A303 Amesbury to Berwick Down

TR010025

Volume 6

6.3 Environmental Statement Appendices

Appendix 10.2 Contaminated Land Assessment Methodology and Detailed Risk Assessment

APFP Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

October 2018

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10 Contaminated Land Assessment Methodology and Detailed Risk Assessment

10.1 Methodology Tables

Table 10.1.1: Proximity Zone Definition

Zone No	Definition
Zone 1	All land on or within the footprint of the line and including a 10m margin either side, and including side shoots such as road realignments, spoil borrow or storage areas etc.
Zone 2	All land within 50m of the edge of Zone 1 land.
Zone 3	All land from between 50 and 250m from the edge of Zone 1 land.

Table 10.1.2: Potentially Contaminative Land Uses

Class	Generic Description	Typical Land Uses
Class 1	Low risk of potential contamination, or less hazardous chemicals in use	Farms (ancillary buildings and areas for storing chemicals, fuel etc.)
		Warehouses
		Goods yards
		Hospitals
		Builders yards
		Retail and business parks
Class 2	Medium risk of potential contamination, more hazardous chemicals in possible use	Engineering workshops
		Railways/ disused railway lines
		Brick works
		Dry cleaners (retail)
		Sewage works
		Former clay pits and quarries
		Cement/ asphalt works
		Car breakers
		Garage workshops
		Waste transfer facilities
		Paper works
		Power stations
		Glass works
		Timber treatment works
		Foot and mouth burials
		Metal manufacturing and plating
		Depots
		Scrap yards
Class 3	High risk of potential contamination, hazardous chemicals likely to be present	Gas and coke works
		Landfills and historic landfills
		Petrol filling stations

Class	Generic Description	Typical Land Uses
		Oil depots
		Iron and steel works
		Historical foundries
		Chemical works

Table 10.1.3: Site Rating Method

Potentially Contaminative Land Use Class	Proximity to Route	Vertical Alignment	Site Rating
Class 1 Low Risk	Zone 1	Viaduct / Embankment	2
		Cutting / At Grade / Cut and Cover Tunnel	3
		Bored Tunnel	0
	Zone 2	Viaduct / Embankment	1
		Cutting / At Grade / Cut and Cover Tunnel	2
		Bored Tunnel	0
	Zone 3	Viaduct / Embankment	0
		Cutting / At Grade / Cut and Cover Tunnel	1
		Bored Tunnel	0
Class 2 Medium Risk	Zone 1	Viaduct / Embankment	3
		Cutting / At Grade / Cut and Cover Tunnel	4
		Bored Tunnel	2
	Zone 2	Viaduct / Embankment	2
		Cutting / At Grade / Cut and Cover Tunnel	3
		Bored Tunnel	2
	Zone 3	Viaduct / Embankment	1
		Cutting / At Grade / Cut and Cover Tunnel	2
		Bored Tunnel	1
Class 3 High Risk	Zone 1	Viaduct / Embankment	4
		Cutting / At Grade / Cut and Cover Tunnel	5
		Bored Tunnel	3
	Zone 2	Viaduct / Embankment	3
		Cutting / At Grade / Cut and Cover Tunnel	4
		Bored Tunnel	3
	Zone 3	Viaduct / Embankment	2
		Cutting / At Grade / Cut and Cover Tunnel	3
		Bored Tunnel	2

Table 10.1.1: Summary of sites scoped out of Detailed Risk Assessment based on baseline Site Rating 1 and 2

Ref Number	Site Description	Location / Orientation	Proximity Zone	Land Use Class	Vertical Alignment	Baseline Site Rating
CL002	Possible Infilled Ground - former Covered Reservoir	South of western area of the Scheme, near the Pig Farm (CL001).	3	2	Grade	2
CL004	Scotland Farm	North of the current A303, west of Winterbourne Stoke.	3	1	Embankment	0
CL008	Unspecified Pit (1886 - 1957)	In Winterbourne Stoke.	3	2	Embankment	1
CL009	Winterbourne Stoke Filling Station	North of the current A303, within Winterbourne Stoke.	3	3	Embankment	2
CL011	Electricity Sub Station	In Winterbourne Stoke.	3	2	Embankment	1
CL013	Former Cutting (1878)	North of the current A303, west of the River Till.	3	2	Viaduct	1
CL017	Hill Farm	West of Former RAF Oatlands Hill (CL018).	3	1	Cutting	1
CL024	Historic Engine House (1926)	East of the A360, south of Former RAF Lake Down (CL023).	3	2	Cutting	2
CL026	Unspecified Pit (1879)	Within vicinity of existing Longbarrow Cross Roads.	3	2	Cutting	2
CL030	Truck Repair Shop	Adjacent to Rollestone Camp (CL028).	3	2	At Grade	2
CL038	Former RAF Stonehenge Sewage Works (disused 1924, removed 1970)	South of the Stonehenge Monument.	3	2	At grade/Bored Tunnel	2
CL040	Cuttings and Unspecified Pits (1874 - 1974)	East of the Stonehenge Monument.	3	2	Bored Tunnel	1
CL042	Partially Infilled Pond at Amesbury Park (1899 - 1961)	Within Amesbury Park.	3	2	At Grade/Cutting	2
CL043	Electricity Sub Station	Amesbury, within vicinity of Amesbury Abbey.	3	2	Embankment	1
CL044	Countess Farm	North west of Countess Roundabout.	1	1	Embankment	2
CL046	Amesbury Filling Station	East of The Centre (road) in Amesbury.	3	3	Embankment	2
CL047	Unspecified Pit (1878)	East of A345 in Amesbury, near Amesbury Filling Station (CL046).	3	2	Embankment	1

