

### General Note:

During the design stages of a project, designers are required to maintain a **"Hazard Elimination Checklist"** (part B of this document). The 'checklist' records the various significant (high risk) hazards identified by the designer(s) and, where they have been able, details of how they have been eliminated.

It is recognised that not every hazard can be 'designed out' and therefore the checklist will also be used to record the residual risks of which the designer(s) are aware.

The checklist provides an audit trail of the design process and may also be used as evidence in the event that a designer is required to defend his or her actions in any HSE investigation.

Copies of parts A and B should be passed to all members of the project team, especially the Principal Designer. Reference must also be made to GG104 Requirements for safety risk assessment.

### Part A: Designer's Hazard Checklist

<b>Project Title:</b>	<b>A40 Hinders Lane EB MP181.7 Culvert</b>	<b>Kier Highways Job No.:</b>	<b>570124L</b>
<b>Project Description:</b>	<b>Topographical survey, vegetation clearance and culvert survey</b>		
<b>Design Discipline:</b>	<b>Kier design services</b>		
<b>Project Type as determined by GG104 (if applicable)</b>	<b>N/A</b>	<b>Prepared By:</b>	<b>[REDACTED]</b>

### Notes:

1. This section of the document includes a list of potential hazards pertaining to a wide range of situations which may occur across Kier Highways' activities. *Where particular categories do not ordinarily affect the scheme, **Part A should be edited/sections deleted to more accurately reflect the work carried out.***
2. An individual item or a whole section (by ticking the heading) can be noted as not applicable showing you have considered the hazard area and judged it to be not applicable.
3. The list of potential hazards is not exhaustive, and all sections can be added to, or additional sections added, as required. Reference to the Approved Code of Practice may be helpful.
4. All items considered by the designer as having a potential high risk must be addressed on the 'Hazard Elimination Management Schedule'. Low risk activities can also be included if considered appropriate.
5. Consideration must be given to all populations that may be affected as follows -

<b>Population 1</b> – People directly employed by the Client and who work on the site e.g. Traffic Officers.	<b>'Workers'</b>
<b>Population 2</b> – People in a contractual relationship with the client.	
<b>Population 3</b> – Other parties, including road users, the police and emergency services and non-motorised 'Users' such as equestrians, cyclists and pedestrians, as well as those others not in a contractual relationship with the client, such as privately contracted vehicle recovery and vehicle repair providers.	<b>'Users'</b>
<b>Population 4</b> – Third parties includes any person or persons who could be affected by the works, but who are neither using it, nor working on it, i.e. living or working adjacent to the site.	<b>'Other Parties'</b>

Potential Hazards Arising From:		Risk (without designer's elimination / management measures)			Comments
Ref:		Not Applicable	Low- NO Action Required	High – Action NEEDED	
1.	<b>Existing Environment</b>				
1.1	Existing buildings	✓			
1.2	Previous/existing land/ structures	✓			
1.3	Roadways			✓	A40 Adjacent to survey area. TM to be design by contractor and to be used where necessary. PPE is to be worn at all times
1.4	Railways	✓			
1.5	Water course			✓	Reservoir and tributary to Ley Brook
1.6	Ground conditions:				
	• Contamination		✓		WAC / EWC samples will be undertaken as appropriate prior to finalising the design of the drainage system. Otherwise, the Contractor to investigate prior to commencement of the Works.
	• Ground water	✓			
	• Instability			✓	Carrying out works on cutting slope. Void within extent of survey, appropriate PPE and trained operative to carry out surveys
	• Mineral / mine workings	✓			
1.7	Access restrictions			✓	Temporary TM to be provided by Contractor (if required).
1.8	Adjacent properties		✓		There are two residential properties to the west of the structure. Noisy activities should be undertaken during day time hours only.
1.9	Concurrent site activities	✓			
1.10	Interface with the public			✓	The Principal Contractor shall provide adequate security to the site.
1.11	Occupied premises	✓			
1.12	Structural instability	✓			
1.13	Fragile materials			✓	Eroded embankment and void appropriate

