

High Speed Rail (Crewe – Manchester) Environmental Statement

Volume 5: Appendix LQ-001-0MA05

Land quality

MA05: Risley to Bamfurlong

Land quality report

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Land quality report



Department
for Transport

High Speed Two (HS2) Limited has been tasked by the Department for Transport (DfT) with managing the delivery of a new national high speed rail network. It is a non-departmental public body wholly owned by the DfT.

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1 Introduction

- 1.1.1 This report is an appendix to the land quality assessment for the Risley to Bamfurlong area, it comprises:
- a summary of engagement undertaken;
 - details on committed developments relevant to land quality that form part of the future baseline; and
 - detailed risk assessments associated with land contamination.
- 1.1.2 This appendix should be read in conjunction with:
- Volume 2, Community area reports;
 - Volume 3, Route-wide effects;
 - Volume 4, Off-route effects; and
 - Background Information and Data (BID) (BID LQ-002-0MA05)¹.
- 1.1.3 Maps referred to throughout this report are contained in the Volume 5: Land quality Map Book (Maps series LQ-01-314b to LQ-01-318-C1). Sites carried through to assessment are given a reference number. In this report they are referred to as MA05-67 and on the maps they are referred to as 05-67.
- 1.1.4 Further information regarding receptors in relation to each site or group of sites is set out in the BID.
- 1.1.5 Information about Local Sites and Sites of Special Scientific Interest (SSSI) and site visit records are set out in the BID document.
- 1.1.6 The Environmental Impact Assessment Scope and Methodology Report (SMR), (see Volume 5, Appendix CT-001-00001) should be referred to for details of the Land quality assessment.

¹ High Speed Two Ltd (2022), High Speed Rail (Crewe – Manchester), *Background and Information Data, Land quality baseline data*. BID LQ-002-0MA05. Available online at: <https://www.gov.uk/government/collections/hs2-phase-2b-crewe-manchester-environmental-statement>.

2 Engagement

2.1.1 Table 1 sets out the organisations that have been engaged with during the preparation of the land quality section of the Environmental Statement (ES) for the Risley to Bamfurlong area, the types of information that have been provided to the assessment team and any specific concerns raised.

Table 1: Engagement on land quality issues undertaken for the Risley to Bamfurlong area

Organisation	Method/dates of contact	Information provided and/or specific concerns
Warrington Borough Council (WBC)	Meeting (15 May 2018)	Initial Presentation on land quality assessment. No specific concerns raised.
	Phone call (12 July 2018)	No current priority areas of potentially contaminated land within the selected search area.
	Meeting (5 June 2019)	Presentation and workshop with update of progress, discussion of Working Draft Environmental Statement (WDES) consultation responses, review of the land quality assessment process and review of example key sites. No specific concerns raised.
	Email (16 October 2020)	WBC provided with updated GIS shape file.
	Meeting (22 October 2020)	Presentation with update on Stage 2 design refinement, review of the land quality assessment process and presentation on significant impacts identified to date.
Wigan Metropolitan Borough Council (WMBC)	Meeting (15 May 2018)	Presentation and workshop on land quality approach. No specific concerns raised.
	Phone call (12 July 2018)	Three Nominated Landfill Sites on/within proximity to the search area.
	Meeting (5 June 2019)	Presentation and workshop with update of progress, discussion of Working Draft Environmental Statement (WDES) consultation responses, review of the land quality assessment process and review of example key sites. No specific concerns raised.
	Email (16 October 2020)	WMBC provided with updated GIS shape file.
	Meeting (22 October 2020)	Presentation with update on Stage 2 design refinement, review of the land quality assessment process and presentation on significant impacts identified to date.
Environment Agency	Meeting (15 May 2018)	Presentation and workshop on land quality approach. No specific concerns raised but introductions made to Environment Agency HS2 team.
	Meeting (14 September 2018)	Meeting to discuss acquiring Environment Agency landfill data. Agreed procedure for acquiring detailed, site specific data and contacts with local area officers. Priority landfills along the route discussed and general information provided. Detailed information to be provided by local area officers at subsequent meeting.
Animal and Plant Health Agency (APHA)	Email (16th May 2019)	APHA detailed that there is no register of animal burial sites for this area.

3 Risk assessment

- 3.1.1 A four-stage process, comprising stages A to D, has been carried out in accordance with the methodology set out in the SMR. At each stage, professional judgement has been used to check that the screening and assessment process is highlighting significant sites.
- 3.1.2 Stage A highlights potentially contaminative sites based on their potential impact. Sites with a moderate to high potential impact move through to stage B where they are assessed based on receptor proximity.
- 3.1.3 Sites with a high potential impact pass through stage B to detailed assessment irrespective of receptor proximity. Sites with a moderate potential impact and moderate to high receptor proximity also go through to detailed assessment.
- 3.1.4 For those sites which pass through stage B, a further detailed risk assessment (stages C and D) has been carried out.
- 3.1.5 The results of stage C are presented in three conceptual models (CSM) as qualitative risk assessments covering baseline, construction and post-construction scenarios. Stage D then compares the risk of impact at construction and post-construction stages with the baseline to determine the change in risk and hence the potential for a significant effect.
- 3.1.6 Section 3.2 to 3.5 present assessments for potentially contaminated sites which have passed through the screening process within the study area. For each site the following data are presented:
- baseline risk assessment;
 - construction risk assessment;
 - post-construction risk assessment;
 - assessment of temporary (construction) effects; and
 - assessment of permanent (post-construction) effects.
- 3.1.7 The construction and post-construction risk assessments assume that appropriate mitigation has been undertaken and that the operation of the railway is in accordance with environmental legislation.
- 3.1.8 Where nearby sites present a similar contamination risk, they have been grouped and considered together. For example, in rural areas, small former backfilled ponds and pits have been grouped together for assessment purposes.
- 3.1.9 Where sites have been grouped together, only one CSM has been prepared for those sites. The sites in the Risley to Bamfurlong area have been listed as follows in Table 2.

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Table 2: Sites included in the risk assessment within the Risley to Bamfurlong area

Site group	Site title (site ID and land use class ²)
On-site	
Historical landfills	Restored Risley Landfill (MA05-05), Class 3 Historical Lowton Sidings landfill (MA05-73), Class 3 Historical Lily Lane landfill (MA05-106), Class 3
Former and current farms	Current Yewtree Farm (MA05-14), Class 1 Former Rowe Farm (MA05-16), Class 1 Current Glaziers Lane Farm (MA05-24), Class 1 Former Phillips Farm (MA05-25), Class 1 Current Whites Farm (MA05-40), Class 1 Current Birchalls Farm (MA05-41), Class 1 Current Carr Farm (MA05-47); Class 1 Former Baily Hall Farm (MA05-60), Class 1
Former and current railway land and rail goods yard / depots	Former London North Eastern Railway LNER Wigan Junction Branch (MA05-13), Class 2 Former LNER Wigan Junction Branch - Southern Spur (MA05-37), Class 2 Current Liverpool to Manchester line via Warrington Central (MA05-39), Class 2 Former goods shed (MA05-59), Class 2 Former Basin railway (MA05-97), Class 2 Current London and North Western Railway/North Union line (MA05-103), Class 2 Current LNER Wigan Junction Branch - Southern Spur (MA05-114), Class 2
Works	Current Engineering workshops (MA05-54), Class 2
Former Ministry of Defence (MoD) land	Former MoD barracks (MA05-70), Class 3
Former sewage filter beds	Former sewage filter beds (MA05-48), Class 2
Former tanks	Former tank (MA05-51), Class 3 Former tank (MA05-67), Class 3
Business park	Current Lowton Business Park (MA05-50), Class 1
Mine shafts	Mine shaft (MA05-122), Class 2 Mine shaft (MA05-123), Class 2
Off-site	
Historical landfills	Historical landfill Warrington Road, Risley (MA05-03), Class 3 Historical landfill - Land to Rear of 120 Lily Lane (MA05-111), Class 3
Former and current railway land	Former Liverpool to St Helens line (MA05-91), Class 2 Former Long Lane Sidings (MA05-102), Class 2 Current LNER Wigan Junction Branch - Southern Spur (MA05-113), Class 2 Former LNER Wigan Junction Branch - Southern Spur (MA05-115), Class 2 Former LNER Wigan Junction Branch - Southern Spur (MA05-116), Class 2 Former Basin railway (MA05-117), Class 2
Former collieries	Former Edge Green Colliery (MA05-99); Class 2 Former Mains Colliery (extended pits) (MA05-104), Class 2

² As defined by the SMR.

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Site group	Site title (site ID and land use class ²)
	Former Mains Colliery/mines (MA05-105), Class 2 Former Bamfurlong Colliery (MA05-108), Class 2
Current and former works	Current works (MA05-64); Class 2 Current Taylor Business Park and former works (MA05-22), Class 2
Former animal processing site	Former soap and glue works and current depot (MA05-46), Class 3
Former sewage filter beds	Former filter beds and sewage works (MA05-49), Class 2
Former scrap yard and current garage workshop	Former scrap yard (MA05-63), Class 2; Current garage (MA05-66), Class 2
Farms	Current Bates Farm (MA05-09), Class 1 Current Wigshaw Farm (MA05-27), Class 1 Current Clough Farm (MA05-43), Class 1 Current Bamfurlong Hall Farm (MA05-107), Class 1
Former and current tanks	Former tanks associated with Taylor Business Park), Class 3 Former tank (MA05-18), Class 3 Current tank (MA05-20), Class 3 Current tank (MA05-56), Class 3 Current tank (MA05-75), Class 3
Business park	Current Lowton Business Park (MA05-125), Class 1

- 3.1.10 For clarity, 'on-site' in this document means 'within the land required for the construction of the Proposed Scheme' and 'off-site' refers to 'land beyond this boundary, but not within the study area'.
- 3.1.11 Contaminant types included within the risk assessments are based on the Department of the Environment, Farming and Rural Affairs (DEFRA) and Environment Agency (2002); Priority Contaminants Report CLR 8³. Although this report has been withdrawn by the Environment Agency, it remains technically valid and there has been no subsequent authoritative replacement.
- 3.1.12 The remainder of this section presents the risk assessment for the sites going through to stages C and D of the assessment. These sites are shown on Volume 5, Land Quality Map Book, Maps LQ-01-314b to LQ-01-318-C1.
- 3.1.13 The following abbreviations are used in these tables:
- SPZ – Source protection zone;
 - LWS -Local Wildlife Site;
 - SAC – Special Area of Conservation;
 - SBI – Site of Biological Importance;

³ Department for Environment, Food and Rural Affairs and Environment Agency (2002), *Potential Contaminants for the Assessment of Land*. R&D Publication CLR8.

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- SSSI – Site of Special Scientific Interest;
- PAH – polycyclic aromatic hydrocarbons;
- PCB – polychlorinated biphenyls;
- TPH – total petroleum hydrocarbons;
- VOC – volatile organic compounds; and
- SVOC – semi-volatile organic compounds.

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3.2 Baseline risk assessment

Table 3: Baseline CSM and qualitative risk assessment for historical landfills (on-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
Potential contamination in landfilled material including industrial landfill waste (special and liquid sludge), metals, asbestos, petroleum and diesel range hydrocarbons, VOC and SVOC, potential medium to high levels of ground gas and landfill gas (methane, carbon dioxide, hydrogen sulphide)	Existing site users - Workers and visitors walkers	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Unlikely	Severe	Moderate/low
	Adjacent site users - Residential	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Unlikely	Severe	Moderate/low
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till Secondary A Aquifer – Pennine Middle Coal Measures, Alluvium Principal Aquifer - Helsby Sandstone Formation,	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood	Negligible to Medium	Moderate/low to very low

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Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
	Collyhurst Sandstone Formation				
	Controlled waters - groundwater SPZ 2 Principal Aquifer - Chester Formation		Unlikely	Severe	Moderate/low
	Controlled waters - surface water: Leeds and Liverpool Canal, Small Brook, Hey Brook, Springs, ponds	Lateral migration through groundwater Direct runoff from site	Unlikely to likely	Medium to minor	Low to moderate
	Ecological designations - SSSI and LWS- Abram Flashes LWS - Silver Lane Ponds, Gorse Covert Mounds, Pestfurlong Moss	Vertical and lateral migration, direct contact	Likely to low likelihood	Minor to negligible	Moderate/low to very low
		Exposure to ground gases/vapours	Low likelihood	Minor to negligible	Low to very low
	Property receptors - buildings, foundations and services (existing and adjacent)	Direct contact with contaminated soils and waters	Unlikely	Severe	Moderate/low
		Exposure to explosive gases	Unlikely	Severe	Moderate/low

Notes/assumptions:

- sites assessed without construction of the Proposed Scheme;
- see BID document Section 2 Table 1 for details of receptors relevant to groups of sites;
- for groups of sites where different sensitivities of receptors have been identified, a risk range has been provided based on the least and most sensitive receptors;
- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed;
- SPZ 2 relates to one site only (MA05-73), there is a potable groundwater abstraction within the vicinity of the site; and
- there are public rights of way paths within MA05-05 and MA05-106.

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Table 4: Baseline CSM and qualitative risk assessment for former and current farms (on-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
Potential contamination from made ground and former and current site activities including potential chemical storage tanks, petroleum and diesel range hydrocarbons, pesticides, fungicides, asbestos, low levels of ground gas (carbon dioxide and methane)	Existing site users - residential and commercial staff and visitors	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Low likelihood	Medium	Moderate/low
		Inhalation of ground gases	Unlikely	Medium	Low
	Adjacent site users - residential	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Unlikely	Medium	Low
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till Principal Aquifer – Wilmslow Sandstone Formation	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood to unlikely	Negligible to medium	Very low to low
			Unlikely	Severe	Moderate/low
	Controlled waters - groundwater SPZ 2 Principal Aquifer-Chester Formation				
	Controlled waters - surface water: Ponds, Glaze Brook	Lateral migration through groundwater Direct runoff from site	Low likelihood to Unlikely	Medium to negligible	Moderate/low to very low
Property receptors - buildings, foundations and	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low	

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Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
	services (existing and adjacent)	Exposure to explosive gases	Unlikely	Minor	Very low

Notes/assumptions

- sites assessed without construction of the Proposed Scheme;
- see BID document Chapter 2 Table 2 for details of receptors relevant to groups of sites;
- for groups of sites where different sensitivities of receptors have been identified, a risk range has been provided based on the least and most sensitive receptors;
- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed;
- there are commercial groundwater abstractions in the vicinity of MA05-24 and MA05-25; and
- there are two sites (MA05-47 and MA05-60) within SPZ 2; there are potable groundwater wells within the vicinity of these sites.

Table 5: Baseline CSM and qualitative risk assessment for former and current railway land and rail goods yard / depots (on-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
Potential contamination from made ground and from former and current activities: contaminants primarily comprising heavy metals, PAH, asbestos, fuel and lubricating oils, petroleum and diesel range hydrocarbons, ash, potentially low levels of ground gas (methane, carbon dioxide)	Existing site users - Railway workers	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Unlikely	Medium	Low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Unlikely	Medium	Low
	Adjacent site users - Residential and commercial	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Unlikely	Medium	Low
	Controlled waters - groundwater	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood to unlikely	Negligible to medium	Very low to low

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Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
	Secondary (undifferentiated) Aquifer – glacial till Secondary A Aquifer – Middle Coal Measures Principal Aquifer - Chester Formation, Wilmslow Sandstone Formation, Helsby Sandstone Formation				
	Controlled waters - groundwater SPZ 2 Principal Aquifer - Chester Formation		Unlikely	Severe	Moderate/low
	Controlled waters - surface water: Nan Holes Brook, Windy Bank Brook, Coffin Lane Brook, Small Brook, Glaze Brook, Leeds and Liverpool Canal, springs, ponds	Lateral migration through groundwater Direct runoff from site	Unlikely to likely	Minor to negligible	Moderate/low to very low
	Ecological designations - SSSI and SAC- Abram Flashes SSSI and SAC- Holcroft Moss SAC – Manchester Mosses LWS - Woods by Holcroft Moss, Silver Lane Ponds, Glazebrook Moss, Eleven Acre Common SBI – Edge Green	Vertical and lateral migration, direct contact	Likely to unlikely	Minor to negligible	Moderate/low to very low

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Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
	Property receptors - buildings, foundations and services (adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
		Exposure to explosive gases	Unlikely	Minor	Very low

Notes/assumptions:

- sites assessed without construction of the Proposed Scheme;
- see BID document Chapter 2 Table 2 for details of receptors relevant to groups of sites;
- for groups of sites where different sensitivities of receptors have been identified, a risk range has been provided based on the least and most sensitive receptors;
- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed;
- Holcroft Moss SSSI is part of the Manchester Mosses SAC; and
- two sites are situated within SPZ 2 (MA05-59 and MA05-114); there are potable groundwater abstractions within the vicinity of these sites.

Table 6: Baseline CSM and qualitative risk assessment for Works (on-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
Potential contamination from made ground and current site activities: metals, asbestos, PAH petroleum and diesel range hydrocarbons and potentially low levels of ground gas (methane and carbon dioxide)	Existing site users - Industrial staff and visitors	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Low likelihood	Medium	Moderate/low
		Inhalation of ground gases	Unlikely	Medium	Low
	Adjacent site users - Residential and commercial	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Unlikely	Medium	Low

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Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
	Controlled waters - groundwater Secondary (undifferentiated) - Aquifer - glacial till Principal Aquifer - Chester Formation SPZ 2	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood to unlikely	Negligible to severe	Very low moderate/low
	Controlled waters - surface water: Glaze Brook, ponds	Lateral migration through groundwater Direct runoff from site	Unlikely	Minor	Very low
	Ecological designations - Silver Lane Ponds (LWS)	Vertical and lateral migration, direct contact	Unlikely	Minor	Very Low
	Property receptors - buildings, foundations and services (existing and adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
		Exposure to explosive gases	Unlikely	Medium	Low

Notes/assumptions:

- site assessed without construction of the Proposed Scheme;
- see BID document Chapter 2 Table 4 for details of receptors relevant to the site;
- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed; and
- the site is situated within SPZ 2 and there is a potable groundwater abstraction within the vicinity of this site.

