Appendix 10.4

Potential Contamination Sources

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1 Introduction

1.1.1 In support of **Chapter 10** (**Volume 1**) of the Design Manual for Roads and Bridges (DMRB) Stage 3 Environmental Impact Assessment (EIA) report; this appendix presents the baseline details of potential contamination sources identified within the study area for Project 9 - Crubenmore to Kincraig of the A9 Dualling Programme (hereafter referred to as the Proposed Scheme). Potential pollutant linkages in relation to the sources are also outlined within the context of a preliminary Conceptual Site Model (CSM), with mitigation identified as required in **Chapter 10** (**Volume 1**).

2 Approach and Methods

2.1.1 Potential contamination sources were identified based on a review of historical and current mapping, consultations with The Highland Council (THC), Scottish Environment Protection Agency (SEPA) and site walkovers undertaken by the CH2M Fairhurst Joint Venture (CFJV). Available ground investigation (GI) and monitoring data has also been considered as referenced herein and within **Chapter 10** (**Volume 1**).

2.1.2 Published assessment criteria to assist considering soil, soil leachate, groundwater and ground gas monitoring results available were sourced from the following:

- *'Model Procedures for the Management of Land Contamination'*, Environment Agency (EA) (2004)
- *'Suitable for Use Limits for Human Health Risk Assessment'*, Land Quality Management (LQM)/ Chartered Institute of Environmental Health (CIEH) (2015)
- *'Category 4 Screening Levels for Assessment of Land Affected by Contamination'*, Department for Environment, Food and Rural Affairs (DEFRA) (2014)
- 'Position Statement (WAT-PS-10-01) *'Assigning Groundwater Assessment Criteria for Pollutant Inputs, Version 3.0'*, Scottish Environment Protection Agency (SEPA) (2014)
- BS 8485:2015 *'Code of Practice for the Design of Protective Measures for Methane and Carbon Dioxide Ground Gases for New Buildings'*, British Standards Institute (2015)
- Construction Industry Research and Information Association (CIRIA) C665 *'Assessing Risks Posed by Hazardous Ground Gases to Buildings'*, CIRIA (2007)
- EH40/ 2005 *'Workplace Exposure Limits, Second Edition'*, Health and Safety Executive (HSE) (2011).

3 Potential Contamination Sources

3.1.1 Ninety principal potential contamination sources have been identified within the study area as part of the assessment, together with 116 individual occurrences of made ground/ visual or olfactory indications of contamination (i.e. odours, staining). Details of these are provided in **Table 1** and the approximate locations of each potential source are also illustrated in **Drawings 10.35** to **10.46** (**Volume 3**).

Table 1: Potential Contamination Sources

Source Ref.	Potential Source Name	Chainage (approx.)	Position and Distance from Scheme	Potential Source Comments	Ground Investigation/ Other Information
Online Potential Sources of Contamination					
CK-01	Existing A9 Carriageway	Full chainage	Online	Identified from PSSR due to the consideration that made ground may be present associated with the existing carriageway and embankments, together with potential for pollution associated with road run-off.	Several Advanced and Preliminary GI locations were located on or within the immediate vicinity of the existing A9 carriageway. Areas of made ground have been reviewed individually (CK-59 to CK-176). Where chemical testing was available from these or natural soils in areas associated with the existing A9, no elevated contaminant concentrations were identified. Localised detectable concentrations of inorganic and organic contaminants (incl. metals and hydrocarbons) have been identified in soil leachate and groundwater, with some of these recorded to exceed drinking water and/ or surface water standards. Ground gas monitoring has also recorded elevated methane, carbon dioxide and depleted oxygen conditions in some locations (CK-177).
CK-02	Highland Mainline (HML) railway	Full chainage	Online to 650m north/ west	Identified from PSSR due to the consideration that made ground may be present associated with the existing railway or embankments/ accesses, together with the potential for pollution associated with run-off.	One Advanced GI location and two Preliminary GI locations were located in close vicinity to the HML railway. Sand, gravel and gravelly silty sand and locally made ground (CK-173) were encountered with variable cobble and boulder content. Available soil chemical testing did not record any elevated contaminant concentrations.
CK-03	Decommissioned electricity pylons	Full chainage	Online to 160m south/ east	Identified from PSSR and information provided by Scottish Southern Energy (SSE) due to the consideration that made ground may be potentially present associated with former powerline and associated pylon bases. Some pylons remain in place.	Three Preliminary GI location were located in proximity to the pylons, with ground conditions comprising sand and gravel with boulders and locally, made ground (CK-125). Available soil chemical testing results do not identify elevated contaminant levels, but some polycyclic aromatic hydrocarbon (PAH) concentrations were observed greater than the limits of detection locally.
CK-04	Radon affected sites	Various	Online to 600m north/ south/ east/ west	Several areas identified to be radon affected, as between 1 and 3% of homes are above the action level	Not investigated but it is assumed these are from natural sources, likely representing low risks.
CK-05	Worked ground and former gravel pit/ quarry	ch. 42,000 to ch. 42,500	Online	Identified from PSSR due to indication of worked ground on BGS mapping. This also corresponds to the location and extent of a possible infilled gravel pit or quarry, identified on historical mapping in up to 1971.	Several Advanced and Preliminary GI locations are located within the footprint of the area. Made ground was encountered at two locations and are reviewed individually (CK-64 and CK-71). Otherwise, ground conditions generally comprising gravelly silty sand and gravel with variable cobble and boulder content were observed, with peat at one location. Soil chemical testing did not identify any elevated contaminant concentrations. However, soil leachate chemical testing identified levels of cadmium and some PAH at concentrations greater than the limits of detection. Groundwater chemical testing reported slightly elevated ammoniacal nitrogen at two locations.
CK-06a	Ralia Café and Picnic Area	ch. 42,250	Online	Identified from PSSR due to consideration that made ground may be present and is indicated in the area as CK-05.	Three Advanced and four Preliminary GI locations were located in the vicinity of Ralia Café. Ground conditions encountered were generally sand and gravel with low cobble and boulder content, with some made ground (CK-115). Soil chemical test results did not identify elevated levels of contaminants, however soil leachate testing identified detectable levels of some PAHs.
CK-06b	Ralia Centre, Newtonmore	ch. 42,200	Online	SEPA CAR License (Ref. CAR/R/1082485) for STE to soakaway	Not investigated.
CK-07	Old gravel pit	ch. 42,500	Online	Identified from historical mapping as gravel pit.	Made ground was encountered and is reviewed individually (CK-72), but comprised light brown, gravelly, silty sand with pockets of peat and pieces of cut timber, up to 1.40m bgl. Soil chemical testing of samples at 0.50m, 1.00m and 1.50m bgl did not identify any elevated contaminant concentrations.
CK-08a	Buildings/ properties at Griogchan	ch. 42,725 to ch. 42,825	Adjacent north	Identified from PSSR due to the consideration that made ground may potentially be present associated with the existing properties or access to them, with potential also for incidental contamination via fuel spills.	Not investigated.
CK-09a	Buildings/ properties at Ptarmigan Lodge	ch. 43,000	Adjacent north	Identified from PSSR due to the consideration that made ground may potentially be present associated with the existing properties or access to them, with potential also for incidental contamination via fuel spills.	Not investigated.
CK-10	Mineral site	ch. 43,600	Adjacent north	Identified from PSSR a historical gravel pit and identified by THC (Ref. BS-MIN-1062).	Not investigated.
CK-11a	Kennels and Keepers Cottage	ch. 44,100	Adjacent north	Identified from PSSR due to the consideration that made ground may potentially be present associated with the existing properties or access to them, with potential also for incidental contamination via fuel spills.	Not investigated.

Source Ref.	Potential Source Name	Chainage (approx.)	Position and Distance from Scheme	Potential Source Comments	Ground Investigation/ Other Information
CK-12	Made/ worked ground	ch. 47,400 to ch. 47,700	Online	Identified from PSSR as BGS mapped made ground.	One Advanced and several Preliminary GI locations are within the inferred footprint of the made/ worked ground. Made ground was encountered at three locations and is reviewed individually (CK-76, CK-127, CK-128), Otherwise, exploratory holes encountered gravelly or silty sand and sand and gravel with medium cobble content, with underlying bedrock of psammite. Soil chemical testing did not identify elevated concentrations of contaminants, however soil leachate chemical testing identified concentrations of some PAHs to be greater than the limits of detection.
CK-13	Former pits	ch. 48,200	Online	Identified from PSSR and historical maps as disused pit. Unconfirmed lateral and vertical extent with potential to encounter Made Ground of unknown physical and chemical composition (with associated sources of potential soil, groundwater and gas contamination) if it has subsequently been infilled.	One Advanced and three Preliminary GI locations are within the inferred footprint of the former pits. One location encountered made ground and is reviewed individually (CK-78). Otherwise, exploratory holes encountered silty, gravelly fine to coarse sand with low-medium cobble and low boulder content. Soil chemical testing did not identify any elevated levels of contaminants, however soil leachate testing identified concentrations of some PAHs to be greater than the limits of detection.
CK-14	Former pit	ch. 48,850	Online	Identified from PSSR and historical maps as a pit.	One Advanced and three Preliminary GI locations are within the inferred footprint of the former pit area. The exploratory holes encountered silty/ gravelly fine to coarse sand with high to medium cobble content. Soil and soil leachate chemical testing did not encounter any elevated contaminant concentrations.
CK-20	Worked ground	ch. 50,750 to ch. 50,950	Online	Identified from PSSR as BGS mapped made ground area corresponding to construction of the existing A9.	Three Preliminary GI locations are within the inferred footprint of the worked ground and locally observed made ground to be present (CK-144). Soil chemical testing did not identify any elevated contaminant concentrations. However, soil leachate testing found levels of some PAHs greater than drinking water standards and other organic compounds at concentrations greater than the limits of detection.
CK-28a	Buildings/ properties at Kerrow Cottage	ch. 50,900	Online	Identified in PSSR at Kedron Cottage, due to the consideration that made ground may potentially be present associated with the existing properties or access to them, with potential also for incidental contamination via fuel spills.	Not investigated directly, however Preliminary GI locations in vicinity encountered silty gravelly fine to coarse sand with low cobble content. No chemical testing results are available.
CK-28b	Kerrow Farm Cottage, Kingussie	ch. 50,900	20m west	SEPA CAR License (Ref. CAR/R/1013789) for STE to land	Not investigated.
CK-29	Sheep dip and buildings	ch. 52,700	Adjacent north east	Identified by THC (Ref. BS-SHP-1001) Sheep Dip and buildings recorded in 1972 and included on all maps to date. Potential to encounter made ground with associated sources of potential soil and groundwater contamination.	Not investigated directly, however Preliminary GI locations in the vicinity encountered silty, very sandy fine to coarse gravel and medium cobble content and local made ground (CK-102). Soil chemical testing did not identify elevated levels of contaminants. However, soil leachate testing identified elevated levels of cadmium and a pH of 5.2, together with concentrations of some PAHs above the limits of detection.
CK-30a	Buildings/ properties at Chapelpark	ch. 52,800 to ch. 52,900	Online	Buildings identified from PSSR at Chapelpark, due to the consideration that made ground may potentially be present associated with the existing properties or access to them, with potential also for incidental contamination via fuel spills.	Two Preliminary GI locations within the vicinity of Chapelpark encountered made ground and are reviewed individually (CK-103, CK-164). Available soils chemical testing did not identify elevated contaminant concentrations.
CK-32	Former graveyard	ch. 53,150 to ch. 53,250	Online	Burial ground identified from PSSR and on all map editions from 1972. Potential to encounter Made Ground and decomposed remains with associated sources of potential soil, groundwater and gas contamination	Not investigated.
CK-33a	Buildings/ properties at Mains of Balavil	ch. 53,500	Adjacent north	Buildings identified from PSSR as Mains of Balavil due to the consideration that made ground may potentially be present associated with the existing properties or access to them, with potential also for incidental contamination via fuel spills.	One Preliminary GI location is located in the vicinity of the Mains of Balavil. Made ground was encountered, comprising topsoil over gravelly sandy silt, cobbles, boulders and the possible remains of an old wall up to 1.40m. Soil chemical testing results from samples at ground level and 0.50m did not identify elevated contaminant concentrations.
CK-33h	Railway Cottage, Balavil, Kingussie	ch. 53,600	Online	SEPA CAR License (Ref. CAR/R/1096618) for STE to soakaway	Not investigated.
CK-35	Old gravel pit	ch. 55,100	Online	Identifies from PSSR as pits between 1903 and 1938. Unconfirmed lateral and vertical extent with potential to encounter Made Ground of unknown physical and chemical composition (with associated sources of potential soil, groundwater and gas contamination) if it has subsequently been infilled.	One Preliminary GI location is within the inferred footprint of the gravel pit. Ground conditions encountered comprised sandy silty topsoil underlain by sandy silty gravel with cobbles. Soil and soil leachate chemical testing results from samples at 0.05m and 0.50m did not identify elevated contaminant concentrations.
CK-38	Former tank	ch. 56,100	Adjacent north	Identified from PSSR as tank in 1970. The use of the tank is unknown, however it may have been used for fuel storage resulting in a potential contamination source.	Not investigated.
CK-39	Meadowside Quarry/ Worked ground	ch. 56,250	Online	Identified by THC (Ref. BS-MIN-1010) Meadowside Quarry and PSSR, recorded on 1972 edition and included in all maps to date. The quarry is still in use today and is an opencast quarry used to extract igneous and metamorphic rock.	Not investigated.
CK-40	Mineral Site	ch. 56,450	Online	Identified by THC (Ref. BS-MIN-1150) as a mineral site. Potential to encounter made ground and associated soil, groundwater and gas contamination.	Not investigated.