Potential Hazards Arising From:		Risk (without designer's elimination / management measures)			Comments
Ref:		Not Applicable	Low- NO Action Required	High – Action NEEDED	
					PPE and trained operative to carry out surveys
1.14	Hazardous materials			✓	Pre2000 concert, possible presence of asbestos
1.15	Land use	✓			
1.16	Traffic			✓	Traffic management may be required during the surveys. Traffic management to be used where necessary. Six-point PPE is to be worn at all times.
1.17	Vegetation Clearance			✓	Flying objects. Use of mechanical power-driven cutting tool (vibration and noise).
1.18	Asbestos			✓	Any pre 2000 concrete removal has risk of asbestos and shall be tested before depositing
1.19	Plant Movement			✓	All staff to have PPE with clear reflective over-wear.  A banksman to be present to ensure safe movement of the plant.
1.20	Coronavirus			✓	Working safely during coronavirus. Following all government and Kier guidelines
<b>2.</b>	<b>Existing Services</b>				
2.1	Underground				
	• Electrical	✓			
	• Gas	✓			
	• Water (Asbestos pipes?)	✓			
	• Telecommunications	✓			
	• Others (insert as necessary)	✓			
2.2	Overhead Services				
	• Electrical			✓	LV over ground cable present westbound of A40 at the culvert outlet
	• Telecommunications			✓	BT overhand cable within scheme extent

Potential Hazards Arising From:		Risk (without designer's elimination / management measures)			Comments
Ref:		Not Applicable	Low- NO Action Required	High – Action NEEDED	
	• Others (insert as necessary)				
<b>3.</b>	<b>Earthworks</b>	✓			
3.1	Deep excavations				
3.2	Slope / ground stability				
3.3	Ground water / water courses				
3.4	Plant movements				
3.5	Interface with services (refer 2)				
3.6	Contamination (ground / water) (refer 1.6)				
3.7	Adjacent structures (refer 1.8)				
3.8	Others (insert as necessary)				
<b>4.</b>	<b>Foundations</b>	✓			
4.1	Adjacent buildings/structures				
4.2	Deep excavations				
4.3	Plant movements				
4.4	Interface with services				
4.5	Contamination (ground / water)				
4.6	Ground water				
4.7	Confined spaces				
4.8	Piling:				
	• Noise				
	• Vibration				
	• Contamination				
	• Plant				
4.9	Grouting:				
	• Drilling work				
	• Dust				
	• Pollution				
4.10	Stability of structure				
4.11	Others (insert as necessary)				
<b>5.</b>	<b>Services Installation</b>	✓			
5.1	Excavations				
5.2	Ground water				
5.3	Ground conditions				

Potential Hazards Arising From:		Risk (without designer's elimination / management measures)			Comments
Ref:		Not Applicable	Low- NO Action Required	High – Action NEEDED	
5.4	Existing services				
5.5	Testing operations				
5.6	Lifting operations				
5.7	Adjacent structures / activities				
5.8	Maintenance				
5.9	Contamination				
5.10	Others (insert as necessary)				
6.	<b>Drainage Works</b>				
6.1	Excavations		✓		
6.2	Ground water		✓		
6.3	Ground conditions		✓		
6.4	Confined spaces			✓	Confined trained operatives to conduct culvert survey
6.5	Leptospirosis / Weils disease			✓	Contact with highway drainage during surveys will have potential risk of Leptospirosis disease. The Contractor is to ensure sufficient welfare facilities are in place at all times. All appropriate PPE must be worn at all times.
6.6	Existing services (asbestos pipes?)	✓			
6.7	Manual handling		✓		Manual handling to be operated by trained and certified operatives.
6.8	Lifting operations		✓		Individuals only to operate plant & equipment they are currently trained and certified to use.
6.9	Maintenance		✓		
6.10	Sewage	✓			
6.11	Traffic			✓	Traffic management may be required during the surveys. Traffic management to be used where necessary. Six-point PPE is to be worn at all times.
6.12	Contamination (ground / water)	✓			
6.13	Hepatitis B / Tetanus		✓		
6.14	Others (insert as necessary)				