Ref Number	Site Description	Location / Orientation	Proximity Zone	Land Use Class	Vertical Alignment	Baseline Site Rating
CL049	Electricity Sub Station	Amesbury, west of Amesbury Filling Station (CL046).	3	2	Embankment	1
CL053	Electricity Sub Station	North of Countess Services.	2	2	Embankment	2
CL054	Electricity Sub Station	In Amesbury.	3	2	Embankment	1
CL060	Electricity Sub Station	Amesbury, in vicinity of Reconditioning Gears (CL059).	3	2	At Grade	2
CL061	Electricity Sub Station	In Ratfyn.	1	2	Cutting	4
CL062	Ratfyn Farm and Tanks	In Ratfyn.	2	1	Cutting	2
CL065	Garage (Vehicle Repair, Testing and Servicing)	South of the Scheme In Amesbury.	3	2	At Grade	2
CL068	Unnamed Farm	North east of Amesbury.	3	1	At Grade	1
CL069	Painting Contractors	South of the Scheme in Amesbury.	3	2	At Grade	2
CL070	Laundry	South of the Scheme in Amesbury.	3	2	At Grade	2
CL072	Unnamed Farm	South of the Scheme, west of West Amesbury, east of Stonehenge Rd	3	1	At Grade	1
CL073	West Amesbury Farm	South of the Scheme, west of West Amesbury, west of Stonehenge Rd	2	1	At Grade	2
CL078	Manor Farm	North of the Scheme, north of Larkhill Road	3	1	At Grade	1
CL079	Muller Plc (Warehouse distribution)	South of the Scheme in eastern Amesbury.	2	1	At Grade	2
CL089	Tank (1926)	South east of the eastern extent of the Scheme, within Amesbury.	3	1	At Grade	1
CL090	Tank (1926)	Eastern extent of scheme	2	1	At Grade	2
CL092	Unknown Filled Ground (pit, quarry, etc)	Northern area of scheme, SE of Rolleston Crossroads	3	2	At Grade	2
CL097	Sub Station (1977)	To east of Rollestone camp	3	2	At grade	2
CL100	Unknown Filled Ground (pond, pit, quarry, etc) - 1961	Eastern extent of scheme	3	2	At Grade	2
CL101	Unknown Filled Ground (pond, pit, quarry, etc) - 1961	Eastern extent of scheme	3	2	At Grade	2

Ref Number	Site Description	Location / Orientation	Proximity Zone	Land Use Class	Vertical Alignment	Baseline Site Rating
CL103	Concrete Works	Eastern extent of scheme	3	2	At Grade	2
CL108	Reservoir	Ratfyn	3	2	At grade	2
CL109	Historical Garages	North of Amesbury	3	2	At grade	2
CL110	Historical Garages	North of Amesbury	3	2	At grade	2
CL111	Unspecified Pit	Stonehenge Bottom	1	2	Bored Tunnel	2
CL112	Former Garage (now residential and shops including dry cleaners)	North of Amesbury	3	2	Cutting	2

Table 10.1.5: Summary of sites scoped in for Detailed Risk Assessment based on baseline Site Rating (baseline score 3, 4 and 5)

Ref Number	Site Description	Location / Orientation	Proximity Zone	Land Use Class	Vertical Alignment	Baseline Site Rating
CL001	Pig Farm (Berwick Down)	South east of Yarnbury Castle Fort.	1	1	Grade	3
CL003	Cherry Lodge Farm (formerly Homanton Farm)	West of the B3083.	1	1	Cutting	3
CL005	Pumping House	Northwest of Winterbourne Stoke, north of Scotland Farm.	1	2	Embankment	3
CL006	Possible Infilled Ground - former Covered Reservoir	North of the current A303, west of the River Till.	2	2	Cutting	3
CL010	Winterbourne Stoke Chalk Pit (1879 - 1926)	East of Winterbourne Stoke.	1	2	Embankment	3
CL012	Manor Farm	In Winterbourne Stoke.	1	1	Cutting	3
CL014	Unspecified Pit (1878 - 1926). Adjacent/ within Area of Fill (Demolition Rubble) (CL015)	North of the current A303, east of the River Till.	1	2	Cutting	4
CL015	Area of Fill (Demolition Rubble)	Northeast of Winterbourne Stoke, east of the River Till.	1	2	Cutting	4
CL016	Historic Barn and Above Ground Tank (1877 - 1961)	West of existing Longbarrow Cross Roads, north of the current A303.	1	1	Cutting	3
CL018	Former RAF Oatlands Hill (1941 -	South of the current A303, west of the	1	3	Cutting/At Grade	5