Source Ref.	Potential Source Name	Chainage (approx.)	Position and Distance from Scheme	Potential Source Comments	Ground Investigation/ Other Information
CK-41	Discharge consent	ch. 56,250	Online	Discharge consent identified from Envirocheck report.	Not investigated.
CK-43	Invermore Lodge, Ralia, Newtonmore	ch. 43,400	Adjacent south	SEPA CAR License (Ref. CAR/R/1062778) for STE to Land	Not investigated.
CK-55	Lynchat Septic Tank	ch. 53,400	Online	SEPA CAR License (Ref. CAR/L/1001761) for FE to Raitts Burn	Not investigated.
CK-57	Balavil Septic Tank	ch. 53,600	Adjacent north	Septic tank identified through landowner consultation.	Not investigated.
CK-177	Ground Gas	Full chainage	Online/ Adjacent	Conditions encountered during Advanced and Preliminary GI monitoring, nearby existing A9 carriageway and other potential source areas. The response zones of the borehole installations suggest that the ground gas concentrations encountered (carbon dioxide and locally, methane) are generally likely to be attributable to natural sources, such as peat and other organic-rich soils/ sediments.	Detections of methane (between 1 and 81% volume/ volume (v/v)) have been recorded in 65 monitoring locations, with the concentrations observed to exceed the safety threshold of 1% v/v on one or more occasion. None of the locations appear to be associated with a particular potential source area or made ground, with each installation screened in or across alluvial materials and locally, peat. Carbon dioxide concentrations exceed the short term (15 minutes) occupational exposure limit (1.5% v/v) in 52 boreholes and the long term (8 hour) exposure limit (0.5% v/v) in 85 boreholes on one or more occasion, with detected concentrations ranging between 0.1 and 20.8% v/v. Depleted oxygen concentrations below 19% v/v have also been observed in 30 boreholes on one or more occasion, with levels considered to be very low (less than 16% v/v) in 11 boreholes, frequently coinciding with higher carbon dioxide or methane levels. Some boreholes recorded isolated detections of carbon monoxide between 1 and 27 parts per million (ppm), which are below the short and long-term exposure limits for this gas. However, two borehole locations detected carbon monoxide at levels in excess of the short term exposure limit (30 ppm) – one on two occasions at concentrations of 78 and 101 ppm and the other on three occasions, once at a concentration of 66 ppm and twice at a concentration of 42 ppm. Detections of hydrogen sulphide were recorded in one borehole location at 40 ppm on one occasion, exceeding the short (10 ppm) and long-term (5 ppm) exposure limits. Volatile organic compound concentrations were also observed to slightly exceed the long-term exposure limit for benzene (1 ppm) in two borehole locations on one occasion – one at a concentration of 1.6 ppm and the other at a concentration of 4.1 ppm.
Online Individual Occurrences of Made Ground/ Visual or Olfactory Indications of Contamination (i.e. odours, staining)					
CK-59	Historical GI Location (BGS Ref. NH80SW2630/26A)	ch. 56, 175	Online	Conditions encountered during GI undertaken in relation to the construction of the A9, nearby existing A9 carriageway (CK-01).	Made ground comprising topsoil, sand, gravel and cobbles encountered between ground level and 0.45m. No chemical testing results available.
CK-60	Historical GI Location (BGS Ref. NH80SW2630/26D)	ch. 56, 200	Online	Conditions encountered during GI undertaken in relation to the construction of the A9, nearby existing A9 carriageway (CK-01).	Made ground comprising concrete, tarmac, topsoil and boulders encountered between 0.35 and 0.70m. No chemical testing results available.
CK-61	Historical GI Location (BGS Ref. NH70SE16830/B333)	ch. 50,450	Online	Conditions encountered during GI undertaken in relation to the construction of the A9, nearby existing A9 carriageway (CK-01).	Made ground comprising cobbles and ash fill material encountered between ground level and 0.35m. No chemical testing results available.
CK-62	Historical GI Location (BGS Ref. NH79SE16830/B334)	ch. 50,450	Online	Conditions encountered during GI undertaken in relation to the construction of the A9, nearby existing A9 carriageway (CK-01).	Made ground comprising cobbles and ash fill material encountered between ground level and 0.35m. No chemical testing results available.
CK-63	Advanced GI Location (TP9-012)	ch. 40,650	Online	Conditions encountered during Advanced GI in vicinity of the existing A9 carriageway (CK-01).	Made ground comprising grey clayey gravelly sand with roots between ground level and 0.60m. No chemical testing results available.
CK-64	Advanced GI Location (TP9-056)	ch. 42,250	Online	Conditions encountered during Advanced GI in vicinity of the existing A9 carriageway (CK-01) and BGS mapped worked ground/ former gravel pit/ quarry (CK-05).	Made ground comprising grey gravelly sand with roots and cobbles, and fragments of old concrete pipe between ground level and 1.30m. No chemical testing results available.
CK-65	Advanced GI Location (TP9-026)	ch. 47,275	Online	Conditions encountered during Advanced GI in vicinity of the existing A9 carriageway (CK-01).	Made ground comprising brown peaty sandy gravelly topsoil and brown gravelly sand with pockets of peat encountered between ground level and 1.05m. No chemical testing results available.
CK-66	Advanced GI Location (TP9-028)	ch. 47,800	Online	Conditions encountered during Advanced GI in vicinity of the existing A9 carriageway (CK-01).	Made ground comprising brown gravelly topsoil and grey clayey sand with cobbles and fragments of metal and wood between ground level and 0.60m. Soil and soil leachate chemical testing of a sample from 0.50m did not identify any elevated contaminant concentrations.
CK-67	Preliminary GI Location (TP9-3-189)	ch. 41,300	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01) and the HML (CK-02).	Made ground encountered comprising black, gravelly, silty sand and gravel of mixed lithologies including basalt, psammite and quartzite up to 0.10m. Soil chemical testing of samples at 0.20m and 1.00m did not identify any elevated contaminant levels. Soil leachate testing of the sample at 0.20m identified some PAH concentrations above the limits of detection.

Source Ref.	Potential Source Name	Chainage (approx.)	Position and Distance from Scheme	Potential Source Comments	Ground Investigation/ Other Information
CK-68	Preliminary GI Location (TP9-3-104)	ch. 41,300	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Possible made ground encountered comprising brown silty, gravelly fine to coarse sand up to 1.20m. Gravel is of mixed lithologies including granite, psammite, quartzite and schist. Soil chemical testing of a sample at 0.20m did not identify any elevated contaminant concentrations.
CK-69	Preliminary GI Location (TP9-3-107)	ch. 41,550	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising dark brown silty gravelly sand with high organic matter and rootlets and occasional traces of burnt organic material up to 0.20m. Gravel is of mixed lithologies including granite and psammite. Soil chemical testing of a sample at 0.20m did not identify any elevated contaminant concentrations.
CK-70	Preliminary GI Location (TP9-3-196)	ch. 42,000	Online/ Adjacent	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01) and the HML (CK-02).	Made ground encountered comprising dark brown sandy silty gravel of mixed lithologies, including psammite, granite and quartzite, up to 0.90m. Soil chemical testing of samples at 0.50m and 1.00m did not identify any elevated contaminant concentrations.
CK-71	Preliminary GI Location (TP9-3-111)	ch. 42,300	Online/ Adjacent	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01) and worked ground (CK-05).	Made ground encountered comprising black silty organic rich sandy topsoil and light brown silty sand, with roots up to 0.30m. Soil chemical testing of samples at 0.20m and 0.50m did not identify any elevated contaminant concentrations.
CK-72	Preliminary GI Location (TP9-3-115)	ch. 42,525	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01) and old gravel pit (CK-07).	Made ground encountered comprising light brown, gravelly, silty sand with pockets of peat and pieces of cut timber, up to 1.40m. Soil chemical testing of samples at 0.50m, 1.00m and 1.50m did not identify any elevated contaminant concentrations.
CK-73	Preliminary GI Location (TP9-3-202)	ch. 42,575	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising soft black organic rich clay becoming dark brown gravelly clayey sand up to 2.00m. An abundance of tree roots and branches were also present. Soil chemical testing of samples at 0.50m and 2.00m did not identify any elevated contaminant concentrations. However, soil leachate chemical testing of a sample at 2.0m identified concentrations of TPH greater than the limits of detection.
CK-74	Preliminary GI Location (TP9-3-170)	ch. 43,400	Online/ Adjacent	Conditions encountered during Preliminary GI in vicinity of Invermore Lodge (CK-43).	Made ground encountered comprising gravelly, silty sand with occasional glass bottles and frequent roots and fibres, up to 0.30m. Soil chemical testing of a sample at 0.20m did not identify any elevated contaminant concentrations.
CK-75	Preliminary GI Location (TP9-3-226)	ch. 47,275	Online/ Adjacent	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising dark grey gravelly sandy silt with low cobble content up to 1.40m. Soil and soil leachate testing of a sample taken at 0.50m did not identify any elevated contaminant concentrations.
CK-76	Preliminary GI Location (TP9-3-205)	ch. 47,450	Online/ Adjacent	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01) and made/ worked ground (CK-12).	Made ground encountered comprising brown, gravelly silty sand, mixed with metal, wire and slabs of concrete, up to 1.90m. Soil chemical testing of samples at 0.20m, 1.00m and 3.00m did not identify any elevated contaminant concentrations.
CK-77	Preliminary GI Location (TP9-3-140)	ch. 47,700	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered, comprising brown gravelly silty sand and asphalt up to 1.05m. Soil chemical testing of a sample at 0.50m did not identify any elevated contaminant concentrations, though soil leachate testing identified some PAH and TPH concentrations above the limits of detection.
CK-78	Preliminary GI Location (TP9-3-143)	ch. 48,125	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01) and former pits (CK-13).	Made ground encountered comprising gravelly silty topsoil and light brown sand and gravel up to 0.30m. Soil and soil leachate chemical testing of samples at 0.10m, 0.50m and 1.00m did not identify any elevated contaminant concentrations.
CK-79	Preliminary GI Location (HP9-3-100)	ch. 49,575	Online/ Adjacent	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01) and on existing approach embankment to the River Spey bridge.	Made ground encountered, comprising dark brown silty gravelly sand with rootlets and rubbish (e.g. traces of foil) up to 0.30m. Soil chemical testing of samples at 0.20m and 1.00m did not identify any elevated contaminant concentrations.
CK-80	Preliminary GI Location (HP9-3-101)	ch. 49,700	Online/ Adjacent	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01) and on existing approach embankment to the River Spey bridge.	Made ground encountered comprising brown gravelly sand with low cobble content up to 1.20m. No chemical testing results available.
CK-81	Preliminary GI Location (HP9-3-102)	ch. 49,800	Online/ Adjacent	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01) and on existing approach embankment to the River Spey bridge.	Made ground encountered comprising light brown/ orange brown gravelly with sand with low cobble content, up to 1.10m. Soil chemical testing of samples at 0.50m and 1.00m did not identify any elevated contaminant concentrations. However, soil leachate testing at 0.50m identified some PAH and TPH concentrations above the limits of detection.
CK-82	Preliminary GI Location (HP9-3-104)	ch. 49,975	Online/ Adjacent	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01) and on existing approach embankment to the River Spey bridge.	Made ground encountered comprising light brown gravelly silty sand up to 0.80m. Soil chemical testing of a sample at 0.50m did not identify any elevated contaminant concentrations.
CK-83	Preliminary GI Location (TT9-3-101NW)	ch. 52,125	Online	Conditions encountered during archaeological trial trenching for the Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising dark brown slightly gravelly sandy silty topsoil with rare ceramic fragments and frequent roots up to 0.50m. Possible archaeology was also encountered comprising subangular psammite boulders and cobbles. No environmental samples were obtained, so no chemical testing results available.
CK-84	Preliminary GI Location (TT9-3-103CH25.00)	ch. 52,170	Online	Conditions encountered during archaeological trial trenching for the Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising dark brown slightly gravelly sandy silty topsoil with a low cobble content, up to 0.30m. No environmental samples were obtained, so no chemical testing results available.