Table 7: Baseline CSM and qualitative risk assessment for former MoD land (on-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
Potential contamination from made ground and former activities including asbestos, explosive ordnance,	Existing site users - Residential, walkers	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Low likelihood	Medium	Moderate/low

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Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
radiological sources, metals, petroleum and diesel range hydrocarbons and potentially low levels of ground gas (methane and carbon dioxide)		Inhalation of ground gases	Unlikely	Medium	Low
	Adjacent site users - Residential and school users	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Unlikely	Medium	Low
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till Principal Aquifer - Chester Formation SPZ 2	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood to unlikely	Negligible to severe	Very low to moderate/low
	Controlled waters - surface water: ponds	Lateral migration through groundwater Direct runoff from site	Unlikely	Negligible	Very low
	Property receptors – buildings, foundations and services (existing and adjacent) and school building (adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
		Exposure to explosive gases	Unlikely	Medium	Low

Notes/assumptions:

- site assessed without construction of the Proposed Scheme;
- see BID document Chapter 2 Table 4 for details of receptors to the site;
- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed; and
- a potable groundwater well is in the vicinity of the site.

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Table 8: Baseline CSM and qualitative risk assessment for former sewage filter beds (on-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
Contamination associated with made ground and former site activities, including organic waste, cleaning chemicals, PAH, petroleum and diesel range hydrocarbons. Low levels of ground gas	Existing site users - Commercial staff and visitors	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Unlikely	Medium	Low
	Adjacent site users - Commercial	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Unlikely	Medium	Low
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer- glacial till Principal Aquifer - Chester Formation	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood to unlikely	Negligible to medium	Very low to low
			Unlikely	Severe	Moderate/low
	Controlled waters - groundwater SPZ 2 Principal Aquifer - Chester Formation				
Controlled waters - surface water: Glaze Brook, pond	Lateral migration through groundwater	Unlikely	Minor	Very low	
	Direct runoff from site				
	Direct contact with contaminated soils and waters	Unlikely	Minor	Very low	

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Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
	Property receptors - buildings, foundations and services (adjacent)	Exposure to explosive gases	Low likelihood	Minor	Low

Notes/assumptions:

- site assessed without construction of the Proposed Scheme;
- see BID document Chapter Section 2 Table 6 for details of receptors to the site;
- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed; and
- the site is within the vicinity of a potable groundwater abstraction.

Table 9: Baseline CSM and qualitative risk assessment for former tanks (on-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
Potential contamination from made ground and former activities including petroleum and diesel range hydrocarbons, VOC and SVOC, asbestos, and low levels of ground gases (carbon dioxide and methane)	Existing site users - Industrial and commercial staff and visitors	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases and vapours	Unlikely	Medium	Low
	Adjacent site users - Commercial	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases and vapours	Unlikely	Medium	Low
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood to unlikely	Negligible to medium	Very low to low

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Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
	Principal Aquifer – Chester Formation				
	Controlled waters - groundwater SPZ 2 Principal Aquifer - Chester Formation		Unlikely	Severe	Moderate/low
	Controlled waters - surface water: Glaze Brook	Lateral migration through groundwater Direct runoff from site	Unlikely	Minor	Very low
	Property receptors - buildings, foundations and services (adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
		Exposure to explosive gases	Unlikely	Minor	Very low

Notes/assumptions:

- sites assessed without construction of the Proposed Scheme;
- see BID document Chapter 2 Table 7 for details of receptors relevant to groups of sites;
- for groups of sites where different sensitivities of receptors have been identified, a risk range has been provided based on the least and most sensitive receptors;
- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed;
- potable groundwater abstractions are within the vicinity of both sites; and
- existing site users relate to MA05-51 only.

Table 10: Baseline CSM and qualitative risk assessment for business park (on-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
Potential contamination from made ground and	Existing site users -	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low

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Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
current activities: contaminants including metals, PAH, petroleum and diesel range hydrocarbons, asbestos and low levels of ground gas (carbon dioxide and methane)	Commercial staff and visitors	Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Unlikely	Medium	Low
	Adjacent site users - Commercial, school users	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases and vapours	Unlikely	Minor	Low
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till Principal Aquifer - Chester Formation SPZ 2	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood to unlikely	Negligible to severe	Very low to moderate/low
	Controlled waters - surface water: Glaze Brook	Lateral migration through groundwater Direct runoff from site	Unlikely	Minor	Very low
	Property receptors - buildings, foundations and services (existing and adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
		Exposure to explosive gases	Unlikely	Minor	Very low

Notes/assumptions:

- site assessed without construction of the Proposed Scheme;

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- see BID document Chapter Section 2 Table 8 for details of receptors to the site;
- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed; and
- potable groundwater abstractions are within the vicinity the site.

Table 11: Baseline CSM and qualitative risk assessment for mine shafts (on-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
Potential contamination from former activities: contaminants primarily including metals, metalloids, inorganic ions, organic contaminants, acids/alkalis, PAH, hydrocarbons, asbestos and mine gas	Adjacent site users – Residential	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Low likelihood	Severe	Moderate
	Controlled waters – groundwater: Secondary (undifferentiated) Aquifer - glacial till Secondary B Aquifer - Manchester Marls Formation	Leaching, vertical and lateral migration from contaminated soils and waters	Likely	Negligible to minor	Low to moderate/low
		Controlled waters - surface water: Ponds, Nan Holes Brook	Lateral migration through groundwater Direct runoff from site	Unlikely	Minor
	Property receptors - buildings, foundations and services (adjacent)	Direct contact with contaminated soils and waters	Unlikely	Medium	Low
		Exposure to explosive gases	Low likelihood	Medium	Moderate/low
Potential contamination from made ground and	Existing site users -	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low

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Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
current activities: contaminants including metals, PAH, petroleum and diesel range hydrocarbons, asbestos and low levels of ground gas (carbon dioxide and methane)	Commercial staff and visitors	Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Unlikely	Medium	Low
	Adjacent site users - Commercial, school users	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases and vapours	Unlikely	Minor	Low
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till Principal Aquifer - Chester Formation SPZ 2	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood to unlikely	Negligible to severe	Very low to moderate/low
	Controlled waters - surface water: Glaze Brook	Lateral migration through groundwater Direct runoff from site	Unlikely	Minor	Very low
	Property receptors - buildings, foundations and services (existing and adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
		Exposure to explosive gases	Unlikely	Minor	Very low

Notes/assumptions:

- sites assessed without construction of the Proposed Scheme;

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- see BID document Chapter 2 Table 9 for details of receptors relevant to groups of sites;
- for groups of sites where different sensitivities of receptors have been identified, a risk range has been provided based on the least and most sensitive receptors; and
- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed.

Table 12: Baseline CSM and qualitative risk assessment for historical landfills (off-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase	
Potential contamination in landfilled material including industrial landfill waste (special and liquid sludge), metals, asbestos, petroleum and diesel range hydrocarbons, VOC and SVOC, potentially medium to high levels of ground gas and landfill gas (methane, carbon dioxide, hydrogen sulphide)	Existing site users - Walkers, commercial staff and visitors, residential and public building users	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low	
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Low likelihood	Medium	Moderate/low	
		Inhalation of ground gases	Unlikely	Severe	Moderate/low	
	Adjacent site users - Residential, commercial	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low	
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Low likelihood	Medium	Moderate/low	
		Inhalation of ground gases	Unlikely	Severe	Moderate/low	
	Controlled waters – groundwater: Secondary (undifferentiated) Aquifer - glacial till Secondary A Aquifer – Middle Coal Measures Principal Aquifer – Helsby Sandstone Formation		Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood	Negligible to Medium	Moderate/low to very low

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Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
	Controlled waters - surface water: Ponds, Coffin Lane Brook	Lateral migration through groundwater Direct runoff from site	Low likelihood to unlikely	Negligible to minor	Very low
	Ecological designations LWS - Silver Lane Ponds	Vertical and lateral migration, direct contact	Likely	Minor	Moderate/low
		Exposure to ground gases/vapours	Low likelihood	Minor to negligible	Low to very low
	Property receptors - buildings, foundations and services (existing and adjacent)	Direct contact with contaminated soils and waters	Unlikely	Severe	Moderate/low
		Exposure to explosive gases	Unlikely	Severe	Moderate/low
Potential contamination from former activities: contaminants primarily including metals, metalloids, inorganic ions, organic contaminants, acids/alkalis, PAH, hydrocarbons, asbestos and mine gas	Adjacent site users – Residential	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Low likelihood	Severe	Moderate
	Controlled waters – groundwater: Secondary (undifferentiated) Aquifer - glacial till Secondary B Aquifer - Manchester Marls Formation	Leaching, vertical and lateral migration from contaminated soils and waters	Likely	Negligible to minor	Low to moderate/low
	Controlled waters - surface water: Ponds, Nan Holes Brook	Lateral migration through groundwater Direct runoff from site	Unlikely	Minor	Low

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Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
	Property receptors - buildings, foundations and services (adjacent)	Direct contact with contaminated soils and waters	Unlikely	Medium	Low
		Exposure to explosive gases	Low likelihood	Medium	Moderate/low
Potential contamination from made ground and current activities: contaminants including metals, PAH, petroleum and diesel range hydrocarbons, asbestos and low levels of ground gas (carbon dioxide and methane)	Existing site users - Commercial staff and visitors	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Unlikely	Medium	Low
	Adjacent site users - Commercial, school users	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases and vapours	Unlikely	Minor	Low
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till Principal Aquifer - Chester Formation SPZ 2	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood to unlikely	Negligible to severe	Very low to moderate/low
	Controlled waters - surface water: Glaze Brook	Lateral migration through groundwater Direct runoff from site	Unlikely	Minor	Very low

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Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
	Property receptors - buildings, foundations and services (existing and adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
		Exposure to explosive gases	Unlikely	Minor	Very low

Notes/assumptions:

- sites assessed without construction of the Proposed Scheme;
- see BID document Chapter 2 Table 10 for details of receptors relevant to groups of sites;
- for groups of sites where different sensitivities of receptors have been identified, a risk range has been provided based on the least and most sensitive receptors; and
- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed.

Table 13: Baseline CSM and qualitative risk assessment for former and current railway land (off-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
Potential contamination from made ground and from former and current activities: contaminants primarily comprising heavy metals, PAH, asbestos, fuel and lubricating oils, petroleum and diesel range hydrocarbons, ash, potentially low levels of ground gas (methane, carbon dioxide)	Existing site users - Commercial staff and visitors and residential	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Unlikely	Medium	Low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Unlikely	Medium	Low
	Adjacent site users - Commercial and residential	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Unlikely	Medium	Low
	Controlled waters - groundwater		Low likelihood to	Negligible to medium	Very low to low

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Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
	Secondary (undifferentiated) Aquifer - glacial till Secondary A Aquifer – Manchester Marls Formation, Pennine Middle Coal Measures Principal Aquifer - Chester Formation, Kinnerton Sandstone Formation, Collyhurst Sandstone Formation	Leaching, vertical and lateral migration from contaminated soils and waters	unlikely		
	Controlled waters - groundwater SPZ 2 Principal Aquifer - Chester Formation		Unlikely	Severe	Moderate/low
	Controlled waters - surface water: Spring, ponds, Small Brook, Windy brook	Lateral migration through groundwater Direct runoff from site	Low likelihood	Medium	Moderate/low
	Ecological designations- SSSI and SAC- Holcroft Moss LWS – Silver Lane Pond, Eleven Acre Common, Woods by Holcroft Moss, LNR - Pennington Flash	Vertical and lateral migration, direct contact	Likely to low likelihood	Negligible to minor	Low
	Property receptors - buildings, foundations and services (existing and adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
		Exposure to explosive gases	Unlikely	Minor	Very low

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Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
Potential contamination from made ground and from former and current activities: contaminants primarily comprising heavy metals, PAH, asbestos, fuel and lubricating oils, petroleum and diesel range hydrocarbons, ash, potentially low levels of ground gas (methane, carbon dioxide)	Existing site users - Commercial staff and visitors and residential	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Unlikely	Medium	Low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Unlikely	Medium	Low
	Adjacent site users - Commercial and residential	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Unlikely	Medium	Low
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till Secondary A Aquifer - Manchester Marls Formation, Pennine Middle Coal Measures Principal Aquifer - Chester Formation, Kinnerton Sandstone Formation, Collyhurst Sandstone Formation	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood to unlikely	Negligible to medium	Very low to low
			Unlikely	Severe	Moderate/low

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Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
	SPZ 2 Principal Aquifer - Chester Formation				
	Controlled waters - surface water: Spring, ponds, Small Brook, Windy brook	Lateral migration through groundwater Direct runoff from site	Low likelihood	Medium	Moderate/low
	Ecological designations- SSSI and SAC- Holcroft Moss LWS - Silver Lane Pond, Eleven Acre Common, Woods by Holcroft Moss, LNR - Pennington Flash	Vertical and lateral migration, direct contact	Likely to low likelihood	Negligible to minor	Low
	Property receptors - buildings, foundations and services (existing and adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
		Exposure to explosive gases	Unlikely	Minor	Very low

Notes/assumptions:

- sites assessed without construction of the Proposed Scheme;
- see BID document Chapter 2 Table 11 for details of receptors relevant to groups of sites;
- for groups of sites where different sensitivities of receptors have been identified, a risk range has been provided based on the least and most sensitive receptors;
- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed;
- Holcroft Moss SSSI is part of the Manchester Mosses SAC; and
- sites MA05-113 and MA05-116 are with a SPZ 2; there are numerous potable and commercial abstractions wells in the vicinity.

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Table 14: Baseline CSM and qualitative risk assessment for former collieries (off-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
Potential contamination from former mining activities – Acids and alkalis, metals, hydrocarbons, low levels of ground gas and mine gas (carbon dioxide, methane, hydrogen sulphide)	Existing site users - Residential and commercial staff and visitors	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Low likelihood	Medium	Moderate/low
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till Secondary A Aquifer – Middle Coal Measures Principal Aquifer – Collyhurst Sandstone Formation	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood	Negligible to medium	Very low to moderate/low
			Controlled waters: - surface water: Leeds and Liverpool Canal, Nan Holes Brook, Coffin Lane Brook, multiple springs	Lateral migration through groundwater Direct runoff from site	Likely to unlikely
	Ecological designations- SSSI and LWS- Abram Flashes, LNR - Bryn Marsh and Ince Moss SBI – Edge Green	Vertical and lateral migration, direct contact	Likely to low likelihood	Negligible to minor	Low
	Property receptors - buildings, foundations and services (existing and adjacent)	Direct contact with contaminated soils and waters	Unlikely	Medium	Low
		Exposure to explosive/mine gases	Unlikely	Medium	Low

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Notes/assumptions:

- sites assessed without construction of the Proposed Scheme;
- see BID document Chapter 2 Table 12 for details of receptors relevant to groups of sites;
- for groups of sites where different sensitivities of receptors have been identified, a risk range has been provided based on the least and most sensitive receptors; and
- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed.

Table 15: Baseline CSM and qualitative risk assessment for current and former works (off-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
Potential contamination in made ground and from current – hydrocarbons including waste oils, solvents, heavy metals, PAH, low levels of ground gases and asbestos	Existing site users - Industrial and commercial staff and visitors	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Low likelihood	Medium	Moderate/low
	Adjacent site users - Residential	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Low likelihood	Medium	Moderate/low
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer- glacial till Principal Aquifer - Wilmslow Sandstone Formation	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood to unlikely	Negligible to medium	Very low to Low
			Unlikely	Severe	Moderate/low
	Controlled waters - groundwater SPZ 2				

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Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
	Principal Aquifer - Chester Formation				
	Controlled waters - surface water: ponds	Lateral migration through groundwater Direct runoff from site	Unlikely	Negligible	Very low
	Ecological designations- Silver Lane Ponds LWS	Vertical and lateral migration, direct contact	Unlikely	Minor	Very low
	Property receptors - buildings, foundations and services (existing and adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
		Exposure to explosive gases	Unlikely	Minor	Very low

Notes/assumptions:

- site assessed without construction of the Proposed Scheme;
- see BID document Chapter Section 2 Table 13 for details of receptors to the site;
- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed; and
- Potable groundwater abstraction within vicinity of the site.

Table 16: Baseline CSM and qualitative risk assessment for former animal processing site (off-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
Potential contamination from current and former activities - including hydrocarbons including waste oils, heavy metals, PAH, potentially asbestos and ground gases	Existing site users - Residential	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Low likelihood	Medium	Moderate/low
	Controlled waters - groundwater	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood	Severe	Moderate

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Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
	Principal Aquifer - Chester Formation SPZ 2				
	Controlled waters - surface water: Glaze Brook	Lateral migration through groundwater Direct runoff from site	Likely	Minor	Moderate/low
	Property receptors - buildings, foundations and services (existing)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
		Exposure to explosive gases	Unlikely	Minor	Very low

Notes/assumptions:

- site assessed without construction of the Proposed Scheme;
- see BID document Chapter Section 2 Table 14 for details of receptors to the site; and
- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed.

Table 17: Baseline CSM and qualitative risk assessment for former sewage filter beds (off-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
Potential contamination from sewage works contaminants primarily comprising metals and metalloids, inorganic ions, organic contaminants, acids/alkalis, microorganisms, fuel oils, acids, herbicides and pesticides and	Existing site users - Commercial staff and visitors	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of dusts and vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Low likelihood	Medium	Moderate/low
	Adjacent site users - Residential	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of dusts and vapours from contaminated waters	Unlikely	Medium	Low

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Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
potential low levels of ground gas		Inhalation of ground gases	Low likelihood	Medium	Moderate/low
	Controlled waters – groundwater Principal Aquifer – Chester Formation SPZ 2	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood	Severe	Moderate
	Controlled waters - surface water: Pond, Glaze Brook	Lateral migration through groundwater Direct runoff from site	Likely	Negligible to minor	Moderate/low to low
	Property receptors - buildings, foundations and services (existing and adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
		Exposure to explosive gases	Low likelihood	Minor	Low

Notes/assumptions:

- site assessed without construction of the Proposed Scheme;
- see BID document Section 2 Table 15 for details of receptors relevant to the site; and
- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed.