Ref Number	Site Description	Location / Orientation	Proximity Zone	Land Use Class	Vertical Alignment	Baseline Site Rating
	1946)	A360.				
CL020	Infilled and unspecified Pits and Ground Workings (1879 - 1957)	Within RAF Oatlands Hill (CL018).	1	2	Cutting	4
CL021	Pump House (and associated former Covered Reservoir - potentially infilled)	Northwest of existing Longbarrow Cross Roads.	1	2	Cutting/Embankment	4
CL023	Former RAF Lake Down (1917 - 1924)	Along the A360, south of the Scheme.	1	3	Cutting	5
CL025	Former Larkhill Military Light Railway (Dismantled)	East of the existing Longbarrow Cross Roads.	1	2	Cutting	4
CL028	Rollestone Camp	West of the A360, north of B3086.	1	3	At Grade	5
CL033	Larkhill (Former Aerodrome and Current Royal School of Artillery) - Artillery Range	Along The Packway Road.	2	3	At Grade	4
CL034	Pig Farm (Longbarrow Roundabout)	South east of existing Longbarrow Cross Roads.	1	1	Cutting	3
CL035	Former RAF Stonehenge (1917 - 1921)	West of the Stonehenge Monument.	1	3	Cutting/ Bored Tunnel	5
CL036	Former Stonehenge Pedigree Stock Farm (1924 - 1926)	Within the footprint of the Former RAF Stonehenge (CL035).	1	1	At grade/Bored Tunnel	3
CL037	Former Sewage Outfall (disused 1924, removed 1970)	South of the Stonehenge Monument.	1	2	At grade/Bored Tunnel	4
CL039	Disused Tip (1974)	South of the Stonehenge Monument.	3	3	At grade/Bored Tunnel	3
CL041	Former Quarry (1899 - 1961)	North west of Amesbury.	1	2	At Grade/Cutting	4
CL045	Former Gas Works (1879 - 1901) and Ground Works (1961)	West Amesbury, adjacent (east) of the A345 (Countess Road).	1	3	Embankment	4
CL050	Pumping Station	Within vicinity of Countess Roundabout.	1	2	Embankment	3
CL051	Countess Filling Station	North east of Countess Roundabout.	1	3	Embankment	4
CL052	Former Gravel Pit (1926 - 1961)	North of Countess Services.	2	2	Cutting/Grade	3
CL055	Railway Land (historic engine	In Ratfyn.	1	2	Cutting/Grade	4

Ref Number	Site Description	Location / Orientation	Proximity Zone	Land Use Class	Vertical Alignment	Baseline Site Rating
	sheds, buildings, tanks and sidings (1926)					
CL056	MA Motors and recovery - Motor Garage	North of Ratfyn.	1	2	Cutting/Grade	4
CL057	Former SR Bulford Extension Railway (1924 - 1937)	East of Ratfyn and Amesbury.	1	2	Cutting/Grade	4
CL058	Cuttings potentially associated with SR Bulford Extention Railway - potentially infilled	East of Amesbury.	1	2	At Grade	4
CL059	Industrial Repairs and Servicing (Reconditioning Gears)	South east of the eastern extent of the Scheme, within Amesbury.	2	2	At Grade	3
CL061	Electricity Sub Station	In Ratfyn.	1	2	Cutting	4
CL063	Former Chalk Pit (1878 - 1961)	Near Ratfyn Farm (CL062).	2	2	At Grade	3
CL064	Precision Engineer (Engineering Services)	South of the Scheme In Amesbury.	1	2	At Grade	4
CL066	Depot and Warehousing (Minton Distribution Park)	South of the Scheme In Amesbury.	2	2	At Grade	3
CL071	Coop Filling Station	South of the Scheme in eastern Amesbury.	2	3	At Grade	4
CL080	High Pressure Esso Oil Pipeline	West of Winterbourne Stoke.	1	3	Embankment	4
CL081	Electricity Sub Station	North west of Ratfyn	1	2	Cutting	4
CL082	Sewage Works	North west of Ratfyn	1	2	Cutting	4
CL088	Electricity Sub Station	East of Countess Road, north of Amesbury	2	2	At Grade	3
CL091	New Barn' - current unknown industrial activity from aerial photography	Eastern extent of scheme	1	1	At Grade	3
CL098	Unknown Filled Ground (pit, quarry, etc)	West of the B3083, within cherry lodge farm	1	2	Cutting	4
CL102	Motor Works	Eastern extent of scheme	2	2	At Grade	3
CL105	Former Railway Buildings and	East and West of Countess Rd	1	2	Cutting	4

