

RESIDUAL DESIGN HAZARDS

THE FOLLOWING HAS BEEN COLLECTED FROM THE PRE-CONSTRUCTION INFORMATION AND HIGHLIGHTS KNOWN RESIDUAL HAZARDS.

KEY	HS-#	HS-# = HEALTH AND SAFETY RISK REFERENCE NUMBER
	E-#	= ENVIRONMENT RISK REFERENCE NUMBER

- NOTES**
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS WITHIN THE SERIES.
 2. DO NOT SCALE FROM THIS DRAWING. USE STATED DIMENSIONS ONLY.
 3. ALL STATUTORY UNDERTAKERS APPARATUS SHOWN ON THIS PLAN HAS BEEN TAKEN FROM THE PROVE-IT DATABASE JUNE 2021.
 4. MARKER POSTS ARE SHOWN FOR INDICATIVE PURPOSE ONLY. CHAINAGES SHOWN ON THIS DRAWING HAVE BEEN SET OUT AT LEAST EVERY 50m ALONG THE CHART SECTIONS INDICATED THROUGHOUT THE EXTENTS OF THE WORKS.
 5. FOR FURTHER DETAILS IN RELATION TO THESE PROPOSALS PLEASE REFER TO THE WORKS INFORMATION DOCUMENT.
 6. THE WIDTH OF THE TOPOGRAPHICAL SURVEY EXTENTS WILL BE FROM LANE 2 ROAD EDGE EASTBOUND TO LANE 2 ROAD EDGE WESTBOUND UNLESS INDICATED OTHERWISE.
 7. KIER TAKES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN ON THIS DRAWING, WHICH HAS BEEN COMPILED FROM PLANS PROVIDED BY THE UTILITY COMPANIES. THE LOCATION OF ALL SERVICES MUST BE CONFIRMED WITH THE RELEVANT SERVICE PROVIDER PRIOR TO UNDERTAKING ANY WORKS.

- KEY**
- T — TELEPHONE OVERHEAD
 - U — TELEPHONE UNDERGROUND
 - E(OH) — E(UH) — ELECTRICITY OVERHEAD
 - E — ELECTRICITY UNDERGROUND
 - W — WATER SUPPLIES
 - HD — HD — HIGHWAY DRAIN
 - EXISTING SIGN
 - SURVEY AREA (TOPOGRAPHICAL, ASBESTOS & DRAINAGE) (0.587m²)
 - SOIL SAMPLING & DCP (1No)
 - TRIAL HOLE SURVEY (STATS DEPTHS) & SOIL SAMPLING (3No)
 - SOIL SAMPLING (2No)
 - MANHOLE
 - GULLY
 - CATCHPIT
 - OUTLET

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C2	NORTH ARROW ADDED TO LOCATION PLAN	AM	GR	28/06/2021
C1	FIRST ISSUE	SC	RP	21/12/2020
REV	DETAILS	CHKD	APPD	DATE
DRAWING NUMBER				SCHEME REFERENCE No.
PROJECT ORIGINATOR VOLUME				570131D
HE570131D - KIER - VGN				REVISION
A30_MP_95-97_CR- DR - CH - 010002				C 2
LOCATION		TYPE	ROLE	NUMBER

CLIENT	AGENT	SCHEME NAME	DRAWN : DF	SCALE : 1:500	DRAWING STATUS
		A30 CARMINOW CROSS TO HELLAND MP 95.2-96.1	DESIGN : DF	DIMENSIONS : m	WORK IN PROGRESS
		DRAWING TITLE	CHKD : SC	ORIG DWG SIZE: A1	PRELIMINARY DRAWING
			APPD : RP	COPYRIGHT © KIER	EXTERNAL ISSUE
			DATE : 21/12/2020		AS-BUILT
			SUITABILITY: A	FOR CONSTRUCTION	

Kier Highways Project No: 1040304**Client Reference No: HE570131D****570131D Priority VRS VM Development Batch 1****595 Site 20 - M4 J17 + Slip Roads EB MP 152.3 – 153.6****Designers Pre-Construction Information**

	Yes	No
Are Works to be carried out under the Commission / Contract Health and Safety Plan?		X
Is the Scheme notifiable under the CDM Regulations 2015?		
1. Last longer than 30 working days and have more than 20 workers simultaneously at any point in the project;		X
2. Exceed 500 person days		X

Project type as categorised by GG104	A
<p>* If applicable GG104 will determine the Kier Highways minimum Scheme Principal Designer (Scheme PD) level. Refer to SHEMS-FOR-HIG-S-055 for GG104 type categorisation and minimum Scheme PD level.</p> <p>Type A projects the Design Team Lead, Type B projects the Senior Manager, Type C projects the Service Director.</p>	

This document has been produced in accordance with the recommendations and requirements of the Construction (Design and Management) Regulations 2015.

	Name	Signed	Date
Prepared by: Designer			
Reviewed by: Design Team Lead			
Accepted by: Scheme PD			

'Reviewed by' & 'Accepted by' can be the same person for GG104 type A projects (where the Design Team Lead is the Scheme PD)

Site Specific Hazards Identified in Design

ONLY include significant and unusual hazards that a competent contractor would need to know, could not reasonably foresee, or are likely to be difficult to manage effectively.


Note – Consideration to be given to all 'populations' affected, Workers, Users, Other Parties.