Table 18: Baseline CSM and qualitative risk assessment for a former scrap yard and current garage workshop (off-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
Potential contamination from made ground and former activities: contaminants primarily comprising metals and	Existing site users - Commercial staff and visitors	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of dusts and vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Low likelihood	Medium	Moderate/low

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Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
metalloids, inorganic contaminants including acids and alkalis and cyanides, organics including fuel oils, solvents, hydrocarbons, asbestos, low levels of ground gas	Adjacent site users - Commercial and residential	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of dusts and vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Low likelihood	Medium	Moderate/low
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till Principal Aquifer – Chester Formation	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood to unlikely	Negligible to medium	Very low to low
			Unlikely	Severe	Moderate/low
	Controlled waters - groundwater SPZ 2 Principal Aquifer – Chester Formation				
	Controlled waters - surface water: Ponds	Lateral migration through groundwater Direct runoff from site	Low likelihood	Negligible	Very low
	Property receptors - buildings, foundations and services (existing and adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Negligible	Very low
Exposure to explosive gases		Unlikely	Medium	Low	

Notes/assumptions:

- sites assessed without construction of the Proposed Scheme;
- see BID document Chapter 2 Table 16 for details of receptors relevant to groups of sites;
- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed; and
- there are potable groundwater abstractions within the vicinity of both sites.

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Table 19: Baseline CSM and qualitative risk assessment for farms (off-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase	
Potential contamination from made ground and former and current site activities including potential chemical storage tanks, petroleum and diesel range hydrocarbons, pesticides, fungicides, asbestos, low levels of ground gas (carbon dioxide and methane)	Existing site users - Residential and commercial staff and visitors	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low	
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low	
		Inhalation of ground gases	Low likelihood	Medium	Moderate/low	
	Adjacent site users - Residential, commercial	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low	
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low	
		Inhalation of ground gases	Low likelihood	Medium	Moderate/low	
	Controlled waters - groundwater Secondary (undifferentiated) -Aquifer - glacial till Secondary A Aquifer – Pennine Middle Coal Measures Principal Aquifer -Wilmslow Sandstone Formation	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood to unlikely	Negligible to medium	Very low to low	
			Lateral migration through groundwater Direct runoff from site	Likely to unlikely	Negligible to medium	Low
			Ecological designations-	Vertical and lateral migration, direct contact	Low likelihood	Minor

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Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
	SSSI and LWS- Abram Flashes,				
	Property receptors - buildings, foundations and services (existing and adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
		Exposure to explosive gases	Low likelihood	Minor	Low

Notes/assumptions:

- sites assessed without construction of the Proposed Scheme;
- see BID document Section 2 Table 17 for details of receptors relevant to groups of sites;
- for groups of sites where different sensitivities of receptors have been identified, a risk range has been provided based on the least and most sensitive receptors; and
- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed.

Table 20: Baseline CSM and qualitative risk assessment for former and current tanks (off-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
Potential contamination from former and current activities: contaminants primarily comprising petroleum and diesel range hydrocarbons, low levels of ground gas	Existing site users - Commercial staff and visitors and residential	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Low likelihood	Medium	Moderate/low
		Inhalation of ground gases	Low likelihood	Medium	Moderate/low
	Adjacent site users - Commercial, residential	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Low likelihood	Medium	Moderate/low

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Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till Principal Aquifer - Wilmslow Sandstone Formation, Chester Formation	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood to unlikely	Negligible to medium	Very low to low
	Controlled waters - groundwater SPZ 1 and SPZ 2 Principal - Wilmslow Sandstone Formation		Unlikely	Severe	Moderate/low
	Controlled waters - surface water: Ponds, Small Brook, Glaze Brook	Lateral migration through groundwater Direct runoff from site	Low likelihood to unlikely	Negligible to minor	Very low
	Property receptors - buildings, foundations and services (existing and adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
		Exposure to explosive gases	Low likelihood	Minor	Low

Notes/assumptions:

- sites assessed without construction of the Proposed Scheme;
- for groups of sites where different sensitivities of receptors have been identified, a risk range has been provided based on the least and most sensitive receptors;
- see BID document Section 2 Table 18 for details of receptors relevant to groups of sites; and
- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed.

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Table 21: Baseline CSM and qualitative risk assessment for business park (off-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
Potential contamination from made ground and current activities: contaminants including metals, PAH, petroleum and diesel range hydrocarbons, asbestos and low levels of ground gas (carbon dioxide and methane)	Existing site users - Commercial staff and visitors	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Unlikely	Medium	Low
	Adjacent site users - Commercial and school users	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases and vapours	Unlikely	Medium	Low
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till Principal Aquifer - Chester Formation	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood to unlikely	Negligible to medium	Very low to low
			Unlikely	Severe	Moderate/low
		Controlled waters - groundwater SPZ 2 Principal - Chester Formation	Lateral migration through groundwater	Unlikely	Negligible
Controlled waters - surface water: Glaze Brook	Lateral migration through groundwater	Unlikely	Negligible	Very low	

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Source	Receptor	Pathway	Probability	Consequence	Risk at baseline phase
		Direct runoff from site			
	Property receptors - buildings, foundations and services (existing and adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
		Exposure to explosive gases	Unlikely	Minor	Very low

Notes/assumptions:

- site assessed without construction of the Proposed Scheme;
- see BID document Section 2 Table 19 for details of receptors to the site;
- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed; and
- potable groundwater abstractions are within the vicinity the site.

3.3 Construction risk assessment

Table 22: Construction CSM and qualitative risk assessment for historical landfills (on-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase
Potential contamination in landfilled material including industrial landfill waste (special and liquid sludge), metals, asbestos, petroleum and diesel range hydrocarbons, VOC and SVOC, potential medium to high levels of ground gas and landfill gas	Existing site users - Workers and visitors walkers	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapours from contaminated waters	N/A	N/A	N/A
		Inhalation of ground gases	N/A	N/A	N/A
	Adjacent site users - Residential properties	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low

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Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase
(methane, carbon dioxide, hydrogen sulphide)		Inhalation of ground gases	Unlikely	Severe	Moderate/low
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till Secondary A Aquifer - Middle Coal Measures Principal Aquifer - Helsby Sandstone Formation, Collyhurst Sandstone Formation	Leaching, vertical and lateral migration from contaminated soils and waters	Likely to low likelihood	Negligible to medium	Low to moderate/low
	Controlled waters - groundwater SPZ 2 Principal Aquifer - Chester Formation		Low likelihood	Severe	Moderate
	Controlled waters - surface water: Leeds and Liverpool Canal, Small Brook, Hey Brook, Springs	Lateral migration through groundwater Direct runoff from site	Unlikely to likely	Medium to minor	Low to moderate
	Ecological designations - SSSI and LWS- Abram Flashes	Vertical and lateral migration, direct contact	Likely to low likelihood	Minor to negligible	Moderate/low to very low
	LWS - Silver Lane Ponds, Gorse Covert Mounds, Pestfurlong Moss	Exposure to ground gases/vapours	Low likelihood	Minor to negligible	Low to very low
	Property receptors - buildings, foundations and services (adjacent)	Direct contact with contaminated soils and waters	Unlikely	Severe	Moderate/low
		Exposure to explosive gases	Unlikely	Severe	Moderate/low

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Notes/assumptions:

- *site investigation will be required prior to construction of the Proposed Scheme;*
- *sites which lie within the land required for construction of the Proposed Scheme may require remediation;*
- *sites located on the land required for the construction of the Proposed Scheme are assumed to be unoccupied during construction, therefore on-site construction risks to human health and property receptors are not assessed and are labelled as not applicable (N/A);*
- *it is assumed that existing on-site properties will be demolished during the construction stage and so risks to them have not been assessed;*
- *remediation will be restricted to mitigation of land quality effects arising from the Proposed Scheme;*
- *existing site users and adjacent site users in the receptor column refer to users at or near to the potentially contaminated area;*
- *for groups of sites where different sensitivities of receptors have been identified, a risk range has been provided based on the least and most sensitive receptors;*
- *during construction, standard mitigation procedures are assumed to be implemented in accordance with the draft CoCP (Volume 5, Appendix CT-002-00000). Construction workers have been excluded from assessment due to the use of PPE/risk management protocols and in accordance with the SMR;*
- *while the draft CoCP will make it unlikely that there will be adverse consequences associated with construction e.g. the control of surface runoff and dust, it is considered that there may still be temporary minor adverse effects during the construction period from ground disturbance in these areas. The adoption of the draft CoCP generally results in a low to unlikely probability of a consequence, but in some cases the actual consequence may temporarily increase from that defined at baseline; and*
- *only a minor portion of MA05-05 is within the CCB; receptors outside of the CCB will remain during construction.*

Table 23: Construction CSM and qualitative risk assessment for former and current farms (on-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase
Potential contamination from made ground and former and current site activities including potential chemical storage tanks, petroleum and diesel range hydrocarbons, pesticides, fungicides, asbestos, low levels of	Existing site users - residential and commercial staff and visitors	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapours from contaminated waters	N/A	N/A	N/A
		Inhalation of ground gases	N/A	N/A	N/A
	Adjacent site users - residential	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low

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Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase
ground gas (carbon dioxide and methane)		Inhalation of ground gases	Unlikely	Medium	Low
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till Principal Aquifer - Wilmslow Sandstone Formation	Leaching, vertical and lateral migration from contaminated soils and waters	Likely to low likelihood	Negligible to medium	Low to moderate/low
			Low likelihood	Severe	Moderate
	Controlled waters - surface water: Ponds, Glaze Brook	Lateral migration through groundwater Direct runoff from site	Low likelihood to Unlikely	Medium to negligible	Moderate/low to very low
	Property receptors - buildings, foundations and services (adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
		Exposure to explosive gases	Unlikely	Minor	Very low

Notes/assumptions:

- site investigation will be required prior to construction of the Proposed Scheme;
- sites which lie within the land required for construction of the Proposed Scheme may require remediation;
- sites located on the land required for the construction of the Proposed Scheme are assumed to be unoccupied during construction, therefore on-site construction risks to human health and property receptors are not assessed and are labelled as not applicable (N/A);
- it is assumed that existing on-site properties will be demolished during the construction stage and so risks to them have not been assessed;
- remediation will be restricted to mitigation of land quality effects arising from the Proposed Scheme;
- existing site users and adjacent site users in the receptor column refer to users at or near to the potentially contaminated area;
- for groups of sites where different sensitivities of receptors have been identified, a risk range has been provided based on the least and most sensitive receptors;

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- during construction, standard mitigation procedures are assumed to be implemented in accordance with the draft CoCP. Construction workers have been excluded from assessment due to the use of PPE/risk management protocols and in accordance with the SMR;
- while the draft CoCP will make it unlikely that there will be adverse consequences associated with construction e.g. the control of surface runoff and dust, it is considered that there may still be temporary minor adverse effects during the construction period from ground disturbance in these areas. The adoption of the draft CoCP generally results in a low to unlikely probability of a consequence, but in some cases the actual consequence may temporarily increase from that defined at baseline; and
- buildings for most of the sites are scheduled for demolition, with the exception MA05-47. Only a part of the farm is on-site (construction of a new trackway); and this on-site area will be isolated from the operation of the farm during construction.

Table 24: Construction CSM and qualitative risk assessment for former and current former and current railway land and rail goods yard / depots (on-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase
Potential contamination from made ground and from former and current activities: contaminants primarily comprising heavy metals, PAH, asbestos, fuel and lubricating oils, petroleum and diesel range hydrocarbons, ash, potentially low levels of ground gas (methane, carbon dioxide)	Existing site users - Railway workers	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapours from contaminated waters	N/A	N/A	N/A
		Inhalation of ground gases	N/A	N/A	N/A
	Adjacent site users - Residential and commercial	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Unlikely	Medium	Low
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer – glacial till Secondary A Aquifer – Middle Coal Measures	Leaching, vertical and lateral migration from contaminated soils and waters	Likely to low likelihood	Negligible to medium	Low to moderate/low

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Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase
	Principal Aquifer - Chester Formation, Wilmslow Sandstone Formation, Helsby Sandstone Formation				
	Controlled waters - groundwater SPZ 2 Principal Aquifer - Chester Formation		Low likelihood	Severe	Moderate
	Controlled waters - surface water: Nan Holes Brook, Windy Bank Brook, Coffin Lane Brook, Small Brook, Glaze Brook, Leeds and Liverpool Canal, springs, ponds	Lateral migration through groundwater Direct runoff from site	Unlikely to likely	Minor to negligible	Moderate/low to very low
	Ecological designations - SSSI and SAC- Abram Flashes SSSI and SAC -Holcroft Moss SAC - Manchester Mosses LWS - Woods by Holcroft Moss Silver Lane Ponds, Glazebrook Moss, Eleven Acre Common SBI - Edge Green	Vertical and lateral migration, direct contact	Likely to unlikely	Minor to negligible	Moderate/low to very low
	Property receptors - buildings, foundations and services (adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
		Exposure to explosive gases	Unlikely	Minor	Very low

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Notes/assumptions:

- *site investigation will be required prior to construction of the Proposed Scheme;*
- *sites which lie within the land required for construction of the Proposed Scheme may require remediation;*
- *sites located on the land required for the construction of the Proposed Scheme are assumed to be unoccupied during construction, therefore on-site construction risks to human health and property receptors are not assessed and are labelled as not applicable (N/A);*
- *it is assumed that existing on-site properties will be demolished during the construction stage and so risks to them have not been assessed;*
- *remediation will be restricted to mitigation of land quality effects arising from the Proposed Scheme;*
- *existing site users and adjacent site users in the receptor column refer to users at or near to the potentially contaminated area;*
- *for groups of sites where different sensitivities of receptors have been identified, a risk range has been provided based on the least and most sensitive receptors;*
- *during construction, standard mitigation procedures are assumed to be implemented in accordance with the draft CoCP. Construction workers have been excluded from assessment due to the use of PPE/risk management protocols and in accordance with the SMR;*
- *while the draft CoCP will make it unlikely that there will be adverse consequences associated with construction e.g. the control of surface runoff and dust, it is considered that there may still be temporary minor adverse effects during the construction period from ground disturbance in these areas. The adoption of the draft CoCP generally results in a low to unlikely probability of a consequence, but in some cases the actual consequence may temporarily increase from that defined at baseline;*
- *Holcroft Moss SSSI is part of the Manchester Mosses SAC; and*
- *current railway land will not be removed during construction but will have risk mitigated.*

Table 25: Construction CSM and qualitative risk assessment for Works (on-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase
Potential contamination from made ground and current site activities: metals, asbestos, PAH petroleum and diesel range hydrocarbons and potentially low levels of ground gas (methane and carbon dioxide)	Existing site users - Industrial staff and visitors	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapours from contaminated waters	N/A	N/A	N/A
		Inhalation of ground gases	N/A	N/A	N/A
	Adjacent site users - Residential and commercial	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low

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Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase
		Inhalation of ground gases	Unlikely	Medium	Low
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till Principal Aquifer - Chester Formation SPZ 2	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood	Negligible to severe	Low to moderate
	Controlled waters - surface water: Glaze Brook, ponds	Lateral migration through groundwater Direct runoff from site	Unlikely	Minor	Very low
	Ecological designations - Silver Lane Ponds	Vertical and lateral migration, direct contact	Unlikely	Minor	Very Low
	Property receptors - buildings, foundations and services (adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
		Exposure to explosive gases	Unlikely	Medium	Low

Notes/assumptions:

- site investigation will be required prior to construction of the Proposed Scheme;
- sites which lie within the land required for construction of the Proposed Scheme may require remediation;
- sites located on the land required for the construction of the Proposed Scheme are assumed to be unoccupied during construction, therefore on-site construction risks to human health receptors are labelled as not applicable (N/A);
- it is assumed that existing on-site properties will be demolished during the construction stage and so risks to them have not been assessed;
- remediation will be restricted to mitigation of land quality effects arising from the Proposed Scheme;
- existing site users and adjacent site users in the receptor column refer to users at or near to the potentially contaminated area;
- during construction, standard mitigation procedures are assumed to be implemented in accordance with the draft CoCP. Construction workers have been excluded from assessment due to the use of PPE/risk management protocols and in accordance with the SMR; and

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• while the draft CoCP will make it unlikely that there will be adverse consequences associated with construction e.g. the control of surface runoff and dust, it is considered that there may still be temporary minor adverse effects during the construction period from ground disturbance in these areas. The adoption of the draft CoCP generally results in a low to unlikely probability of a consequence, but in some cases the actual consequence may temporarily increase from that defined at baseline.