Source Ref.	Potential Source Name	Chainage (approx.)	Position and Distance from Scheme	Potential Source Comments	Ground Investigation/ Other Information
CK-85	Preliminary GI Location (TT9-3-103W)	ch. 52,170	Online	Conditions encountered during archaeological trial trenching for the Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising gravelly silty sandy topsoil with cobbles and boulders, up to 0.30m. No environmental samples were obtained, so no chemical testing results available.
CK-86	Preliminary GI Location (TT9-3-103CH14.00)	ch. 52,180	Online	Conditions encountered during archaeological trial trenching for the Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising dark brown gravelly silty sandy topsoil with rare ceramic and low cobble content, up to 0.30m. No environmental samples were obtained, so no chemical testing results available.
CK-87	Preliminary GI Location (TT9-3-103CH4.00)	ch. 52,200	Online	Conditions encountered during archaeological trial trenching for the Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising dark brown gravelly sandy silty topsoil with rare ceramic fragments and frequent root fibres, up to 0.40m. No environmental samples were obtained, so no chemical testing results available.
CK-88	Preliminary GI Location (TT9-3-103CH2.40)	ch. 52,200	Online	Conditions encountered during archaeological trial trenching for the Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising dark brown gravelly silty topsoil with frequent root fibres up to 0.40m. Possible archaeology was also encountered comprising of subrounded psammite cobbles and boulders. No environmental samples were obtained, so no chemical testing results available.
CK-89	Preliminary GI Location (TT9-3-104W)	ch. 52,220	Online	Conditions encountered during archaeological trial trenching for the Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising dark brown silty sand with low cobble content (considered to be a possible archaeological feature), up to 0.20m. No environmental samples were obtained, so no chemical testing results available.
CK-90	Preliminary GI Location (TT9-3-105W)	ch. 52,220	Online	Conditions encountered during archaeological trial trenching for the Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising dark grey silty gravelly sand with occasional fragments of glass and rootlets, up to 0.10m. No environmental samples were obtained, so no chemical testing results available.
CK-91	Preliminary GI Location (TT9-3-104CH14.00)	ch. 52,230	Online	Conditions encountered during archaeological trial trenching for the Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising dark brown gravelly silty sandy topsoil with occasional fine rootlets, up to 0.40m. No environmental samples were obtained, so no chemical testing results available.
CK-92	Preliminary GI Location (TT9-3-104CH19.70)	ch. 52,235	Online	Conditions encountered during archaeological trial trenching for the Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising dark brown silty sandy topsoil and low cobble content (considered to be a possible archaeological feature), up to 0.20m. No environmental samples were obtained, so no chemical testing results available.
CK-93	Preliminary GI Location (TT9-3-104E)	ch. 52,240	Online	Conditions encountered during archaeological trial trenching for the Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising dark brown silty sandy topsoil with frequent root fibres, up to 0.25m. No environmental samples were obtained, so no chemical testing results available.
CK-96	Preliminary GI Location (TT9-3-105CH21.10)	ch. 52,270	Online	Conditions encountered during archaeological trial trenching for the Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising dark grey silty gravelly sand with occasional fragments of ceramics and rootlets, up to 0.10m. No environmental samples were obtained, so no chemical testing results available.
CK-97	Preliminary GI Location (TT9-3-105CH14.30)	ch. 52,275	Online	Conditions encountered during archaeological trial trenching for the Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising dark grey silty gravelly sand with occasional fragments of ceramics and rootlets, up to 0.10m. No environmental samples were obtained, so no chemical testing results available.
CK-98	Preliminary GI Location (TT9-3-105)	ch. 52,275	Online	Conditions encountered during archaeological trial trenching for the Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising dark grey silty gravelly sand with occasional fragments of glass and rootlets, up to 0.10m. No environmental samples were obtained, so no chemical testing results available.
CK-99	Preliminary GI Location (TT9-3-105CH11.30)	ch. 52,275	Online	Conditions encountered during archaeological trial trenching for the Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising dark grey silty gravelly sand with occasional fragments of ceramics and rootlets, up to 0.10m. No environmental samples were obtained, so no chemical testing results available.
CK-100	Preliminary GI Location (TT9-3-105CH6.10)	ch. 52,280	Online	Conditions encountered during archaeological trial trenching for the Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising dark grey silty gravelly sand with occasional fragments of ceramics and rootlets, up to 0.10m. No environmental samples were obtained, so no chemical testing results available.
CK-101	Preliminary GI Location (TT9-3-105E)	ch. 52,285	Online	Conditions encountered during archaeological trial trenching for the Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising dark grey silty gravelly sand with occasional fragments of glass and rootlets, up to 0.10m. No environmental samples were obtained, so no chemical testing results available.
CK-102	Preliminary GI Location (TP9-3-163)	ch. 52,650	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01). sheep dip and buildings (CK-29).	Made ground encountered comprising greyish brown gravelly silty sand with low cobble content up to 1.30m. Concrete obstruction associated with an A9 access road was also observed, in addition to a relic wooden post and historic dead cable. Soil chemical testing of samples at 0.20m, 0.50m, 1.00m, 2.00m and 3.00m did not identify any elevated contaminant concentrations. Soil leachate samples taken at 1.00m and 2.00m identified concentrations of some PAHs above the limits of detection.
CK-103	Preliminary GI Location (TP9-3-161)	ch. 52,850	Online/ Adjacent	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01) and buildings/ properties at Chapelpark (CK-30a).	Made ground/ possible made ground encountered comprising dark brown clayey silty sand and light yellowish brown gravelly silty sand with medium cobble content, up to 2.20m. Soil chemical testing of a sample at 0.50m did not identify any elevated contaminant concentrations.

Source Ref.	Potential Source Name	Chainage (approx.)	Position and Distance from Scheme	Potential Source Comments	Ground Investigation/ Other Information
CK-104	Preliminary GI Location (BH9-3-173)	ch. 52,975	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising, dense dark brown gravelly clayey sand, up to 2.40m. Soil chemical testing of samples at 0.20m and 0.50m did not identify any elevated contaminant concentrations. However, soil leachate chemical testing of the sample at 0.20m identified some PAHs at concentrations greater than the limits of detection.
CK-105	Preliminary GI Location (TP9-3-171)	ch. 53,450	Online/ Adjacent	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground/ possible made ground encountered comprising brown silty gravelly sand with low cobble content and rootlets, and grey silty gravelly sand with rootlets up to 0.60m. Soil chemical testing of samples at 0.50m and 1.50m did not identify any elevated contaminant concentrations. Soil leachate testing of the sample at 0.50m identified some PAHs at concentrations greater than the limits of detection.
CK-106	Preliminary GI Location (TP9-3-172)	ch. 53,550	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Possible made ground encountered comprising dark brown silty gravelly sand with low cobble content and rootlets, up to 0.70m. Soil chemical testing of a sample at 0.50m did not identify any elevated contaminant concentrations.
CK-107	Preliminary GI Location (TP9-3-175)	ch. 54,100	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising dark brown gravelly silty sand with ceramics and glass, low cobble content and a large boulder founded beneath up to 0.70m. Soil chemical testing of a sample at 0.50m bgl did not identify any elevated contaminant concentrations.
CK-108	Preliminary GI Location (TP9-3-175A)	ch. 54,100	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising dark brown gravelly silty sand with ceramics and glass and a low cobble content, up to 0.70m. No chemical testing results available.
CK-109	Preliminary GI Location (BH9-3V-003A)	ch. 40,625	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising brown sand and gravel with tar (driller's description), up to 0.40m. Soil chemical testing of samples at 0.50m and 1.00m did not identify any elevated contaminant concentrations, but concentrations of various PAHs were detected at levels greater than the limit of detection in soil leachate at 0.50m.
CK-110	Preliminary GI Location (BH9-3V-003)	ch. 40,625	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising brown sand and gravel (driller's description), up to 0.40m. No soil or soil leachate chemical testing results are available. However, a groundwater sample identified concentrations of ammoniacal nitrogen, cadmium and cyanide to exceed surface water and/ or drinking water standards, while some PAH compound and TPH concentrations were reported greater than the limit of detection.
CK-111	Preliminary GI Location (BH9-3V-004)	ch. 40,650	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising black tarmacadam (driller's description), up to 0.10m. Soil chemical testing of a sample taken at 0.20m did not identify any elevated contaminant concentrations.
CK-112	Preliminary GI Location (TP9-3-183)	ch. 40,700	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising gravelly sandy silty topsoil with occasional traces of ash and rootlets, up to 0.10m. No chemical testing results available.
CK-113	Preliminary GI Location (TP9-3-184)	ch. 40,800	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising gravelly, sandy, silty topsoil with some rootlets and occasional fragments of glass, up to 0.10m. Chemical testing of a soil sample taken at 0.50m did not identify any elevated contaminant concentrations.
CK-114	Preliminary GI Location (TP9-3-188)	ch. 41,200	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising gravelly sand up to 0.35m. Soil chemical testing results did not identify any elevated contaminant concentrations.
CK-115	Preliminary GI Location (TP9-3-113)	ch. 42,400	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01) and Ralia Café and Picnic Area (CK-06a).	Made ground encountered comprising gravelly silty sand with pockets of semi-decomposed vegetative matter and low to medium cobble content, up to 1.80m. Soil chemical testing results did not identify any elevated contaminant concentrations.
CK-116	Preliminary GI Location (TP9-3-119A)	ch. 42.750	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising sandy gravelly slightly silty topsoil with occasional fragments of brick and numerous rootlets, up to 0.30m. Soil chemical testing results did not identify any elevated contaminant concentrations.
CK-117	Preliminary GI Location (TP9-3-119)	ch. 42.850	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising slightly gravelly sandy silty topsoil with plastic and numerous fine roots, up to 0.30m. Soil chemical testing results did not identify any elevated contaminant concentrations.
CK-118	Preliminary GI Location (BH9-3-118)	ch. 43,300	Online	Conditions encountered during Preliminary GI in vicinity of the Highland Mainline Railway (CK-02).	Made ground encountered comprising cobbles (driller's description) up to 0.30m. No environmental samples were obtained, so no chemical testing results are available.
CK-119	Preliminary GI Location (BH9-3-129)	ch. 44,625	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising fill (driller's description) up to 1.00m. No soil or soil leachate chemical testing results are available. However, groundwater chemical testing identified a mercury concentration to exceeding the surface water standard and some PAHs were detected at concentrations greater than the limit of detection.

