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); this appendix presents the baseline details of potential contamination sources identified within the study area for Project 8 – Dalwhinnie to Crubenmore of the A9 Dualling Programme (hereafter referred to as the Proposed Scheme). Potential pollutant linkage impacts in relation to the sources are also outlined within the context of a 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 maps, consultations with The Highland Council (THC), Scottish Environment Protection Agency (SEPA) and site walkovers undertaken by the CH2M Fairhurst Joint Venture (CFJV). Ground investigation (GI) and monitoring data has also been considered, as described and referenced in **Chapter 10** (**Volume 1**).

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

- *'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 Thirty-one principal potential contamination sources have been identified within the study area as part of the assessment, together with 22 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 10.30** to **10.38** (**Volume 3**).

Table 1: Potential Contamination Sources

Source Ref.	Potential Source Name	Chainage (approx.)	Position and Distance from Scheme	Potential Source Comments	Ground Investigation Information
Online Potential Sources of Contamination					
DC-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 or 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. Localised areas of made ground or possible made ground have been identified and reviewed as individual source areas (DC-32 to DC-55). Where soil chemical testing was available from these or natural soils in other areas, some localised detections have been made for inorganic and organic contaminants (incl. metals and hydrocarbons). Elevated concentrations of arsenic (51 to 85 mg/kg) were identified in excess of residential assessment criteria in two locations in peaty soil/ peat horizons, but these and all other contaminant concentrations were below open space and commercial criteria. Localised and slightly elevated concentrations of mercury and lead were identified in soil leachate analysis in excess of surface water assessment criteria, as well as PAH concentration detections. Localised elevated levels of copper, zinc and ammoniacal nitrogen were also detected. Groundwater results from Advanced and Preliminary monitoring identified localised concentrations of mercury, nickel, nitrate, PAHs and TPHs, with ammoniacal nitrogen generally slightly elevated in all boreholes.
DC-02	Highland Mainline (HML) railway	Full chainage	Adjacent to 250m 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.	Several Advanced GI locations were located within the general vicinity of the Highland Mainline railway, though reasonably distanced and two Preliminary GI locations were located nearby. Where soil chemical testing was available from these or natural soils in other areas, some localised detections have been made for inorganic and organic contaminants (incl. metals and hydrocarbons), but no elevated concentrations of contaminants were encountered. Localised detections of inorganic and organic contaminants (incl. metals and hydrocarbons) were identified in soil leachate, but not in excess of assessment criteria protective of surface water, groundwater or GWDTE.
DC-03	Former Electricity Pylons (Removed)	ch.0 (tie-in) to ch. 22,200	Online/ Adjacent east and west	Identified from PSSR due to the consideration that made ground may be potentially present associated with former powerline and associated pylon bases.	Several Advanced and Preliminary GI positions were located on or nearby the approximate positions of former pylon bases. Where soil chemical testing was available from these or natural soils in other areas, some localised detections have been made for inorganic and organic contaminants (incl. metals and hydrocarbons), but no elevated concentrations of contaminants were encountered. Localised detections of inorganic and organic contaminants (incl. metals and hydrocarbons) were identified in soil leachate, but not in excess of assessment criteria protective of surface water, groundwater or GWDTE.
DC-04	Existing Electricity Pylons (Beauly Denny Powerline)	ch.0 (tie-in) to ch. 24,600	15 to 85m east	Identified from PSSR due to the consideration that made ground may be present associated with the construction of the pylon bases and/ or associated access tracks.	Historical GI locations are available from the Beauly-Denny powerline development, but no chemical testing results are available and no made ground was identified.
DC-08a	Dalwhinnie Service Station	ch. 22,600	Online/ Adjacent west	Identified from PSSR as service station/ garage within Dalwhinnie.	Not investigated, but located adjacent to the west of the proposed Dalwhinnie junction link road tie-in to existing A899.
DC-08b	Dalwhinnie Service Station, A889, Dalwhinnie (JIG Ltd)	ch. 22,600	Online/ Adjacent west	SEPA CAR License (Ref. CAR/R/1096867) for STE to soakaway.	Not investigated, but located adjacent to the west of the proposed Dalwhinnie junction link road tie-in to existing A899.
DC-10	Made Ground/ Former Quarry (Dallanach)	ch. 27,600	Online	Identified from PSSR as BGS mapped made ground area corresponding to a former sand pit/ quarry site near Dallanach.	Several Advanced and Preliminary GI locations within inferred footprint of former pit/ quarry area. Two locations identified thin made ground (gravelly sand with traces of litter) up to 0.10m thickness, underlain by silty gravelly sand or gravel. Chemical testing of soil samples identified detectable concentrations of chloromethane and dichloromethane, but at levels below residential, open space and commercial land use assessment criteria. Soil leachate analysis identified concentrations of benzo(b/k)fluoranethene to slightly exceed surface water assessment criteria.
DC-11	Quarry/ Sand Pit	ch. 27,300	Online	Identified from PSSR and historical mapping as former sand pit/ quarry site nearby Dallanach (DC-10).	Several Advanced and Preliminary GI locations within inferred footprint of former pit/ quarry area. No made ground was identified, with ground conditions comprising topsoil and peat underlain by gravel. Chemical testing of soil samples identified detectable concentrations of chloromethane and dichloromethane, but at levels below residential, open space and commercial land use assessment criteria. Detections of inorganic and organic contaminants were identified in soil leachate, but not in excess of assessment criteria protective of surface water, groundwater or GWDTE.
DC-12a	Cuaich Farm	ch. 25,900	Online/ Adjacent west	Cuaich farm settlement located approximately 75m west of the existing A9 carriageway. Agricultural activities understood to include sheep sheering, grazing and movements within and nearby the settlement.	Advanced and Preliminary GI locations within the vicinity of the farm encountered silt and gravel and chemical testing of soil did not identify any elevated contaminant concentrations.
DC-14	Old Railway Embankment	ch. 31,500	Adjacent north	Identified from PSSR due to consideration that made ground associated with old railway embankment may be encountered.	Not specifically investigated, but nearby Advanced GI locations encountered topsoil, sand and semipelite. No chemical testing results available.
DC-15	Radon Affected Sites	various	various	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.