Potential Hazards Arising From:		Risk (without designer's elimination / management measures)			Comments
Ref:		Not Applicable	Low- NO Action Required	High – Action NEEDED	
<b>7.</b>	<b>Highways</b>				
7.1	Traffic management			✓	A40 Adjacent to survey area. TM to be design by contractor and to be used where necessary. PPE is to be worn at all times
7.2	Adjacent traffic			✓	A40 Adjacent to survey area. TM to be design by contractor and to be used where necessary. PPE is to be worn at all times
7.3	Construction materials	✓			
7.4	Structural works	✓			
7.5	Adjacent structures	✓			
7.6	Noise			✓	Working beside live highway, loud plant and machinery sudden loud noises may cause damage to hearing or loss of hearing. Noise at work 2005 regulations will apply.
7.7	Vibration			✓	Excavations and operatives to be protected against vibration caused by construction practices. PUWER 1998 / Vibrations at work regulation 2005 apply.
7.8	Coal TAR in pavement	✓			
7.9	Others (insert as necessary)	✓			
<b>8.</b>	<b>Steelwork Construction</b>	✓			
8.1	Working at height				
8.2	Lifting operations				
8.3	Temporary stability				
8.4	Connections				
8.5	Unusual sequence				
8.6	Materials, e.g. paints				
8.7	Consideration of future maintenance				
8.8	Others (insert as necessary)				

Potential Hazards Arising From:		Risk (without designer's elimination / management measures)			Comments
Ref:		Not Applicable	Low- NO Action Required	High – Action NEEDED	
<b>9.</b>	<b>Concrete Construction</b>	✓			
9.1	Working at height				
9.2	Plant restrictions				
9.3	Lifting operations				
9.4	Noise				
9.5	Vibration				
9.6	Temporary instability				
9.7	Pre/post tensioning				
9.8	Materials				
9.9	Maintenance				
9.10	Joints (scabbling should not be undertaken)				
9.11	Others (insert as necessary)				
<b>10.</b>	<b>Masonry Construction</b>	✓			
10.1	Manual handling				
10.2	Lifting operations				
10.3	Materials				
10.4	Temporary stability				
10.5	Working at height				
10.6	Dust				
10.7	Durability				
10.8	Catastrophic collapse				
10.9	Others (insert as necessary)				
<b>11.</b>	<b>Timber Construction</b>	✓			
11.1	Materials				
11.2	Working at height				
11.3	Temporary stability				
11.4	Lifting operations				
11.5	Manual handling				
11.6	Fire				
11.7	Dust				
11.8	Others (insert as necessary)				
<b>12.</b>	<b>Cladding</b>	✓			
12.1	Lifting operations				



Potential Hazards Arising From:		Risk (without designer's elimination / management measures)			Comments
Ref:		Not Applicable	Low- NO Action Required	High – Action NEEDED	
12.2	Manual handling				
12.3	Maintenance / cleaning				
12.4	Others (insert as necessary)				
<b>13.</b>	<b>Glazing</b>	✓			
13.1	Manual handling				
13.2	Lifting operations				
13.3	Cleaning / maintenance				
13.4	Others (insert as necessary)				
<b>14.</b>	<b>Mechanical/Electrical Systems</b>	✓			
14.1	Access				
14.2	Existing services (asbestos?)				
14.3	Manual handling				
14.4	Materials / substances				
14.5	Confined spaces				
14.6	Pressure systems				
14.7	Testing operations				
14.8	Fixings				
14.9	Working at height				
14.10	Maintenance				
14.11	Others (insert as necessary)				
<b>15.</b>	<b>Railway Activities</b>	✓			
15.1	Train movements				
15.2	Overhead lines				
15.3	Electrified track				
15.4	Underground services				
15.5	Adjacent structures				
15.6	Ground stability				
15.7	Contamination				
15.8	Others (insert as necessary)				
<b>16.</b>	<b>Demolition of Existing Structures</b>	✓			
16.1	Services				