Ref Number	Site Description	Location / Orientation	Proximity Zone	Land Use Class	Vertical Alignment	Baseline Site Rating
	Sidings near Countess Road					
CL113	Goods Yard - Unknown activity	Ratfyn	1	1	Cutting	3

10.2 Detailed Risk Assessment - Esso Oil Pipeline

Table 10.1.6: Detailed risk assessment for the High Pressure Esso Oil Pipeline in the study area

Site ID (IDS)	CL080					
Site group and the Study Area	High Pressure Esso Oil Pipeline located within the Scheme boundary					
Site title (Site ID) and land use class	High Pressure Esso Oil Pipeline - (CL080) – Class 3.					
Receptors						
Site title (Site ID)	Sensitive land use (human receptor) (adjacent and/or <50m)	Aquifer designation	Surface watercourse (adjacent and/or <50m)	Geological, including minerals designation or ecological designation (adjacent and/or <50m)	Property e.g. buildings and structures (adjacent and/or <50m)	Other
High Pressure Esso Oil Pipeline (CL080)	Off Site Residential	Bedrock - Principal Aquifer	River Till	Crosses Parsonage Down SSSI north of Scheme SSSI – River Till	Off Site Residential	None
Post-construction development description						
CL080 – Remains in-situ beneath embankment leading to B3082 underbridge – Winterbourne Stoke Bypass						

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, organic compounds, inorganic compounds, hydrocarbons, PAH, solvents, fuel oils, alkalis.	On-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - commercial/public open space None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, organic compounds, inorganic compounds, hydrocarbons, PAH, solvents, fuel oils, alkalis.	Off-site users – residential Cherry Lodge Farm	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Low	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Low	Medium	Moderate/low
		Inhalation of ground gases.	N/A	N/A	N/A
	Off-site users - commercial/public open space None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	Controlled waters – groundwater – Principal Aquifer	Vertical and lateral migration.	Low	Severe	Moderate

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, organic compounds, inorganic compounds, hydrocarbons, PAH, solvents, fuel oils, alkalis.	Controlled waters – surface waters River Till	Groundwater migration, direct run-off from site.	Low	Severe	Moderate
	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	Low	Severe	Moderate
		Aggressive Ground Conditions	N/A	N/A	N/A
	Ecological/geological designations Parsonage Down SSSI SSSI – River Till	Vertical and lateral migration, direct contact.	Low	Severe	Moderate
Notes / assumptions Sites assessed without construction of the Scheme. N/A is not applicable as there are no residential properties on the site, no commercial properties on or adjacent to the site, no ground gas sources on or adjacent to the site.					

Source	Receptor	Pathway	Probability (R&D66 Table)	Consequence (R&D66 Table)	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, organic compounds, inorganic compounds, hydrocarbons, PAH, solvents, fuel oils, alkalis.	On-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - commercial/public open space None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A

Source	Receptor	Pathway	Probability (R&D66 Table)	Consequence (R&D66 Table)	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, organic compounds, inorganic compounds, hydrocarbons, PAH, solvents, fuel oils, alkalis.	Off-site users – residential Cherry Lodge Farm	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Low	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Low	Medium	Moderate/low
		Inhalation of ground gases.	N/A	N/A	N/A
	Off-site users - commercial/public open space None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	Controlled waters – groundwater – Principal Aquifer	Vertical and lateral migration.	Low	Severe	Moderate

Source	Receptor	Pathway	Probability (R&D66 Table)	Consequence (R&D66 Table)	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, organic compounds, inorganic compounds, hydrocarbons, PAH, solvents, fuel oils, alkalis.	Controlled waters – surface waters River Till	Groundwater migration, direct run-off from site.	Low	Severe	Moderate
	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	Low	Severe	Moderate
		Aggressive Ground Conditions	N/A	N/A	N/A
	Ecological/geological designations Parsonage Down SSSI SSSI – River Till	Vertical and lateral migration, direct contact.	Low	Severe	Moderate
Notes / assumptions During construction standard mitigation procedures are assumed to be implemented. Construction workers have been excluded from assessment due to the use of PPE and risk management. N/A is not applicable as there are no residential properties on the site, no commercial properties on or adjacent to the site, no ground gas sources on or adjacent to the site Whilst the measures detailed in the Outline Environmental Management Plan (OEMP) (Application Number 6.3, Appendix 2.2) will make it unlikely that there will be adverse consequences associated with construction for example through the control of surface run-off and dust, it is considered that there may still be temporary adverse effects during the construction period that might arise through ground disturbance. The adoption of the OEMP 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. Assumes construction phase includes remediation that may be required					

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
Residual soil, leachate, and groundwater contamination. Ground gas.	On-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - commercial, public open space. None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
Residual soil, leachate, and groundwater contamination. Ground gas.	Off-site users – residential. Cherry Lodge Farm	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Low	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Low	Medium	Moderate/low
		Inhalation of ground gases.	N/A	N/A	N/A
	Off-site users - commercial/public open space. None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	Controlled waters – groundwater – Principal Aquifer	Vertical and lateral migration.	Low	Severe	Moderate
	Controlled waters – surface waters River Till	Groundwater migration, direct run-off from site.	Low	Severe	Moderate