Source Ref.	Potential Source Name	Chainage (approx.)	Position and Distance from Scheme	Potential Source Comments	Ground Investigation Information
DC-53	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 likely to be attributable to natural sources, such as organic-rich soils/ sediments or peat.	Isolated raised detections of methane (between 1.0 and 50.6% volume/ volume (v/v)) have been recorded in three monitoring locations. Each borehole location is situated to the west of the Proposed Scheme at ch. 22,900, ch. 29,000 and ch. 30,200 at Dalwhinnie or within the River Truim valley, with the installations screened in/ across peat or natural alluvial materials; suggesting these may be the potential source. Carbon dioxide concentrations exceed the short term (15 minutes) occupational exposure limit (1.5% v/v) in 36 boreholes and the long term (8 hour) exposure limit (0.5% v/v) in 41 boreholes, with detected concentrations ranging between 0.1 and 13.3% v/v. Depleted oxygen concentrations below 19% v/v have been observed in 38 boreholes on one or more occasion, with levels considered to be very low (less than 16% v/v) in several instances and frequently coinciding with higher carbon dioxide levels.
Online Individual Occurrences of Made Ground/ Visual or Olfactory Indications of Contamination (i.e. odours, staining)					
DC-32	Advanced GI Location (TP8-004)	ch. 21,100	Online	Conditions encountered during Advanced GI and within the footprint of a former electricity pylon (DC-03).	Made ground encountered, comprising clayey sandy gravelly topsoil and silty gravelly sand with pockets of peat between ground level and 1.10m. No chemical testing results.
DC-33	Advanced GI Location (BH8-004)	ch. 21,250	Online	Conditions encountered during Advanced GI and nearby the footprint of a former electricity pylon (DC-03).	Strong hydrocarbon odour observed within made ground soils between 1.20 and 1.70m. No chemical testing results available.
DC-34	Advanced GI Location (TP8-010)	ch. 22,150	Online	Conditions encountered during DMRB Stage 2 GI and not within the vicinity of any identified particular source other than the existing A9 carriageway (DC-01).	Made ground encountered, comprising clayey sandy gravelly topsoil. gravelly sand and concrete, between ground level and 1.00m. No chemical testing results available.
DC-35	Advanced GI Location (TP8-019)	ch. 22,525	Online	Conditions encountered during Advanced GI and not within the vicinity of any identified particular source.	Made ground encountered, comprising peat and gravelly sand, between ground level and 0.50m. No chemical testing results.
DC-36	Advanced GI Location (TP8-035)	ch. 27,600	Online	Conditions encountered during Advanced GI and not within the vicinity of any identified particular source other than the existing A9 carriageway (DC-01) and Highland Mainline railway (DC-02).	Made ground encountered, comprising silty gravelly sand between ground level and 0.10m depth. Soil chemical testing of a sample at 0.50m did not identify any elevated contaminant concentrations.
DC-37	Preliminary GI Location (TP8-3-101)	ch. 20,300	Online	Conditions encountered during Preliminary GI, nearby existing A9 carriageway (DC-01).	Made ground encountered, comprising dark brown gravelly sandy topsoil, black tarmac, brown and grey gravelly sand and occasional glass tarmac and timber fragments up to 1.00m. Soil chemical testing of samples at 0.10 and 0.70m did not identify any elevated contaminant concentrations.
DC-38	Preliminary GI Location (TP8-3-102)	ch. 20,350	Online	Conditions encountered during Preliminary GI, nearby existing A9 carriageway (DC-01).	Made ground encountered, comprising dark brown/ mottled brown and orange slightly gravelly slightly clayey sand with medium cobble content and pockets of peat, between 0.15 and 1.50m bgl. Soil chemical testing of a sample at 0.50m did not identify any elevated contaminant concentrations.