Potential Hazards Arising From:		Risk (without designer's elimination / management measures)			Comments
Ref:		Not Applicable	Low- NO Action Required	High – Action NEEDED	
16.2	Adjacent / adjoining structures				
16.3	Materials:				
	• Hazardous i.e. asbestos in permanent shuttering, waterproofing to bridge decks, joints etc.				
	• fragile				
16.4	Working at height				
16.5	Temporary stability				
16.6	Pre/post tensioning				
16.7	Noise				
16.8	Vibration				
16.9	Dust				
16.10	Effect on usage of demolition materials				
16.11	Others (insert as necessary)				
17.	<b>Future Demolition / decommissioning of new structure/installation</b>	✓			
17.1	Unusual sequence				
17.2	Pre/post tensioned element				
17.3	Materials				
17.4	Adjacent/adjoining structure				
17.5	Temporary stability				
17.6	Contamination during usage of demolition material.				
17.7	Others (insert as necessary)				
18.	<b>Maintenance and Operation of Facility / Structure etc.</b>	✓			
18.1	Access				
18.2	Safety equipment				
18.3	Testing / inspection				
18.4	Procedure				
18.5	Contamination during usage of demolition material.				
18.6	Others (insert as necessary)				
19.	<b>Use of the structure as a workplace</b>				
19.1	Does the proposed use of the structure / premises include the intention for it to be made available to any person as a place of work				
19.2	If yes; the design and materials used must take in to account the provisions of the				

Potential Hazards Arising From:		Risk (without designer's elimination / management measures)			Comments
Ref:		Not Applicable	Low- NO Action Required	High – Action NEEDED	
	Workplace (Health, Safety and Welfare) Regulations 1992				

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## Part B: Hazard Elimination Checklist

Project Title:	A40 Hinders Lane EB MP181.7 Culvert	Kier Highways Job No.:	570124L
Project Description:	Topographical survey, vegetation clearance and culvert survey		
Design Discipline:	Kier design services	Prepared By:	Checked By: JH

**Note: If GG104 applies to your contract, the checklist must be approved by an appropriate person: For a Type A project the Scheme PD must approve, for a Type B projects the Senior Manager must**

Reviewed and approved by

\* Persons

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Action by:

Principal Designer  
Designer  
Principal Contractor  
Other designer  
Client

– include within the H&S file  
– include in the pre-construction information  
– manage risk during the construction phase  
– take into consideration when preparing their designs  
– pass information to designers / Principal designer

Ref.	Activity	Hazard	Persons at Risk *	Design Measures taken, or being taken to eliminate or reduce the hazard	Information on the Residual Risk	Principal Designer Review	Action Req'd by: **
1.3 1.10 1.16 6.11 7.1 7.2	Working adjacent to live traffic.	Conflict between site traffic, moving plants and live traffic, struck by moving vehicles, accidents with site traffic resulting in death or serious injury.	1,2	Temporary traffic management will be designed in accordance with chapter 8. Approved and agreed by Kier Highways prior to being issued to the Contractor. TM will be installed and removed in accordance with the Contractor's method statement.	Standard risks associated with TM layout.	No further comment.	Principal Contractor