Source Ref.	Potential Source Name	Chainage (approx.)	Position and Distance from Scheme	Potential Source Comments	Ground Investigation/ Other Information
CK-120	Preliminary GI Location (TP9-3-125)	ch. 44,700	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising silty gravelly sand with occasional decomposed birch branch fragments and low cobble content, up to 3.80m. Soil chemical testing results from samples at 0.20m, 1.00m and 3.50m, did not identify any elevated contaminant concentrations, although some PAH concentrations were recorded greater than the limits of detection in soil leachate analysis at 3.50m.
CK-121	Preliminary GI Location (TP9-3-126)	ch. 45,200	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising silty sandy gravel with low boulder and cobble content, up to 2.05m. Soil chemical testing results did not identify any elevated contaminant concentrations.
CK-122	Preliminary GI Location (BH9-3-135)	ch. 45,650	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising sandy silty gravel with cobbles, ash and concrete fragments up to 0.70m. A 9-inch pipe was encountered at 0.70m. No chemical testing results available.
CK-123	Preliminary GI Location (BH9-3-135A)	ch. 45,650	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising sand and gravel fill (driller's description) up to 0.40m. No chemical testing results available.
CK-124	Preliminary GI Location (TP9-3-116)	ch. 45,800	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising gravelly fine to coarse sand with plant roots, up to 0.20m. Soil chemical testing results did not identify any elevated contaminant concentrations.
CK-125	Preliminary GI Location (TP9-3-127)	ch. 45,900	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01) and Decommissioned electricity pylons (CK-03).	Made ground encountered comprising sandy silty gravel with low cobble and boulder content, up to 1.05m. Soil chemical testing of samples taken at 0.20m, 1.00m and 3.00m did not identify any contaminant exceedances. Chemical testing of soil leachate from samples taken from 0.20m and 3.00m observed total PAH concentrations greater than the limits of detection.
CK-126	Preliminary GI Location (BH9-3-137)	ch. 46,075	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising sand and gravel consisting of lithologies including brick and concrete up to 3.80m. Soil chemical testing results of a sample at 4.00m did not identify any contaminant exceedances.
CK-127	Preliminary GI Location (BH9-3-141)	ch. 47,325	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01) and made/ worked ground (CK-12).	Made ground encountered comprising coarse gravel with cobble size fragments and a matrix of sandy clay up to 1.20m. No chemical testing results available.
CK-128	Preliminary GI Location (TP9-3-204A)	ch. 47,450	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01) and made/ worked ground (CK-12).	Made ground encountered comprising sandy silty gravelly topsoil up to 0.20m. No chemical testing results available.
CK-129	Preliminary GI Location (TP9-3-148)	ch. 49,000	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising gravelly sand with fragments of asphalt and roots with a low cobble content, up to 0.80m. Chemical testing of samples taken at 0.20m and 0.50m did not identify any elevated contaminant concentrations.
CK-130	Preliminary GI Location (BH9-3-206)	ch. 49,250	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground (driller's description) encountered up to 0.10m. No chemical testing results available.
CK-131	Preliminary GI Location (BH9-3-208)	ch. 49,250	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising silty, fine to coarse sand with plant rootlets and cobbles, up to 0.60m. No chemical testing results available.
CK-132	Preliminary GI Location (BH9-3-207)	ch. 49,275	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising sand and gravel with cobbles (driller's description), up to 1.20m. No soil or soil leachate chemical testing results available. However, groundwater chemical testing observed ammoniacal nitrogen and mercury concentrations greater than the drinking water and/ or surface water standards, in addition to several PAH and TPH concentrations at levels greater than the limit of detection.
CK-133	Preliminary GI Location (BH9-3-209)	ch. 49,275	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising sand and gravel (driller's description). No chemical testing results available.
CK-134	Preliminary GI Location (BH9-3-151)	ch. 49,600	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01) and on existing approach embankment to the River Spey bridge.	Made ground encountered comprising sandy organic clay and gravelly, silty sand, up to 6.00m. At 1.40m, a concrete obstruction was encountered. No chemical testing results available.
CK-135	Preliminary GI Location (BH9-3-153)	ch. 49,900	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01) and on existing approach embankment to the River Spey bridge.	Made ground encountered comprising gravelly, silty sand with traces of rootlets and cobbles, up to 7.50m. No chemical testing results available.
CK-136	Preliminary GI Location (BH9-3-191)	ch. 49,950	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01) and on existing approach embankment to the River Spey bridge.	Possible made ground encountered comprising gravelly sandy spongy fibrous peat and gravelly silty sand with cobbles, up to 6.00m. No chemical testing results available.

Source Ref.	Potential Source Name	Chainage (approx.)	Position and Distance from Scheme	Potential Source Comments	Ground Investigation/ Other Information
CK-137	Preliminary GI Location (BH9-3-193)	ch. 50,000	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01) and on existing approach embankment to the River Spey bridge.	Made ground encountered comprising re-worked material of gravelly silty sand with cobbles up to 6.00m. Soil chemical testing samples taken at 0.20m and 1.00m did not identify any elevated contaminant concentrations. Soil leachate testing at 1.00m and groundwater testing recorded some PAH and TPH concentrations greater than the limits of detection. Groundwater chemical testing also identified ammoniacal nitrogen, mercury and selenium concentrations to exceed drinking water and/ or surface water standards.
CK-138	Preliminary GI Location (BH9-3-195)	ch. 50,050	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01) and on existing approach embankment to the River Spey bridge.	Made ground encountered comprising possible rew orked soil of dense gravelly sand, up to 3.00m. Soil chemical testing of samples at 0.20m and 1.00m did not identify any elevated contaminant concentrations.
CK-139	Preliminary GI Location (HP9-3-105)	ch. 50,050	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01) and on existing approach embankment to the River Spey bridge.	Made ground encountered comprising gravelly clayey topsoil with root and rootlets and low cobble content, up to 0.40m. A concrete obstruction was encountered between 0.20m and 0.4m. No chemical testing results available.
CK-140	Preliminary GI Location (HP9-3-107)	ch. 50,250	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01) and on existing approach embankment to the River Spey bridge.	Made ground encountered comprising gravelly sandy clayey topsoil and gravelly silty sand with medium cobble content, up to 1.20m. Soil chemical testing results of a sample at 0.50m did not identify any elevated contaminant concentrations. However, soil leachate testing identified some PAH concentrations greater than the limit of detection.
CK-141	Preliminary GI Location (HP9-3-108)	ch. 50,250	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01) and on existing approach embankment to the River Spey bridge.	Made ground encountered comprising gravelly silty sand with low to medium cobble content, up to 1.20m. Soil chemical testing results of a sample at 1.00m did not identify any elevated contaminant concentrations.
CK-142	Preliminary GI Location (HP9-3-109)	ch. 50,375	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01) and on existing approach embankment to the River Spey bridge.	Made ground encountered comprising sandy organic clay and sandy silty gravel with medium cobble content, up to 1.20m. Soil chemical testing results did not identify any elevated contaminant concentrations. However, soil leachate testing identified some PAH concentrations greater than the limit of detection.
CK-143	Preliminary GI Location (TP9-3-151)	ch. 50,700	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising gravelly silty sand with fine rootlets, up to 0.20m. Fragments of glass and metal were also encountered. No chemical testing results available.
CK-144	Preliminary GI Location (BH9-3-163)	ch. 50,800	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01) and worked ground (CK-20).	Made ground encountered comprising gravelly, silty sand with low cobble content, up to 3.50m. Gravel lithologies include brick. Soil chemical testing of samples at 0.20m and 1.00m did not identify any elevated contaminant concentrations. However, soil leachate testing of a sample at 1.00m found levels of some PAHs greater than the limits of detection. Groundwater chemical testing also detected some PAH and TPH concentrations greater than the limits of detection.
CK-145	Preliminary GI Location (TP9-3-154)	ch. 51,250	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising gravelly, sandy silt and gravelly, silty sand with plastic fragments, up to 0.70m. No chemical testing results available.
CK-146	Preliminary GI Location (TP9-3-155)	ch. 51,300	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising gravelly, sandy, silty topsoil with low cobble content, up to 0.40m. Soil chemical testing results of a sample at 0.20m did not identify any elevated contaminant concentrations.
CK-147	Preliminary GI Location (TP9-3-156)	ch. 51,450	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising slightly sandy silty topsoil with medium cobble and boulder content, up to 0.30m. No chemical testing results available.
CK-148	Preliminary GI Location (TP9-3-157)	ch. 51,500	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising slightly gravelly sandy silty topsoil with fine roots, up to 0.30m. Soil chemical testing results of samples at 0.50m and 2.00m did not identify any elevated contaminant concentrations. However, soil leachate testing identified some PAH concentrations greater than the limit of detection.
CK-149	Preliminary GI Location (TP9-3-158)	ch. 51,650	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising gravelly sandy silty topsoil, up to 0.40m. No chemical testing results available.
CK-150	Preliminary GI Location (BH9-3-154)	ch. 51,700	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising slightly gravelly sand with cobbles and rare rootlets, up to 0.50m. No chemical testing results available.
CK-151	Preliminary GI Location (HP9-3-167)	ch. 51,700	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising rew orked sandy gravelly pseudo fibrous peat, up to 1.20m. No chemical testing results available.
CK-152	Preliminary GI Location (TT9-3-100CH25.00)	ch. 52,075	Online	Conditions encountered during archaeological trial trenching for the Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising gravelly, sandy, silty topsoil with frequent rootlets, up to 0.25m. No environmental samples were obtained, so no chemical testing results are available.
CK-153	Preliminary GI Location (TT9-3-100CH17.00)	ch. 52,075	Online	Conditions encountered during archaeological trial trenching for the Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising gravelly, sandy, silty topsoil with frequent rootlets and low cobble and boulder content, up to 0.20m. No environmental samples were obtained, so no chemical testing results are available.

Source Ref.	Potential Source Name	Chainage (approx.)	Position and Distance from Scheme	Potential Source Comments	Ground Investigation/ Other Information
CK-154	Preliminary GI Location (TT9-3-100CH9.00)	ch. 52,100	Online	Conditions encountered during archaeological trial trenching for the Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising gravelly, sandy, silty topsoil with frequent rootlets and low cobble and boulder content, up to 0.20m. No environmental samples were obtained, so no chemical testing results are available.
CK-155	Preliminary GI Location (TT9-3-100CH4.80)	ch. 52,100	Online	Conditions encountered during archaeological trial trenching for the Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising gravelly, sandy silty topsoil with low cobble and boulder content between ground level and 0.20m. No environmental samples were obtained, so no chemical testing results are available.
CK-156	Preliminary GI Location (TT9-3-100C)	ch. 52,100	Online	Conditions encountered during archaeological trial trenching for the Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising slightly gravelly sandy silty topsoil with low cobble and boulder content up to 0.40m. No environmental samples were obtained, so no chemical testing results are available.
CK-157	Preliminary GI Location (TT9-3-104B)	ch. 52,225	Online	Conditions encountered during archaeological trial trenching for the Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising dark brown slightly gravelly sandy silty topsoil with low boulder and cobble content up to 0.50m. No environmental samples were obtained, so no chemical testing results are available.
CK-158	Preliminary GI Location (TT9-3-104CH5.00)	ch. 52,225	Online	Conditions encountered during archaeological trial trenching for the Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising dark brown slightly gravelly sandy silty topsoil with low cobble content up to 0.20m. No environmental samples were obtained, so no chemical testing results are available.
CK-159	Preliminary GI Location (TT9-3-104CH10.00)	ch. 52,225	Online	Conditions encountered during archaeological trial trenching for the Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising dark brown slightly gravelly sandy silty topsoil and low cobble and boulder content, up to 0.40m. No environmental samples were obtained, so no chemical testing results are available.
CK-160	Preliminary GI Location (BH9-3-172)	ch. 52,750	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising brown brownish grey gravelly silty sand up 1.20m. Chemical testing of soil samples at 0.20m, 0.50m and 1.00m did not identify any elevated contaminant concentrations. Soil leachate chemical testing of samples taken at 0.20m and 1.00m also identified concentrations of some PAHs above the limits of detection, in addition to ammoniacal nitrogen concentrations greater than water quality standards.
CK-161	Preliminary GI Location (BH9-3-172A)	ch. 52,750	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising compact clay with gravel and topsoil fill (driller's description) up to 0.70m. No environmental samples were obtained, so no chemical testing results are available.
CK-162	Preliminary GI Location (BH9-3-172B)	ch. 52,750	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising compact clay gravel and topsoil (driller's description) up to 0.70m. No environmental samples were obtained, so no chemical testing results are available.
CK-163	Preliminary GI Location (TP9-3-165)	ch. 52,775	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising dark brown gravelly sandy silty topsoil with low cobble and boulder content up to 0.30m. No chemical testing results available.
CK-164	Preliminary GI Location (BH9-3V-016)	ch. 52,775	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01) and buildings/ properties at Chapelpark (CK-30a).	Made ground (driller's description) encountered up to 0.10m. Chemical testing of a soil sample taken at 1.00m did not identify any elevated contaminant concentrations. Groundwater chemical testing identified a mercury concentration in excess of the surface water standard and some PAH and TPH concentrations greater than the limits of detection.
CK-165	Preliminary GI Location (TP9-3-168)	ch. 53,100	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising dark brown gravelly sandy silty topsoil with low cobble content between ground level and 0.60m. Soil chemical testing of samples from 0.50m and 2.00m did not identify any elevated contaminant concentrations.
CK-166	Preliminary GI Location (TP9-3-227)	ch. 53,150	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising dark brown gravelly sandy silty topsoil up to 0.30m. No chemical testing results available.
CK-167	Preliminary GI Location (TP9-3-219)	ch. 53,500	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01) and buildings properties at Mains of Balavil (CK-33a).	Made ground encountered comprising dark brownish black gravelly silty sand with some plastic bags, high root content and low cobble content, up to 0.35m. Soil chemical testing of a sample at 2.00m did not identify any elevated contaminant concentrations.
CK-168	Preliminary GI Location (BH9-3-176)	ch. 53,600	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01) and buildings properties at Mains of Balavil (CK-33a).	Made ground encountered comprising drown gravelly sandy silt with cobbles and boulders considered possible wall remains, between ground level and 1.40m. Soil chemical testing of samples at ground level and 0.50m did not identify any elevated contaminant concentrations. Concentrations of some PAHs were observed to be greater than the limits of detection in groundwater.
CK-169	Preliminary GI Location (TP9-3-132)	ch. 53,750	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising brown sandy gravelly silt with low cobble content between ground level and 2.30m. Fragments of coal, wood and plastic were also encountered from 0.10m. Soil chemical testing of samples taken at 0.20m, 2.00m and 3.00m and soil leachate from samples at 2.00m did not identify elevated contaminant concentrations.
CK-170	Preliminary GI Location (BH9-3-177)	ch. 53,825	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising brown gravelly sand with plant remains and cobbles, up to 1.55m. No chemical testing results available.