DC-39	Preliminary GI Location (TP8-3-105)	ch. 20,400	Online	Conditions encountered during Preliminary GI, nearby existing A9 carriageway (DC-01).	Made ground encountered, comprising orange locally pale brown very gravelly silty fine to coarse sand with medium cobble content as well as black gravel of tarmac, between 0.10 and 1.60m bgl. Soil chemical testing of samples at 0.10, 1.00 and 2.00m bgl did not identify any elevated contaminant concentrations.
DC-40	Preliminary GI Location (TP8-3-109)	ch. 20,900	Online	Conditions encountered during Preliminary GI, nearby existing A9 carriageway (DC-01).	Possible made ground encountered, comprising peaty topsoil, brown and black fibrous peat and brown sandy slightly silty gravel up to 1.30m bgl. Soil chemical testing of samples at 0.10, 0.45, 1.00 and 1.70m did not identify any elevated contaminant concentrations.
DC-41	Preliminary GI Location (TP8-3-112)	ch. 21,100	Online	Conditions encountered during Preliminary GI, nearby existing A9 carriageway (DC-01) and existing Beauly-Denny electricity pylons (DC-04).	Made ground and possible made ground, comprising dark brown slightly gravelly slightly sandy fibrous peaty topsoil and dark brown and black slightly sandy fibrous and spongy peat with fragments of wood up to 0.50m bgl. Soil chemical testing of a sample at 0.45m did not identify any elevated contaminant concentrations.
DC-42	Preliminary GI Location (TP8-3-113)	ch. 21,200	Online	Conditions encountered during Preliminary GI, nearby existing A9 carriageway (DC-01).	Made ground encountered comprising dark brown slightly clayey spongy and fibrous peaty topsoil with occasional rootlets and wood up to 0.60m bgl. Soil chemical testing of a sample at 0.10m did not identify any elevated contaminant concentrations.
DC-43	Preliminary GI Location (TP8-3-114)	ch. 21,200	Online	Conditions encountered during Preliminary GI, nearby existing A9 carriageway (DC-01).	Made ground encountered comprising dark reddish brown fine to coarse sand with fibrous peat and occasional wood between 0.10 and 0.40m bgl. Soil chemical testing of a sample at 0.50m bgl did not identify any elevated contaminant concentrations.
DC-44	Preliminary GI Location (TP8-3-115)	ch. 21,300	Online	Conditions encountered during Preliminary GI, nearby existing A9 carriageway (DC-01).	Made ground encountered, comprising brown and grey slightly clayey sand and gravel with boulders of mixed lithologies including concrete and psammite up to 1.40m bgl. Soil chemical testing of samples at 0.10, 1.00 and 2.00m did not identify any elevated contaminant concentrations.
DC-45	Preliminary GI Location (TP8-3-116)	ch. 21,400	Online	Conditions encountered during Preliminary GI, nearby existing A9 carriageway (DC-01).	Made ground encountered, comprising greyish brown very silty sand and gravel with occasional bricks broken clay pipe, plastic sheeting and timber up to 1.80m bgl. Soil chemical testing of a sample at 0.10m bgl did not identify any elevated contaminant concentrations.
DC-46	Preliminary GI Location (TP8-3-110)	ch. 21,450	Online	Conditions encountered during Preliminary GI, nearby existing A9 carriageway (DC-01).	Made ground encountered, comprising grey silty sand and gravel with brick, timber and metal wire and rare concrete boulders up to 2.20m bgl. Soil chemical testing of samples at 0.10, 1.00 and 2.00m bgl did not identify any elevated contaminant concentrations.
DC-47	Preliminary GI Location (TP8-3-117)	ch. 21,500	Online	Conditions encountered during Preliminary GI, nearby existing A9 carriageway (DC-01).	Made ground encountered, comprising brown slightly silty sand gravel with a plastic bag up to 0.70m bgl. Soil chemical testing of a sample at 0.50m did not identify any elevated contaminant concentrations.
DC-48	Preliminary GI Location (TP8-3-118)	ch. 21,600	Online	Conditions encountered during Preliminary GI, nearby existing A9 carriageway (DC-01) and existing Beauly-Denny electricity pylons (DC-04).	Made ground encountered, comprising pale orange brown very silty sand and gravel up to 1.00m bgl. Soil chemical testing of a sample at 0.50m bgl did not identify any elevated contaminant concentrations.