Activity	Residual Hazard	Comments
Works in general.	Coming into contact with live traffic.	The Client (Highways England) have elected to be responsible for and to arrange for temporary traffic management (which will be hardshoulder closures, lane 1 closures and total slip road closures) to be provided.
Excavation of trial holes.	Coming into contact with underground services.	Statutory undertakers and other service drawings have been obtained indicating the anticipated locations of services. These locations have been included on the scheme drawings. The Client is to arrange for the motorway communications services to be marked out on site. Identification and control methods outlined in HSG47 'Avoiding Danger from Underground Services' should be followed.
Works in general.	Coming into contact with overhead electricity services.	Statutory undertakers drawings have been obtained. There are two overhead electricity crossings within the works area. the locations of which is shown on the scheme drawings and included in Appendix E. Identification and control measures outlined in GS6 'Avoiding Danger from Overhead Power Lines' should be followed.
Works in general.	Coming into contact with overhead structures	There are two overbridges and a variable message sign gantry within the works areas. These have been indicated on the scheme drawings and included in Appendix F.
All activities.	Covid 19 virus.	Government and Industry guidelines should be followed.



Authorised By: [REDACTED]	Page 1 of 10	SHEMS-FOR-HIG-051
Author: Highways CDM Team	Date: October 2019	Version: 1.0
As part of our system review, this document is valid until April 2021		



1 Project Description				
Scope of Works				
<p>The works are located within the hardshoulder and verge of the eastbound M4 motorway within the vicinity of junction 17, and within the carriageway and verges of the eastbound exit and entry slips of the same junction, and consist of the following survey works which are required in connection with the design of a vehicle restraint system (VRS) replacement scheme.</p> <ul style="list-style-type: none"> • An asbestos management / refurbishment survey. • A topographical survey. • Trial pits to determine service locations, overbridge pier foundations, ground conditions and to obtain soil samples for analysis. • A CCTV drainage survey. <p>The extents of the topographical survey and the locations of the trial holes are shown on drawing numbers HE570131D-KIER-VGN-M4_J17_J16_B-DR-CH-010001 to 010003.</p>				
Location				
 <p>See also drawing number HE570131D-KIER-HGN-M4_J17_J16_B-DR-CH-000001.</p>				
Site Address		<p>M4 eastbound verge and hardshoulder in the vicinity of junction 17 and the entirety of both the eastbound exit and entry slip roads at M4 junction 17. [The post code of the nearest property to the north of the junction is SN14 6AA]</p>		
Site Photographs				
N/A				
OSGR	From	391036, 179529	To	392608, 179585
Mark Posts	From	153/7-75m	To	152/1-40m

1 Project Description					
Traffic Management					
<p>Traffic Flows:</p> <p><u>Eastbound mainline between M4 J18 and J17</u> 42,575 (AADT, 1 way), 11.6% (>6.6m) [2019 Annual report for Site M4/3542B]</p> <p><u>M4 J17 Eastbound Exit Slip Road</u> 7,875 (AADT, 1 way), 14.7% (>6.6m) [2019 Annual report for Site M4/3533L]</p> <p><u>Eastbound mainline line between M4 J17 eastbound exit and entry slip roads</u> 35,085 (AADT, 1 way), 12.5% (>6.6m) [2019 Annual report for Site M4/3527B]</p> <p><u>M4 J17 Eastbound Entry Slip Road</u> 7,822 (AADT, 1 way), 7.6% (>6.6m) [2019 Annual report for Site M4/3526M]</p> <p><u>Eastbound mainline between M4 J17 and J16</u> 43,117 (AADT, 1 way), 11.7% (>6.6m) [2019 Annual report for Site M4/3522]</p> <p>Speed Limits: National Speed Limit (70mph) applies.</p> <p>Cycle/Bus Routes: Cycles are prohibited and bus routes will not be affected by the anticipated traffic management arrangements.</p> <p>Traffic Management: This is to be arranged by the Client (Highways England) and will be a combination of hardshoulder and lane 1 closures and or/total slip road closures.</p> <p>Emergency access: Works may need to be suspended to allow the passage of emergency services vehicles, or where general traffic needs to be diverted to within the works area in the event of an emergency.</p>					
Anticipated Working Hours, subject to Traffic Counts		Traffic management: Overnight from 2200 to 0600 hours. Site working hours: TBC by HE.			
Mobilisation Period	TBC by Highways England	Anticipated Start Date	TBC by Highways England	Anticipated End Date	TBC by Highways England

3. Scheme Specific Requirements			
	Yes	No	Comments
A pre-start meeting will be mandatory			
Does an H&S file exist?		X	publicprotectionwest@wiltshire.gov.uk
Site Welfare	X		Site Welfare is to be provided by the Principal Contractor.
Security / Segregation	X		
Are there any other projects taking place in the vicinity?		X	
Are there any restrictions on vehicle movements?	X		All site vehicles (including delivery vehicles) must abide by the TM requirements and regulations 1. Enter and exit site from the dedicated points; 2. Comply with the designated site safety speed limits; All vehicles within Traffic Management shall comply with the conspicuity requirements of Chapter 8.
Are there any restrictions on deliveries, waste collection, or storage?	X		No deliveries to take place unless Traffic Management is in place. No waste shall be stored on site. Waste Carriers Licences will be required
Are there any parking restrictions?	X		All vehicles and plant within the works area shall be parked in a safe area clear of access and egress points. All vehicles and plant shall be removed from the carriageway prior to removal of traffic management. No Private vehicles are allowed on site
Height Restrictions	X		See details of 'Overhead Cables' and 'Structures' below.
Overhead Cables	X		There are two overhead electricity crossings within the works area. See Appendix E for details.
Structures	X		There are two overbridges and one gantry mounted variable message sign within the works area. See Appendix F for details.
Will fire precautions be required?	X		Suitable fire precautions shall be in place.
Are emergency procedures and means of escape required?	X		The Contractor shall ensure that emergency procedure plans are in place, all staff have been inducted, and access for emergency vehicles is to be maintained at all times. The nearest Accident and Emergency (A & E) hospital is: The Great Western Hospital Marlborough Road Swindon Wiltshire SN3 6BB Tel: 01793 604020

