

Appendix A10.1: Contaminated Land Sources

1.1.1 This appendix provides details of potential contamination sources within 250m of the proposed scheme, supporting Chapter 10 (Geology, Soils, Contaminated Land and Groundwater). The potential contaminated land sources presented in Table 1 were obtained from a review of historical and current maps; ground investigation data; consultation; and site survey information. The location of these potential sources are presented on Figure 10.2.

Table 1: Contaminated Land Sources

Source Reference	Historical Land Use/Source	Desk Study Information				Ground Investigation Information
		Source of Information	Dates Shown	Distance from Proposed Scheme	Further Comments	
TB-C1	Existing A9	OS Map	1977 (shown as under construction) - Present	Full length (online)	<p>Potential for made ground associated with embankment construction.</p> <p>Potential for contaminants associated with A9 traffic.</p>	<p>Fifty-five boreholes and 34 trial pits were within the expected footprint of the potential source. Made ground was encountered at 21 locations, consisting of sand and gravel with concrete, brick and slate fragments. Tarmacadam also encountered as a layer in three boreholes.</p> <p>Thirty-three locations within the footprint of the expected source were selected for soil sample laboratory analysis. No soil chemistry generic assessment criteria (GAC) exceedances recorded.</p> <p>Seven locations within the footprint of the expected source were selected for groundwater chemical laboratory analysis. One location recorded an exceedance of the resource protection value (RPV) for chloride. Three locations recorded exceedances of the resource protection value (RPV) mercury. Two locations recorded exceedances of the resource protection value (RPV) Ammoniacal Nitrogen as N.</p> <p>Twenty-four boreholes were monitored for ground gas concentrations. Nine boreholes recorded carbon dioxide (CO₂) above the long term exposure limit, and six above the short term exposure limit. Six boreholes recorded oxygen concentrations below the mining act exposure limit. One borehole recorded carbon monoxide (CO) above the both the long term and short term exposure limits.</p>
TB-C2	Highland Main Line railway	OS Map	1867 - Present	Ch0000 to ch300 (150m west), Ch4600 to Ch5000 (<250m west), Ch5000 to Ch6200 (<10m west), Ch6200 to Ch8200 (<250m west)	<p>Potential for made ground associated with embankment construction.</p> <p>Potential for contaminants associated with railway use.</p>	<p>Two GI boreholes were located solely within the expected footprint of the potential source, with three locations being situated between TB-C1 and TB-C2. No made ground was recorded.</p> <p>Two locations were selected for soil analytical testing with no generic assessment criteria (GAC) exceedances recorded. No groundwater samples were collected for analytical testing.</p> <p>One borehole in proximity to the potential source was monitored for ground gas concentrations. No exposure limits were exceeded.</p>
TB-C3	Saw Mill (Dowally)	OS Map	1867	Ch4100 (15m west)	Present in 1867 only.	Not investigated

Source Reference	Historical Land Use/Source	Desk Study Information				Ground Investigation Information
		Source of Information	Dates Shown	Distance from Proposed Scheme	Further Comments	
TB-C4	Sand Pit	OS Map	1900-2012	Ch4900 (7m east)	<p>Labelled as 'disused' from 1978. It is unknown if the sand pit has been subsequently infilled.</p> <p>Potential for contaminants associated with infill material.</p>	<p>One GI borehole was located within the footprint of the potential source. No made ground was recorded.</p> <p>No soil or groundwater samples were collected for analytical testing.</p>
TB-C5	Guay Station	OS Map	1867 – 1900	Ch5100 (20m west)	<p>Station is shown on west side of railway in 1867 and 1900. No longer present.</p> <p>Potential for contaminants associated with railway use.</p>	Not investigated
TB-C6	Sand and Gravel Mineral Extraction Point	Landmark Envirocheck Report (Jacobs, 2013)	Unknown	Ch5300 (165m east)	<p>BGS Recorded Mineral Site: Sand and Gravel Opencast operated by Balfour Beatty and no longer active. It is unknown if the opencast mine has been subsequently infilled.</p> <p>Potential for contaminants associated with infill material.</p>	Not investigated
TB-C7	Smithy	OS Map	1867-1900	Ch5400 (120m east of mainline and <10m east of the Dowally Kindallachan side road)	From 1976 onwards, the building is shown as residential properties.	Not investigated
TB-C8	Saw Mill	OS Map	1867 only	Ch6100 (190m east)	Present in 1867 only.	Not investigated
TB-C9	Farina Works	OS Map	1867 – 1900	Ch6200 (130m east of mainline and 20m east of the Kindallachan North side road)	The Farina Works is recorded at Kindallachan from 1867-1900. Not present in the 1978 map edition.	Not investigated