Source Ref.	Potential Source Name	Chainage (approx.)	Position and Distance from Scheme	Potential Source Comments	Ground Investigation Information
DC-49	Preliminary GI Location (TP8-3-146)	ch. 23,800	Online	Conditions encountered during Preliminary GI, nearby existing A9 carriageway (DC-01).	Made ground encountered, comprising dark brown slightly gravelly silty sand with occasional rootlets, metal wire and low cobble content, up to 1.45m bgl. Soil chemical testing of a sample at 0.50m bgl did not identify any elevated contaminant concentrations, however soil leachate testing identified a pH below slightly outwith the drinking water and surface water standard ranges.
DC-50	Preliminary GI Location (TP8-3-151)	ch. 24,500	Online	Conditions encountered during Preliminary GI, nearby existing A9 carriageway (DC-01).	Made ground encountered, comprising dark brown gravelly sandy topsoil with many rootlets and brownish grey cobbles and boulders of mixed lithologies up to 1.00m bgl. Soil chemical testing of samples at 0.10 and 0.80m bgl did not identify any elevated contaminant concentrations. In soil leachate chemical testing of a sample at 0.80m, mercury concentration exceeded surface water standards and total PAH exceeded drinking water standards.
DC-51	Preliminary GI Location (TP8-3-178)	ch. 26,200	Online	Conditions encountered during Preliminary GI, nearby existing A9 carriageway (DC-01).	Made ground encountered, comprising pale brown gravelly slightly silty sand with occasional fragments of glass, metal, concrete, some rootlets and low cobble content between 0.10 and 1.05m bgl. Soil chemical testing of samples at 0.50 and 1.00m bgl did not identify any elevated contaminant concentrations. Soil leachate testing identified a pH outwith drinking water and surface water standard ranges.
DC-52	Preliminary GI Location (TP8-3-186)	ch. 26,850	Online	Conditions encountered during Preliminary GI, nearby existing A9 carriageway (DC-01).	Made ground encountered, comprising dark brown sandy gravelly angular cobbles of psammite with high boulder content. Soil chemical testing of a sample at 0.10m did not identify any elevated contaminant concentrations.
Offline Potential Sources of Contamination					
DC-12b	No 1 Cuaich Cottages, Cuaich (Private Contact)	ch. 26,000	95m west	SEPA CAR License (Ref. CAR/R/1056065) for STE to soakaway.	Not investigated.
DC-12c	No 2 Cuaich Cottages, Cuaich (Private Contact)	ch. 26,000	75m west	SEPA CAR License (Ref. CAR/R/1070367) for STE to soakaway.	Not investigated.
DC-12d	No 5 Cuaich Cottages, Cuaich (Private Contact)	ch. 26,000	190m west	SEPA CAR License (Ref. CAR/R/1070382) for STE to soakaway.	Not investigated.
DC-12e	No 4 Cuaich Cottages, Cuaich (Private Contact)	ch. 26,000	80m west	SEPA CAR License (Ref. CAR/R/1070403) for STE to soakaway.	Not investigated.
DC-12f	No 3 Cuaich Cottages, Cuaich (Private Contact)	ch. 26,000	220m west	SEPA CAR License (Ref. CAR/R/1070412) for STE to soakaway.	Not investigated.
DC-13	An Stac Quarry	ch. 28,500	430m west	Identified from PSSR as potential source of made ground/ ground gas but distanced from Proposed Scheme.	Not investigated.
DC-16	Garage/ Scottish Southern Energy (SSE)/ Balfour Beatty Central Section Office	ch. 22,800	180m west/ north	Information from THC (Ref. BS-GAR-1049) highlights a potential garage/ fuel source. PSSR information identified this area to be an unnamed structure historically and more recently, the Scottish Southern Energy (SSE)/ Balfour Beatty Central Section Office for the Beauly-Denny powerline construction.	Not investigated.
DC-17	Garage/ Residential Properties	ch. 23,000	250m north west	Information from THC (Ref. BS-GAR-1061) highlights a potential garage/ fuel source. PSSR information identified this area as small residential properties both historically and presently, suggesting domestic heating/ fuel storage; though it is also noted to be located opposite the current Dalwhinnie Water Treatment Works site.	Not investigated.
DC-18	Garage/ Tollhouse Café, Bar and Restaurant	ch. 23,200	250m west	Information from THC (Ref. BS-GAR-1062) highlights a potential garage/ fuel source. PSSR information identified this area as small unnamed structures historically and presently, a small area of garages associated with the nearby Tollhouse Café, Bar and Restaurant.	Not investigated.
DC-19	Mrs T Connelly, Etteridge Railway Cottage, Etteridge	N/A	>1km north	Septic tank discharge record (Ref. S/69/19 (October 1969)) for Etteridge Railway Cottage. Status is not supplied and discharge is noted to be to an unnamed tributary of the River Truim.	Not investigated.
DC-20	Tigh Fhothannan, Dalwhinnie (Kirklands Law Ltd)	ch. 23,400	300m west	SEPA CAR License (Ref. CAR/R/1021716) for STE to unnamed tributary of the River Truim.	Not investigated.
DC-06a	Dalwhinnie Distillery	ch. 23,750	330m west	Identified from PSSR and information from THC (Ref. BS-FDP-1004) as a potential source of contamination due to commercial/ process nature of the site, but distanced from Proposed Scheme. No additional information provided from THC, however additional information from SEPA highlighted associated CAR Licenses, related to effluent discharge from settlement lagoons. The PSSR also identified historical septic tank and discharge consent records (DC-06b to i).	Not investigated.
DC-06b	Scottish Malt Distillers Ltd, Dalwhinnie Distillery, Dalwhinnie	ch. 23,400	140m west	Septic tank discharge record (Ref. S/73/127 (January 1974)) for Dalwhinnie Distillery, Manager's House. Status is unknown and discharge noted to be to the River Truim.	Not investigated.
DC-06c	Scottish Malt Distillers Ltd, Dalwhinnie Distillery, Dalwhinnie	ch. 23,400	140m west	Septic tank discharge record (Ref. S/73/128 (January 1974)) for Dalwhinnie Distillery, Workers Houses. Status is not supplied and discharge is noted to be to the River Truim.	Not investigated.