3. Scheme Specific Requirements			
	Yes	No	Comments
Are there any areas in or around the site classified as no-go areas?	X		No site personnel shall enter the safety zones or tapers within the extents of the traffic management unless trained and competent for installation/removal/maintenance of TM. Sub-Contractor's Method Statements and Risk Statements shall contain suitable risk control to protect pedestrian workers and plant operators.
Are there any noise restrictions?	X		It is expected that construction noise will not significantly exceed the ambient road noise levels. Any increases in noise will be temporary and limited to the construction phase.
Are temporary works required?		X	None are anticipated.
Are there any vibration restrictions?	X		The Contractor shall comply with BS 6841:2008 Evaluations of human Exposure to Vibration in Buildings (1Hz-80Hz). Any vibration monitoring carried out shall also be in compliance with BS 6841:2008.
Are there any poor or hazardous ground conditions		X	None are anticipated.
Are there any unstable structures?		X	None.
Are there any areas classed (existing or designed) classed as confined spaces?		X	None are anticipated.
Are there any smoking restrictions?	X		No smoking is allowed on site. Designated smoking areas to be confirmed during site inductions.
Any environmental constraints identified?		X	None.

Materials and Substances with Health and/or Safety Hazards**Asbestos**

Please see Appendix G for details of the existing Asbestos Action Plans and Asbestos Surveys for the extent of the works.

It is not anticipated that asbestos or asbestos containing materials (ACM's) will be encountered during the trial hole excavations, however, there are several electrical cabinets within the verge where ACM's are presumed to be present.

Lead

Due to the scope of the works it is unlikely that lead will be encountered.

Tar based pavement/surfacing

No excavation of bituminous surfacing is anticipated as part of the works.

Leptospirosis/Weil's disease / Psittacosis

As works are partly within the soft verge there is a potential risk of Weil's disease. The Principal Contractor is to ensure sufficient welfare facilities are in place at all times. All appropriate PPE must be worn at all times.

Any instances of illness / sickness on site should be reported to the Principal Contractor immediately and the persons affected should seek medical advice. Information regarding Weil's disease should be included in the Site Induction.

Covid-19 pandemic

The Principal Contractor is to ensure the site workforce are protected and minimising the risk of spread of infection. They must comply with the latest Government advice on working safely during coronavirus covid-19 which is currently available at <https://www.gov.uk/guidance/working-safely-during-coronavirus-covid-19/construction-and-other-outdoor-work> and the latest Kier Site Operating Procedures that are current at the time of the works. The health and safety requirements of any construction activity must not be compromised. If an activity cannot be undertaken in line with social distancing being implemented, or by exception, safely, without risk and mitigating measures then it shall not take place.

4. Existing Services		Refer also to STATS plans		
Statutory Undertaker	Not Present	Over head	Under ground	Comments
Electricity				
400/132kV [pylons]	X			Two overhead (one 33 kV and one 11 kV) electricity cable crossings are within the works area. The locations of these are indicated on the scheme drawings. Please also see Appendix E for further details.
66kV	X			
33kV		X		
11kV		X		
240/415Volts			X	
Water (Foul and Potable)				
Public Foul	X			
Pressurised Foul	X			
Public Combined Gravity	X			
Pressurised Combined	X			
Culverted Watercourse			X	
Water Main			X	
Aqueduct	X			
Communications				
Communications				
British Telecom			X	
National Grid				
National Grid	X			
Transco				
LP Mains	X			There is a medium pressure gas main within the area of the topological survey but outside of the trial hole excavation areas.
MP Mains			X	
IP Mains	X			
LHP Mains	X			
NHP Mains	X			
Government Pipelines				
Government Pipelines	X			
Fisher German Pipelines				
Fisher German Pipelines	X			
Energis				
Energis	X			
Motorway Communication				
Motorway Comms			X	
Street Lighting				
Street lighting			X	
Highway Drainage				
Highways England			X	
Other				
	X			

5. Health and Safety file requirements

All information will be produced in an electronic format. The format of the electronic data issued is to be as follows: All documents and product data sheets are to be in PDF format, drawings are to be in PDF and AutoCAD DWG format.

The Principal Contractor shall collate all appropriate information as it becomes available, and this shall subsequently be collated in the File. The Principal Contractor is to implement an early procedure that advises contractors and materials suppliers of the detailed requirements for this record information. The health and safety file will be created and/or updated in accordance with the requirements of the IAN105/08.

Appendix A - Location Plan

Refer to drawing no. HE570131D-KIER-HGN-M4_J17_J16_B-DR-CH-000001.