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
Residual soil, leachate, and groundwater contamination. Ground gas.	Property receptors – buildings, foundations, and services (on-site and off-site).	Exposure to explosive gases	Low	Severe	Moderate
		Aggressive Ground Conditions	N/A	N/A	N/A
	Ecological/geological designations Parsonage Down SSSI SSSI – River Till	Vertical and lateral migration, direct contact	Low	Severe	Moderate
Notes / assumptions Assumes remediation required has been undertaken and construction works are complete. N/A is not applicable as there are no residential properties on the site, no commercial properties on or adjacent to the site, no ground gas sources on or adjacent to the site A range may be given as remediation strategies will vary in design to focus on specific contaminative risks at each site. Remediation strategies may involve source removal or pathway intervention as appropriate.					

Impact Assessment (Comparison of baseline against construction and post-construction): High Pressure Esso Oil Pipeline located within the Study Area

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Exposure to soil contamination - on-site users (residential).	N/A	N/A	N/A	N/A	N/A
Exposure to groundwater contamination - on-site users (residential).	N/A	N/A	N/A	N/A	N/A
Exposure to ground gas - on-site users (residential).	N/A	N/A	N/A	N/A	N/A
Exposure to soil contamination – on-site users (commercial/public open space)	N/A	N/A	N/A	N/A	N/A
Exposure to groundwater contamination – on-site users (commercial/public open space)	N/A	N/A	N/A	N/A	N/A
Exposure to ground gas – on-site users (commercial/public open space)	N/A	N/A	N/A	N/A	N/A

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Exposure to soil contamination - off-site users (residential)	Moderate/low	Moderate/low	Moderate/low	Neutral effect	Neutral Effect
Exposure to groundwater contamination – off-site users (residential)	Moderate/low	Moderate/low	Moderate/low	Neutral effect	Neutral Effect
Exposure to ground gas – off-site users (residential)	N/A	N/A	N/A	Neutral effect	Neutral Effect
Exposure to soil contamination – off-site users (commercial)	N/A	N/A	N/A	N/A	N/A
Exposure to groundwater contamination – off-site users (commercial)	N/A	N/A	N/A	N/A	N/A
Exposure to ground gas – off-site users (commercial)	N/A	N/A	N/A	N/A	N/A
Contaminated soil, leachate/groundwater and pollution of aquifers	Moderate	Moderate	Moderate	Neutral effect	Neutral Effect

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Contaminated soil, leachate/groundwater and impact on surface watercourses	Moderate	Moderate	Moderate	Neutral effect	Neutral Effect
Impact on property receptors	Moderate	Moderate	Moderate	Neutral effect	Neutral Effect
Impact on ecological/geological designations	Moderate	Moderate	Moderate	Neutral effect	Neutral Effect
Overall significance				Neutral effect	Neutral Effect
Notes / assumptions Assumes remediation required has been undertaken and construction works are complete.					

10.3 Detailed Risk Assessment – Military Land

Table 10.1.7: Detailed risk assessment for the Military Land located within the Scheme boundary

Site ID (IDS)	CL018, CL023, CL035
Site group	Military land located within the Scheme
Site title (Site ID) and land use class	Former RAF Oatlands Hill (1941 to 1946) - (CL018) Class 3. Former RAF Lake Down (1917 to 1924) - (CL023) Class 3. Former RAF Stonehenge (1917 to 1921) - (CL035) Class 3.

Receptors						
Site title (Site ID)	Sensitive land use (human receptor) (adjacent and/or <50m)	Aquifer designation	Surface watercourse (adjacent and/or <50m)	Geological, including minerals designation or ecological designation (adjacent and/or <50m)	Property e.g. buildings and structures (adjacent and/or <50m)	Other
Former RAF Oatlands Hill (CL018)	None	Bedrock Principal Aquifer	None	None	None	Agricultural Land
Former RAF Lake Down (CL023)	Off-site Residential and Commercial	Bedrock Principal Aquifer Superficial Secondary Undifferentiated Aquifer	None	None	Off-site Residential and Commercial properties	Agricultural Land
Former RAF Stonehenge (CL035)	On-site Public open space Off Site Public open space	Bedrock Principal Aquifer	None	None	None	Agricultural Land

Post-construction development description
CL018 – Longbarrow Junction (including Longbarrow cutting east, west and central, Green Bridge three and Longbarrow dumbbell south) CL023 – South of Longbarrow Junction CL035 – Tunnel / western portal

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	On-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users – Public open space (Stonehenge)	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Medium	Low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Medium	Low
		Inhalation of ground gases.	N/A	N/A	N/A

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	Off-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	Off-site users - commercial/public open space Public open space (Stonehenge)	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely to low	Medium	Low to Moderate/low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Medium	Low
		Inhalation of ground gases.	N/A	N/A	N/A
	Controlled waters – groundwater – Principal Aquifer, Secondary Undifferentiated Aquifer	Vertical and lateral migration.	Unlikely	Medium	Low

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	Controlled waters – surface waters None	Groundwater migration, direct run-off from site.	N/A	N/A	N/A
	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	N/A	N/A	N/A
		Aggressive Ground Conditions	N/A	N/A	N/A
	Ecological/geological designations	Vertical and lateral migration, direct contact.	N/A	N/A	N/A
Notes / assumptions Sites assessed without construction of the Scheme. N/A is not applicable as there are no residential properties on the site, no commercial properties on or adjacent to the site, no ground gas sources on or adjacent to the site. There are no surface water courses within vicinity of the sites.					