Source Ref.	Potential Source Name	Chainage (approx.)	Position and Distance from Scheme	Potential Source Comments	Ground Investigation Information
DC-06d	Scottish Malt Distillers Ltd, Dalwhinnie Distillery, Dalwhinnie	ch. 23,400	140m west	Septic tank discharge record (Ref. S/73/125) (January 1974) for Dalwhinnie Distillery, Unnamed House. Status is not supplied and discharge is noted to be to the River Truim.	Not investigated.
DC-06e	Scottish Malt Distillers Ltd, Dalwhinnie Distillery, Dalwhinnie	ch. 23,400	140m west	Septic tank discharge record (Ref. S/73/131) (January 1974) for Dalwhinnie Distillery, Workers Houses. Status is not supplied and discharge is noted to be to the River Truim.	Not investigated.
DC-06f	Scottish Malt Distillers Ltd, Dalwhinnie Distillery, Dalwhinnie	ch. 23,400	140m west	Septic tank discharge record (Ref. S/73/124) (January 1974) for Dalwhinnie Distillery, 2 Houses. Status is not supplied and discharge is noted to be to a ditch tributary of the River Truim.	Not investigated.
DC-06g	Scottish Malt Distillers Ltd, Dalwhinnie Distillery, Dalwhinnie	ch. 23,400	140m west	Septic tank discharge record (Ref. S/73/129) (January 1974) for Dalwhinnie Distillery, Excise Office. Status is not supplied and discharge is noted to be to the River Truim.	Not investigated.
DC-06h	Scottish Malt Distillers Ltd, Dalwhinnie Distillery, Dalwhinnie	ch. 23,400	140m west	Septic tank record (Ref. S/73/126) (January 1974) for Dalwhinnie Distillery, Workmen's Hostel. Status is not supplied and discharge is noted to be to the River Truim.	Not investigated.
DC-06i	Scottish Malt Distillers Ltd, Dalwhinnie Distillery, Dalwhinnie	ch. 23,400	140m west	Cooling water discharge record (Ref. S/73/130) (January 1974) for Dalwhinnie Distillery. Status is not supplied and discharge is noted to be to the River Truim.	Not investigated.
DC-06j	Dalwhinnie Distillery, Dalwhinnie (Diageo Scotland Ltd)	ch. 24,400	210m west	SEPA CAR License (Ref. CAR/L/1002680) for TE from settlement lagoons to the River Truim.	Not investigated.
DC-05	Made Ground (Cuaich Aqueduct)	ch. 23,400	55m east	Identified from PSSR as conditions encountered during historical GI, to the eastern side of the Cuaich Aqueduct near Dalwhinnie.	Historical GI location recorded made ground as engineered fill; silty sand and gravel up to 4.00m bgl. No chemical testing results available from historical works and no Advanced or Preliminary GI locations were advanced on the eastern side of the aqueduct near here.
DC-07	Dalwhinnie Depot	ch. 22,300	130m west	Identified from PSSR as small existing depot within Dalwhinnie utilised for material storage, located to the west of the proposed link road to Dalwhinnie.	Not investigated.
DC-09a	Dalwhinnie Water Treatment Works	ch. 24,425	300m west	Identified from PSSR due to consideration that made ground/ potential material spills may represent source of contamination, but distanced from Proposed Scheme	Not investigated.
