S" | Risk | | | | | | |
| 1 | Construction | | Instability of structure once new PC deck panels have been installed. | Costain | 3 | 4 | 12 | Medium | Construction sequence to be compiled and designer to inform strength requirement for grouted connections. | 2 | 2 | 4 | Low | Open | No | 25/05/2023 | PF |
| 2 | Construction | | Instability of steel beams, resulting in full or partial collapse during installation. | Costain | 4 | 4 | 16 | High | Temporary works design to inform requirements for lateral restraint | 2 | 4 | 8 | Medium | Open | No | 25/05/2023 | PF |
| 3 | Construction | | Overloading the bridge when in its temporary installation condition. | Costain | 3 | 3 | 9 | Medium | Typically 3kN/m ² load restriction for equipment and 10kN/m ² live load restriction to be implemented | 1 | 3 | 3 | Low | Open | No | 25/05/2023 | PF |
| 4 | Operation | | Lane width does not meet current design standards, resulting in collisions | TTL | 3 | 2 | 6 | Low | Due to narrow lanes on the flyover there is a risk of vehicular collision. Vehicle tracking has shown there to be limited available space if two HGVs were to pass simultaneously. | 2 | 2 | 4 | Low | Open | No | 18/05/2023 | PF |

Design Hazard Register (C5)

Project No.

Project Name: STIC A127Gallows Corner Flyover Refurbishment - Traffic Management

| Ref. | Risk Category (and Phase where appropriate) e.g. location/environment, construction, operation, maintenance, alteration/demolition | Work Element/ Location (where appropriate) | Hazard or Risk Issue Identified | Risk Management Owner | Initial Risk Category | | | Design Action Required (e.g. hazard elimination/risk mitigation action, information to be provided to others) | Risk Category after Mitigation Measures | | | Design Action Status/Final Resolution Notes (e.g. traceability of ERTs action, communication of significant residual risk, critical design criteria, etc) | Significant Residual Risk after Mitigation Measures (Yes/No) | Date Logged/ Reviewed | Raised By |
|------|---|--|--|-----------------------|-----------------------|--------------|--------------|--|--|--------------|--------------|--|--|-----------------------|-----------|
| | | | | | Likelihood "L" | Severity "S" | Risk Ranking | | Likelihood "L" | Severity "S" | Risk Ranking | | | | |
| 1 | Operation | | Setting up / removal / maintenance of traffic management | Costain | 3 | 5 | 15 | High | Temporary road closures/ TM diversion routes will be implemented to minimise traffic interface with the works area. | 1 | 5 | 5 | Low | 26/04/2023 | Costain |
| 2 | Operation | | Working adjacent to live traffic, vehicle / pedestrian collision | Costain | 4 | 5 | 20 | High | TM designed by specialist TM designer to current standards. | 1 | 5 | 5 | Low | 26/04/2023 | Costain |
| 3 | Operation | | Coming into contact with traffic that may ignore traffic management | Costain | 3 | 5 | 15 | High | TM designed by specialist TM designer to current standards. | 1 | 5 | 5 | Low | 26/04/2023 | Costain |
| 4 | Risk of errant vehicle impact | | Operatives safety from adjacent traffic during construction and traffic management | Costain | 4 | 5 | 20 | High | Temporary road closures/ TM diversion routes will be implemented to minimise traffic interface with the works area. Traffic management proposals complying with TSM Chapter 8 will be provided to ensure safety clearances are maintained during minor construction activities. Impact protection vehicles to be utilised as required, All traffic management signs and cones to be inspected for damage and maintained accordingly. Proposed access/ egress points to be identified on traffic management plans to take cognisance of adjacent diverted traffic. | 2 | 5 | 10 | Medium | 26/04/2023 | Costain |

Design Hazard Register (C5)

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|---|--------------------|--|---------|---|---|----|------|---|---|---|---|-----|--|------|----|------------|----|
| 5 | Operation | Speeding issues and working near live traffic. Risk of accident with site attendees and construction workers. | Costain | 3 | 5 | 15 | High | Carrageway and superstructure will be closed with a proper traffic management duration of the construction. | 1 | 5 | 5 | Low | Parapet containment capacity shall be improved, and consideration should be given to installing speed cameras. Ensuring appropriate traffic management is applied during construction operations. | Open | No | 18/05/2023 | PF |
| 6 | Traffic Management | Risk of disruption in connection between five roads including bus routes. | Costain | 5 | 3 | 15 | High | The roundabout should remain open. | 2 | 3 | 6 | Low | Where un-avoidable, partial or full closures should be timed to minimise the closure of the route, Provision of diversion routes. | Open | No | 18/05/2023 | PF |

Design Hazard Register (C5)

Project No.