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Source	Receptor	Pathway	Probability (R&D66 Table)	Consequence (R&D66 Table)	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	On-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - Public open space (Stonehenge)	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A

Source	Receptor	Pathway	Probability (R&D66 Table)	Consequence (R&D66 Table)	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	Off-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	Off-site users - commercial/public open space Public open space (Stonehenge)	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely to low	Medium	Low to Moderate/low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Low	Medium	Moderate/low
		Inhalation of ground gases.	N/A	N/A	N/A
Soil, leachate and	Controlled waters – groundwater – Principal Aquifer, Secondary Undifferentiated Aquifer	Vertical and lateral migration.	Low	Medium	Moderate/low

Source	Receptor	Pathway	Probability (R&D66 Table)	Consequence (R&D66 Table)	Risk with construction stage mitigation
groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	Controlled waters – surface waters None	Groundwater migration, direct run-off from site.	N/A	N/A	N/A
	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	N/A	N/A	N/A
		Aggressive Ground Conditions	N/A	N/A	N/A
	Ecological/geological designations	Vertical and lateral migration, direct contact.	N/A	N/A	N/A
Notes / assumptions During construction standard mitigation procedures are assumed to be implemented. Construction workers have been excluded from assessment due to the use of PPE and risk management. N/A is not applicable as there are no residential properties on the site, no commercial properties on or adjacent to the site, no ground gas sources or surface water on or adjacent to the sites Whilst the measures detailed in the OEMP will make it unlikely that there will be adverse consequences associated with construction for example through the control of surface run-off and dust, it is considered that there may still be temporary adverse effects during the construction period that might arise through ground disturbance. The adoption of the OEMP 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. Assumes construction phase include remediation that may be required					

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
Residual soil, leachate, and groundwater contamination. Ground gas.	On-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users – Public open space (Stonehenge)	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Minor to medium	Very low to low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Minor to medium	Very low to low
		Inhalation of ground gases.	N/A	N/A	N/A

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
Residual soil, leachate, and groundwater contamination. Ground gas.	Off-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	Off-site users - commercial/public open space Public open space (Stonehenge)	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely to low	Medium	Low to Moderate/low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Medium	Low
		Inhalation of ground gases.	N/A	N/A	N/A
	Controlled waters – groundwater – Principal Aquifer, Secondary Undifferentiated Aquifer	Vertical and lateral migration.	Unlikely	Mild to Medium	Very low to low

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
Residual soil, leachate, and groundwater contamination. Ground gas.	Controlled waters – surface waters None	Groundwater migration, direct run-off from site.	N/A	N/A	N/A
	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases	N/A	N/A	N/A
		Aggressive Ground Conditions	N/A	N/A	N/A
	Ecological/geological designations	Vertical and lateral migration, direct contact	N/A	N/A	N/A
Notes / assumptions Assumes remediation required has been undertaken and construction works are complete. N/A is not applicable as there no residential properties on the site, no commercial properties on or adjacent to the site, no ground gas sources or surface water on or adjacent to the sites A range may be given as remediation strategies will vary in design to focus on specific contaminative risks at each site. Remediation strategies may involve source removal or pathway intervention as appropriate.					

Impact Assessment (Comparison of baseline against construction and post-construction): Military Land sites located within the Scheme

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Exposure to soil contamination - on-site users (residential).	N/A	N/A	N/A	N/A	N/A
Exposure to groundwater contamination - on-site users (residential).	N/A	N/A	N/A	N/A	N/A
Exposure to ground gas - on-site users (residential).	N/A	N/A	N/A	N/A	N/A
Exposure to soil contamination – on-site users (commercial/public open space)	Low	N/A	Very low to low	N/A	Minor beneficial effect
Exposure to groundwater contamination – on-site users (commercial/public open space)	Low	N/A	Very low to low	N/A	Minor beneficial effect
Exposure to ground gas – on-site users (commercial/public open space)	N/A	N/A	N/A	N/A	N/A

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Exposure to soil contamination - off-site users (residential)	N/A	N/A	N/A	N/A	N/A
Exposure to groundwater contamination – off-site users (residential)	N/A	N/A	N/A	N/A	N/A
Exposure to ground gas – off-site users (residential)	N/A	N/A	N/A	N/A	N/A
Exposure to soil contamination – off-site users (commercial/public open space)	Low to Moderate/low	Low to Moderate/low	Low to Moderate/low	Neutral effect	Neutral effect
Exposure to groundwater contamination – off-site users (commercial/public open space)	Low	Low	Low	Neutral effect	Neutral effect
Exposure to ground gas – off-site users (commercial/public open space)	N/A	N/A	N/A	N/A	N/A