Source Ref.	Potential Source Name	Chainage (approx.)	Position and Distance from Scheme	Potential Source Comments	Ground Investigation/ Other Information
CK-171	Preliminary GI Location (TP9-3-230)	ch. 54,675	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising dark brown gravelly silty topsoil with low cobble content, up to 0.30m. No environmental samples were obtained, so no chemical testing results are available.
CK-172	Preliminary GI Location (TP9-3-231)	ch. 55,050	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising dark brown gravelly sandy silty topsoil with fine rootlets and low cobble content, up to 0.30m. No environmental samples were obtained, so no chemical testing results are available.
CK-173	Preliminary GI Location (TP9-3-220)	ch. 55,500	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising light brown to brown gravelly silty fine to coarse sand with low cobble content between ground level and 3.70m. Timber and concrete fragments were also encountered from 0.50m. Soil chemical testing was carried out on samples from 0.20m, 1.00m and 3.00m, with no elevated contaminant concentrations observed. Soil leachate testing of a sample from 3.00m identified ammoniacal nitrogen concentrations to exceed the drinking water and surface water standards, in addition to some PAH levels greater than the limits of detection.
CK-174	Preliminary GI Location (TP9-3-221)	ch. 55,650	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising orangish brown to light brown gravelly silty sand with low cobble content, between ground level and 3.30m. Partially decomposed wood fragments were encountered up to 1.10m and clods of grey to dark brown silty sand were encountered beneath this. Soil chemical testing was carried out on samples from 0.50m, 2.00m and 4.00m, with no elevated contaminant concentrations observed. Soil leachate testing identified concentrations of some PAHs to be greater than the limit of detection at 4.00m.
CK-175	Preliminary GI Location (TP9-3-224)	ch. 55,800	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01) and the HML railway (CK-02).	Made ground/ possible made ground encountered comprising greyish brown to orangish brown gravelly, silty gravel with medium cobble and low boulder content, up to 1.80m. No chemical testing results available.
CK-176	Preliminary GI Location (BH9-3-186)	ch. 55,950	Online	Conditions encountered during Preliminary GI in vicinity of the existing A9 carriageway (CK-01).	Made ground encountered comprising compact greyish brown coarse angular type 1 road stone (driller's description), up to 0.20m. Soil chemical testing of a sample from 1.00m did not identify any elevated contaminant concentrations.
Offline Potential Sources of Contamination					
CK-08b	Griogchan, West Ralia, Newtonmore	ch. 42,825	40m north	SEPA CAR License (Ref. CAR/R/1049004) for STE to soakaway	Not investigated.
CK-08c	Near Griogchan, Newtonmore	ch. 42,850	70m north	Septic tank discharge record identified in PSSR (Ref. S/91/40/U (May 1991)) for a location at Raliabeag. The status is unknown and discharge is noted to be to groundwater.	Not investigated.
CK-09b	Ralia Beag, Newtonmore	ch. 42,800	30m north	SEPA CAR License (Ref. CAR/R/1051865) for STE to soakaway	Not investigated.
CK-11b	Keepers Cottage, Newtonmore	ch. 44,050	60m north	SEPA CAR License (Ref. CAR/R/1051866) for STE to soakaway	Not investigated.
CK-11c	Keepers Cottage, Newtonmore	ch. 44,100	70m north	Septic tank discharge record identified in PSSR (Ref. S/95/10/U (February 1995)) for Keepers Cottage at Ralia. The status is unknown and discharge is noted to be to groundwater.	Not investigated.
CK-15a	Former smithy and Ruthven Farm Steading	ch. 49,100	150m west	Identified from PSSR as Ruthven farm recorded in 1903 and included on all maps to date.	Not investigated.
CK-15b	Ruthven House, Kingussie	ch. 49,150	80m east	SEPA CAR License (Ref. CAR/R/1084638) for STE to soakaway	Not investigated.
CK-15c	Ruthven Cottage, Ruthven, Kingussie	ch. 48,850	90m east	SEPA CAR License (Ref. CAR/R/1142321) for STE to land	Not investigated.
CK-15d	Ruthven Steadings, Kingussie	ch. 49,250	170m east	SEPA CAR License (Ref.CAR/R/1047302) for STE to soakaway	Not investigated.
CK-16	Fertiliser Storage	ch. 49,050	50m east	Identified by THC (Ref. BS-FER-1021) as fertiliser storage.	Not investigated.
CK-17	Sheep Dip	ch. 49,200	160m east	Identified from PSSR as former sheep deep, no longer considered to be active. Potential to encounter made ground with associated sources of potential soil and groundwater contamination.	Not investigated.
CK-18	Former graveyard	ch. 49,350	220m east	Identified in PSSR as a former graveyard. Potential to encounter Made Ground and decomposed remains with associated sources of potential soil, groundwater and gas contamination	Not investigated.
CK-19	Made/ worked ground (Ruthven Barracks)	ch. 49,500	200m east	Identified from PSSR as Ruthven Barracks, due to potential to encounter made ground.	Not investigated.

Source Ref.	Potential Source Name	Chainage (approx.)	Position and Distance from Scheme	Potential Source Comments	Ground Investigation/ Other Information
CK-21a	Wastewater Treatment Works, Kingussie	ch. 50,100	250m west	Identified by THC (Ref. BS-SEW-1008) and from PSSR. Operational compliance regarding storage of chemicals/ fuels and integrity of tanks is unknown and therefore there is potential for spillages and associated impact to underlying soils and groundwater.	Not investigated.
CK-21b	Kingussie Sewage Works, Kingussie	ch. 50,100	60m west	Storm sewage discharge record identified in PSSR (Ref. S/89/21/R (March 1989)) at Kingussie Sewage Works. The status is unknown, but the operator is noted as the Highland Regional Council and discharge is to the River Spey. Likely to have been superseded by CK-21f to CK-21i.	Not investigated.
CK-21c	Kingussie Sewage Works, Kingussie	ch. 50,100	60m west	Storm sewage discharge record identified in PSSR (Ref. S/89/20/R (March 1989)) at Kingussie Sewage Works. The status is unknown, but the operator is noted as the Highland Regional Council and discharge is to the River Spey. Likely to have been superseded by CK-21f to CK-21i.	Not investigated.
CK-21d	Kingussie Sewage Works, Kingussie	ch. 50,100	60m west	Treated sewage effluent discharge record identified in PSSR (Ref. S/89/19/R (March 1989)) at Kingussie Sewage Works. The status is unknown, but the operator is noted as the Highland Regional Council and discharge is to the River Spey. Likely to have been superseded by CK-21f to CK-21i.	Not investigated.
CK-21e	Kingussie Sewage Works, Kingussie	ch. 50,100	210m west	Treated sewage effluent discharge record identified in PSSR (Ref. S/60/27* (February 1960)) at Kingussie Sewage Works. The status is unknown, but the operator is noted as Kingussie Town Council and discharge is to the River Spey. Likely to have been superseded by CK-21f to CK-21i.	Not investigated.
CK-21f	Wastewater Treatment Works, Kingussie	ch. 50,100	90m west	SEPA CAR License (Ref. CAR/L/1001762) for emergency sewage overflow discharge to the River Spey from Kingussie Wastewater Treatment Works, operated by Scottish Water.	Not investigated.
CK-21g	Wastewater Treatment Works, Kingussie	ch. 50,100	90m west	SEPA CAR License (Ref. CAR/L/1001762) for combined sewer overflow and storm sewer outlet to the River Spey, associated with Kingussie Wastewater Treatment Works, operated by Scottish Water.	Not investigated.
CK-21h	Wastewater Treatment Works, Kingussie	ch. 50,100	90m west	SEPA CAR License (Ref. CAR/L/1001762) for foul effluent and 24-hour composite discharge to the River Spey, associated with Kingussie Wastewater Treatment Works, operated by Scottish Water.	Not investigated.
CK-21i	Wastewater Treatment Works, Kingussie	ch. 50,150	330m west	SEPA CAR License (Ref. CAR/L/1002785) for CSO 3 x DWF	Not investigated.
CK-22	Scrap yard	ch. 50,150	120m west	Identified from PSSR as a scrap yard for domestic, industrial and commercial waste and is also included published BGS mapping and information received from THC (Refs. BS-SCP-1001; BS-WDS-1012). Considered a potential source of contamination due to commercial/ process nature of the site.	Not investigated.
CK-23	Made/ worked ground	ch. 50,150	60m west	Identified from PSSR and BGS mapping as an area of made ground.	Not investigated.
CK-24	Waste disposal	ch. 50,150	60m west	Identified by THC (Refs. BS-WDS-1012) as a waste disposal record.	Not investigated.
CK-25	Mineral site	ch. 50,550	290m west	Identified by THC (Ref. BS-MIN-1054) as a mineral site record.	Not investigated.
CK-26	Mineral site	ch. 50,700	20m west	Identified by THC (Ref. BS-MIN-1063) as a mineral site and from PSSR as a historical gravel pit. Potential to encounter made ground.	Not investigated.
CK-27	Mineral Site	ch. 50,700	120m west	Identified from PSSR as historical clay pit recorded in 1970 to 1995. Potential to encounter made ground.	Not investigated.
CK-28c	Kerrow Farm, Kingussie	ch. 51,050	80m west	SEPA CAR License (Ref. CAR/R/1013790) for STE to land	Not investigated.
CK-30b	Discharge consent	ch. 52,700	20m south	Discharge consent identified from Envirocheck report.	Not investigated.
CK-30c	Discharge consent	ch. 52,700	20m south	Discharge consent identified from Envirocheck report.	Not investigated.
CK-30d	Discharge consent	ch. 52,700	210m south	Discharge consent identified from Envirocheck report.	Not investigated.
CK-31	Discharge consent	Ch. 52,700	70m south	Discharge consent identified from Envirocheck report.	Not investigated.
CK-33b	Balavil Cottage, Balavil Estate, Kingussie	ch. 53,500	110m north	SEPA CAR License (Ref. CAR/R/1134486) for STE to soakaway	Not investigated.
CK-33c	Mains of Balavil, Balavil Estate, Kingussie	ch. 53,550	30m north	SEPA CAR License (Ref. CAR/R/1134492) for STE to soakaway	Not investigated.