Project Name: STIC A127Gallows Corner Flyover Refurbishment - Utilities and Services

| Ref. | Risk Category (and Phase where appropriate) e.g. location/environment, construction, operation, maintenance, alteration/demolition | Work Element/ Location (where appropriate) | Hazard or Risk Issue Identified | Risk Management Owner | Initial Risk Category | | | Design ERIC Action Required (e.g. hazard elimination/risk mitigation action, information to be provided to others) | Risk Category after Mitigation Measures | | | Significant Residual Risk after Mitigation Measures (Yes/No) | Date Logged/ Reviewed | Raised By | | | |
|------|---|--|---|-----------------------|-----------------------|--------------|------|---|---|--------------|------|--|-----------------------|-----------|----|------------|----|
| | | | | | Likelihood "L" | Severity "S" | Risk | | Likelihood "L" | Severity "S" | Risk | | | | | | |
| 1 | Utilities and services | | Risk of interfacing with cables while construction or setting up the required facilities due to presence of underground high voltage electric optics fibre. | Costain | 3 | 3 | 9 | Medium | Information about the cables location and utilities to be provided. A safe system of work will be implemented that follows the guidance in HSE document HSG47 | 2 | 3 | 6 | Low | Open | No | 18/05/2023 | PF |
| 2 | Utilities and services | | Risk of damage to water main due to existence of high pressure water main below the structure. Condition of water main is unknown. | Costain | 3 | 5 | 15 | High | All affected services to be indicated on design drawings. The condition of the watermain is to be assessed once it has been exposed. Local protection of the watermain to be provided as required | 2 | 5 | 10 | Medium | Open | No | 18/05/2023 | PF |
| 3 | Utilities and services | | Risk of explosion caused by damaging the gas mains. | Costain | 3 | 5 | 15 | High | Statutory undertakes information is available upon request to the contractor for the location of the gas main A safe system of work will be implemented that follows the guidance in HSE document HSG47. | 2 | 3 | 6 | Low | Open | No | 18/05/2023 | PF |



Design Hazard Register (C5)

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|---|------------------------|---|---------|---|---|----|--------|--|---|---|---|-----|---|------|----|------------|----|
| 4 | Utilities and services | Risk of damage to street lighting columns while deck is being removed. | Costain | 3 | 3 | 9 | Medium | <p>Early planning and removal of existing lighting columns that clash with lifting operations.</p> <p>Temporary lighting located away from the structure will be used to compensate for any reduction in light levels and to provided task lighting.</p> | 1 | 3 | 5 | Low | The Principal Contractor will need to put in place suitable risk control measures and working methods if not already included within internal working practises and policies. | Open | No | 18/05/2023 | PF |
| 5 | Utilities and services | Risk of spillage and entering the watercourse during construction operations. | Costain | 3 | 4 | 12 | Medium | Data and information are required to indicate the locations of water courses. Spill kits and local bunding will be issues as required to | 1 | 3 | 3 | Low | The Principal Contractor will need to put in place suitable risk control measures and working methods if not already included within internal working practises and policies. Spill kits or other methods to mitigate against spillage will be used. | Open | No | 18/05/2023 | PF |

F7275 A1 TfL Engineering - Surface and Highway Structures Submission Comments Form

| Part A: Comments to Designer/Contractor | | | | | | | | | |
|---|--------------|----------------------------------|------------------------|------------------------------|-------------|-------------|---|--|--|
| Subject / Project | | A127/0.00 Gallows Corner Flyover | | | | | | | |
| Rev | TfL Response | | | Designer/Contractor Response | | | Document Review Status Codes | | |
| | Date | Prepared By | Reviewed By | Date | Prepared by | Approved by | A. Accepted | | |
| 01 | 14/06/23 | Charles Carew | Mike Dowding | | | | B. Not Accepted: Comments to be addressed through re-submission | | |
| | | | | | | | | | |
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| Document Reference | | Rev | Title | | | | | | |
| STPJ388 -CST-MAC-15_XX-REG-HS-00001 | | P01 | Design Hazard Register | | | | | | |
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| Live comments or responses are shown Black font. Closed out comments and responses are shown in Grey highlight. Subsequent comments and responses are listed beneath the initial comment to which they relate and are numbered as #a, #b etc. | | | | | | | | | |

| COMMENTS | | | | | |
|----------|------------|------------------------|----------------|--------------|--|
| No | Comment by | Clause / Section Title | Clause/Sec. No | TfL Comments | Designer / Contractor Response (further response in red) |
| 1. | | | | No comments | |

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| COMMENTS | | | | | |
|----------|-----------------------------|------------------------|----------------|--------------|--|
| No | Comment by | Clause / Section Title | Clause/Sec. No | TfL Comments | Designer / Contractor Response (further response in red) |
| | Charles Carew - SHE Manager | | | | |
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| OBSERVATIONS (Informal comments which do not affect the approval status) | | | | | |
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Page 2 of 3



| OBSERVATIONS (Informal comments which do not affect the approval status) | | | | | | |
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