Ref.	Activity	Hazard	Persons at Risk *	Design Measures taken, or being taken to eliminate or reduce the hazard	Information on the Residual Risk	Principal Designer Review	Action Req'd by: **
1.7	Access restrictions.	Access restriction for the vans to carry out surveys.	1,2	TM to be planned to provide adequate Working area for surveys. Liaison may be required with landowners to gain access into the manholes.	Hazard still remains but risk is reduced.	No further comment	Principal contractor
1.3 1.5	Working at height Working adjacent to and above live carriageway and water course (canal, river).	Falling from Height, leading to serious injuries or death. -Debris, dust, material falling onto the carriageway, railway line with overhead electrifying cables, watercourse below. - Leptospirosis/Weil's disease -Works are at a high risk of a flooding event and are also within close proximity to various watercourses. Contact with pigeon faeces may irritate the bronchial passages	1, 2	Temporary protective measures and safety screen shall be in place. Liaise with the Environment Agency to get information on possible flood events. Remove pigeon faeces by damping down. Wear appropriate PPE	Risk remains but reduced Contractor to provide safe method of working.	No further comment	Principal contractor
1.7 2.2	Working in height restricted area & in the vicinity of overhead cables.	Damaging the services resulting in death or serious injury. Plant hitting the soffit of viaduct may result serious injury or death.	1	Best Practice Measures must be in place to ensure that any risk is taking place while carry on works by using the correct plant, equipment and method statement. Liaise with SU for advice. Wear appropriate PPE. Works near electric overhead power lines are to be planned and managed in accordance with HSE Guidance Note GS6, so that risks from accidental contact or close proximity to the lines are adequately controlled. The safe clearance required beneath the overhead lines should be found by contacting the Distribution Network Operator (DNO) to establish safe clearance distance needed between the wires and machinery or equipment required to carry out the survey works.	Risk remains but reduced Contractor to provide safe method of working.	No further comment	Principal contractor

Ref.	Activity	Hazard	Persons at Risk *	Design Measures taken, or being taken to eliminate or reduce the hazard	Information on the Residual Risk	Principal Designer Review	Action Req'd by: **
1.13 1.6	Steep ground working.	Injury from slips, trips and falls associated with working close to a steep gradient or incline.	1, 2	Before commencing works, visually check working area for steep gradients and inclines. Extreme care to be taken on steeply sloping ground. Wear suitable stout/strong walking boots with ankle support and well threaded soles. If working at the base of a steep gradient or incline, visually check ground stability. Do not work in areas immediately below unstable steep slopes.	Risk remains but reduced Contractor to provide safe method of working.	No further comment	Principal contractor
1.17	Vegetation clearance with use of chainsaw.	Eye/other injury from flying objects during chainsaw operations.	1, 2	All appropriate PPE must be worn at all times. All PPE to comply with HSE Chainsaws at Work (INDG317).	Risk remains but reduced Contractor to provide safe method of working.	No further comment	Principal contractor
1.17	Vegetation clearance with use of chainsaw.	Injury from use of chainsaw.	1, 2	Chainsaw operatives must receive adequate training and be competent in using a chainsaw for that type of work. All appropriate PPE must be worn at all times. All PPE to comply with HSE Chainsaws at Work (INDG317).	Risk remains but reduced Contractor to provide safe method of working.	No further comment	Principal contractor
1.17	Use of vibration tools (chainsaw)	Injury from excessive vibration.	1, 2	Provide information, instruction and training to employees on the risk. Reduce vibration exposure and time spent holding vibrating equipment.	Risk remains but reduced Contractor to provide safe method of working.	No further comment	Principal contractor
1.6 1.14 1.18	Encounter with hazardous material Asbestos, silica dust	Respiratory hazard, disease, burns, infection to work force	1	Asbestos survey to be carried out. If encounter with asbestos stop operation immediately.	Contractor to provide safe method of working. If in doubt seek expert's advice.	No further comment	Principal contractor
1.20	Working with and in close proximity to others.	Risk of catching new coronavirus (COVID-19) and infecting others, resulting in illness/serious illness or death.	1, 2, 3 plus	Working methods to be assessed prior to start of scheme to ensure social distancing and hygiene measures can be implemented and maintained. Awarded contractor to provide safe system of work to address current risk. Refer to Kier guidance document SHEMS-GUI-GR-109 [Coronavirus (COVID-19)]	Risk reduced. Contractor to follow guidance document SHEMS-GUI-GR-109 [Coronavirus (COVID-19) Site Operating Procedures – protecting our workforce].		Principal contractor