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Contaminated soil, leachate/groundwater and pollution of aquifers	Low	Moderate/low	Very low to low	Minor adverse effect	Minor beneficial effect to Neutral effect
Contaminated soil, leachate/groundwater and impact on surface watercourses	N/A	N/A	N/A	N/A	N/A
Impact on property receptors	N/A	N/A	N/A	N/A	N/A
Impact on ecological/geological designations	N/A	N/A	N/A	N/A	N/A
Overall significance				Neutral to minor adverse effect	Neutral to minor beneficial effect
Notes / assumptions Assumes remediation required has been undertaken and construction works are complete.					

Table 10.1.8: Detailed risk assessment for the Military Land located outside the Scheme boundary but within the Study Area

Site ID (IDS)	CL028, CL033
Site group	Military Land located outside the Scheme boundary but within the Study Area
Site title (Site ID) and land use class	Rollestone Camp – (CL028) Class 3 Larkhill (Former Aerodrome and Current Royal School of Artillery) - Artillery Range – (CL033) Class 3

Receptors						
Site title (Site ID)	Sensitive land use (human receptor) (adjacent and/or <50m)	Aquifer designation	Surface watercourse (adjacent and/or <50m)	Geological, including minerals designation or ecological designation (adjacent and/or <50m)	Property e.g. buildings and structures (adjacent and/or <50m)	Other
Rollestone Camp (CL028)	On-site Residential Commercial Off-site Residential Commercial / Open space	Bedrock - Principal Aquifer	None	SSSI – Salisbury Plain	On-site Residential and commercial properties Off-Site Residential and commercial properties	Agricultural land adjacent to the north and south
Larkhill (Former Aerodrome and Current Royal School of Artillery) - Artillery Range (CL033)	On-site Open Space Off-site Residential	Bedrock - Principal Aquifer	None	SSSI – Salisbury Plain	On-site None Off-ite Residential properties	Agricultural land to north south and east.

Post-construction development description
None. Sites are located outside of the land required for the construction of the Scheme. Adjacent to Rollestone Junction

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	On-site users – residential Rollestone Camp	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Medium	Low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Medium	Low
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - commercial/public open space Truck repair company (CL030) Artillery Range	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Mild to Medium	Very low to Low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Mild to Medium	Very low to Low
		Inhalation of ground gases.	N/A	N/A	N/A

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	Off-site users – residential Rollestone Camp and Residential property	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Medium	Low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Medium	Low
		Inhalation of ground gases.	N/A	N/A	N/A
	Off-site users - commercial/public open space Artillery Range	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Mild	Very Low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Mild	Very low
		Inhalation of ground gases.	N/A	N/A	N/A
	Controlled waters – groundwater – Principal Aquifer	Vertical and lateral migration.	Unlikely	Medium	Low

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	Controlled waters – surface waters None	Groundwater migration, direct run-off from site.	N/A	N/A	N/A
	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	Unlikely	Medium	Low
		Aggressive Ground Conditions	N/A	N/A	N/A
	Ecological/geological designations SSSI – Salisbury Plain	Vertical and lateral migration, direct contact.	Low	Mild	Low
Notes / assumptions Sites assessed without construction of the Scheme. N/A is not applicable as there are no ground gas sources on or adjacent to the site. There are also no surface water courses within vicinity of the sites.					

Source	Receptor	Pathway	Probability (R&D66 Table)	Consequence (R&D66 Table)	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	On-site users – residential Rollestone Camp	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Medium	Low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Medium	Low
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - commercial/public open space Truck repair company (CL030) Artillery Range	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Mild to medium	Very low to Low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Mild to medium	Very low to Low
		Inhalation of ground gases.	N/A	N/A	N/A

Source	Receptor	Pathway	Probability (R&D66 Table)	Consequence (R&D66 Table)	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	Off-site users – residential Rollestone Camp and Residential property	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Medium	Low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Medium	Low
		Inhalation of ground gases.	N/A	N/A	N/A
	Off-site users - commercial/public open space Artillery Range	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Mild	Very Low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Mild	Very Low
		Inhalation of ground gases.	N/A	N/A	N/A
	Controlled waters – groundwater Principal Aquifer	Vertical and lateral migration.	Unlikely	Medium	Low
Soil, leachate and groundwater contamination. Ground gas.	Controlled waters – surface waters None	Groundwater migration, direct run-off from site.	N/A	N/A	N/A