DC-09b	Dalwhinnie Water Treatment Works, Dalwhinnie (Scottish Water)	ch. 24,425	340m west	SEPA CAR License (Ref. CAR/S/1019804) for TE to River Truim and potable water treatment and supply.	Not investigated.
DC-21	Crubenmore Lodge, Newtonmore (Ralia Enterprises)	ch. 30,700	50m west	SEPA CAR License (Ref. CAR/R/1051861) for STE to soakaway.	Not investigated.
DC-22	Birch View, Carron, Aberlour (Private Contact)	ch. 22,600	180m west	SEPA CAR License (Ref. CAR/R/1063005) for STE to soakaway.	Not investigated (NN 63510 84150), but located approximately 180m west of proposed Dalwhinnie junction link road tie-in to existing A899.
DC-23	Woodside Cottage, Dalwhinnie (Private Contact)	ch. 22,600	10m west	SEPA CAR License (Ref. CAR/R/1070542) for STE to land.	Not investigated (NN 63660 84150), but located approximately 10m west of proposed Dalwhinnie junction link road tie-in to existing A899.
DC-24	1 Ben Alder Cottage, Dalwhinnie (Private Contact)	ch. 22,600	40m west	SEPA CAR License (Ref. CAR/R/1070561) for STE to land.	Not investigated (NN 63620 84140) but located approximately 40m west of proposed Dalwhinnie junction link road tie-in to existing A899.
DC-25	Invertruim Cottage, Glentruim (Private Contact)	ch. 30,900	55m west	SEPA CAR License (Ref. CAR/R/1074928) for STE to soakaway.	Not investigated.
DC-26	10 Distillery Cottages, Dalwhinnie (Private Contact)	ch. 23,300	750m north east	SEPA CAR License (Ref. CAR/R/1076777) for STE to land.	Not investigated.
DC-27	Dalwhinnie Office, Dalwhinnie (JIG Ltd)	ch. 22,600	65m west	SEPA CAR License (Ref. CAR/R/1095858) for STE to soakaway.	Not investigated (NN 63610 84230), but located approximately 65m west of proposed Dalwhinnie junction link road tie-in to existing A899.
DC-28	1 & 2 Loch Ericht Cottage, Dalwhinnie (Private Contact)	ch. 22,600	120m west	SEPA CAR License (Ref. CAR/R/1117881) for STE to soakaway.	Not investigated (NN 63553 84110), but located approximately 120m west of proposed Dalwhinnie junction link road tie-in to existing A899.
DC-29	Construction Yard, Dalwhinnie (Balfour Beatty Utility Solutions)	ch. 22,800	310m west	SEPA CAR License (Ref. CAR/S/1099092) for BBUSL Construction Yard (A889), Dalwhinnie.	Not investigated.
DC-30	Dalwhinnie Septic Tank (Scottish Water)	ch. 23,400	210m west	SEPA CAR License (Ref. CAR/S/1099092) for FE to River Truim.	Not investigated.
DC-31a	Breackachy, Laggan, Newtonmore (Breackachy)	ch. 27,300	270m west	SEPA CAR License (Ref. CAR/S/1034669) for sheep dip disposal to land.	Not investigated.
DC-31b	Breackachy, Laggan, Newtonmore (Breackachy)	ch. 27,000	170m west	SEPA CAR License (Ref. CAR/S/1034669) for sheep dip disposal to land.	Not investigated.
DC-31c	Breackachy, Laggan, Newtonmore (Breackachy)	ch. 27,100	210m west	SEPA CAR License (Ref. CAR/S/1034669) for sheep dip disposal to land.	Not investigated.