Appendix B - Construction Drawings

Reference	Rev	Title
HE570131D-KIER-VGN-M4_J17_J16_B-DR-CH-010001	C1	SURVEY LOCATION PLAN SHEET 1 OF 3
HE570131D-KIER-VGN-M4_J17_J16_B-DR-CH-010002	C1	SURVEY LOCATION PLAN SHEET 2 OF 3
HE570131D-KIER-VGN-M4_J17_J16_B-DR-CH-010003	C1	SURVEY LOCATION PLAN SHEET 2 OF 3

Appendix C – Existing Records and As-Built Drawings

Stanton St Quintin Interchange (West) Overbridge (Structure Key 1140)

Reference	Rev	Title	Company
3878/C1/246	- (1972)	A429 INTERCHANGE (WEST) CHAINAGE 56,635 GENERAL ARRANGEMENT	Department of the Environment
BW 5024/TED/0263	Z	STANTON INTERCHANGE BRIDGE (WEST) GENERAL ARRANGEMENT	Highways Agency
3878/C1/247	- (1972)	A429 INTERCHANGE OVERBRIDGE CHAINAGE 56,635 : 57,065 FOUNDATION DETAILS	Department of the Environment

Stanton St Quintin Interchange (East) Overbridge (Structure key 1138)

Reference	Rev	Title	Company
3878/C1/253	- (1972)	A429 INTERCHANGE (EAST) CHAINAGE 57,064 GENERAL ARRANGEMENT	Department of the Environment
BW 5024/TED/0262	Z	STANTON INTERCHANGE BRIDGE (EAST) GENERAL ARRANGEMENT	Highways Agency
3878/C1/247	- (1972)	A429 INTERCHANGE OVERBRIDGE CHAINAGE 56,635 : 57,065 FOUNDATION DETAILS	Department of the Environment

Appendix D - Statutory Undertaker Drawings

Reference	Rev	Title	Company
HE570131D-KIER-HGN-M4_J17_J16_B-DR-CH-010005	C1	STATUTORY UNDERTAKERS PLAN SHEET 1 OF 3	Combined stats plan
HE570131D-KIER-HGN-M4_J17_J16_B-DR-CH-010006	C1	STATUTORY UNDERTAKERS PLAN SHEET 2 OF 3	Combined stats plan
HE570131D-KIER-HGN-M4_J17_J16_B-DR-CH-010007	C1	STATUTORY UNDERTAKERS PLAN SHEET 3 OF 3	Combined stats plan

Service Type	Service Details	Service owner	Marker Post	OSGR
Electricity	33 kV cable crossing	Scottish and Southern Electricity Networks	152/7-80m	392050, 179587
Electricity	11 kV cable crossing	Scottish and Southern Electricity Networks	152/4-80m	392351, 179582

Appendix F - List of Structures

Structure Name	Structure Type	Structure Number	Structure Key	Structure headroom (m)	Marker Post	OSGR
N/A	Cantilevered gantry (variable message sign)	3533B	26638	5.75m	153/3-30m	391394, 179568
Stanton St Quinton West	Overbridge	/M4//153.00//	1140	5.1m	153/1-30m	391585, 179569
Stanton St Quinton East	Overbridge	/M4//152.90//	1138	5.1m	153/0-50m	391718, 179578

Appendix G - Asbestos Action Plans

Asbestos Action Plans

Electronic file name	Asset	Plan Status	Date
011 AAP M4 J15 J18	M4 J18-J15 Eastbound & Westbound	Initial Plan	March 2008
095 M4 J15-18 MP 123.0-169.4 review	M4 J15-18 Eastbound and Westbound	Review of AAP	November 2013
095 B M4 J15-18 [PDF of monitoring inspections]	M4 J18 – J15	Hand annotated records	Feb and Mar 2014.
095 B M4 J15-18 [Word document, Section 7]	M4 J15-18 Eastbound and Westbound	Monitoring inspection	March 2014
188 AAP M4 J15 18	M4 J15-18 Eastbound and Westbound	Review and update of AAP to include Refurbishment Survey	Oct 2014
188 M4 J15 J18 – signed review	M4 J15-18 Eastbound and Westbound	Review and update of AAP to include Refurbishment Survey	Oct 2014

Asbestos Surveys

Electronic file name	Location	Survey Type	Date
M4 J18 J15	M4 J18 – J15 E/B & W/B	Type 2 Survey	29.02.08
M4 J17 Stanton drainage inspection	M4 MOTORWAY JUNCTION 17	Refurbishment	24 th April 2014 – 25 th April 2014
M4 J17-18 Barrier Scheme Rev 01	Area 2 M4 Junction 17-18 VRS MP 157.50 to 162.20 Central Barrier Investigation	Refurbishment	29 th August 2014
M4 J18-17 CR drainage survey	M4 Junction 17 to 18 Drainage	Refurbishment	7 th July 2015