Source Reference	Historical Land Use/Source	Desk Study Information				Ground Investigation Information
		Source of Information	Dates Shown	Distance from Proposed Scheme	Further Comments	
TB-C10	Gravel Pit	OS Map	1900	Ch7050 (35m east)	Present in 1900 only. It is unknown if the gravel pit has been subsequently infilled. Potential for contaminants associated with infill material.	Not investigated
TB-C11	Sand and Gravel Mineral Extraction Point	Landmark Envirocheck Report (Jacobs, 2013)	Unknown	Ch7200 (<10m east)	BGS Recorded Mineral Site: Ballachallan Quarry (Sand and Gravel Opencast) operated by Balfour Beatty and no longer active. It is unknown if the opencast mine has been subsequently infilled. Positional accuracy is noted to be within 10m Potential for contaminants associated with infill material.	Two boreholes were located within the expected footprint of the potential source. Made ground was recorded in one of these locations as sand with gravel of clinker and glass. One location was chosen for soil sample chemical laboratory analysis. No soil chemistry GAC exceedances were recorded. One borehole location was selected for groundwater sample collection with no exceedances of RPVs noted. One borehole location was monitored for ground gas concentrations and CO ₂ above both the long and short term exposure limits and oxygen below the mining act exposure limit (19% v/v).
TB-C14 to TB-C20, TB-C22, TB-C23, TB-C26, TB-C28 & TB-C29	Septic Tank	Landowner consultation	Unknown	Multiple locations along the proposed scheme	Exact location of tank unknown.	Not investigated

Source Reference	Historical Land Use/Source	Desk Study Information				Ground Investigation Information
		Source of Information	Dates Shown	Distance from Proposed Scheme	Further Comments	
n/a	Minor/Residential Side roads/ Access Tracks	OS Map	1977 (shown as under construction) - Present	Multiple locations along the proposed scheme	<p>Potential for made ground associated with embankment construction.</p> <p>Potential for contaminants associated with side road traffic.</p>	<p>Twenty-one boreholes and two trial pits were within the expected footprint of the potential sources. Made ground was encountered at 13 locations, consisting of sand and gravel with concrete, brick and slate fragments. Tarmacadam was also encountered as a layer in ten boreholes.</p> <p>Seven locations were selected for soil sample chemical laboratory analysis. Three locations recorded soil chemistry generic assessment criteria (GAC) exceedances of Napthalene and Dibenzo(ah)anthracene. Two locations recorded exceedances of Benzo(a)anthracene, Benzo(b)fluoranthene, and Benzo(a)pyrene, while only one recording an exceedance in Crysene.</p> <p>Four locations within the footprint of the expected sources were selected for groundwater chemical laboratory analysis. One exceedance of the resource protection value (RPV) for TPH Aromatic C16-C21 was recorded.</p> <p>Eight boreholes were monitored for ground gas concentrations. One borehole recorded carbon dioxide (CO₂) above the long term exposure limit and oxygen concentrations below the mining act exposure limit. One borehole recorded oxygen concentrations below the mining act exposure limit, H₂S above the long and short term exposure limit and carbon monoxide (CO) above the both the long term and short term exposure limits. One borehole recorded carbon monoxide (CO) above the both the long term and short term exposure limits</p>
PBTC-C46	Septic Tank discharge	Envirocheck report	Present	Ch200 (95m west)	SEPA regulated Non Water Company (Private) Septic Tank Discharge Consent (WPC/E/10122) associated with Inch Caravan Site	Not investigated