4 Preliminary Conceptual Site Model

4.1.1 For each relevant 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 the Proposed Scheme construction or operation, 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 in the assessment. The potential receptors and pathways were compiled based on the definitions in Part IIA of the Environmental Protection Act 1990, 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 likely 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, the 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** therefore 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						
DC-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
DC-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)	Low Likelihood	Mild	Low
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Low Likelihood	Mild	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)	Unlikely	Mild	Very Low
DC-03 Former Electricity Pylons (Removed)	**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	Minor	Low
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Likely	Minor	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	Minor	Very Low

Source Ref. and Name	Pollutant Linkage	Pathway	Receptors	Risk (Significance) Evaluation		
				Likelihood	Consequence	Significance
DC-04 Existing Electricity Pylons (Beauly Denny Powerline)	**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	Minor	Low
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Likely	Minor	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	Minor	Very Low
DC-08a Dalwhinnie Service Station, including DC-08b 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	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) 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
DC-10 Made Ground/ Former Quarry (Dalannach)	**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	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

Source Ref. and Name	Pollutant Linkage	Pathway	Receptors	Risk (Significance) Evaluation		
				Likelihood	Consequence	Significance
DC-11 Quarry/ Sand 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	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	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
DC-12a Cuaich Farm, including DC-12b to DC-12f septic tank and discharges	**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
DC-15 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
DC-53 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

Source Ref. and Name	Pollutant Linkage	Pathway	Receptors	Risk (Significance) Evaluation		
				Likelihood	Consequence	Significance
DC-53 Ground Gas	**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
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 (DC-32 to GGD-52) 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, 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
Offline Potential Contamination Sources						
DC-05 Made Ground (Cuaich Aqueduct)	**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)	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
DC-06a Dalwhinnie Distillery, including DC-06b to DC-06i septic tank records and 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)	Unlikely	Mild	Very Low
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE)	Unlikely	Mild	Very Low
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Unlikely	Mild	Very 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	Mild	Very Low
DC-07 Dalwhinnie Depot	**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	Mild	Very 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)	Low Likelihood	Mild	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	Mild	Very Low
DC-09a and DC-09b Dalwhinnie Water Treatment Works, including filter beds 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)	Unlikely	Mild	Very Low
	PL7	Migration/ mobilisation of contaminated shallow groundwater through drift deposits or made ground	Water Environment (surface water) Ecological Receptors (GWDTE)	Unlikely	Mild	Very Low
	PL10	Interception and discharge of contaminated groundwater during active or passive dewatering	Water Environment (surface water)	Unlikely	Mild	Very 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	Mild	Very Low
DC-22, DC-23,, DC-24, DC-27 and DC-28 septic tank discharges at Dalwhinnie	**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

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