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

Project Title:	570131D Priority VRS VM Development Batch 1 595 Site 20 - M4 J17 + Slip Roads EB MP 152.3 - 153.6	Kier Highways Job No.:	1040304
Project Description:	<p>Survey works in connection with the preparation of a design for a vehicle restraint system (VRS) replacement scheme in the area of the eastbound carriageway side of M4 junction 17 including the eastbound slip roads.</p> <p>The VRS to be replaced is located within the nearside verge of the mainline motorway on the approach to the exit slip road, between the entry and exit slip roads and on the departure from the entry slip road, and on both the nearside and offside of the exit and entry slip roads.</p> <p>The survey works to be undertaken are as follows:</p> <ul style="list-style-type: none"> • a topographical survey of the hardshoulder, slip road carriageways, the slip road nearside verge and the areas between the mainline hardshoulder and the slip roads and roundabout • trials holes to investigate the ground conditions, to locate statutory undertakers and other services, and to locate bridge foundations • an asbestos management / refurbishment survey • a CCTV drainage survey 		
Design Discipline:	Highways – Renewal of Roads		
Project Type as determined by GG104 (if applicable)	A	Prepared By:	

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 -

Population 1 – People directly employed by the Client and who work on the site e.g. Traffic Officers.	'Workers'
Population 2 – People in a contractual relationship with the client.	
Population 3 – 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.	'Users'
Population 4 – 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.	'Other Parties'

Potential Hazards Arising From:		Risk (without designer's elimination / management measures)			Comments
Ref:		Not Applicable	Low- NO Action Required	High – Action NEEDED	
1.	Existing Environment				
1.1	Existing buildings	X			
1.2	Previous/existing land/ structures	X			
1.3	Roadways			X	
1.4	Railways	X			
1.5	Water course	X			
1.6	Ground conditions:	X			Trial holes are being excavated to establish the existing ground conditions and for soil sampling. No hazards are anticipated.
	• Contamination	X			
	• Ground water	X			
	• Instability	X			
	• Mineral / mine workings	X			
1.7	Access restrictions			X	
1.8	Adjacent properties	X			
1.9	Concurrent site activities	X			
1.10	Interface with the public			X	
1.11	Occupied premises	X			
1.12	Structural instability	X			
1.13	Fragile materials	X			
1.14	Hazardous materials	X			
1.15	Land use	X			
1.16	Traffic			X	
1.17	Asbestos		X		It is not anticipated that asbestos will be encountered as part of the trail hole and topographical survey works, however an asbestos refurbishment survey is being undertaken as part of the survey works as part of the design.
2.	Existing Services				Trial holes are to be dug with handheld equipment.
2.1	Underground				
	• Electrical			X	
	• Gas			X	
	• Water (Asbestos pipes?)			X	
	• Telecommunications			X	
	• Motorway communication services			X	
2.2	Overhead Services				

Potential Hazards Arising From:		Risk (without designer's elimination / management measures)			Comments
Ref:		Not Applicable	Low- NO Action Required	High – Action NEEDED	
	• Electrical			X	
	• Telecommunications	X			
	• Others (insert as necessary)	X			
3.	Earthworks	X			
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)				
4.	Foundations	X			
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)				
5.	Services Installation	X			
5.1	Excavations				
5.2	Ground water				

Potential Hazards Arising From:		Risk (without designer's elimination / management measures)			Comments
Ref:		Not Applicable	Low- NO Action Required	High – Action NEEDED	
5.3	Ground conditions				
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.	Drainage Works				
6.1	Excavations	X			
6.2	Ground water	X			
6.3	Ground conditions	X			
6.4	Confined spaces		X		Confined space entry may be required for the drainage survey. This will be managed by the Principal Contractor/CCTV Drainage Contractor
6.5	Leptospirosis / Weils disease		X		It is possible that Leptospirosis / Weils disease may be encountered during the drainage surveys but this should be covered in the General Site induction.
6.6	Existing services (asbestos pipes?)		X		An asbestos survey is being undertaken as part of these survey works to identify any asbestos containing material (ACM) drainage assets. It is not anticipated that ACMs will be disturbed during the CCTV drainage surveys.
6.7	Manual handling	X			
6.8	Lifting operations	X			
6.9	Maintenance	X			
6.10	Sewage	X			
6.11	Traffic			X	
6.12	Contamination (ground / water)		X		It is possible that these may be encountered during the CCTV drainage surveys but this should be covered in the Task induction.
6.13	Hepatitis B / Tetanus		X		
6.14	Others (insert as necessary)	X			
7.	Highways				

Potential Hazards Arising From:		Risk (without designer's elimination / management measures)			Comments
Ref:		Not Applicable	Low- NO Action Required	High – Action NEEDED	
7.1	Traffic management			X	
7.2	Adjacent traffic			X	
7.3	Construction materials	X			
7.4	Structural works	X			
7.5	Adjacent structures			X	Overbridges, an overhead sign gantry and a culvert are present.
7.6	Noise	X			
7.7	Vibration	X			
7.8	Coal TAR in pavement	X			
7.9	Others (insert as necessary)	X			It is anticipated that works will be undertaken at night but should be undertaken during daylight hours where possible.
8.	Steelwork Construction	X			
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)				
9.	Concrete Construction	X			
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)				
10.	Masonry Construction	X			

Potential Hazards Arising From:		Risk (without designer's elimination / management measures)			Comments
Ref:		Not Applicable	Low- NO Action Required	High – Action NEEDED	
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)				
11.	Timber Construction	X			
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)				
12.	Cladding	X			
12.1	Lifting operations				
12.2	Manual handling				
12.3	Maintenance / cleaning				
12.4	Others (insert as necessary)				
13.	Glazing	X			
13.1	Manual handling				
13.2	Lifting operations				
13.3	Cleaning / maintenance				
13.4	Others (insert as necessary)				
14.	Mechanical/Electrical Systems	X			
14.1	Access				
14.2	Existing services (asbestos?)				
14.3	Manual handling				
14.4	Materials / substances				