Table 26: Construction CSM and qualitative risk assessment for former MoD land (on-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase
Potential contamination from made ground and former activities including asbestos, explosive ordnance, radiological sources, metals, petroleum and diesel range hydrocarbons and potentially low levels of ground gas (methane and carbon dioxide)	Existing site users - Residential, walkers	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Unlikely	Severe	Moderate/low
	Adjacent site users - Residential and school users	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Unlikely	Medium	Low
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till Principal Aquifer - Chester Formation SPZ 2	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood	Negligible to severe	Very low to moderate
		Controlled waters - surface water: ponds	Lateral migration through groundwater Direct runoff from site	Unlikely	Negligible
	Property receptors - buildings, foundations and services	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low

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Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase
	(existing and adjacent), and adjacent school building.	Exposure to explosive gases	Unlikely	Medium	Low

Notes/assumptions:

- site investigation will be required prior to construction of the Proposed Scheme;
- sites which lie within the land required for construction of the Proposed Scheme may require remediation;
- sites located on the land required for the construction of the Proposed Scheme are assumed to be unoccupied during construction;
- this site includes land required for construction of the Proposed Scheme and areas outside land required for construction of the Proposed Scheme. The existing properties outside of the land required for the Proposed Scheme will be retained as part of construction works and so risks to human health and property receptors are assessed;
- remediation will be restricted to mitigation of land quality effects arising from the Proposed Scheme;
- existing site users and adjacent site users in the receptor column refer to users at or near to the potentially contaminated area;
- during construction, standard mitigation procedures are assumed to be implemented in accordance with the draft CoCP. Construction workers have been excluded from assessment due to the use of PPE/risk management protocols and in accordance with the SMR; and
- while the draft CoCP will make it unlikely that there will be adverse consequences associated with construction e.g. the control of surface runoff and dust, it is considered that there may still be temporary minor adverse effects during the construction period from ground disturbance in these areas. The adoption of the draft CoCP generally results in a low to unlikely probability of a consequence, but in some cases the actual consequence may temporarily increase from that defined at baseline.

Table 27: Construction CSM and qualitative risk assessment for former sewage filter beds (on-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase
Contamination associated with made ground and former site activities, including organic waste, cleaning chemicals, PAH, petroleum and diesel range hydrocarbons. Low levels of ground gas	Existing site users - Commercial staff and visitors	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapours from contaminated waters	N/A	N/A	N/A
		Inhalation of ground gases	N/A	N/A	N/A
	Adjacent site users - Commercial	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low

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Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Unlikely	Medium	Low
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer- glacial till Principal Aquifer - Chester Formation	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood to unlikely	Negligible to medium	Very low to low
	Controlled waters - groundwater SPZ 2 Principal Aquifer - Chester Formation		Unlikely	Severe	Moderate/low
	Controlled waters - surface water: Glaze Brook, pond	Lateral migration through groundwater Direct runoff from site	Unlikely	Minor	Very low
	Property receptors - buildings, foundations and services (adjacent)	Direct contact with contaminated soils and waters	Unlikely	Minor	Very low
		Exposure to explosive gases	Low likelihood	Minor	Low

Notes/assumptions:

- site investigation will be required prior to construction of the Proposed Scheme;
- sites which lie within the land required for construction of the Proposed Scheme may require remediation;
- sites located on the land required for the construction of the Proposed Scheme are assumed to be unoccupied during construction, therefore on-site construction risks to human health receptors are labelled as not applicable (N/A);
- it is assumed that existing on-site properties will be demolished during the construction stage and so risks to them have not been assessed;
- remediation will be restricted to mitigation of land quality effects arising from the Proposed Scheme;
- existing site users and adjacent site users in the receptor column refer to users at or near to the potentially contaminated area;

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- during construction, standard mitigation procedures are assumed to be implemented in accordance with the draft CoCP. Construction workers have been excluded from assessment due to the use of PPE/risk management protocols and in accordance with the SMR;
- while the draft CoCP will make it unlikely that there will be adverse consequences associated with construction e.g. the control of surface runoff and dust, it is considered that there may still be temporary minor adverse effects during the construction period from ground disturbance in these areas. The adoption of the draft CoCP generally results in a low to unlikely probability of a consequence, but in some cases the actual consequence may temporarily increase from that defined at baseline; and
- adjacent commercial human health receptors will be removed in construction but residential will remain.

Table 28: Construction CSM and qualitative risk assessment for former tanks (on-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase	
Potential contamination from made ground and former activities including petroleum and diesel range hydrocarbons, VOC and SVOC, asbestos, and low levels of ground gases (carbon dioxide and methane)	Existing site users - Industrial and commercial staff and visitors	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	N/A	N/A	N/A	
		Direct contact, ingestion, inhalation of vapours from contaminated waters	N/A	N/A	N/A	
		Inhalation of ground gases and vapours	N/A	N/A	N/A	
	Adjacent site users - Commercial	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	N/A	N/A	N/A	
		Direct contact, ingestion, inhalation of vapours from contaminated waters	N/A	N/A	N/A	
		Inhalation of ground gases and vapours	N/A	N/A	N/A	
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer -glacial till Principal Aquifer – Chester Formation		Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood	Negligible to medium	Very low to moderate/low
				Low likelihood	Severe	Moderate

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Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase
	SPZ 2 Principal Aquifer - Chester Formation				
	Controlled waters - surface water: Glaze Brook	Lateral migration through groundwater Direct runoff from site	Unlikely	Minor	Very low
	Property receptors - buildings, foundations and services (adjacent)	Direct contact with contaminated soils and waters	N/A	N/A	N/A
		Exposure to explosive gases	N/A	N/A	N/A

Notes/assumptions:

- site investigation will be required prior to construction of the Proposed Scheme;
- sites which lie within the land required for construction of the Proposed Scheme may require remediation;
- sites located on the land required for the construction of the Proposed Scheme are assumed to be unoccupied during construction, therefore on-site construction risks to human health and property receptors are not assessed and are labelled as not applicable (N/A);
- it is assumed that existing on-site properties will be demolished during the construction stage and so risks to them have not been assessed;
- remediation will be restricted to mitigation of land quality effects arising from the Proposed Scheme;
- existing site users and adjacent site users in the receptor column refer to users at or near to the potentially contaminated area;
- for groups of sites where different sensitivities of receptors have been identified, a risk range has been provided based on the least and most sensitive receptors;
- during construction, standard mitigation procedures are assumed to be implemented in accordance with the draft CoCP. Construction workers have been excluded from assessment due to the use of PPE/risk management protocols and in accordance with the SMR; and
- while the draft CoCP will make it unlikely that there will be adverse consequences associated with construction e.g. the control of surface runoff and dust, it is considered that there may still be temporary minor adverse effects during the construction period from ground disturbance in these areas. The adoption of the draft CoCP generally results in a low to unlikely probability of a consequence, but in some cases the actual consequence may temporarily increase from that defined at baseline.

Table 29: Construction CSM and qualitative risk assessment for business park (on-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase
Potential contamination from made ground and	Existing site users - Commercial staff and visitors	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	N/A	N/A	N/A

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Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase
current activities: contaminants including metals, PAH, petroleum and diesel range hydrocarbons, asbestos and low levels of ground gas (carbon dioxide and methane)		Direct contact, ingestion, inhalation of vapours from contaminated waters	N/A	N/A	N/A
		Inhalation of ground gases	N/A	N/A	N/A
	Adjacent site users - Commercial, school users	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases and vapours	Unlikely	Minor	Low
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till Principal Aquifer - Chester Formation SPZ 2	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood	Negligible to severe	Very low to moderate
	Controlled waters - surface water: Glaze Brook	Lateral migration through groundwater Direct runoff from site	Unlikely	Minor	Very low
	Property receptors - buildings, foundations and services (adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
		Exposure to explosive gases	Unlikely	Minor	Very low

Notes/assumptions:

- site investigation will be required prior to construction of the Proposed Scheme;
- sites which lie within the land required for construction of the Proposed Scheme may require remediation;
- sites located on the land required for the construction of the Proposed Scheme are assumed to be unoccupied during construction, therefore on-site construction risks to human health and property receptors are not assessed and are labelled as not applicable (N/A);
- it is assumed that existing on-site properties will be demolished during the construction stage and so risks to them have not been assessed;

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- remediation will be restricted to mitigation of land quality effects arising from the Proposed Scheme;
- existing site users and adjacent site users in the receptor column refer to users at or near to the potentially contaminated area;
- during construction, standard mitigation procedures are assumed to be implemented in accordance with the draft CoCP. Construction workers have been excluded from assessment due to the use of PPE/risk management protocols and in accordance with the SMR; and
- while the draft CoCP will make it unlikely that there will be adverse consequences associated with construction e.g. the control of surface runoff and dust, it is considered that there may still be temporary minor adverse effects during the construction period from ground disturbance in these areas. The adoption of the draft CoCP generally results in a low to unlikely probability of a consequence, but in some cases the actual consequence may temporarily increase from that defined at baseline.

Table 30: Construction CSM and qualitative risk assessment for mine shafts (on-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase
Potential contamination from former activities: contaminants primarily including metals, metalloids, inorganic ions, organic contaminants, acids/alkalis, PAH, hydrocarbons, asbestos and mine gas	Adjacent site users – Residential	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Low likelihood	Severe	Moderate
	Controlled waters – groundwater: Secondary (undifferentiated) Aquifer - glacial till Secondary B Aquifer- Manchester Marls Formation	Leaching, vertical and lateral migration from contaminated soils and waters	Likely	Negligible to minor	Low to moderate/low
			Controlled waters - surface water: Ponds, Nan Holes Brook	Lateral migration through groundwater Direct runoff from site	Unlikely
	Property receptors - buildings, foundations and services (adjacent)	Direct contact with contaminated soils and waters	Unlikely	Medium	Low
		Exposure to explosive gases	Low likelihood	Medium	Moderate/low

Notes/assumptions:

- site investigation will be required prior to construction of the Proposed Scheme;

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- sites which lie within the land required for construction of the Proposed Scheme may require remediation;
- sites located on the land required for the construction of the Proposed Scheme are assumed to be unoccupied during construction, therefore on-site construction risks to human health and property receptors are not assessed and are labelled as not applicable (N/A);
- it is assumed that existing on-site properties will be demolished during the construction stage and so risks to them have not been assessed;
- remediation will be restricted to mitigation of land quality effects arising from the Proposed Scheme;
- existing site users and adjacent site users in the receptor column refer to users at or near to the potentially contaminated area;
- for groups of sites where different sensitivities of receptors have been identified, a risk range has been provided based on the least and most sensitive receptors;
- during construction, standard mitigation procedures are assumed to be implemented in accordance with the draft CoCP. Construction workers have been excluded from assessment due to the use of PPE/risk management protocols and in accordance with the SMR; and
- while the draft CoCP will make it unlikely that there will be adverse consequences associated with construction e.g. the control of surface runoff and dust, it is considered that there may still be temporary minor adverse effects during the construction period from ground disturbance in these areas. The adoption of the draft CoCP generally results in a low to unlikely probability of a consequence, but in some cases the actual consequence may temporarily increase from that defined at baseline.

Table 31: Construction CSM and qualitative risk assessment for historical landfills (off-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase
Potential contamination in landfilled material including industrial landfill waste (special and liquid sludge), metals, asbestos, petroleum and diesel range hydrocarbons, VOC and SVOC, potentially medium to high levels of ground gas and landfill gas (methane, carbon	Existing site users - Walkers, commercial staff and visitors, residential and public building users	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Low likelihood	Medium	Moderate/low
		Inhalation of ground gases	Unlikely	Severe	Moderate/low
	Adjacent site users - Residential, commercial	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Low likelihood	Medium	Moderate/low
		Inhalation of ground gases	Unlikely	Severe	Moderate/low

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Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase
dioxide, hydrogen sulphide)	Controlled waters – groundwater: Secondary (undifferentiated) Aquifer - glacial till Secondary A Aquifer – Middle Coal Measures Principal Aquifer – Helsby Sandstone Formation	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood	Negligible to Medium	Moderate/low to very low
	Controlled waters - surface water: Ponds, Coffin Lane Brook	Lateral migration through groundwater Direct runoff from site	Low likelihood to unlikely	Negligible to minor	Very low
	Ecological designations LWS - Silver Lane Ponds	Vertical and lateral migration, direct contact	Likely	Minor	Moderate/low
		Exposure to ground gases/vapours	Low likelihood	Minor to negligible	Low to very low
	Property receptors - buildings, foundations and services (adjacent)	Direct contact with contaminated soils and waters	Unlikely	Severe	Moderate/low
		Exposure to explosive gases	Unlikely	Severe	Moderate/low

Notes/assumptions:

- *site investigation may be required prior to construction of the Proposed Scheme;*
- *existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed;*
- *during construction, standard mitigation procedures are assumed to be implemented in accordance with the draft CoCP. Construction workers have been excluded from assessment due to the use of PPE/risk management protocols and in accordance with the SMR;*
- *for groups of sites where different sensitivities of receptors have been identified, a risk range has been provided based on the least and most sensitive receptors; and*
- *while the draft CoCP will make it unlikely that there will be adverse consequences associated with construction e.g. the control of surface runoff and dust, it is considered that there may still be temporary minor adverse effects during the construction period from ground disturbance in these areas. The adoption of the draft CoCP generally results in a low to unlikely probability of a consequence, but in some cases the actual consequence may temporarily increase from that defined at baseline.*

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Table 32: Construction CSM and qualitative risk assessment for former and current railway land (off-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase	
Potential contamination from made ground and from former and current activities: contaminants primarily comprising heavy metals, PAH, asbestos, fuel and lubricating oils, petroleum and diesel range hydrocarbons, ash, potentially low levels of ground gas (methane, carbon dioxide)	Existing site users - Commercial staff and visitors and residential	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Unlikely	Medium	Low	
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low	
		Inhalation of ground gases	Unlikely	Medium	Low	
	Adjacent site users - Commercial and residential	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low	
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low	
		Inhalation of ground gases	Unlikely	Medium	Low	
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till Secondary A Aquifer – Manchester Marls Formation Principal Aquifer - Chester Formation, Kinnerton Sandstone Formation		Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood to unlikely	Negligible to medium	Very low to low
				Unlikely	Severe	Moderate/low
		Controlled waters - groundwater SPZ 2 Principal Aquifer - Chester Formation				
Controlled waters - surface water: Spring, ponds, Small Brook, Windy brook		Lateral migration through groundwater	Low likelihood	Medium	Moderate/low	
		Direct runoff from site				

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Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase
	Ecological designations- SSSI and SAC- Holcroft Moss LWS – Silver Lane Pond, Eleven Acre Common, Woods by Holcroft Moss, LNR - Pennington Flash	Vertical and lateral migration, direct contact	Likely to low likelihood	Negligible to minor	Low
	Property receptors - buildings, foundations and services (existing and adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
		Exposure to explosive gases	Unlikely	Minor	Very low

Notes/assumptions:

- site investigation may be required prior to construction of the Proposed Scheme;
- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed;
- during construction, standard mitigation procedures are assumed to be implemented in accordance with the draft CoCP . Construction workers have been excluded from assessment due to the use of PPE/risk management protocols and in accordance with the SMR;
- for groups of sites where different sensitivities of receptors have been identified, a risk range has been provided based on the least and most sensitive receptors;
- while the draft CoCP will make it unlikely that there will be adverse consequences associated with construction e.g. the control of surface runoff and dust, it is considered that there may still be temporary minor adverse effects during the construction period from ground disturbance in these areas. The adoption of the draft CoCP generally results in a low to unlikely probability of a consequence, but in some cases the actual consequence may temporarily increase from that defined at baseline; and
- Holcroft Moss SSSI is part of the Manchester Mosses SAC.

Table 33: Construction CSM and qualitative risk assessment for former collieries (off-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase
Potential contamination from Potential contamination from former mining activities –	Existing site users - Residential and commercial staff and visitors	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Low likelihood	Medium	Moderate/low

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Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase
Acids and alkalis, metals, hydrocarbons, low levels of ground gas and mine gas (carbon dioxide, methane, hydrogen sulphide)	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till Secondary A Aquifer – Middle Coal Measures Principal Aquifer – Collyhurst Sandstone Formation	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood	Negligible to medium	Very low to moderate/low
	Controlled waters - surface water: Leeds and Liverpool Canal, Nan Holes Brook, Coffin Lane Brook, multiple springs	Lateral migration through groundwater Direct runoff from site	Likely to unlikely	Negligible to minor	Low
	Ecological designations- SSSI and LWS- Abram Flashes, Bryn Marsh and Ince Moss SBI – Edge Green,	Vertical and lateral migration, direct contact	Likely to low likelihood	Negligible to minor	Low
	Property receptors - buildings, foundations and services (existing and adjacent)	Direct contact with contaminated soils and waters	Unlikely	Medium	Low
		Exposure to explosive/mine gases	Unlikely	Medium	Low

Notes/assumptions:

- *site investigation may be required prior to construction of the Proposed Scheme;*
- *existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed;*
- *during construction, standard mitigation procedures are assumed to be implemented in accordance with the draft CoCP. Construction workers have been excluded from assessment due to the use of PPE/risk management protocols and in accordance with the SMR;*
- *for groups of sites where different sensitivities of receptors have been identified, a risk range has been provided based on the least and most sensitive receptors; and*
- *while the draft CoCP will make it unlikely that there will be adverse consequences associated with construction e.g. the control of surface runoff and dust, it is considered that there may still be temporary minor adverse effects during the construction period from ground disturbance in these areas. The adoption of the draft CoCP generally results in a low to unlikely probability of a consequence, but in some cases the actual consequence may temporarily increase from that defined at baseline.*

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Table 34: Construction CSM and qualitative risk assessment for current and former works (off-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase
Potential contamination in made ground and from current – hydrocarbons including waste oils, solvents, heavy metals, PAH, low levels of ground gases and asbestos	Existing site users - Industrial and commercial staff and visitors	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Low likelihood	Medium	Moderate/low
	Adjacent site users - Residential	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Low likelihood	Medium	Moderate/low
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till Principal Aquifer - Chester Formation	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood to unlikely	Negligible to medium	Very low to Low
			Unlikely	Severe	Moderate/low
	Controlled waters - groundwater SPZ 2 Principal Aquifer - Chester Formation				
Controlled waters - surface water: ponds	Lateral migration through groundwater	Unlikely	Negligible	Very low	
	Direct runoff from site				

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Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase
	Ecological designations- Silver Lane Ponds LWS	Vertical and lateral migration, direct contact	Unlikely	Minor	Very low
	Property receptors - buildings, foundations and services (existing and adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
		Exposure to explosive gases	Unlikely	Minor	Very low

Notes/assumptions:

- site investigation may be required prior to construction of the Proposed Scheme;
- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed;
- during construction, standard mitigation procedures are assumed to be implemented in accordance with the draft CoCP. Construction workers have been excluded from assessment due to the use of PPE/risk management protocols and in accordance with the SMR;
- for groups of sites where different sensitivities of receptors have been identified, a risk range has been provided based on the least and most sensitive receptors; and
- while the draft CoCP will make it unlikely that there will be adverse consequences associated with construction e.g. the control of surface runoff and dust, it is considered that there may still be temporary minor adverse effects during the construction period from ground disturbance in these areas. The adoption of the draft CoCP generally results in a low to unlikely probability of a consequence, but in some cases the actual consequence may temporarily increase from that defined at baseline.