Source Ref.	Potential Source Name	Chainage (approx.)	Position and Distance from Scheme	Potential Source Comments	Ground Investigation/ Other Information
CK-33d	East Lodge, Balavil Estate, Kingussie	ch. 54,250	20m south	SEPA CAR License (Ref. CAR/R/1134490) for STE to soakaway	Not investigated.
CK-33e	West Lodge, Balavil Estate, Kingussie	ch. 53,300	60m south	SEPA CAR License (Ref. CAR/R/1134491) for STE to soakaway	Not investigated.
CK-33f	The Kennels, Balavil Estate, Kingussie	ch. 53,300	400m north	SEPA CAR License (Ref. CAR/R/1134493) for STE to soakaway	Not investigated.
CK-33g	Garden Cottage, Balavil Estate, Kingussie	ch. 53,450	110m north	SEPA CAR License (Ref. CAR/R/1134487) for STE to soakaway	Not investigated.
CK-33i	Balavil House, Kingussie	ch. 53,900	260m north	SEPA CAR License (Ref. CAR/R/1134485) for STE to soakaway	Not investigated.
CK-34	Buildings/ properties at East Lodge	ch. 54,300	20m south	Identified in PSSR as East Lodge due to the consideration that made ground may potentially be present associated with the existing properties or access to them, with potential also for incidental contamination via fuel spills.	Not investigated.
CK-36	Discharge consent	ch. 55,300	200m north west/ north east	Discharge consent identified from Envirocheck report.	Not investigated.
CK-37a	Buildings/ properties at Meadow side House	ch. 55,900 to ch. 56,000	20m north west	Identified in PSSR as Meadow side due to the consideration that made ground may potentially be present associated with the existing properties or access to them, with potential also for incidental contamination via fuel spills.	Not investigated.
CK-37b	Discharge consent	ch. 55,850	30m north west	Discharge consent identified from Envirocheck report.	Not investigated.
CK-42	Truimbridge Cottage by Newtonmore	ch. 40,250 (tie-in)	250m south west	SEPA CAR License (Ref. CAR/R/1078382) for STE to soakaway	Not investigated.
CK-44	Ralia Lodge, Newtonmore	ch. 43,850	50m north west	SEPA CAR License (Ref.CAR/R/1051859) for STE to soakaway	Not investigated.
CK-45	Headkeepers House, Newtonmore	ch. 43,950	60m north west	SEPA CAR License (Ref.CAR/R/1051860) for STE to soakaway	Not investigated.
CK-46	Milton Lodge, Ralia, Newtonmore	ch. 44,000	110m north west	SEPA CAR License (Ref. CAR/R/1051867) for STE to soakaway	Not investigated.
CK-47	Upper Nuide Cottage, Kingussie	ch. 45,800	20m north	SEPA CAR License (Ref. CAR/R/1051869) for STE to soakaway	Not investigated.
CK-48	Lower Nuide Cottage, Kingussie	ch. 46,000	150m north	SEPA CAR License (Ref. CAR/R/1051868) for STE to Soakaway	Not investigated.
CK-49	Nuide Farmhouse, Kingussie	ch. 46,050	250m north	SEPA CAR License (Ref. CAR/R/1051870) for STE to soakaway	Not investigated.
CK-50	Inverton, Kingussie	ch. 47,550	220m north	SEPA CAR License (Ref. CAR/R/1051872) for STE to soakaway	Not investigated.
CK-51	The Dell Shinty Pitch Ruthven Road Kingussie	ch. 49,100	250m north west	SEPA CAR License (Ref. CAR/R/1087798) for STE to U/T of River Spey	Not investigated.
CK-52	Three Bridges, Laggan 2, Kingussie	ch. 51,100	250m east	SEPA CAR License (Ref.CAR/R/1047067) for STE to soakaway	Not investigated.
CK-53	Auld Poor House, Kingussie	ch. 51,200	250m east	SEPA CAR License (Ref. CAR/R/1080243) for STE to soakaway	Not investigated.
CK-54	Lynvoan, Balavil Estate, Kingussie	ch. 52,550	40m north	SEPA CAR License (Ref. CAR/R/1134488) for STE to soakaway	Not investigated.
CK-56	Croftcarnoch, Balavil Estate, Kingussie	ch. 54,900	180m west/ 90m south	SEPA CAR License (Ref. CAR/R/1134489) for STE to soakaway	Not investigated.
CK-58	Dellmore of Kingussie	ch. 48,300	50m north west	Historical mapping for the Dellmore site identified that a rifle range was present within the site boundary from 1872 until 1961. The rifle range was subsequently identified as a potential source of ordnance, as well as soil and water contamination.	Nine Preliminary GI locations were located in the site – four of which were focussed around a target mound associated with the former rifle range in the south-western corner. An additional 32 hand pit excavations focussed around this area were also completed by CFJV in March 2018, with groundwater sampling of borehole installations undertaken in June 2018. Ground conditions were observed to generally comprise sand and gravel, or silt and clay with local buried peat, while some small arms ammunition debris comprising bullets and bullet fragments were observed on the target mound surface. Additional details regarding the Dellmore site, available investigation information and chemical testing results are presented in **Appendix 6.2** (**Volume2**).

4 Preliminary Conceptual Site Model

4.1.1 For each potential contamination source identified in **Table 1**, a generic qualitative assessment has been undertaken through the development of a preliminary CSM. The purpose of this is to evaluate the level of potential contamination risk that may be present in relation to the sources identified, as a direct result of activities associated with construction or operation of the Proposed Scheme, which may interact with them as follows:

- direct disturbance of potential contamination sources (i.e. those within the Proposed Scheme footprint or permanent and temporary works boundaries)
- indirect disturbance of nearby potential contamination sources as a result of construction of the Proposed Scheme (i.e. interception within areas of excavation).

4.1.2 The preliminary CSM therefore represents an outline of potential direct and indirect pollutant linkages (PL) that may be present between sources of contamination, pathways by which they may move and ultimately, affected receptors during construction or operation. If any element of a linkage (contaminant, pathway or receptor) is missing, the linkage cannot pose a risk and is not considered. The potential receptors and pathways were compiled based on the definitions in the *'Environmental Protection Act 1990: Part IIA Contaminated Land - Statutory Guidance: Edition 2'* (Scottish Executive, 2006), as described in **Table 10-7** within **Chapter 10** (**Volume 1**).

4.1.3 In order to establish the level of potential risk that may be present, the guidance set out within CIRIA C552 '*Contaminated Land Risk Assessment: A Guide to Good Practice'* (CIRIA, 2001) and *'CLR11 – Model Procedures for the Management of Land Contamination'* (EA, 2004) has been followed. These state that the designation of risk should be based on:

- the likelihood of the risk being present – taking into account the presence of a source and receptor, and the integrity of the pathway, versus;
- the severity of the potential consequence should the risk be realised – taking into account the severity of the source, the sensitivity of the receptor and the duration of potential effects where appropriate.

4.1.4 The output of the assessment is therefore reported as the 'likelihood' of a complete pollutant linkage being present, the 'consequence' (magnitude) of effect on possible receptors, followed by overall risk (significance), taking account of both likelihood and consequence, as defined in **Table 10-8** to **Table 10-10** within **Chapter 10** (**Volume 1**).

4.1.5 In order to make the assessment as specific as possible, available desk-based and GI information for each potential contamination source area in **Table 1** has been considered, as well as evidence for potential or actual contamination to be present, the proximity of receptors and how these may interact with the local geology, hydrogeology and anticipated construction or operation phase activities for the Proposed Scheme. Based on this and the above, **Table 2** presents the CSM evaluation of plausible direct and indirect pollutant linkages for the Proposed Scheme in support of the assessment described in **Chapter 10** (**Volume 1**).

Table 2: Preliminary Conceptual Site Model

Source Ref. and Name	Pollutant Linkage	Pathway	Receptors	Risk (Significance) Evaluation		
				Likelihood	Consequence	Significance
Online Potential Contamination Sources						
CK-01 Existing A9 Carriageway	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Likely	Mild	Moderate/ Low
	PL3	Ingestion, inhalation and dermal contact with wind-blown dust created during excavation works	Human Health (local residents and transient traffic (foot, road and rail))	Likely	Mild	Moderate/ Low
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE) Property (PWS and services)	Likely	Mild	Moderate/ Low
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Likely	Mild	Moderate/ Low
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres (asbestos), deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Low Likelihood	Mild	Low
	PL15	Ingestion, inhalation and dermal contact with wind-blown dust from contaminated soils reused within road features such as embankments and landscaped areas	Human Health (local residents and transient traffic (foot, road and rail))	Low Likelihood	Mild	Low
	PL22	Discharge of intercepted contaminated groundwater	Water Environment (surface water)	Low Likelihood	Mild	Low
CK-02 Highland Mainline Railway	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Likely	Mild	Moderate/ Low
	PL3	Ingestion, inhalation and dermal contact with wind-blown dust created during excavation works	Human Health (local residents and transient traffic (foot, road and rail))	Likely	Mild	Moderate/ Low
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE) Property (PWS and services)	Likely	Mild	Moderate/ Low
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Likely	Mild	Moderate/ Low
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres (asbestos), deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Low Likelihood	Mild	Low
	PL15	Ingestion, inhalation and dermal contact with wind-blown dust from contaminated soils reused within road features such as embankments and landscaped areas	Human Health (local residents and transient traffic (foot, road and rail))	Low Likelihood	Mild	Low
	PL22	Discharge of intercepted contaminated groundwater	Water Environment (surface water)	Low Likelihood	Mild	Low
CK-03 Decommissioned electricity pylons	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Likely	Minor	Low
	PL3	Ingestion, inhalation and dermal contact with wind-blown dust created during excavation works	Human Health (local residents and transient traffic (foot, road and rail))	Likely	Minor	Low
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE) Property (PWS and services)	Likely	Mild	Moderate/ Low
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Likely	Mild	Moderate/ Low
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres (asbestos), deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Low Likelihood	Minor	Very Low
	PL15	Ingestion, inhalation and dermal contact with wind-blown dust from contaminated soils reused within road features such as embankments and landscaped areas	Human Health (local residents and transient traffic (foot, road and rail))	Low Likelihood	Minor	Very Low
	PL22	Discharge of intercepted contaminated groundwater	Water Environment (surface water)	Low Likelihood	Mild	Low

Source Ref. and Name	Pollutant Linkage	Pathway	Receptors	Risk (Significance) Evaluation		
				Likelihood	Consequence	Significance
CK-04 Radon affected sites	**Construction**					
	PL2	Migration of ground gases into shallow pits or site buildings	Human Health (construction workers)	Likely	Mild	Moderate/ Low
	PL4	Migration of ground gases into homes or workplaces through preferential pathways created during construction posing a potential asphyxiation/ explosion risk	Human Health (local residents and transient traffic (foot, road and rail)) Property (buildings)	Low Likelihood	Mild	Low
	Operation					
	PL14	Migration of ground gases into confined spaces e.g. service pits, accommodation buildings creating an asphyxiation/explosion risk	Human Health (maintenance workers)	Low Likelihood	Mild	Low
	PL16	Migration of ground gases into homes or workplaces through preferential pathways remaining following construction thus posing a potential asphyxiation/ explosion risk	Human Health (local residents and transient traffic (foot, road and rail)) Property (buildings)	Unlikely	Mild	Very Low
CK-05 Worked ground and former gravel pit/ quarry	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Likely	Minor	Low
	PL3	Ingestion, inhalation and dermal contact with wind-blown dust created during excavation works	Human Health (local residents and transient traffic (foot, road and rail))	Likely	Minor	Low
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Property (PWS and services) Ecological Receptors (GWDTE)	Likely	Mild	Moderate/ Low
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Likely	Mild	Moderate/ Low
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres (asbestos), deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Low Likelihood	Minor	Very Low
	PL15	Ingestion, inhalation and dermal contact with wind-blown dust from contaminated soils reused within road features such as embankments and landscaped areas	Human Health (local residents and transient traffic (foot, road and rail))	Low Likelihood	Minor	Very Low
	PL22	Discharge of intercepted contaminated groundwater	Water Environment (surface water)	Low Likelihood	Mild	Low
CK-06a Ralia Café and Picnic Area, including CK-06b septic tank and discharge	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Likely	Minor	Low
	PL3	Ingestion, inhalation and dermal contact with wind-blown dust created during excavation works	Human Health (local residents and transient traffic (foot, road and rail))	Likely	Minor	Low
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Property (PWS and services) Ecological Receptors (GWDTE)	Likely	Mild	Moderate/ Low
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Likely	Mild	Moderate/ Low
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres (asbestos), deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Low Likelihood	Minor	Very Low
	PL15	Ingestion, inhalation and dermal contact with wind-blown dust from contaminated soils reused within road features such as embankments and landscaped areas	Human Health (local residents and transient traffic (foot, road and rail))	Low Likelihood	Minor	Very Low
	PL22	Discharge of intercepted contaminated groundwater	Water Environment (surface water)	Low Likelihood	Mild	Moderate/ Low