Ref.	Activity	Hazard	Persons at Risk *	Design Measures taken, or being taken to eliminate or reduce the hazard	Information on the Residual Risk	Principal Designer Review	Action Req'd by: **
				Site Operating Procedures – protecting our workforce].			
1.19	Plant Movement.	Conflict between site traffic, moving plant and site traffic, struck by moving vehicles, accidents with site traffic resulting in death or serious injury.	1	Temporary traffic management will be designed in accordance with TSM chapter 8. TM will be installed and removed in accordance with the Contractor's method statement. A banksman to be present to ensure safe movement of the plant where conflicts occur with site traffic.	Standard risks associated with TM layout.		Principal contractor
2.2	Working alongside existing services	Cable strike / severance of main, electrocution, burns, explosions, fire, loss of consciousness, asphyxiation, death contamination, flooding of excavations, destabilisation of ground, drowning	1	Existing utility providers contacted to provide position of existing services. Production of services plan for the works. Design is such as to minimise potential conflict with services. Details marked on contract plans to be refreshed before construction. Trial pits to be undertaken as preliminary works during construction to confirm position of existing services where drainage works are to be undertaken. Goal posts to be used to identify overhead cables.	Despite best efforts unable to completely avoid risk of conflict with services. Hazards potentially therefore still remain. Principal Contractor to check updated service returns & survey area prior to excavation. Following CAT scans the services should be excavated carefully by hand. All services to be suitably protected and supported in all excavations. Isolate all necessary services.	No further comment	PC
6.4	Confined Spaces	H&S risks to operatives.	1,2	Confined spaces training and permit to be issued to the personnel by the contractor before entering any confined spaces.	Risk remains but reduced Contractor to provide confined space training.	No further comment	Principal contractor

Ref.	Activity	Hazard	Persons at Risk *	Design Measures taken, or being taken to eliminate or reduce the hazard	Information on the Residual Risk	Principal Designer Review	Action Req'd by: **
6.5	Leptospirosis / Weils disease.	Contact with highway drainage during surveys will have potential risk of Leptospirosis disease.	1	The Contractor is to ensure sufficient welfare facilities are in place at all times. All appropriate PPE must be worn at all times.	Risk remains but reduced Contractor to ensure sufficient welfare facilities are in place at all times.	No further comment	Principal contractor
6.7 6.8	Manual handling and lifting operations	<ul style="list-style-type: none"> <li>Slips and falls</li> <li>Muscular skeletal injuries</li> <li>Reversing vehicles</li> </ul> Falling objects or materials	1	<ul style="list-style-type: none"> <li>Preliminary site surveys undertaken to identify trip hazards.</li> <li>Appropriate lifting equipment to be used where possible.</li> </ul> All lifting operations to have an appointed lift supervisor to coordinate lifts.	<ul style="list-style-type: none"> <li>Manual handling and lifting operations remain unavoidable. Contractor to ensure that all site personnel have suitable PPE, lifting equipment.</li> </ul> Appointed person to approve lift plans.	No further comment	PC
7.6 7.7	Noise, vibration and dust	<ul style="list-style-type: none"> <li>Potentially hazardous to health and an adverse effect on the environment.</li> </ul> Extended use of vibrating equipment.	1 & 2	<ul style="list-style-type: none"> <li>Ensure construction noise levels are controlled not only for the workforce but for all groups.</li> <li>All exposure levels shall be limited to the recommendations of the 'Noise at Work Regulations 2005'.</li> <li>The Contractor should adhere to these Regs and use mufflers, sound absorption equipment or latest technological equipment where possible.</li> <li>Works in accordance with Health and Safety Regulations consider exposure to vibrating plant should be limited to the recommendation stated in the Vibration at Work Regulations 2005.</li> <li>The contractor should adhere to these Regs and use latest technological equipment where possible to protect operatives.</li> <li>Operatives usage time will be recorded on a daily basis to</li> </ul>	<ul style="list-style-type: none"> <li>Limited dust exposure. Residual risk acceptable.</li> </ul>	No further comment	PC



Ref.	Activity	Hazard	Persons at Risk *	Design Measures taken, or being taken to eliminate or reduce the hazard	Information on the Residual Risk	Principal Designer Review	Action Req'd by: **
				ensure over exposure is not an occurrence. Dust control in accordance with COSHH regulations.			

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