Table 35: Construction CSM and qualitative risk assessment for former animal processing site (off-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase
Potential contamination from current and former activities – including hydrocarbons including waste oils, heavy metals, PAH, potentially asbestos and ground gases	Existing site users - Residential	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Low likelihood	Medium	Moderate/low
	Controlled waters - groundwater SPZ 2 Principal Aquifer - Chester Formation	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood	Severe	Moderate

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Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase
	Controlled waters - surface water: Glaze Brook	Lateral migration through groundwater Direct runoff from site	Likely	Minor	Moderate/low
	Property receptors - buildings, foundations and services (existing)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
		Exposure to explosive gases	Unlikely	Minor	Very low

Notes/assumptions:

- site investigation may be required prior to construction of the Proposed Scheme;
- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed;
- during construction, standard mitigation procedures are assumed to be implemented in accordance with the draft CoCP. Construction workers have been excluded from assessment due to the use of PPE/risk management protocols and in accordance with the SMR; and
- while the draft CoCP will make it unlikely that there will be adverse consequences associated with construction e.g. the control of surface runoff and dust, it is considered that there may still be temporary minor adverse effects during the construction period from ground disturbance in these areas. The adoption of the draft CoCP generally results in a low to unlikely probability of a consequence, but in some cases the actual consequence may temporarily increase from that defined at baseline.

Table 36: Construction CSM and qualitative risk assessment for former sewage filter beds (off-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase
Potential contamination from sewage works contaminants primarily comprising metals and metalloids, inorganic ions, organic contaminants, acids/alkalis, microorganisms, fuel oils, acids, herbicides	Existing site users - Commercial staff and visitors	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of dusts and vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Low likelihood	Medium	Moderate/low
	Adjacent site users - Residential	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low

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Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase
and pesticides and potential low levels of ground gas		Direct contact, ingestion, inhalation of dusts and vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Low likelihood	Medium	Moderate/low
	Controlled waters – groundwater Principal Aquifer – Chester Formation SPZ 2	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood	Severe	Moderate
	Controlled waters - surface water: Pond, Glaze Brook	Lateral migration through groundwater Direct runoff from site	Likely	Negligible to minor	Moderate/low to low
	Property receptors - buildings, foundations and services (existing and adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
		Exposure to explosive gases	Low likelihood	Minor	Low

Notes/assumptions:

- site investigation may be required prior to construction of the Proposed Scheme;
- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed;
- during construction, standard mitigation procedures are assumed to be implemented in accordance with the draft CoCP. Construction workers have been excluded from assessment due to the use of PPE/risk management protocols and in accordance with the SMR; and
- while the C draft CoCP will make it unlikely that there will be adverse consequences associated with construction e.g. the control of surface runoff and dust, it is considered that there may still be temporary minor adverse effects during the construction period from ground disturbance in these areas. The adoption of the draft CoCP generally results in a low to unlikely probability of a consequence, but in some cases the actual consequence may temporarily increase from that defined at baseline.

Table 37: Construction CSM and qualitative risk assessment for a former scrap yard and current garage workshop (off-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase
Potential contamination from made ground and	Existing site users - Commercial staff and visitors	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low

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Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase
former activities: contaminants primarily comprising metals and metalloids, inorganic contaminants including acids and alkalis and cyanides, organics including fuel oils, solvents, hydrocarbons, asbestos, low levels of ground gas		Direct contact, ingestion, inhalation of dusts and vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Low likelihood	Medium	Moderate/low
	Adjacent site users - Commercial and residential	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of dusts and vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Low likelihood	Medium	Moderate/low
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till Principal Aquifer – Chester Formation	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood to unlikely	Negligible to medium	Very low to low
			Unlikely	Severe	Moderate/low
	Controlled waters - groundwater SPZ 2				
	Controlled waters - surface water: Ponds	Lateral migration through groundwater Direct runoff from site	Low likelihood	Negligible	Very low
	Property receptors - buildings, foundations and services (existing and adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Negligible	Very low
Exposure to explosive gases		Unlikely	Medium	Low	

Notes/assumptions:

- site investigation may be required prior to construction of the Proposed Scheme;

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- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed;
- during construction, standard mitigation procedures are assumed to be implemented in accordance with the draft CoCP. Construction workers have been excluded from assessment due to the use of PPE/risk management protocols and in accordance with the SMR;
- for groups of sites where different sensitivities of receptors have been identified, a risk range has been provided based on the least and most sensitive receptors; and
- while the draft CoCP will make it unlikely that there will be adverse consequences associated with construction e.g. the control of surface runoff and dust, it is considered that there may still be temporary minor adverse effects during the construction period from ground disturbance in these areas. The adoption of the draft CoCP generally results in a low to unlikely probability of a consequence, but in some cases the actual consequence may temporarily increase from that defined at baseline.

Table 38: Construction CSM and qualitative risk assessment for farms (off-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase	
Potential contamination from made ground and former and current site activities including potential chemical storage tanks, petroleum and diesel range hydrocarbons, pesticides, fungicides, asbestos, low levels of ground gas (carbon dioxide and methane)	Existing site users - Residential and commercial staff and visitors	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low	
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low	
		Inhalation of ground gases	Low likelihood	Medium	Moderate/low	
	Adjacent site users - Residential, commercial	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low	
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low	
		Inhalation of ground gases	Low likelihood	Medium	Moderate/low	
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till Secondary A - Middle Coal Measures Principal Aquifer - Chester Formation, Wilmslow Sandstone Formation		Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood to unlikely	Negligible to medium	Very low to low

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Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase
	Controlled waters - surface water: Ponds, Leeds and Liverpool Canal	Lateral migration through groundwater Direct runoff from site	Likely to unlikely	Negligible to medium	Low
	Ecological designations- SSSI and LWS- Abram Flashes,	Vertical and lateral migration, direct contact	Low likelihood	Minor	Low
	Property receptors - buildings, foundations and services (existing and adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
		Exposure to explosive gases	Low likelihood	Minor	Low

Notes/assumptions:

- *site investigation may be required prior to construction of the Proposed Scheme;*
- *existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed;*
- *during construction, standard mitigation procedures are assumed to be implemented in accordance with the draft CoCP. Construction workers have been excluded from assessment due to the use of PPE/risk management protocols and in accordance with the SMR;*
- *for groups of sites where different sensitivities of receptors have been identified, a risk range has been provided based on the least and most sensitive receptors; and*
- *while the draft CoCP will make it unlikely that there will be adverse consequences associated with construction e.g. the control of surface runoff and dust, it is considered that there may still be temporary minor adverse effects during the construction period from ground disturbance in these areas. The adoption of the draft CoCP generally results in a low to unlikely probability of a consequence, but in some cases the actual consequence may temporarily increase from that defined at baseline.*

Table 39: Construction CSM and qualitative risk assessment for former and current tanks (off-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at Construction phase
Potential contamination from former and current activities: contaminants primarily comprising petroleum and diesel range	Existing site users - Commercial staff and visitors and residential	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Low likelihood	Medium	Moderate/low
		Inhalation of ground gases	Low likelihood	Medium	Moderate/low

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Source	Receptor	Pathway	Probability	Consequence	Risk at Construction phase
hydrocarbons, low levels of ground gas	Adjacent site users - Commercial, residential	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Low likelihood	Medium	Moderate/low
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till Principal Aquifer - Wilmslow Sandstone Formation	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood to unlikely	Negligible to medium	Very low to low
			Unlikely	Severe	Moderate/low
	Controlled waters - groundwater SPZ 2 Principal Aquifer - Wilmslow Sandstone Formation				
	Controlled waters - surface water: Small Brook, Glaze Brook	Lateral migration through groundwater Direct runoff from site	Low likelihood to unlikely	Negligible to minor	Very low
	Property receptors - buildings, foundations and services (existing and adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
Exposure to explosive gases		Low likelihood	Minor	Low	

Notes/assumptions:

- site investigation may be required prior to construction of the Proposed Scheme;
- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed;
- during construction, standard mitigation procedures are assumed to be implemented in accordance with the draft CoCP. Construction workers have been excluded from assessment due to the use of PPE/risk management protocols and in accordance with the SMR;

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- for groups of sites where different sensitivities of receptors have been identified, a risk range has been provided based on the least and most sensitive receptors; and
- while the draft CoCP will make it unlikely that there will be adverse consequences associated with construction e.g. the control of surface runoff and dust, it is considered that there may still be temporary minor adverse effects during the construction period from ground disturbance in these areas. The adoption of the draft CoCP generally results in a low to unlikely probability of a consequence, but in some cases the actual consequence may temporarily increase from that defined at baseline.

Table 40: Construction CSM and qualitative risk assessment for business park (off-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase
Potential contamination from made ground and current activities: contaminants including metals, PAH, petroleum and diesel range hydrocarbons, asbestos and low levels of ground gas (carbon dioxide and methane)	Existing site users - Commercial staff and visitors	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Unlikely	Medium	Low
	Adjacent site users - Commercial and school users	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases and vapours	Unlikely	Medium	Low
	Controlled waters - groundwater Secondary (undifferentiated) - glacial till Principal Aquifer – Chester Formation	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood to unlikely	Negligible to medium	Very low to low
			Unlikely	Severe	Moderate/low
	Controlled waters - groundwater SPZ 2				

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Source	Receptor	Pathway	Probability	Consequence	Risk at construction phase
	Principal Aquifer – Chester Formation				
	Controlled waters - surface water: Glaze Brook	Lateral migration through groundwater Direct runoff from site	Unlikely	Negligible	Very low
	Property receptors - buildings, foundations and services (existing and adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
		Exposure to explosive gases	Unlikely	Minor	Very low

Notes/assumptions:

- site investigation may be required prior to construction of the Proposed Scheme;
- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed;
- during construction, standard mitigation procedures are assumed to be implemented in accordance with the draft CoCP. Construction workers have been excluded from assessment due to the use of PPE/risk management protocols and in accordance with the SMR; and
- while the draft CoCP will make it unlikely that there will be adverse consequences associated with construction e.g. the control of surface runoff and dust, it is considered that there may still be temporary minor adverse effects during the construction period from ground disturbance in these areas. The adoption of the draft CoCP generally results in a low to unlikely probability of a consequence, but in some cases the actual consequence may temporarily increase from that defined at baseline.

3.4 Post-construction risk assessment

Table 41: Post-construction CSM and qualitative risk assessment for historical landfills (on-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
Potential contamination in landfilled material including industrial landfill waste (special and liquid sludge), metals, asbestos,	Existing site users - Workers and visitors walkers	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapours from contaminated waters	N/A	N/A	N/A

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Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
petroleum and diesel range hydrocarbons, VOC and SVOC, potential medium to high levels of ground gas and landfill gas (methane, carbon dioxide, hydrogen sulphide)		Inhalation of ground gases	N/A	N/A	N/A
	Adjacent site users - Residential properties	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Unlikely	Severe	Moderate/low
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till Secondary A Aquifer - Middle Coal Measures Principal Aquifer - Helsby Sandstone Formation, Collyhurst Sandstone Formation	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood	Negligible to Medium	Moderate/low to very low
			Unlikely	Severe	Moderate/low
	Controlled waters - groundwater SPZ 2 Principal Aquifer - Chester Formation				
Controlled waters - surface water: Leeds and Liverpool Canal, Small Brook, Hey Brook, Springs	Lateral migration through groundwater Direct runoff from site	Unlikely to likely	Medium to minor	Low to moderate	

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Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
	Ecological designations - SSSI and LWS- Abram Flashes	Vertical and lateral migration, direct contact	Likely to low likelihood	Minor to negligible	Moderate/low to very low
	LWS - Silver Lane Ponds, Gorse Covert Mounds, Pestfurlong Moss	Exposure to ground gases/vapours	Low likelihood	Minor to negligible	Low to very low
	Property receptors - buildings, foundations and services (adjacent)	Direct contact with contaminated soils and waters	Unlikely	Severe	Moderate/low
		Exposure to explosive gases	Unlikely	Severe	Moderate/low

Notes/assumptions:

- assumes construction works are complete and remediation has been carried out where necessary. No pathways are left open;
- as human health and property receptors are no longer present at the post-construction stage the risks are labelled as not applicable (N/A);
- it is assumed that existing properties are no longer present on-site at the post-construction stage and so risks to them have not been assessed;
- a risk range may be given as the need for remediation strategies will vary to focus on specific contaminative risks at each site;
- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed;
- excludes rail passengers (as whilst within trains, will at all routine times be within a controlled environment) and maintenance workers; but includes people at stations/depots or in areas returned to public land after construction;
- MA05-05 and MA05-106 will still have walkers present on public right of way footpaths post-construction; and only a minor portion of MA05-05 is within the CCB; receptors outside of the CCB will remain post-construction.

Table 42: Post-construction CSM and qualitative risk assessment for former and current farms (on-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
Potential contamination from made ground and former and current site activities including potential chemical storage tanks, petroleum and diesel	Existing site users - residential and commercial staff and visitors	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Low likelihood	Medium	Moderate/low
		Inhalation of ground gases	Unlikely	Medium	Low

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Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
range hydrocarbons, pesticides, fungicides, asbestos, low levels of ground gas (carbon dioxide and methane)	Adjacent site users - residential	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Unlikely	Medium	Low
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till Principal Aquifer – Wilmslow Sandstone Formation	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood to unlikely	Negligible to medium	Very low to low
			Unlikely	Severe	Moderate/low
	Controlled waters - groundwater SPZ 2 Principal Aquifer - Chester Formation				
	Controlled waters - surface water: Ponds, Glaze Brook	Lateral migration through groundwater Direct runoff from site	Low likelihood to Unlikely	Medium to negligible	Moderate/low to very low
Property receptors - buildings, foundations and services (adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low	
	Exposure to explosive gases	Unlikely	Minor	Very low	

Notes/assumptions:

- assumes construction works are complete and remediation has been carried out where necessary. No pathways are left open;
- it is assumed that existing properties are no longer present on-site at the post-construction stage and so risks to them have not been assessed except for MA05-47;
- at MA05-47 it is assumed that the land will be returned to agricultural use following completion of construction works;

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- a risk range may be given as the need for remediation strategies will vary to focus on specific contaminative risks at each site;
- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed; and
- excludes rail passengers (as whilst within trains, will at all routine times be within a controlled environment) and maintenance workers; but includes people at stations/depots or in areas returned to public land after construction.

Table 43: Post-construction CSM and qualitative risk assessment for former and current railway land and rail goods yard / depots (on-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
Potential contamination from made ground and from former and current activities: contaminants primarily comprising heavy metals, PAH, asbestos, fuel and lubricating oils, petroleum and diesel range hydrocarbons, ash, potentially low levels of ground gas (methane, carbon dioxide)	Existing site users - Railways workers	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapours from contaminated waters	N/A	N/A	N/A
		Inhalation of ground gases	N/A	N/A	N/A
	Adjacent site users - Residential and commercial	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Unlikely	Medium	Low
	Controlled waters - groundwater Secondary (undifferentiated) – glacial till Secondary A Aquifer – Middle Coal Measures Principal Aquifer - Chester Formation, Wilmslow	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood to unlikely	Negligible to medium	Very low to low

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Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
	Sandstone Formation, Helsby Sandstone Formation				
	Controlled waters - groundwater SPZ 2 Principal Aquifer - Chester Formation		Unlikely	Severe	Moderate/low
	Controlled waters - surface water: Nan Holes Brook, Windy Bank Brook, Coffin Lane Brook, Small Brook, Glaze Brook, Leeds and Liverpool Canal, springs, ponds	Lateral migration through groundwater Direct runoff from site	Unlikely to likely	Minor to negligible	Moderate/low to very low
	Ecological designations - SSSI and SAC- Abram Flashes SSSI and SAC- Holcroft Moss SAC - Manchester Mosses LWS - Woods by Holcroft Moss Silver Lane Ponds, Glazebrook Moss, Eleven Acre Common SBI - Edge Green	Vertical and lateral migration, direct contact	Likely to unlikely	Minor to negligible	Moderate/low to very low
	Property receptors - buildings, foundations and services (adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
		Exposure to explosive gases	Unlikely	Minor	Very low

Notes/assumptions:

- assumes construction works are complete and remediation has been carried out where necessary. No pathways are left open;
- as human health and property receptors are no longer present at the post-construction stage the risks are labelled as not applicable (N/A);

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- it is assumed that existing properties are no longer present on-site at the post-construction stage and so risks to them have not been assessed;
- a risk range may be given as the need for remediation strategies will vary to focus on specific contaminative risks at each site;
- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed;
- excludes rail passengers (as whilst within trains, will at all routine times be within a controlled environment) and maintenance workers; but includes people at stations/depots or in areas returned to public land after construction;
- current railway land will keep on-site human health receptors post-construction, but risk will be mitigated so listed as N/A;
- MA05-97 will still have walkers present on the footpath post-construction; and
- Holcroft Moss SSSI is part of the Manchester Mosses SAC.