Potential Hazards Arising From:		Risk (without designer's elimination / management measures)			Comments
Ref:		Not Applicable	Low- NO Action Required	High – Action NEEDED	
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)				
15.	Railway Activities	X			
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)				
16.	Demolition of Existing Structures	X			
16.1	Services				
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.	Future Demolition / decommissioning of new structure/installation	X			
17.1	Unusual sequence				
17.2	Pre/post tensioned element				
17.3	Materials				

Potential Hazards Arising From:		Risk (without designer's elimination / management measures)			Comments
Ref:		Not Applicable	Low- NO Action Required	High – Action NEEDED	
17.4	Adjacent/adjoining structure				
17.5	Temporary stability				
17.6	Contamination during usage of demolition material.				
17.7	Others (insert as necessary)				
18.	Maintenance and Operation of Facility / Structure etc.	X			
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.	Use of the structure as a workplace				
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	NO			
19.2	If yes; the design and materials used must take in to account the provisions of the Workplace (Health, Safety and Welfare) Regulations 1992				

Part B: Hazard Elimination Checklist

Project Title:	570131D Priority VRS VM Development Batch 1 595 Site 20 - M4 J17 + Slip Roads EB MP 152.3 - 153.6		Kier Highways Job No.:	1040304
Project Description:	<p>Survey works in connection with the preparation of a design for a vehicle restraint system (VRS) replacement scheme in the area of the eastbound carriageway side of M4 junction 17 including the eastbound slip roads.</p> <p>The VRS to be replaced is located within the nearside verge of the mainline motorway on the approach to the exit slip road, between the entry and exit slip roads and on the departure from the entry slip road, and on both the nearside and offside of the exit and entry slip roads.</p> <p>The survey works to be undertaken are as follows:</p> <ul style="list-style-type: none"> • a topographical survey of the hardshoulder, slip road carriageways, the slip road nearside verge and the areas between the mainline hardshoulder and the slip roads and roundabout • trials holes to investigate the ground conditions, to locate statutory undertakers and other services, and to locate bridge foundations • an asbestos management / refurbishment survey • a CCTV drainage survey 			
Design Discipline:	Highways – Renewal of Roads	Prepared By:		

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 approve and for a Type C project the Kier Highways Service Director must approve.

Reviewed and approved by:

Name	
Signature	
Position	

* **Persons at Risk:** (1) Workers (2) Users (3) Other parties

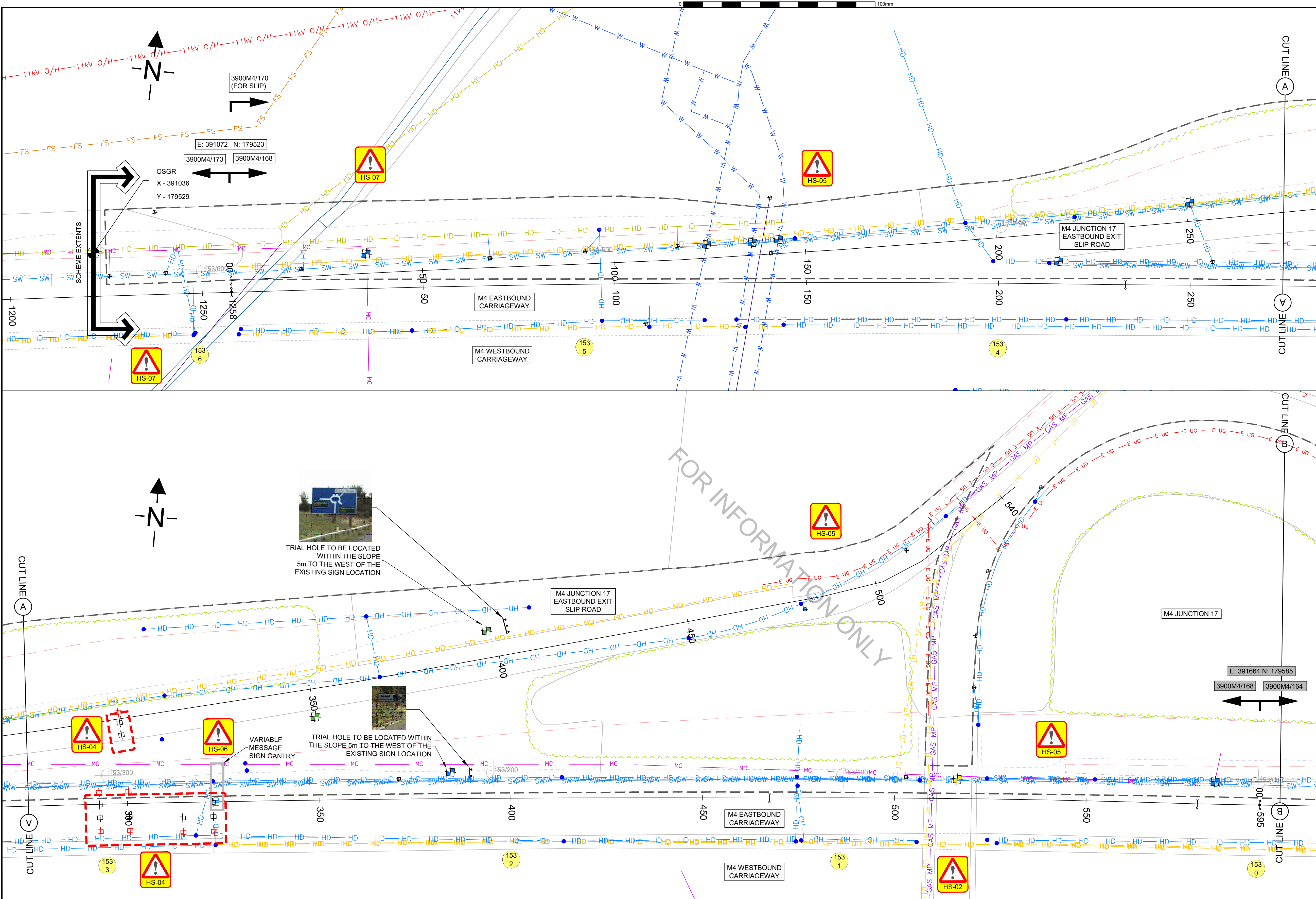
** **Action by:**

Principal Designer	– Include within the H&S file
Designer	– include in the pre-construction information
Principal Contractor	– manage risk during the construction phase
Other designer	– take into consideration when preparing their designs

Client

– 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, 1.7, 1.10, 1.16, 6.11, 7.1 & 7.2.	Works in general.	Coming into contact with live traffic or encountering members of the public (motorists).	(1) and (2)	The Client (Highways England) have elected to be responsible for and to arrange for the provision of the temporary traffic management (which will be lane 1 closures and/or total slip road closures). This will be provided overnight from 2200 to 0600.	The risk remains but the likelihood has been reduced.	No further comment.	Client and Principal Contractor
2.1	Excavation of trial holes.	Coming into contact with underground services.	(1)	Statutory undertakers drawings have been obtained and the routes of these and other services have been shown on the scheme statutory undertakers and other service drawings (nos. HE570131D-KIER-HGN-M4_J17_J16_B-DR-CH-010005, 010006 and 010007). These are also shown on the trial hole location drawings (nos. HE570131D-KIER-VGN-M4_J17_J16_B-DR-CH-010001, 010002 and 010003). The Client will arrange for the NRTS communication services to be marked out on site. There is a culvert that passes beneath the M4 at approximately MP 153/6-20m but no records are available for this. It is beneath an embankment and is unlikely to be encountered during the survey works.	The risk remains but the likelihood has been reduced and will need to be managed by the Principal Contractor. Identification and control methods outlined in HSG47 'Avoiding Danger from Underground Services' should be followed.	No further comment.	Principal Contractor and Client
2.2	Works in general.	Coming into contact with overhead services.	(1)	There are two overhead service (electricity) crossings within the works area (one 33kV and the other 11kV). The location of this has been indicated on the scheme drawings.	The risk remains but the likelihood has been reduced and will need to be managed by the Principal Contractor. Identification and control methods outlined in GS6 'Avoiding Danger from Overhead Power Lines' should be followed.	No further comment.	Principal Contractor
7.5	Works in general.	Striking overhead structures.	(1), (2) and (3)	There are two overbridges and one overhead sign gantry (VMS) within the works area. These have been indicated on the scheme drawings.	The risk remains but the likelihood has been reduced. The Principal Contractor should manage this risk (possibly as part of the traffic management arrangements).	No further comment.	Principal Contractor (and possibly Client)



KEY

- | | | | |
|----------|--------------------------------|--|--|
| BT | BRITISH TELECOM - UNDERGROUND | | GULLIES / INLETS TO BE SURVEYED |
| HD | HIGHWAY DRAIN | | MANHOLE / CATCHPIT / INSPECTION CHAMBER TO BE SURVEYED |
| HD | FILTER DRAIN | | |
| HD | HIGHWAY DITCH | | SURVEY AREA (TOPOGRAPHICAL, DRAINAGE AND ASBESTOS REFURBISHMENT (64,383m ²)) |
| E UG | ELECTRICITY LINE - UNDERGROUND | | APPROXIMATE AREAS OF DENSE TREES (26,155m ²)(SEE NOTE 8) |
| 11kV O/H | ELECTRICITY 11KV - OVERHEAD | | CARRIAGEWAY LOOPS LOCATION |
| 33kV O/H | ELECTRICITY 33KV - OVERHEAD | | TRIAL HOLE SURVEY (STATS DEPTHS AND SOIL SAMPLING) (21No) |
| GAS MP | GAS MAIN MP | | TRIAL HOLE SURVEY (STRUCTURES, STATS DEPTH AND SOIL SAMPLING) (2No) |
| W | WATER MAIN | | TRIAL HOLE SURVEY (SOIL SAMPLING) (3No) |
| MC | MOTORWAY COMMUNICATIONS | | MARKER POST REFERENCE |
| FS | FOUL WATER SEWER | | |

THIS MAP IS REPRODUCED FROM ORDNANCE SURVEY MATERIAL WITH THE PERMISSION OF ORDNANCE SURVEY ON BEHALF OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE © CROWN COPYRIGHT. UNAUTHORISED REPRODUCTION INFRINGES CROWN COPYRIGHT AND MAY LEAD TO PROSECUTION OR CIVIL PROCEEDINGS. AL 100030649 2020

RESIDUAL DESIGN HAZARDS

THE FOLLOWING HAS BEEN COLLECTED FROM THE PRE-CONSTRUCTION INFORMATION AND HIGHLIGHTS KNOWN RESIDUAL HAZARDS.