Source Ref. and Name	Pollutant Linkage	Pathway	Receptors	Risk (Significance) Evaluation		
				Likelihood	Consequence	Significance
CK-07 Old gravel pit	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Likely	Minor	Low
	PL3	Ingestion, inhalation and dermal contact with wind-blown dust created during excavation works	Human Health (local residents and transient traffic (foot, road and rail))	Likely	Minor	Low
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE)	Likely	Mild	Moderate/ Low
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Likely	Mild	Moderate/ Low
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres (asbestos), deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Low Likelihood	Minor	Very Low
	PL15	Ingestion, inhalation and dermal contact with wind-blown dust from contaminated soils reused within road features such as embankments and landscaped areas	Human Health (local residents and transient traffic (foot, road and rail))	Low Likelihood	Minor	Very Low
	PL22	Discharge of intercepted contaminated groundwater	Water Environment (surface water)	Low Likelihood	Mild	Moderate/ Low
CK-08a Buildings/ properties at Griogchan, including CK-08b and CK-08c septic tanks and discharge	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Likely	Mild	Moderate/ Low
	PL3	Ingestion, inhalation and dermal contact with wind-blown dust created during excavation works	Human Health (local residents and transient traffic (foot, road and rail))	Likely	Mild	Moderate/ Low
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE) Property (PWS and services)	Likely	Medium	Moderate
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Likely	Medium	Moderate
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres (asbestos), deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Low Likelihood	Mild	Low
	PL15	Ingestion, inhalation and dermal contact with wind-blown dust from contaminated soils reused within road features such as embankments and landscaped areas	Human Health (local residents and transient traffic (foot, road and rail))	Low Likelihood	Mild	Low
	PL22	Discharge of intercepted contaminated groundwater	Water Environment (surface water)	Low Likelihood	Medium	Moderate/ Low
CK-09a Buildings/ properties at Ptarmigan Lodge, including CK-09b septic tank and discharge	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Likely	Mild	Moderate/ Low
	PL3	Ingestion, inhalation and dermal contact with wind-blown dust created during excavation works	Human Health (local residents and transient traffic (foot, road and rail))	Likely	Mild	Moderate/ Low
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE) Property (PWS and services)	Likely	Medium	Moderate
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Likely	Medium	Moderate
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres (asbestos), deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Low Likelihood	Mild	Low
	PL15	Ingestion, inhalation and dermal contact with wind-blown dust from contaminated soils reused within road features such as embankments and landscaped areas	Human Health (local residents and transient traffic (foot, road and rail))	Low Likelihood	Mild	Low
	PL22	Discharge of intercepted contaminated groundwater	Water Environment (surface water)	Low Likelihood	Medium	Moderate/ Low

Source Ref. and Name	Pollutant Linkage	Pathway	Receptors	Risk (Significance) Evaluation		
				Likelihood	Consequence	Significance
CK-10 Mineral Site	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Likely	Mild	Moderate/ Low
	PL3	Ingestion, inhalation and dermal contact with wind-blown dust created during excavation works	Human Health (local residents and transient traffic (foot, road and rail))	Likely	Mild	Moderate/ Low
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE)	Likely	Medium	Moderate
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Likely	Medium	Moderate
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres (asbestos), deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Low Likelihood	Mild	Low
	PL15	Ingestion, inhalation and dermal contact with wind-blown dust from contaminated soils reused within road features such as embankments and landscaped areas	Human Health (local residents and transient traffic (foot, road and rail))	Low Likelihood	Mild	Low
	PL22	Discharge of intercepted contaminated groundwater	Water Environment (surface water)	Low Likelihood	Medium	Moderate/ Low
CK-11a Kennels and Keepers Cottage, including CK-11b and CK-11c septic tank and discharge	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Likely	Mild	Moderate/ Low
	PL3	Ingestion, inhalation and dermal contact with wind-blown dust created during excavation works	Human Health (local residents and transient traffic (foot, road and rail))	Likely	Mild	Moderate/ Low
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE) Property (PWS and services)	Likely	Medium	Moderate
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Likely	Medium	Moderate
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres (asbestos), deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Low Likelihood	Mild	Low
	PL15	Ingestion, inhalation and dermal contact with wind-blown dust from contaminated soils reused within road features such as embankments and landscaped areas	Human Health (local residents and transient traffic (foot, road and rail))	Low Likelihood	Mild	Low
	PL22	Discharge of intercepted contaminated groundwater	Water Environment (surface water)	Low Likelihood	Medium	Moderate/ Low
CK-12 Made/ worked ground	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Likely	Minor	Low
	PL3	Ingestion, inhalation and dermal contact with wind-blown dust created during excavation works	Human Health (local residents and transient traffic (foot, road and rail))	Likely	Minor	Low
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE) Property (PWS and services)	Likely	Mild	Moderate/ Low
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Likely	Mild	Moderate/ Low
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres (asbestos), deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Low Likelihood	Minor	Very Low
	PL15	Ingestion, inhalation and dermal contact with wind-blown dust from contaminated soils reused within road features such as embankments and landscaped areas	Human Health (local residents and transient traffic (foot, road and rail))	Low Likelihood	Minor	Very Low
	PL22	Discharge of intercepted contaminated groundwater	Water Environment (surface water)	Low Likelihood	Mild	Low

Source Ref. and Name	Pollutant Linkage	Pathway	Receptors	Risk (Significance) Evaluation		
				Likelihood	Consequence	Significance
CK-13 Former pits	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Likely	Minor	Low
	PL3	Ingestion, inhalation and dermal contact with wind-blown dust created during excavation works	Human Health (local residents and transient traffic (foot, road and rail))	Likely	Minor	Low
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE)	Likely	Mild	Moderate/ Low
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Likely	Mild	Moderate/ Low
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres (asbestos), deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Low Likelihood	Minor	Very Low
	PL15	Ingestion, inhalation and dermal contact with wind-blown dust from contaminated soils reused within road features such as embankments and landscaped areas	Human Health (local residents and transient traffic (foot, road and rail))	Low Likelihood	Minor	Very Low
	PL22	Discharge of intercepted contaminated groundwater	Water Environment (surface water)	Low Likelihood	Mild	Low
CK-14 Made/ worked ground	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Likely	Minor	Low
	PL3	Ingestion, inhalation and dermal contact with wind-blown dust created during excavation works	Human Health (local residents and transient traffic (foot, road and rail))	Likely	Minor	Low
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE) Property (PWS and services)	Likely	Mild	Moderate/ Low
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Likely	Mild	Moderate/ Low
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres (asbestos), deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Low Likelihood	Minor	Very Low
	PL15	Ingestion, inhalation and dermal contact with wind-blown dust from contaminated soils reused within road features such as embankments and landscaped areas	Human Health (local residents and transient traffic (foot, road and rail))	Low Likelihood	Minor	Very Low
	PL22	Discharge of intercepted contaminated groundwater	Water Environment (surface water)	Low Likelihood	Mild	Low
CK-20 Worked ground	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Likely	Minor	Low
	PL3	Ingestion, inhalation and dermal contact with wind-blown dust created during excavation works	Human Health (local residents and transient traffic (foot, road and rail))	Likely	Minor	Low
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE)	Likely	Mild	Moderate/ Low
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Likely	Mild	Moderate/ Low
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres (asbestos), deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Low Likelihood	Minor	Very Low
	PL15	Ingestion, inhalation and dermal contact with wind-blown dust from contaminated soils reused within road features such as embankments and landscaped areas	Human Health (local residents and transient traffic (foot, road and rail))	Low Likelihood	Minor	Very Low
	PL22	Discharge of intercepted contaminated groundwater	Water Environment (surface water)	Low Likelihood	Mild	Low

Source Ref. and Name	Pollutant Linkage	Pathway	Receptors	Risk (Significance) Evaluation		
				Likelihood	Consequence	Significance
CK-28a Buildings and properties at Kerrow Cottage, including CK-28b and CK-28c septic tank and discharge	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Likely	Mild	Moderate/ Low
	PL3	Ingestion, inhalation and dermal contact with wind-blown dust created during excavation works	Human Health (local residents and transient traffic (foot, road and rail))	Likely	Mild	Moderate/ Low
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE) Property (PWS and services)	Likely	Medium	Moderate
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Likely	Medium	Moderate
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres (asbestos), deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Low Likelihood	Mild	Low
	PL15	Ingestion, inhalation and dermal contact with wind-blown dust from contaminated soils reused within road features such as embankments and landscaped areas	Human Health (local residents and transient traffic (foot, road and rail))	Low Likelihood	Mild	Low
	PL22	Discharge of intercepted contaminated groundwater	Water Environment (surface water)	Low Likelihood	Medium	Moderate/ Low
CK-29 Sheep dip and buildings	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Likely	Mild	Moderate/ Low
	PL3	Ingestion, inhalation and dermal contact with wind-blown dust created during excavation works	Human Health (local residents and transient traffic (foot, road and rail))	Likely	Mild	Moderate/ Low
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE) Property (PWS and services)	Likely	Medium	Moderate
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Likely	Medium	Moderate
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres (asbestos), deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Low Likelihood	Mild	Low
	PL15	Ingestion, inhalation and dermal contact with wind-blown dust from contaminated soils reused within road features such as embankments and landscaped areas	Human Health (local residents and transient traffic (foot, road and rail))	Low Likelihood	Mild	Low
	PL22	Discharge of intercepted contaminated groundwater	Water Environment (surface water)	Low Likelihood	Medium	Moderate/ Low
CK-30a Buildings/ properties at Chapelpark, including CK-30b to CK-30d discharge consents	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Likely	Mild	Moderate/ Low
	PL3	Ingestion, inhalation and dermal contact with wind-blown dust created during excavation works	Human Health (local residents and transient traffic (foot, road and rail))	Likely	Mild	Moderate/ Low
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE) Property (PWS and services)	Likely	Medium	Moderate
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Likely	Medium	Moderate
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres (asbestos), deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Low Likelihood	Mild	Low
	PL15	Ingestion, inhalation and dermal contact with wind-blown dust from contaminated soils reused within road features such as embankments and landscaped areas	Human Health (local residents and transient traffic (foot, road and rail))	Low Likelihood	Mild	Low
	PL22	Discharge of intercepted contaminated groundwater	Water Environment (surface water)	Low Likelihood	Medium	Moderate/ Low

Source Ref. and Name	Pollutant Linkage	Pathway	Receptors	Risk (Significance) Evaluation		
				Likelihood	Consequence	Significance
CK-32 Former graveyard	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Likely	Mild	Moderate/ Low
	PL3	Ingestion, inhalation and dermal contact with wind-blown dust created during excavation works	Human Health (local residents and transient traffic (foot, road and rail))	Likely	Mild	Moderate/ Low
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE) Property (PWS and services)	Likely	Medium	Moderate
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Likely	Medium	Moderate
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres (asbestos), deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Low Likelihood	Mild	Low
	PL15	Ingestion, inhalation and dermal contact with wind-blown dust from contaminated soils reused within road features such as embankments and landscaped areas	Human Health (local residents and transient traffic (foot, road and rail))	Low Likelihood	Mild	Low
	PL22	Discharge of intercepted contaminated groundwater	Water Environment (surface water)	Low Likelihood	Medium	Moderate/ Low
CK-33a Buildings/ properties at Mains of Balavil, including CK-33b to CK-33i septic tank and discharge	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Likely	Mild	Moderate/ Low
	PL3	Ingestion, inhalation and dermal contact with wind-blown dust created during excavation works	Human Health (local residents and transient traffic (foot, road and rail))	Likely	Mild	Moderate/ Low
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE) Property (PWS and services)	Likely	Medium	Moderate
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Likely	Medium	Moderate
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres (asbestos), deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Low Likelihood	Mild	Low
	PL15	Ingestion, inhalation and dermal contact with wind-blown dust from contaminated soils reused within road features such as embankments and landscaped areas	Human Health (local residents and transient traffic (foot, road and rail))	Low Likelihood	Mild	Low
	PL22	Discharge of intercepted contaminated groundwater	Water Environment (surface water)	Low Likelihood	Medium	Moderate/ Low
CK-35 Old gravel pit	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Likely	Medium	Moderate
	PL3	Ingestion, inhalation and dermal contact with wind-blown dust created during excavation works	Human Health (local residents and transient traffic (foot, road and rail))	Likely	Medium	Moderate
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE) Property (PWS and services)	Likely	Medium	Moderate
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Likely	Medium	Moderate
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres (asbestos), deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Low Likelihood	Medium	Moderate/ Low
	PL15	Ingestion, inhalation and dermal contact with wind-blown dust from contaminated soils reused within road features such as embankments and landscaped areas	Human Health (local residents and transient traffic (foot, road and rail))	Low Likelihood	Medium	Moderate/ Low
	PL22	Discharge of intercepted contaminated groundwater	Water Environment (surface water)	Low Likelihood	Medium	Moderate/ Low