Table 44: Post-construction CSM and qualitative risk assessment for Works (on-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase	
Potential contamination from made ground and current site activities: metals, asbestos, PAH petroleum and diesel range hydrocarbons and potentially low levels of ground gas (methane and carbon dioxide)	Existing site users - Industrial staff and visitors	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	N/A	N/A	N/A	
		Direct contact, ingestion, inhalation of vapours from contaminated waters	N/A	N/A	N/A	
		Inhalation of ground gases	N/A	N/A	N/A	
	Adjacent site users - Residential and commercial	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low	
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low	
		Inhalation of ground gases	Unlikely	Medium	Low	
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till		Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood to unlikely	Negligible to severe	Very low to moderate/low

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Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
	Principal Aquifer - Chester Formation SPZ 2				
	Controlled waters - surface water: Glaze Brook, ponds	Lateral migration through groundwater Direct runoff from site	Unlikely	Minor	Very low
	Ecological designations - Silver Lane Ponds	Vertical and lateral migration, direct contact	Unlikely	Minor	Very Low
	Property receptors - buildings, foundations and services (adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
		Exposure to explosive gases	Unlikely	Medium	Low

Notes/assumptions:

- assumes construction works are complete and remediation has been carried out where necessary. No pathways are left open;
- as human health and property receptors are no longer present at the post-construction stage the risks are labelled as not applicable (N/A);
- it is assumed that existing properties are no longer present on-site at the post-construction stage and so risks to them have not been assessed;
- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed;
- excludes rail passengers (as whilst within trains, will at all routine times be within a controlled environment) and maintenance workers; but includes people at stations/depots or in areas returned to public land after construction; and
- MA05-22 will not be demolished during post-construction so on-site human health receptors remain.

Table 45: Post-construction CSM and qualitative risk assessment for former MoD land (on-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
Potential contamination from made ground and former activities including asbestos, explosive ordnance, radiological sources,	Existing site users - Residential, walkers	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low

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Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
metals, petroleum and diesel range hydrocarbons and potentially low levels of ground gas (methane and carbon dioxide)		Inhalation of ground gases	Unlikely	Severe	Moderate/low
	Adjacent site users - Residential and school users	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Unlikely	Medium	Low
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till Principal Aquifer - Chester Formation SPZ 2	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood to unlikely	Negligible to severe	Very low to moderate/low
	Controlled waters - surface water: ponds	Lateral migration through groundwater Direct runoff from site	Unlikely	Negligible	Very low
	Property receptors - buildings, foundations and services (existing and adjacent), and adjacent school building.	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
		Exposure to explosive gases	Unlikely	Medium	Low

Notes/assumptions:

- assumes construction works are complete and remediation has been carried out where necessary. No pathways are left open;
- the existing properties outside of the land required for the Proposed Scheme will not be demolished as part of construction works and so risks to human health and property receptors are assessed;
- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed; and
- excludes rail passengers (as whilst within trains, will at all routine times be within a controlled environment) and maintenance workers; but includes people at stations/depots or in areas returned to public land after construction.

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Table 46: Post-construction CSM and qualitative risk assessment for former sewage filter beds (on-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
Contamination associated with made ground and former site activities, including organic waste, cleaning chemicals, PAH, petroleum and diesel range hydrocarbons. Low levels of ground gas	Existing site users - Commercial staff and visitors	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapours from contaminated waters	N/A	N/A	N/A
		Inhalation of ground gases	N/A	N/A	N/A
	Adjacent site users - Commercial	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Unlikely	Medium	Low
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer- glacial till Principal Aquifer - Chester Formation	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood	Negligible to medium	Low
			Unlikely	Severe	Moderate/low
	Controlled waters - groundwater SPZ 2 Principal Aquifer - Chester Formation				

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Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
	Controlled waters - surface water: Glaze Brook, pond	Lateral migration through groundwater Direct runoff from site	Unlikely	Negligible	Very low
	Property receptors - buildings, foundations and services (adjacent)	Direct contact with contaminated soils and waters	Unlikely	Minor	Very low
		Exposure to explosive gases	Low likelihood	Minor	Low

Notes/assumptions:

- assumes construction works are complete and remediation has been carried out where necessary. No pathways are left open;
- as human health and property receptors are no longer present at the post-construction stage the risks are labelled as not applicable (N/A);
- it is assumed that existing properties are no longer present on-site at the post-construction stage and so risks to them have not been assessed;
- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed; and
- excludes rail passengers (as whilst within trains, will at all routine times be within a controlled environment) and maintenance workers; but includes people at stations/depots or in areas returned to public land after construction.

Table 47: Post-construction CSM and qualitative risk assessment for former tanks (on-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
Potential contamination from made ground and former activities including petroleum and diesel range hydrocarbons, VOC and SVOC, asbestos, and low levels of ground gases (carbon dioxide and methane)	Existing site users - Industrial and commercial staff and visitors	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapours from contaminated waters	N/A	N/A	N/A
		Inhalation of ground gases and vapours	N/A	N/A	N/A
	Adjacent site users - Commercial	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	N/A	N/A	N/A

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Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
		Direct contact, ingestion, inhalation of vapours from contaminated waters	N/A	N/A	N/A
		Inhalation of ground gases and vapours	N/A	N/A	N/A
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till Principal Aquifer – Chester Formation	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood to unlikely	Negligible to medium	Very low to low
	Controlled waters - groundwater SPZ 2 Principal Aquifer - Chester Formation		Unlikely	Severe	Moderate/low
	Controlled waters - surface water: Glaze Brook	Lateral migration through groundwater Direct runoff from site	Unlikely	Minor	Very low
	Property receptors - buildings, foundations and services (adjacent)	Direct contact with contaminated soils and waters	N/A	N/A	N/A
		Exposure to explosive gases	N/A	N/A	N/A

Notes/assumptions:

- assumes construction works are complete and remediation has been carried out where necessary. No pathways are left open;
- as human health and property receptors are no longer present at the post-construction stage the risks are labelled as not applicable (N/A);
- it is assumed that existing properties are no longer present on-site at the post-construction stage and so risks to them have not been assessed;
- a risk range may be given as the need for remediation strategies will vary to focus on specific contaminative risks at each site;
- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed; and

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• excludes rail passengers (as whilst within trains, will at all routine times be within a controlled environment) and maintenance workers; but includes people at stations/depots or in areas returned to public land after construction.

Table 48: Post-construction CSM and qualitative risk assessment for business park (on-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase	
Potential contamination from made ground and current activities: contaminants including metals, PAH, petroleum and diesel range hydrocarbons, asbestos and low levels of ground gas (carbon dioxide and methane)	Existing site users - Commercial staff and visitors	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	N/A	N/A	N/A	
		Direct contact, ingestion, inhalation of vapours from contaminated waters	N/A	N/A	N/A	
		Inhalation of ground gases	N/A	N/A	N/A	
	Adjacent site users - Commercial, school users	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low	
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low	
		Inhalation of ground gases and vapours	Unlikely	Minor	Low	
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till Principal Aquifer – Chester Formation SPZ 2	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till Principal Aquifer – Chester Formation SPZ 2	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood to unlikely	Negligible to severe	Very low to moderate/low
			Controlled waters - surface water: Glaze Brook	Lateral migration through groundwater Direct runoff from site	Unlikely	Minor

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Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
	Property receptors - buildings, foundations and services (existing and adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
		Exposure to explosive gases	Unlikely	Minor	Very low

Notes/assumptions:

- assumes construction works are complete and remediation has been carried out where necessary. No pathways are left open;
- as human health and property receptors are no longer present at the post-construction stage the risks are labelled as not applicable (N/A);
- it is assumed that existing properties are no longer present on-site at the post-construction stage and so risks to them have not been assessed;
- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed; and
- excludes rail passengers (as whilst within trains, will at all routine times be within a controlled environment) and maintenance workers; but includes people at stations/depots or in areas returned to public land after construction.

Table 49: Post-construction CSM and qualitative risk assessment for mine shafts (on-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
Potential contamination from former activities: contaminants primarily including metals, metalloids, inorganic ions, organic contaminants, acids/alkalis, PAH, hydrocarbons, asbestos and mine gas	Adjacent site users – Residential	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Low likelihood	Severe	Moderate
	Controlled waters – groundwater Secondary (undifferentiated) Aquifer - glacial till Secondary B Aquifer - Manchester Marls Formation	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood	Negligible to minor	Very low to low

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Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
	Controlled waters - surface water: Ponds, Nan Holes Brook	Lateral migration through groundwater Direct runoff from site	Unlikely	Minor	Low
	Property receptors - buildings, foundations and services (adjacent)	Direct contact with contaminated soils and waters	Unlikely	Medium	Low
		Exposure to explosive gases	Low likelihood	Medium	Moderate/low

Notes/assumptions:

- assumes construction works are complete and remediation has been carried out where necessary. No pathways are left open;
- as human health and property receptors are no longer present at the post-construction stage the risks are labelled as not applicable (N/A);
- it is assumed that existing properties are no longer present on-site at the post-construction stage and so risks to them have not been assessed;
- a risk range may be given as the need for remediation strategies will vary to focus on specific contaminative risks at each site;
- existing site users and adjacent site users in the receptor column refer to users at or near to the areas assessed; and
- excludes rail passengers (as whilst within trains, will at all routine times be within a controlled environment) and maintenance workers; but includes people at stations/depots or in areas returned to public land after construction.

Table 50: Post-construction CSM and qualitative risk assessment for historical landfills (off-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
Potential contamination in landfilled material including industrial landfill waste (special and liquid sludge), metals, asbestos, petroleum and diesel range hydrocarbons, VOC and SVOC, potentially medium to high levels of ground	Existing site users - Walkers, commercial staff and visitors, residential and public building users	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of dusts and vapours from contaminated waters	Low likelihood	Medium	Moderate/low
		Inhalation of ground gases	Unlikely	Severe	Moderate/low
	Adjacent site users - Residential, commercial	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low

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Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
gas and landfill gas (methane, carbon dioxide, hydrogen sulphide)		Direct contact, ingestion, inhalation of dusts and vapours from contaminated waters	Low likelihood	Medium	Moderate/low
		Inhalation of ground gases	Unlikely	Severe	Moderate/low
	Controlled waters – groundwater: Secondary (undifferentiated) Aquifer - glacial till Secondary A Aquifer – Middle Coal Measures Principal Aquifer – Helsby Sandstone Formation	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood	Negligible to Medium	Moderate/low to very low
	Controlled waters - surface water: Ponds, Coffin Lane Brook	Lateral migration through groundwater Direct runoff from site	Low likelihood to unlikely	Negligible to minor	Very low
	Ecological designations LWS - Silver Lane Ponds	Vertical and lateral migration, direct contact	Likely	Minor	Moderate/low
		Exposure to ground gases/vapours	Low likelihood	Minor to negligible	Low to very low
	Property receptors - buildings, foundations and services (adjacent)	Direct contact with contaminated soils and waters	Unlikely	Severe	Moderate/low
		Exposure to explosive gases	Unlikely	Severe	Moderate/low

Notes/assumptions:

- assumes construction works are complete and remediation has been carried out where necessary. No pathways are open;
- a risk range may be given as the need for remediation will vary at each site;
- assumes baseline conditions will not change at post-construction; and
- existing site users and adjacent site users in the receptor column refer to users within/near to the areas assessed.

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Table 51: Post-construction CSM and qualitative risk assessment for former and current railway land (off-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
Potential contamination from made ground and from former and current activities: contaminants primarily comprising heavy metals, PAH, asbestos, fuel and lubricating oils, petroleum and diesel range hydrocarbons, ash, potentially low levels of ground gas (methane, carbon dioxide)	Existing site users - Commercial staff and visitors and residential	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Unlikely	Medium	Low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Unlikely	Medium	Low
	Adjacent site users - Commercial and residential	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Unlikely	Medium	Low
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till Secondary A Aquifer – Manchester Marls Formation Principal Aquifer - Chester Formation, Kinnerton Sandstone Formation	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood to unlikely	Negligible to medium	Very low to low
			Unlikely	Severe	Moderate/low
	Controlled waters - groundwater SPZ 2 Principal Aquifer - Chester Formation				

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Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
	Controlled waters - surface water: Spring, ponds, Small Brook, Windy brook	Lateral migration through groundwater Direct runoff from site	Low likelihood	Medium	Moderate/low
	Ecological designations- SSSI and SAC- Holcroft Moss LWS - Silver Lane Pond, Eleven Acre Common, Woods by Holcroft Moss, LNR - Pennington Flash	Vertical and lateral migration, direct contact	Likely to low likelihood	Negligible to minor	Low
	Property receptors - buildings, foundations and services (adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
		Exposure to explosive gases	Unlikely	Minor	Very low

Notes/assumptions:

- assumes construction works are complete and remediation has been carried out where necessary. No pathways are open;
- a risk range may be given as the need for remediation will vary at each site;
- assumes baseline conditions will not change at post-construction;
- existing site users and adjacent site users in the receptor column refer to users within/near to the areas assessed; and
- Holcroft Moss SSSI is part of the Manchester Mosses SAC.

Table 52: Post-construction CSM and qualitative risk assessment for former collieries (off-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
Potential contamination from former mining activities – Acids and alkalis, metals, hydrocarbons, low levels of ground gas and mine gas	Existing site users - Residential and commercial staff and visitors	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Low likelihood	Medium	Moderate/low

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Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
(carbon dioxide, methane, hydrogen sulphide)	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till Secondary A Aquifer – Middle Coal Measures Principal Aquifer – Collyhurst Sandstone Formation	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood	Negligible to medium	Very low to moderate/low
	Controlled waters: Controlled waters - surface water: Leeds and Liverpool Canal, Nan Holes Brook, Coffin Lane Brook, multiple springs	Lateral migration through groundwater Direct runoff from site	Likely to unlikely	Negligible to minor	Low
	Ecological designations- SSSI and LWS- Abram Flashes, Bryn Marsh and Ince Moss SBI – Edge Green,	Vertical and lateral migration, direct contact	Likely to low likelihood	Negligible to minor	Low
	Property receptors - buildings, foundations and services (existing and adjacent)	Direct contact with contaminated soils and waters	Unlikely	Medium	Low
		Exposure to explosive/mine gases	Unlikely	Medium	Low

Notes/assumptions:

- assumes construction works are complete and remediation has been carried out where necessary. No pathways are open;
- a risk range may be given as the need for remediation will vary at each site;
- assumes baseline conditions will not change at post-construction; and
- existing site users and adjacent site users in the receptor column refer to users within/near to the areas assessed.

Table 53: Post-construction CSM and qualitative risk assessment for current and former works (off-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
Potential contamination in made	Existing site users -	Direct contact, ingestion, inhalation of dusts and	Low likelihood	Medium	Moderate/low

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Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
ground and from current – hydrocarbons including waste oils, solvents, heavy metals, PAH, low levels of ground gases and asbestos	Industrial and commercial staff and visitors	vapours from contaminated soils			
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Low likelihood	Medium	Moderate/low
	Adjacent site users - Residential	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Low likelihood	Medium	Moderate/low
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till Principal Aquifer - Chester Formation	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood to unlikely	Negligible to medium	Very low to Low
			Unlikely	Severe	Moderate/low
	Controlled waters - groundwater SPZ 2 Principal Aquifer - Chester Formation				
	Controlled waters - surface water: ponds	Lateral migration through groundwater Direct runoff from site	Unlikely	Negligible	Very low
Ecological designations- Silver Lane Ponds LWS	Vertical and lateral migration, direct contact	Unlikely	Minor	Very low	
Property receptors - buildings, foundations and services (existing and adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low	

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Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
		Exposure to explosive gases	Unlikely	Minor	Very low

Notes/assumptions:

- assumes construction works are complete and remediation has been carried out where necessary. No pathways are open;
- a risk range may be given as the need for remediation will vary at each site;
- assumes baseline conditions will not change at post-construction; and
- existing site users and adjacent site users in the receptor column refer to users within/near to the areas assessed.

Table 54: Post-construction CSM and qualitative risk assessment for former animal processing site (off-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase	
Potential contamination from current and former activities – including hydrocarbons including waste oils, heavy metals, PAH, potentially asbestos and ground gases	Existing site users - Residential	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low	
		Direct contact, ingestion, inhalation of dusts and vapours from contaminated waters	Unlikely	Medium	Low	
		Inhalation of ground gases	Low likelihood	Medium	Moderate/low	
	Controlled waters - groundwater SPZ 2 Principal Aquifer – Chester Formation	Controlled waters - surface water: Glaze Brook	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood	Severe	Moderate
			Lateral migration through groundwater Direct runoff from site	Likely	Minor	Moderate/low
	Property receptors - buildings, foundations and services (existing)		Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
			Exposure to explosive gases	Unlikely	Minor	Very low

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Notes/assumptions:

- assumes construction works are complete and remediation has been carried out where necessary. No pathways are open;
- assumes baseline conditions will not change at post-construction; and
- existing site users and adjacent site users in the receptor column refer to users within/near to the areas assessed.

Table 55: Post-construction CSM and qualitative risk assessment for former sewage filter beds (off-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
Potential contamination from sewage works contaminants primarily comprising metals and metalloids, inorganic ions, organic contaminants, acids/alkalis, microorganisms, fuel oils, acids, herbicides and pesticides and potential low levels of ground gas	Existing site users - Commercial staff and visitors	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of dusts and vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Low likelihood	Medium	Moderate/low
	Adjacent site users - Residential	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of dusts and vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Low likelihood	Medium	Moderate/low
	Controlled waters – groundwater Principal Aquifer – Chester Formation SPZ 2	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood	Severe	Moderate
	Controlled waters - surface water: Pond, Glaze Brook	Lateral migration through groundwater	Likely	Negligible to minor	Low

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Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
		Direct runoff from site			
	Property receptors - buildings, foundations and services (existing and adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
		Exposure to explosive gases	Low likelihood	Minor	Low

Notes/assumptions:

- assumes construction works are complete and remediation has been carried out where necessary. No pathways are open;
- assumes baseline conditions will not change at post-construction; and
- existing site users and adjacent site users in the receptor column refer to users within/near to the areas assessed.