KEY
HS-# = HEALTH AND SAFETY RISK REFERENCE NUMBER
E-# = ENVIRONMENT RISK REFERENCE NUMBER

HS-01 - EXISTING OVERHEAD ELECTRICITY CABLES
HS-02 - EXISTING OVERHEAD STRUCTURES
HS-03 - UNDERBRIDGE STRUCTURES
HS-04 - TRAFFIC LOOPS
HS-05 - STATUTORY UNDERTAKERS (UNDERGROUND)
HS-06 - GANTRY
HS-07 - EXISTING CULVERT
HS-08 - POTENTIAL ASBESTOS-CONTAMINATED MATERIALS (ACM)
E-01 - INVASIVE SPECIES
E-02 - PROTECTED SPECIES
E-03 - DITCHES/WATERCOURSE

NOTES

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS WITHIN THE SERIES.
- CROSS CARRIAGEWAY INDICATIVE LOCATIONS OF STATUTORY UNDERTAKERS SERVICES HAVE BEEN PROVIDED ON THIS DRAWING FOR TRIAL HOLE SURVEY PURPOSES. FOR STATUTORY UNDERTAKERS SERVICES INFORMATION REFER TO DRAWING NO. HE570131D-KIER-HGN-M4_J17-J16_CR-DR-CH-010005.
- MARKER POSTS ARE SHOWN FOR INDICATIVE PURPOSE ONLY. CHAINAGES SHOWN ON THIS DRAWING HAVE BEEN SET OUT AT LEAST EVERY 50m ALONG THE CHART SECTIONS INDICATED THROUGHOUT THE EXTENTS OF THE WORKS.
- THE OVERHEAD CABLES HAVE BEEN IDENTIFIED ON THE SCHEME DRAWINGS, HOWEVER INFORMATION REGARDING SAFE WORKING HEIGHTS IN ACCORDANCE WITH GS6 HAS NOT BEEN INDICATED. PRIOR TO THE COMMENCEMENT OF WORKS ON SITE, OVERHEAD CABLE HEIGHTS TO BE CONFIRMED AND RECORDED BY WAY OF SIGNATURE AND DATE BY A TRAINED AND COMPETENT PERSON.
- TRIAL HOLES LOCATED AT THE STRUCTURES ARE TO DETERMINE THE DEPTH OF BRIDGE PIER FOUNDATIONS AND OFFSET OF FOUNDATION EDGE FROM THE FACE OF THE BRIDGE PIER.
- THE TOPOGRAPHICAL SURVEY IS TO EXTEND FROM THE TRAFFIC SIDE OF THE HARDSHOULDER / LANE 1 DIVIDING (RAISED RIB) ROAD MARKING, OR THE TRAFFIC SIDE OF THE BROKEN SLIP ROAD EXIT AND ENTRY MARKINGS, TO THE HIGHWAY BOUNDARY (INCLUDING THE CARRIAGEWAY AND VERGE OF THE SLIP ROADS).
- THE CCTV DRAINAGE SURVEY IS A DRAINAGE CONNECTIVITY SURVEY AND IS FOR ALL ASSETS IN THE DRAINAGE SYSTEM WHICH MAY ALSO INCLUDED INFRASTRUCTURE OUTSIDE OF THE SURVEY AREA E.G. OUTFALLS
- FOR THE TOPOGRAPHICAL SURVEY FOR DENSE AREAS OF TREES IT IS ONLY NECESSARY TO SURVEY THE TRUNKS (AT A HEIGHT OF 0.3m ABOVE GROUND LEVEL) AT THE PERIMETER OF THESE AREAS. THE APPROXIMATE AREAS HAVE BEEN INDICATED ON THE DRAWINGS BUT SHOULD BE ACCURATELY ESTABLISHED ON SITE DURING THE TOPOGRAPHICAL SURVEY.

C2	AMENDMENTS TO SURVEYS	LP	PP	08.06.2021
C1	FIRST ISSUE	SR	SR	26.02.2021
REV	DETAILS	CHKD	APPD	DATE

DRAWN : TW	DRAWING STATUS
DESIGN : TW	WORK IN PROGRESS
CHKD : LP	PRELIMINARY DRAWING
APPD : PP	EXTERNAL ISSUE
DATE : 08.06.2021	AS-BUILT
SUITABILITY : S2	FOR INFORMATION

CLIENT



AGENT



SCHEME NAME

570131D PRIORITY VRS VM
DEVELOPMENT BATCH 1

DRAWING TITLE

SITE 20 - M4 J17-16 EASTBOUND
SURVEY LOCATION PLAN
SHEET 1 OF 3

ORIG DRAWING SIZE : A1	DIMENSIONS : m	SCHEME REFERENCE No. 1040304
COPYRIGHT © KIER	SCALE : 1:500	
DRAWING NUMBER PROJECT ORIGINATOR VOLUME	HE570131D - KIER - VGN	REVISION C 2
M4_J17-J16_B - DR - CH - 010001	LOCATION TYPE ROLE NUMBER	