Source Ref. and Name	Pollutant Linkage	Pathway	Receptors	Risk (Significance) Evaluation		
				Likelihood	Consequence	Significance
CK-39 Meadowside Quarry worked ground	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Likely	Minor	Low
	PL3	Ingestion, inhalation and dermal contact with wind-blown dust created during excavation works	Human Health (local residents and transient traffic (foot, road and rail))	Likely	Minor	Low
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE) Property (PWS and services)	Likely	Mild	Moderate/ Low
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Likely	Mild	Moderate/ Low
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres (asbestos), deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Low Likelihood	Mild	Low
	PL15	Ingestion, inhalation and dermal contact with wind-blown dust from contaminated soils reused within road features such as embankments and landscaped areas	Human Health (local residents and transient traffic (foot, road and rail))	Low Likelihood	Mild	Low
	PL22	Discharge of intercepted contaminated groundwater	Water Environment (surface water)	Low Likelihood	Mild	Low
CK-40 Mineral site	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Likely	Mild	Moderate/ Low
	PL3	Ingestion, inhalation and dermal contact with wind-blown dust created during excavation works	Human Health (local residents and transient traffic (foot, road and rail))	Likely	Mild	Moderate/ Low
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE) Property (PWS and services)	Likely	Medium	Moderate
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Likely	Medium	Moderate
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres (asbestos), deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Low Likelihood	Mild	Low
	PL15	Ingestion, inhalation and dermal contact with wind-blown dust from contaminated soils reused within road features such as embankments and landscaped areas	Human Health (local residents and transient traffic (foot, road and rail))	Low Likelihood	Mild	Low
	PL22	Discharge of intercepted contaminated groundwater	Water Environment (surface water)	Low Likelihood	Medium	Moderate/ Low
CK-43 Invermore Lodge septic tank and discharge	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Likely	Mild	Moderate/ Low
	PL3	Ingestion, inhalation and dermal contact with wind-blown dust created during excavation works	Human Health (local residents and transient traffic (foot, road and rail))	Likely	Mild	Moderate/ Low
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE) Property (PWS and services)	Likely	Medium	Moderate
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Likely	Medium	Moderate
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres (asbestos), deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Low Likelihood	Mild	Low
	PL15	Ingestion, inhalation and dermal contact with wind-blown dust from contaminated soils reused within road features such as embankments and landscaped areas	Human Health (local residents and transient traffic (foot, road and rail))	Low Likelihood	Mild	Low
	PL22	Discharge of intercepted contaminated groundwater	Water Environment (surface water)	Low Likelihood	Medium	Moderate/ Low

Source Ref. and Name	Pollutant Linkage	Pathway	Receptors	Risk (Significance) Evaluation		
				Likelihood	Consequence	Significance
CK-55 Lynchat septic tank	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Likely	Mild	Moderate/ Low
	PL3	Ingestion, inhalation and dermal contact with wind-blown dust created during excavation works	Human Health (local residents and transient traffic (foot, road and rail))	Likely	Mild	Moderate/ Low
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE) Property (PWS and services)	Likely	Medium	Moderate
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Likely	Medium	Moderate
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres (asbestos), deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Low Likelihood	Mild	Low
	PL15	Ingestion, inhalation and dermal contact with wind-blown dust from contaminated soils reused within road features such as embankments and landscaped areas	Human Health (local residents and transient traffic (foot, road and rail))	Low Likelihood	Mild	Low
	PL22	Discharge of intercepted contaminated groundwater	Water Environment (surface water)	Low Likelihood	Medium	Moderate/ Low
CK-57 Balavil Septic Tank	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Likely	Medium	Moderate
	PL3	Ingestion, inhalation and dermal contact with wind-blown dust created during excavation works	Human Health (local residents and transient traffic (foot, road and rail))	Likely	Medium	Moderate
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE) Property (PWS and services)	Likely	Medium	Moderate
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Likely	Medium	Moderate
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres (asbestos), deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Low Likelihood	Medium	Moderate/ Low
	PL15	Ingestion, inhalation and dermal contact with wind-blown dust from contaminated soils reused within road features such as embankments and landscaped areas	Human Health (local residents and transient traffic (foot, road and rail))	Low Likelihood	Medium	Moderate/ Low
	PL22	Discharge of intercepted contaminated groundwater	Water Environment (surface water)	Low Likelihood	Medium	Moderate/ Low
CK-177 Ground Gas	**Construction**					
	PL2	Migration of ground gases into shallow pits or site buildings	Human Health (construction workers)	Likely	Medium	Moderate
	PL4	Migration of ground gases into homes or workplaces through preferential pathways created during construction posing a potential asphyxiation/ explosion risk	Human Health (local residents and transient traffic (foot, road and rail)) Property (buildings)	Unlikely	Severe	Moderate/ Low
	Operation					
	PL14	Migration of ground gases into confined spaces e.g. service pits, accommodation buildings creating an asphyxiation/explosion risk	Human Health (maintenance workers)	Low Likelihood	Medium	Moderate/ Low
	PL16	Migration of ground gases into homes or workplaces through preferential pathways remaining following construction thus posing a potential asphyxiation/ explosion risk	Human Health (local residents and transient traffic (foot, road and rail)) Property (buildings)	Unlikely	Severe	Moderate/ Low

Source Ref. and Name	Pollutant Linkage	Pathway	Receptors	Risk (Significance) Evaluation		
				Likelihood	Consequence	Significance
Online Individual Occurrences of Made Ground/ Visual or Olfactory Indications of Contamination (i.e. odours, staining)						
Incidental occurrences of made ground or visual/ olfactory indications of contamination (CK-59 to CK-176) that may be excavated, temporarily stored and/ or re-used as part of the Proposed Scheme construction	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Likely	Mild	Moderate/ Low
	PL3	Ingestion, inhalation and dermal contact with wind-blown dust created during excavation works	Human Health (local residents and transient traffic (foot, road and rail))	Likely	Mild	Moderate/ Low
	PL5	Leaching and migration of contaminants	Water Environment (superficial groundwater)	Likely	Medium	Moderate
	PL6	Migration of contaminants or contaminated shallow groundwater into the deeper rock aquifer	Water Environment (bedrock groundwater)	Likely	Medium	Moderate
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE) Property (PWS and services)	Likely	Medium	Moderate
	PL8	Runoff from contaminated source(s)		Likely	Medium	Moderate
	PL9	Migration of contaminated bedrock groundwater towards surface water receptor		Likely	Medium	Moderate
	PL11	Inhalation, ingestion and direct contact with contaminated soils, soil dust, fibres (asbestos) and water	Ecological Receptors (agricultural land/ livestock)	Low Likelihood	Mild	Low
	PL12	Direct contact with made ground, superficial deposits, groundwater and bedrock materials	Property (buried concrete and services)	Likely	Minor	Low
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres, deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Low Likelihood	Mild	Low
	PL15	Ingestion, inhalation and dermal contact with wind-blown dust from contaminated soils reused within road features such as embankments and landscaped areas	Human Health (local residents and transient traffic (foot, road and rail))	Low Likelihood	Mild	Low
	PL17	Leaching and migration of contaminants	Water Environment (superficial groundwater)	Low Likelihood	Medium	Moderate/ Low
	PL18	Migration of contaminated shallow groundwater into the deeper rock aquifer	Water Environment (bedrock groundwater)	Low Likelihood	Medium	Moderate/ Low
	PL19	Migration of shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE) Property (PWS and services)	Low Likelihood	Medium	Moderate/ Low
	PL20	Runoff from contaminated source(s)		Low Likelihood	Medium	Moderate/ Low
	PL21	Migration of contaminated shallow groundwater through drainage channels and associated granular bedding materials or engineered structures		Low Likelihood	Medium	Moderate/ Low
	PL23	Inhalation, ingestion and direct contact with contaminated soils/ water	Ecological Receptors (agricultural land/ livestock)	Unlikely	Mild	Very Low
	PL24	Direct contact with made ground, superficial deposits, groundwater and bedrock materials	Property (buried concrete and services)	Likely	Minor	Low

Source Ref. and Name	Pollutant Linkage	Pathway	Receptors	Risk (Significance) Evaluation		
				Likelihood	Consequence	Significance
Offline Potential Contamination Sources						
CK-15a Former smithy and Ruthven Farm Steading, including CK-15b, CK-15c and CK-15d septic tank and discharge	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Low Likelihood	Mild	Low
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE) Property (PWS and services)	Low Likelihood	Mild	Low
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Unlikely	Medium	Low
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres (asbestos), deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Unlikely	Mild	Very Low
	PL22	Discharge of intercepted contaminated groundwater	Water Environment (surface water)	Unlikely	Medium	Low
CK-16 Fertiliser storage	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Unlikely	Medium	Low
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE) Property (PWS and services)	Unlikely	Medium	Low
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Unlikely	Medium	Low
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres (asbestos), deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Unlikely	Medium	Low
	PL22	Discharge of intercepted contaminated groundwater	Water Environment (surface water)	Unlikely	Medium	Low
CK-17 Sheep Dip	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Unlikely	Medium	Low
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE) Property (PWS and services)	Unlikely	Medium	Low
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Unlikely	Medium	Low
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres (asbestos), deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Unlikely	Medium	Low
	PL22	Discharge of intercepted contaminated groundwater	Water Environment (surface water)	Unlikely	Medium	Low

Source Ref. and Name	Pollutant Linkage	Pathway	Receptors	Risk (Significance) Evaluation		
				Likelihood	Consequence	Significance
CK-23 Made/ worked ground and CK-24 Waste disposal	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Unlikely	Medium	Low
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE)	Low Likelihood	Medium	Moderate/ Low
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Low Likelihood	Medium	Moderate/ Low
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres (asbestos), deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Unlikely	Medium	Low
	PL22	Discharge of intercepted contaminated groundwater	Water Environment (surface water)	Unlikely	Medium	Low
CK-26 Mineral Site	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Low Likelihood	Medium	Moderate/ Low
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE)	Low Likelihood	Medium	Moderate/ Low
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Low Likelihood	Medium	Moderate/ Low
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres (asbestos), deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Unlikely	Medium	Low
	PL22	Discharge of intercepted contaminated groundwater	Water Environment (surface water)	Unlikely	Medium	Low
CK-34 Buildings/ properties at East Lodge	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Low Likelihood	Mild	Low
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE) Property (PWS and services)	Low Likelihood	Medium	Moderate/ Low
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Low Likelihood	Medium	Moderate/ Low
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres (asbestos), deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Unlikely	Mild	Very Low
	PL22	Discharge of intercepted contaminated groundwater	Water Environment (surface water)	Unlikely	Medium	Low

Source Ref. and Name	Pollutant Linkage	Pathway	Receptors	Risk (Significance) Evaluation		
				Likelihood	Consequence	Significance
CK-37a Buildings/ properties at Meadow side House, including CK-37b discharge consent	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Low Likelihood	Mild	Low
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE) Property (PWS and services)	Low Likelihood	Medium	Moderate/ Low
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Low Likelihood	Medium	Moderate/ Low
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres (asbestos), deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Unlikely	Mild	Very Low
	PL22	Discharge of intercepted contaminated groundwater	Water Environment (surface water)	Unlikely	Medium	Low
CK-44 to CK-47 Septic tanks and discharges at Ralia Lodge, Headkeepers House Milton Lodge and Upper Nuide Cottage	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Unlikely	Medium	Low
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE) Property (PWS and services)	Unlikely	Medium	Low
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Unlikely	Medium	Low
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres (asbestos), deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Unlikely	Medium	Low
	PL22	Discharge of intercepted contaminated groundwater	Water Environment (surface water)	Unlikely	Medium	Low
CK-54 Lynvoan septic tank and discharge	**Construction**					
	PL1	Ingestion, inhalation and dermal contact with soil, soil dust and fibres (asbestos), deep and shallow groundwater and surface water	Human Health (construction workers)	Low Likelihood	Medium	Moderate/ Low
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE) Property (PWS and services)	Low Likelihood	Medium	Moderate/ Low
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Low Likelihood	Medium	Moderate/ Low
	Operation					
	PL13	Ingestion, inhalation and dermal contact with soil, soil dust, fibres (asbestos), deep and shallow groundwater, surface water in the long-term during routine maintenance e.g. drainage inspections	Human Health (maintenance workers)	Unlikely	Medium	Low
	PL22	Discharge of intercepted contaminated groundwater	Water Environment (surface water)	Unlikely	Medium	Low

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