Table 56: Post-construction CSM and qualitative risk assessment for a former scrap yard and current garage workshop (off-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
Potential contamination from made ground and former activities: contaminants primarily comprising metals and metalloids, inorganic contaminants including acids and alkalis and cyanides, organics including fuel oils, solvents, hydrocarbons, asbestos, low levels of ground gas	Existing site users - Commercial staff and visitors	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of dusts and vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Low likelihood	Medium	Moderate/low
	Adjacent site users - Commercial and residential	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of dusts and vapours from contaminated waters	Unlikely	Medium	Low

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Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
		Inhalation of ground gases	Low likelihood	Medium	Moderate/low
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till Principal Aquifer – Chester Formation	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood to unlikely	Negligible to medium	Very low to low
	Controlled waters - groundwater SPZ 2		Unlikely	Severe	Moderate/low
	Controlled waters - surface water: Ponds	Lateral migration through groundwater Direct runoff from site	Low likelihood	Negligible	Very low
	Property receptors - buildings, foundations and services (existing and adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Negligible	Very low
		Exposure to explosive gases	Unlikely	Medium	Low

Notes/assumptions:

- assumes construction works are complete and remediation has been carried out where necessary. No pathways are open;
- a risk range may be given as the need for remediation will vary at each site;
- assumes baseline conditions will not change at post-construction; and
- existing site users and adjacent site users in the receptor column refer to users within/near to the areas assessed.

Table 57: Post-construction CSM and qualitative risk assessment for farms (off-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
Potential contamination from made ground and former and current site activities including potential chemical storage tanks,	Existing site users - Residential and commercial staff and visitors	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of dusts and	Unlikely	Medium	Low

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Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
petroleum and diesel range hydrocarbons, pesticides, fungicides, asbestos, low levels of ground gas (carbon dioxide and methane)		vapours from contaminated waters			
		Inhalation of ground gases	Low likelihood	Medium	Moderate/low
	Adjacent site users - Residential, commercial	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of dusts and vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Low likelihood	Medium	Moderate/low
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till Secondary A Aquifer - Middle Coal Measures Principal Aquifer - Chester Formation, Wilmslow Sandstone Formation	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood to unlikely	Negligible to medium	Very low to low
	Controlled waters - surface water: Ponds, Leeds and Liverpool Canal	Lateral migration through groundwater Direct runoff from site	Likely to unlikely	Negligible to medium	Low
	Ecological designations- SSSI and LWS- Abram Flashes,	Vertical and lateral migration, direct contact	Low likelihood	Minor	Low
	Property receptors - buildings, foundations and services (adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
		Exposure to explosive gases	Low likelihood	Minor	Low

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Notes/assumptions:

- assumes construction works are complete and remediation has been carried out where necessary. No pathways are open;
- a risk range may be given as the need for remediation will vary at each site;
- assumes baseline conditions will not change at post-construction; and
- existing site users and adjacent site users in the receptor column refer to users within/near to the areas assessed.

Table 58: Post-construction CSM and qualitative risk assessment for former and current tanks (off-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase	
Potential contamination from former and current activities: contaminants primarily comprising petroleum and diesel range hydrocarbons, low levels of ground gas	Existing site users - Commercial staff and visitors and residential Adjacent site users - Commercial, residential	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low	
			Low likelihood	Medium	Moderate/low	
		Direct contact, ingestion, inhalation of dusts and vapours from contaminated waters	Low likelihood	Medium	Moderate/low	
			Inhalation of ground gases	Low likelihood	Medium	Moderate/low
	Adjacent site users - Commercial, residential	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low	
		Direct contact, ingestion, inhalation of dusts and vapours from contaminated waters	Unlikely	Medium	Low	
			Low likelihood	Medium	Moderate/low	
			Low likelihood to unlikely	Negligible to medium	Very low to low	
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer - glacial till Principal Aquifer – Wilmslow Sandstone Formation		Leaching, vertical and lateral migration from contaminated soils and waters			

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Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
	Controlled waters - groundwater SPZ 2 Principal Aquifer – Wilmslow Sandstone Formation		Unlikely	Severe	Moderate/low
	Controlled waters - surface water: Small Brook, Glaze Brook	Lateral migration through groundwater Direct runoff from site	Low likelihood to unlikely	Negligible to minor	Very low
	Property receptors - buildings, foundations and services (existing and adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
		Exposure to explosive gases	Low likelihood	Minor	Low

Notes/assumptions:

- assumes construction works are complete and remediation has been carried out where necessary. No pathways are open;
- a risk range may be given as the need for remediation will vary at each site;
- assumes baseline conditions will not change at post-construction; and
- existing site users and adjacent site users in the receptor column refer to users within/near to the areas assessed.

Table 59: Post-construction CSM and qualitative risk assessment for business park (off-site)

Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
Potential contamination from made ground and current activities: contaminants including metals, PAH, petroleum and diesel range hydrocarbons, asbestos and low levels of ground gas (carbon dioxide and methane)	Existing site users - Commercial staff and visitors	Direct contact, ingestion, inhalation of dusts and vapours from contaminated soils	Low likelihood	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases	Unlikely	Medium	Low
	Adjacent site users -	Direct contact, ingestion, inhalation of dusts and	Low likelihood	Medium	Moderate/low

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Source	Receptor	Pathway	Probability	Consequence	Risk at post-construction phase
	Commercial and school users	vapours from contaminated soils			
		Direct contact, ingestion, inhalation of vapours from contaminated waters	Unlikely	Medium	Low
		Inhalation of ground gases and vapours	Unlikely	Medium	Low
	Controlled waters - groundwater Secondary (undifferentiated) Aquifer-glacial till Principal Aquifer- Chester Formation	Leaching, vertical and lateral migration from contaminated soils and waters	Low likelihood to unlikely	Negligible to medium	Very low to low
			Unlikely	Severe	Moderate/low
	Controlled waters - groundwater SPZ 2 Principal Aquifer - Chester Formation				
	Controlled waters - surface water: Glaze Brook	Lateral migration through groundwater Direct runoff from site	Unlikely	Negligible	Very low
	Property receptors - buildings, foundations and services (existing and adjacent)	Direct contact with contaminated soils and waters	Low likelihood	Minor	Low
Exposure to explosive gases		Unlikely	Minor	Very low	

Notes/assumptions:

- *assumes construction works are complete and remediation has been carried out where necessary. No pathways are open;*
- *assumes baseline conditions will not change at post-construction; and*
- *existing site users and adjacent site users in the receptor column refer to users within/near to the areas assessed.*

3.5 Assessment of temporary (construction) and permanent (post-construction) effects

3.5.1 The significance of the effects of land contamination is assessed by comparing the difference in risk of each contaminant linkage at baseline to those at construction and at post-construction stages. This provides a way of assessing both the adverse and beneficial effects during construction and the post-construction period.

Table 60: Historical landfills (on-site) - significance of effect assessment

Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of existing site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soils	Moderate/low	N/A	N/A	Neutral	Neutral
Exposure of existing site users to contamination by Direct contact, ingestion, inhalation of vapours from contaminated waters	Low	N/A	N/A	Neutral	Neutral
Exposure of existing site users to inhalation of gases and vapours	Moderate/low	N/A	N/A	Neutral	Neutral
Exposure of adjacent site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soils and waters	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of adjacent site users to contamination by direct contact, ingestion, inhalation of vapours from contaminated waters	Low	Low	Low	Neutral	Neutral
Exposure of adjacent site users to inhalation of gases and vapours	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of groundwater to vertical and lateral migration of contaminated groundwater/leachate	Moderate/low to very low	Low to moderate/low	Moderate/low to very low	Minor adverse	Neutral

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Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of groundwater to vertical and lateral migration of contaminated groundwater/leachate (SPZ)	Moderate/low	Moderate	Moderate/low	Minor adverse	Neutral
Discharge of contaminants to surface water by lateral migration through groundwater and direct runoff from site	Low to moderate	Low to moderate	Low to moderate	Neutral	Neutral
Plant uptake through direct contact/capillary action - SSSI and LWS	Moderate/low to very low	Moderate/low to very low	Moderate/low to very low	Neutral	Neutral
Exposure of LWS and SSSI to ground gases/vapours	Low to very low	Low to very low	Low to very low	Neutral	Neutral
Direct contact of property with contaminated soils and waters	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of property to explosive gases	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Overall Significance				Neutral to minor adverse	Neutral

Notes/assumptions:

- the significance column may report a range of outcomes for a site. The draft CoCP is designed to mitigate effects, and it is considered that only temporary minor adverse effects during the construction period will occur from ground disturbance. Mitigation measures over and above the draft CoCP are detailed in the Volume 2 report for this study area;
- as human health receptors are no longer present during the construction and post-construction stages the risks are labelled as not applicable (N/A); and
- it is assumed that existing properties are demolished during the construction and post-construction stages and so risks to them have not been assessed.

Table 61: Former and current farms (on-site) - significance of effect assessment

Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of existing site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soils	Moderate/low	N/A	Moderate/low	Neutral	Neutral
Exposure of existing site users to contamination by Direct contact, ingestion, inhalation of vapours from contaminated waters	Moderate/low	N/A	Moderate/low	Neutral	Neutral

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Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of existing site users to inhalation of gases and vapours	Low	N/A	Low	Neutral	Neutral
Exposure of adjacent site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soils and waters	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of adjacent site users to contamination by direct contact, ingestion, inhalation of vapours from contaminated waters	Low	Low	Low	Neutral	Neutral
Exposure of adjacent site users to inhalation of gases and vapours	Low	Low	Low	Neutral	Neutral
Exposure of groundwater to vertical and lateral migration of contaminated groundwater/leachate	Very low to low	Low to moderate	Very low to low	Minor adverse	Neutral
Exposure of groundwater to vertical and lateral migration of contaminated groundwater/leachate (SPZ)	Moderate/low	Moderate	Moderate/low	Minor adverse	Neutral
Discharge of contaminants to surface water by lateral migration through groundwater and direct runoff from site	Moderate/low to very low	Moderate/low to very low	Moderate/low to very low	Neutral	Neutral
Direct contact of property with contaminated soils and waters	Low	Low	Low	Neutral	Neutral
Exposure of property to explosive gases	Very low	Very low	Very low	Neutral	Neutral
Overall Significance				Neutral to minor adverse	Neutral

Notes/assumptions:

- the significance column may report a range of outcomes for a site. The draft CoCP is designed to mitigate effects, and it is considered that only temporary minor adverse effects during the construction period will occur from ground disturbance. Mitigation measures over and above the draft CoCP are detailed in the Volume 2 report for this study area;
- as human health receptors are no longer present during the construction and post-construction stages the risks are labelled as not applicable (N/A); and
- it is assumed that existing properties are demolished during the construction and post-construction stages and so risks to them have not been assessed.

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Table 62: Former and current former and current railway land and rail goods yard / depots (on-site) - significance of effect assessment

Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of existing site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soils	Low	N/A	N/A	Neutral	Neutral
Exposure of existing site users to contamination by Direct contact, ingestion, inhalation of vapours from contaminated waters	Low	N/A	N/A	Neutral	Neutral
Exposure of existing site users to inhalation of gases and vapours	Low	N/A	N/A	Neutral	Neutral
Exposure of adjacent site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soils and waters	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of adjacent site users to contamination by direct contact, ingestion, inhalation of vapours from contaminated waters	Low	Low	Low	Neutral	Neutral
Exposure of adjacent site users to inhalation of gases and vapours	Low	Low	Low	Neutral	Neutral
Exposure of groundwater to vertical and lateral migration of contaminated groundwater/leachate	Very low to low	Low to moderate/low	Very low to low	Minor adverse	Neutral
Exposure of groundwater to vertical and lateral migration of contaminated groundwater/leachate (SPZ)	Moderate/low	Moderate	Moderate/low	Minor adverse	Neutral
Discharge of contaminants to surface water by lateral migration through groundwater and direct runoff from site	Moderate/low to very low	Moderate/low to very low	Moderate/low to very low	Neutral	Neutral
Plant uptake through direct contact/capillary action - SSSI	Moderate/low to very low	Moderate/low to very low	Moderate/low to very low	Neutral	Neutral

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Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Direct contact of property with contaminated soils and waters	Low	Low	Low	Neutral	Neutral
Exposure of property to explosive gases	Very low	Very low	Very low	Neutral	Neutral
Overall Significance				Neutral to minor adverse	Neutral

Notes/assumptions:

- the significance column may report a range of outcomes for a site. The draft CoCP is designed to mitigate effects, and it is considered that only temporary minor adverse effects during the construction period will occur from ground disturbance. Mitigation measures over and above the draft CoCP are detailed in the Volume 2 report for this study area;
- as human health receptors are no longer present during the construction and post-construction stages the risks are labelled as not applicable (N/A); and
- it is assumed that existing properties are demolished during the construction and post-construction stages and so risks to them have not been assessed.

Table 63: Works (on-site) - significance of effect assessment

Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of existing site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soils	Moderate/low	N/A	N/A	Neutral	Neutral
Exposure of existing site users to contamination by Direct contact, ingestion, inhalation of vapours from contaminated waters	Moderate/low	N/A	N/A	Neutral	Neutral
Exposure of existing site users to inhalation of gases and vapours	Low	N/A	N/A	Neutral	Neutral
Exposure of adjacent site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soils and waters	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of adjacent site users to contamination by direct contact, ingestion, inhalation of vapours from contaminated waters	Low	Low	Low	Neutral	Neutral

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Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of adjacent site users to inhalation of gases and vapours	Low	Low	Low	Neutral	Neutral
Exposure of groundwater to vertical and lateral migration of contaminated groundwater/leachate (SPZ)	Very low to moderate/low	Low to moderate	Very low to Moderate/low	Minor adverse	Neutral
Discharge of contaminants to surface water by lateral migration through groundwater and direct runoff from site	Very low	Very low	Very low	Neutral	Neutral
Plant uptake through direct contact/capillary action - LWS	Very Low	Very Low	Very Low	Neutral	Neutral
Direct contact of property with contaminated soils and waters	Low	Low	Low	Neutral	Neutral
Exposure of property to explosive gases	Low	Low	Low	Neutral	Neutral
Overall Significance				Neutral to minor adverse	Neutral

Notes/assumptions:

- the significance column may report a range of outcomes for a site. The draft CoCP is designed to mitigate effects, and it is considered that only temporary minor adverse effects during the construction period will occur from ground disturbance. Mitigation measures over and above the draft CoCP are detailed in the Volume 2 report for this study area;
- as human health receptors are no longer present during the construction and post-construction stages the risks are labelled as not applicable (N/A); and
- it is assumed that existing properties are demolished during the construction and post-construction stages and so risks to them have not been assessed.

Table 64: Former MoD land (on-site) - significance of effect assessment

Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of existing site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soils	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral

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Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of existing site users to contamination by Direct contact, ingestion, inhalation of vapours from contaminated waters	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of existing site users to inhalation of gases and vapours	Low	N/A	N/A	Neutral	Neutral
Exposure of adjacent site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soils and waters	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of adjacent site users to contamination by direct contact, ingestion, inhalation of vapours from contaminated waters	Low	Low	Low	Neutral	Neutral
Exposure of adjacent site users to inhalation of gases and vapours	Low	Low	Low	Neutral	Neutral
Exposure of groundwater to vertical and lateral migration of contaminated groundwater/leachate	Very low to moderate/low	Very low to moderate	Very low to moderate/low	Minor adverse	Neutral
Discharge of contaminants to surface water by lateral migration through groundwater and direct runoff from site	Very low	Very low	Very low	Neutral	Neutral
Direct contact of property with contaminated soils and waters	Low	Low	Low	Neutral	Neutral
Exposure of property to explosive gases	Low	Low	Low	Neutral	Neutral
Overall Significance				Neutral to minor adverse	Neutral

Notes/assumptions:

- the significance column may report a range of outcomes for a site. The draft CoCP is designed to mitigate effects, and it is considered that only temporary minor adverse effects during the construction period will occur from ground disturbance. Mitigation measures over and above the draft CoCP are detailed in the Volume 2 report for this study area; and
- the existing properties outside of the land required for the construction of the Proposed Scheme will not be demolished as part of construction works and so risks to human health and property receptors are assessed.

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Table 65: Former sewage filter beds (on-site) - significance of effect assessment

Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of existing site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soils	Moderate/low	N/A	N/A	Neutral	Neutral
Exposure of existing site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated waters	Low	N/A	N/A	Neutral	Neutral
Exposure of existing site users to inhalation of gases and vapours	Low	N/A	N/A	Neutral	Neutral
Exposure of adjacent site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soils	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of adjacent site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated waters	Low	Low	Low	Neutral	Neutral
Exposure of adjacent site users to inhalation of gases and vapours	Low	Low	Low	Neutral	Neutral
Exposure of groundwater to vertical and lateral migration of contaminated groundwater/leachate	Very low to low	Low	Very low to low	Minor adverse	Neutral
Exposure of groundwater to vertical and lateral migration of contaminated groundwater/leachate (SPZ)	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Discharge of contaminants to surface water by lateral migration through groundwater and direct runoff from site	Very low	Low	Low	Neutral	Neutral
Direct contact of property with contaminated soils and waters	Very low	Very low	Very low	Neutral	Neutral
Exposure of property to explosive gases	Low	Low	Low	Neutral	Neutral

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Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Overall Significance				Neutral to minor adverse	Neutral

Notes/assumptions:

- the significance column may report a range of outcomes for a site. The draft CoCP is designed to mitigate effects, and it is considered that only temporary minor adverse effects during the construction period will occur from ground disturbance. Mitigation measures over and above the draft CoCP are detailed in the Volume 2 report for this study area;
- as human health receptors are no longer present during the construction and post-construction stages the risks are labelled as not applicable (N/A); and
- it is assumed that existing properties are demolished during the construction and post-construction stages and so risks to them have not been assessed.

Table 66: Former tanks (on-site) - significance of effect assessment

Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of existent site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soils	Moderate/low	N/A	N/A	Neutral	Neutral
Exposure of existent site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated waters	Low	N/A	N/A	Neutral	Neutral
Exposure of existing site users to inhalation of gases and vapours	Low	N/A	N/A	Neutral	Neutral
Exposure of adjacent site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soils	Moderate/low	N/A	N/A	Neutral	Neutral
Exposure of adjacent site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated waters	Low	N/A	N/A	Neutral	Neutral
Exposure of adjacent site users to inhalation of gases and vapours	Low	N/A	N/A	Neutral	Neutral

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Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Discharge of contaminants to surface water by lateral migration through groundwater and direct runoff from site	Low	N/A	N/A	Neutral	Neutral
Exposure of groundwater to vertical and lateral migration of contaminated groundwater/leachate	Very low to low	Low to moderate/low	Very low to low	Minor adverse	Neutral
Exposure of groundwater to vertical and lateral migration of contaminated groundwater/leachate (SPZ)	Moderate/low	Moderate	Moderate/low	Minor adverse	Neutral
Discharge of contaminants to surface water by lateral migration through groundwater and direct runoff from site	Very low	Very low	Very low	Neutral	Neutral
Direct contact of property with contaminated soils and waters	Low	N/A	N/A	Neutral	Neutral
Exposure of property to explosive gases	Very low	N/A	N/A	Neutral	Neutral
Overall Significance				Neutral to minor adverse	Neutral

Notes/assumptions:

- the significance column may report a range of outcomes for a site. The draft CoCP is designed to mitigate effects, and it is considered that only temporary minor adverse effects during the construction period will occur from ground disturbance. Mitigation measures over and above the draft CoCP are detailed in the Volume 2 report for this study area;
- as human health receptors are no longer present during the construction and post-construction stages the risks are labelled as not applicable (N/A); and
- it is assumed that existing properties are demolished during the construction and post-construction stages and so risks to them have not been assessed.

Table 67: Business park (on-site) - significance of effect assessment

Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of existing site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soils	Moderate/low	N/A	N/A	Neutral	Neutral

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Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of existing site users to contamination by Direct contact, ingestion, inhalation of vapours from contaminated waters	Low	N/A	N/A	Neutral	Neutral
Exposure of existing site users to inhalation of gases and vapours	Low	N/A	N/A	Neutral	Neutral
Exposure of adjacent site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soils and waters	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of adjacent site users to contamination by direct contact, ingestion, inhalation of vapours from contaminated waters	Low	Low	Low	Neutral	Neutral
Exposure of adjacent site users to inhalation of gases and vapours	Low	Low	Low	Neutral	Neutral
Exposure of groundwater to vertical and lateral migration of contaminated groundwater/leachate	Very low to moderate/low	Very low to moderate	Very low to moderate/low	Minor adverse	Neutral
Discharge of contaminants to surface water by lateral migration through groundwater and direct runoff from site	Very low	Very low	Very low	Neutral	Neutral
Direct contact of property with contaminated soils and waters	Low	Low	Low	Neutral	Neutral
Exposure of property to explosive gases	Very low	Very low	Very low	Neutral	Neutral
Overall Significance				Neutral to minor adverse	Neutral

Notes/assumptions:

- the significance column may report a range of outcomes for a site. The draft CoCP is designed to mitigate effects, and it is considered that only temporary minor adverse effects during the construction period will occur from ground disturbance. Mitigation measures over and above the draft CoCP are detailed in the Volume 2 report for this study area;
- as human health receptors are no longer present during the construction and post-construction stages the risks are labelled as not applicable (N/A); and
- it is assumed that existing properties are demolished during the construction and post-construction stages and so risks to them have not been assessed.

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Table 68: Mine shafts (on-site) - significance of effect assessment

Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of adjacent site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soils	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of adjacent site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated waters	Low	Low	Low	Neutral	Neutral
Exposure of adjacent site users to inhalation of gasses and vapours	Moderate	Moderate	Moderate	Neutral	Neutral
Exposure of groundwater to vertical and lateral migration of contaminated groundwater/leachate	Low to moderate/low	Low to moderate/low	Very low to low	Neutral	Minor beneficial
Discharge of contaminants to surface water by lateral migration through groundwater and direct runoff from site	Low	Low	Low	Neutral	Neutral
Direct contact of property with contaminated soils and waters	Low	Low	Low	Neutral	Neutral
Exposure of property to explosive gases	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Overall Significance				Neutral	Neutral to minor beneficial

Notes/assumptions:

- the significance column may report a range of outcomes for a site. The draft CoCP is designed to mitigate effects, and it is considered that only temporary minor adverse effects during the construction period will occur from ground disturbance. Mitigation measures over and above the draft CoCP are detailed in the Volume 2 report for this study area;
- as human health receptors are no longer present during the construction and post-construction stages the risks are labelled as not applicable (N/A); and
- it is assumed that existing properties are demolished during the construction and post-construction stages and so risks to them have not been assessed.

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Table 69: Historical landfills (off-site) - significance of effect assessment

Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of existing site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soil	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of existing site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated waters	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of existing site users to inhalation of gases and vapours	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of adjacent site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soils	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of adjacent site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated waters	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of adjacent site users to inhalation of gases and vapours	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of groundwater to vertical and lateral migration of contaminated groundwater/leachate	Moderate/low to very low	Moderate/low to very low	Moderate/low to very low	Neutral	Neutral
Discharge of contaminants to surface water by lateral migration through groundwater and direct runoff from site	Very low	Very low	Very low	Neutral	Neutral
Plant uptake through direct contact/capillary action - LWS	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of LWS to ground gases/vapours	Low to very low	Low to very low	Low to very low	Neutral	Neutral
Direct contact of property with contaminated soils and waters	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of property to explosive gases	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral

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Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Overall Significance				Neutral	Neutral

Notes/assumptions:

• The significance column may report a range of outcomes for a site. The draft CoCP is designed to mitigate effects, and it is considered that only temporary minor adverse effects during the construction period will occur from ground disturbance. Mitigation measures over and above the draft CoCP are detailed in the Volume 2 report for this study area.

Table 70: Former and current railway land (off-site) - significance of effect assessment

Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of existing site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soils	Low	Low	Low	Neutral	Neutral
Exposure of existing site users to contamination by Direct contact, ingestion, inhalation of vapours from contaminated waters	Low	Low	Low	Neutral	Neutral
Exposure of existing site users to inhalation of gases and vapours	Low	Low	Low	Neutral	Neutral
Exposure of adjacent site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soils and waters	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of adjacent site users to contamination by direct contact, ingestion, inhalation of vapours from contaminated waters	Low	Low	Low	Neutral	Neutral
Exposure of adjacent site users to inhalation of gases and vapours	Low	Low	Low	Neutral	Neutral
Exposure of groundwater to vertical and lateral migration of contaminated groundwater/leachate	Very low to low	Very low to low	Very low to low	Neutral	Neutral
Exposure of groundwater to vertical and lateral migration of contaminated groundwater/leachate (SPZ)	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral

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Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Discharge of contaminants to surface water by lateral migration through groundwater and direct runoff from site	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Plant uptake through direct contact/capillary action – SSSI, SAC, LWS	Low	Low	Low	Neutral	Neutral
Direct contact of property with contaminated soils and waters	Low	Low	Low	Neutral	Neutral
Exposure of property to explosive gases	Very low	Very low	Very low	Neutral	Neutral
Overall Significance				Neutral	Neutral

Notes/assumptions:

- The significance column may report a range of outcomes for a site. The draft CoCP is designed to mitigate effects, and it is considered that only temporary minor adverse effects during the construction period will occur from ground disturbance. Mitigation measures over and above the draft CoCP are detailed in the Volume 2 report for this study area.

Table 71: Former collieries (off-site) - significance of effect assessment

Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of existing site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soils	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of existing site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated waters	Low	Low	Low	Neutral	Neutral
Exposure of existing site users to inhalation of gases and vapours	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of groundwater to vertical and lateral migration of contaminated groundwater/leachate	Very low to moderate/low	Very low to moderate/low	Very low to moderate/low	Neutral	Neutral
Discharge of contaminants to surface water by lateral migration through groundwater and direct runoff from site	Low	Low	Low	Neutral	Neutral

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Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Plant uptake through direct contact/capillary action - SSSI, LNR, LWS,	Low	Low	Low	Neutral	Neutral
Direct contact of property with contaminated soils and waters	Low	Low	Low	Neutral	Neutral
Exposure of property to explosive/mine gases	Low	Low	Low	Neutral	Neutral
Overall Significance				Neutral	Neutral

Notes/assumptions:

• The significance column may report a range of outcomes for a site. The draft CoCP is designed to mitigate effects, and it is considered that only temporary minor adverse effects during the construction period will occur from ground disturbance. Mitigation measures over and above the draft CoCP are detailed in the Volume 2 report for this study area.

Table 72: Current and former works (off-site) - significance of effect assessment

Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of existing site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soils	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of existing site users to contamination by Direct contact, ingestion, inhalation of vapours from contaminated waters	Low	Low	Low	Neutral	Neutral
Exposure of existing site users to inhalation of gases and vapours	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of adjacent site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soils	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of adjacent site users to contamination by direct contact, ingestion, inhalation of vapours from contaminated waters	Low	Low	Low	Neutral	Neutral
Exposure of adjacent site users to inhalation of gases and vapours	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral

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Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of groundwater to vertical and lateral migration of contaminated groundwater/leachate	Very low to Low	Very low to Low	Very low to Low	Neutral	Neutral
Exposure of groundwater to vertical and lateral migration of contaminated groundwater/leachate (SPZ)	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Discharge of contaminants to surface water by lateral migration through groundwater and direct runoff from site	Very low	Very low	Very low	Neutral	Neutral
Plant uptake through direct contact/capillary action - LWS	Very low	Very low	Very low	Neutral	Neutral
Direct contact of property with contaminated soils and waters	Low	Low	Low	Neutral	Neutral
Exposure of property to explosive gases	Very low	Very low	Very low	Neutral	Neutral
Overall Significance				Neutral	Neutral

Notes/assumptions:

• The significance column may report a range of outcomes for a site. The draft CoCP is designed to mitigate effects, and it is considered that only temporary minor adverse effects during the construction period will occur from ground disturbance. Mitigation measures over and above the draft CoCP are detailed in the Volume 2 report for this study area.

Table 73: Former animal processing site (off-site)- significance of effect assessment

Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of existing site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soils	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of existing site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated waters	Low	Low	Low	Neutral	Neutral
Exposure of existing site users to inhalation of gases and vapours	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral

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Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of groundwater to vertical and lateral migration of contaminated groundwater/leachate (SPZ)	Moderate	Moderate	Moderate	Neutral	Neutral
Discharge of contaminants to surface water by lateral migration through groundwater and direct runoff from site	Moderate	Moderate	Moderate	Neutral	Neutral
Direct contact of property with contaminated soils and waters	Very low	Very low	Very low	Neutral	Neutral
Overall Significance				Neutral	Neutral

Notes/assumptions:

• The significance column may report a range of outcomes for a site. The draft CoCP is designed to mitigate effects, and it is considered that only temporary minor adverse effects during the construction period will occur from ground disturbance. Mitigation measures over and above the draft CoCP are detailed in the Volume 2 report for this study area.

Table 74: Former sewage filter beds (off-site)- significance of effect assessment

Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of existing site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soils	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of existing site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated waters	Low	Low	Low	Neutral	Neutral
Exposure of existing site users to inhalation of gases and vapours	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of adjacent site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soils	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral

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Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of adjacent site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated waters	Low	Low	Low	Neutral	Neutral
Exposure of adjacent site users to inhalation of gases and vapours	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of groundwater to vertical and lateral migration of contaminated groundwater/leachate (SPZ)	Moderate	Moderate	Moderate	Neutral	Neutral
Discharge of contaminants to surface water by lateral migration through groundwater and direct runoff from site	Moderate/low to low	Moderate/low to low	Moderate/low to low	Neutral	Neutral
Direct contact of property with contaminated soils and waters	Low	Low	Low	Neutral	Neutral
Exposure of property to explosive gases	Low	Low	Low	Neutral	Neutral
Overall Significance				Neutral	Neutral

Notes/assumptions:

• The significance column may report a range of outcomes for a site. The draft CoCP is designed to mitigate effects, and it is considered that only temporary minor adverse effects during the construction period will occur from ground disturbance. Mitigation measures over and above the draft CoCP are detailed in the Volume 2 report for this study area.

Table 75: Former scrap yard and current garage workshop (off-site) - significance of effect assessment

Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of existing site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soils	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of existing site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated waters	Low	Low	Low	Neutral	Neutral

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Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of existing site users to inhalation of gases and vapours	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of adjacent site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated waters	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of adjacent site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soils	Low	Low	Low	Neutral	Neutral
Exposure of adjacent site users to inhalation of gases and vapours	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of groundwater to vertical and lateral migration of contaminated groundwater/leachate	Very low to low	Very low to low	Very low to low	Neutral	Neutral
Exposure of groundwater to vertical and lateral migration of contaminated groundwater/leachate (SPZ)	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Discharge of contaminants to surface water by lateral migration through groundwater and direct runoff from site	Very low	Very low	Very low	Neutral	Neutral
Direct contact of property with contaminated soils and waters	Very low	Very low	Very low	Neutral	Neutral
Exposure of property to explosive gases	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Overall Significance				Neutral	Neutral

Notes/assumptions:

• *The significance column may report a range of outcomes for a site. The draft CoCP is designed to mitigate effects, and it is considered that only temporary minor adverse effects during the construction period will occur from ground disturbance. Mitigation measures over and above the draft CoCP are detailed in the Volume 2 report for this study area.*

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Table 76: Farms (off-site) - significance of effect assessment

Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of existing site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soils	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of existing site users to contamination by Direct contact, ingestion, inhalation of vapours from contaminated waters	Low	Low	Low	Neutral	Neutral
Exposure of existing site users to inhalation of gases and vapours	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of adjacent site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soils	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of adjacent site users to contamination by direct contact, ingestion, inhalation of vapours from contaminated waters	Low	Low	Low	Neutral	Neutral
Exposure of adjacent site users to inhalation of gases and vapours	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of groundwater to vertical and lateral migration of contaminated groundwater/leachate	Very low to low	Very low to low	Very low to low	Neutral	Neutral
Discharge of contaminants to surface water by lateral migration through groundwater and direct runoff from site	Low	Low	Low	Neutral	Neutral
Plant uptake through direct contact/capillary action – SSSI, LWS	Low	Low	Low	Neutral	Neutral
Direct contact of property with contaminated soils and waters	Low	Low	Low	Neutral	Neutral
Exposure of property to explosive gases	Low	Low	Low	Neutral	Neutral
Overall Significance				Neutral effect	Neutral effect

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Notes/assumptions:

• The significance column may report a range of outcomes for a site. The draft CoCP is designed to mitigate effects, and it is considered that only temporary minor adverse effects during the construction period will occur from ground disturbance. Mitigation measures over and above the draft CoCP are detailed in the Volume 2 report for this study area.

Table 77: Former and current tanks (off-site) - significance of effect assessment

Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of existing site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soils	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of existing site users to contamination by Direct contact, ingestion, inhalation of vapours from contaminated waters	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of existing site users to inhalation of gases and vapours	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of adjacent site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soils and waters	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of adjacent site users to contamination by direct contact, ingestion, inhalation of vapours from contaminated waters	Low	Low	Low	Neutral	Neutral
Exposure of adjacent site users to inhalation of gases and vapours	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of groundwater to vertical and lateral migration of contaminated groundwater/leachate	Very low to low	Very low to low	Very low to low	Neutral	Neutral
Exposure of groundwater to vertical and lateral migration of contaminated groundwater/leachate (SPZ)	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Discharge of contaminants to surface water by lateral migration through groundwater and direct runoff from site	Very low	Very low	Very low	Neutral	Neutral

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Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Direct contact of property with contaminated soils and waters	Low	Low	Low	Neutral	Neutral
Exposure of property to explosive gases	Low	Low	Low	Neutral	Neutral
Overall Significance				Neutral	Neutral

Notes/assumptions:

• The significance column may report a range of outcomes for a site. The draft CoCP is designed to mitigate effects, and it is considered that only temporary minor adverse effects during the construction period will occur from ground disturbance. Mitigation measures over and above the draft CoCP are detailed in the Volume 2 report for this study area.

Table 78: Business park (off-site) - significance of effect assessment

Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of existing site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soils	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of existing site users to contamination by Direct contact, ingestion, inhalation of vapours from contaminated waters	Low	Low	Low	Neutral	Neutral
Exposure of existing site users to inhalation of gases and vapours	Low	Low	Low	Neutral	Neutral
Exposure of adjacent site users to contamination by direct contact, ingestion and inhalation of dusts and vapours from contaminated soils and waters	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Exposure of adjacent site users to contamination by direct contact, ingestion, inhalation of vapours from contaminated waters	Low	Low	Low	Neutral	Neutral
Exposure of adjacent site users to inhalation of gases and vapours	Low	Low	Low	Neutral	Neutral
Exposure of groundwater to vertical and lateral migration of contaminated groundwater/leachate	Very low to low	Very low to low	Very low to low	Neutral	Neutral

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Contaminant linkage	Baseline risk	Construction risk	Post-construction risk	Construction significance	Post-construction significance
Exposure of groundwater to vertical and lateral migration of contaminated groundwater/leachate (SPZ)	Moderate/low	Moderate/low	Moderate/low	Neutral	Neutral
Discharge of contaminants to surface water by lateral migration through groundwater and direct runoff from site	Very low	Very low	Very low	Neutral	Neutral
Direct contact of property with contaminated soils and waters	Low	Low	Low	Neutral	Neutral
Exposure of property to explosive gases	Very low	Very low	Very low	Neutral	Neutral
Overall Significance				Neutral	Neutral

Notes/assumptions:

- The significance column may report a range of outcomes for a site. The draft CoCP is designed to mitigate effects, and it is considered that only temporary minor adverse effects during the construction period will occur from ground disturbance. Mitigation measures over and above the draft CoCP are detailed in the Volume 2 report for this study area.

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