Source	Receptor	Pathway	Probability (R&D66 Table)	Consequence (R&D66 Table)	Risk with construction stage mitigation
Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	Property receptors – buildings, foundations, and services (on-site and off-site).	Exposure to explosive gases.	Unlikely	Medium	Low
		Aggressive Ground Conditions	N/A	N/A	N/A
	Ecological/geological designations SSSI – Salisbury Plain	Vertical and lateral migration, direct contact.	Low	Mild	Low
Notes / assumptions During construction standard mitigation procedures are assumed to be implemented. Construction workers have been excluded from assessment due to the use of PPE and risk management. N/A is not applicable as there are no anticipated ground gas sources or surface water on or adjacent to the sites Whilst the measures detailed in the OEMP will make it unlikely that there will be adverse consequences associated with construction for example through the control of surface run-off and dust, it is considered that there may still be temporary adverse effects during the construction period that might arise through ground disturbance. The adoption of the OEMP 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. Assumes construction phase include remediation that may be required					

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
Residual soil, leachate, and groundwater contamination. Ground gas.	On-site users – residential Rollestone Camp	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Medium	Low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Medium	Low
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - commercial/public open space Truck repair company (CL030) Artillery Range	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Mild to Medium	Very low to Low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Mild to Medium	Very low to Low
		Inhalation of ground gases.	N/A	N/A	N/A
Residual soil, leachate, and groundwater contamination.	Off-site users – residential	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Medium	Low

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
Ground gas. Residual soil, leachate, and groundwater contamination. Ground gas.	Rollestone Camp Residential property	Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Medium	Low
		Inhalation of ground gases.	N/A	N/A	N/A
	Off-site users - commercial/public open space Artillery Range	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Mild	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Mild	Very low
		Inhalation of ground gases.	N/A	N/A	N/A
	Controlled waters – groundwater – Principal Aquifer	Vertical and lateral migration.	Unlikely	Medium	Low
	Controlled waters – surface waters None	Groundwater migration, direct run-off from site.	N/A	N/A	N/A
	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	Unlikely	Medium	Low
		Aggressive Ground Conditions	N/A	N/A	N/A

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
	Ecological/geological designations SSSI – Salisbury Plain	Vertical and lateral migration, direct contact.	Low	Mild	Low
Notes / assumptions Assumes remediation required has been undertaken and construction works are complete. N/A is not applicable as there are no known ground gas sources or surface water on or adjacent to the sites. A range may be given as remediation strategies will vary in design to focus on specific contaminative risks at each site. Remediation strategies may involve source removal or pathway intervention as appropriate.					

Impact Assessment (Comparison of baseline against construction and post-construction): Military Land located outside the Scheme boundary but within the Study Area

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Exposure to soil contamination - on-site users (residential).	Low	Low	Low	Neutral effect	Neutral effect
Exposure to groundwater contamination - on-site users (residential).	Low	Low	Low	Neutral effect	Neutral effect
Exposure to ground gas - on-site users (residential).	N/A	N/A	N/A	N/A	N/A
Exposure to soil contamination – on-site users (commercial/public open space)	Very low to Low	Very low to Low	Very low to low	Neutral effect	Neutral effect
Exposure to groundwater contamination – on-site users (commercial/public open space)	Very low to Low	Very low to Low	Very low to low	Neutral effect	Neutral effect
Exposure to ground gas – on-site users (commercial/public open space)	N/A	N/A	N/A	N/A	N/A

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Exposure to soil contamination - off-site users (residential)	Low	Low	Low	Neutral effect	Neutral effect
Exposure to groundwater contamination – off-site users (residential)	Low	Low	Low	Neutral effect	Neutral effect
Exposure to ground gas – off-site users (residential)	N/A	N/A	N/A	N/A	N/A
Exposure to soil contamination – off-site users (commercial/public open space)	Very low	Very low	Very low	Neutral effect	Neutral effect
Exposure to groundwater contamination – off-site users (commercial/public open space)	Very low	Very low	Very low	Neutral effect	Neutral effect
Exposure to ground gas – off-site users (commercial/public open space)	N/A	N/A	N/A	N/A	N/A
Contaminated soil, leachate/groundwater and pollution of aquifers	Low	Low	Low	Neutral effect	Neutral effect

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Contaminated soil, leachate/groundwater and impact on surface watercourses	N/A	N/A	N/A	N/A	N/A
Impact on property receptors	Low	Low	Low	Neutral effect	Neutral effect
Impact on ecological/geological designations	Low	Low	Low	Neutral effect	Neutral effect
Overall significance				Neutral effect	Neutral effect
Notes / assumptions Assumes remediation required has been undertaken and construction works are complete.					

10.4 Detailed Risk Assessment – Petrol Filling Stations

Table 10.1.9: Detailed risk assessment for the Petrol Filling Stations located outside the Scheme boundary but within the Study Area

Site ID (IDS)	CL051, CL071
Site group	Petrol Filling Stations located outside the Scheme boundary but within the Study Area
Site title (Site ID) and land use class	Countess Filling Station – (CL051) Class 3. Co-operative Filling Station – (CL071) Class 3.

Receptors						
Site title (Site ID)	Sensitive land use (human receptor) (adjacent and/or <50m)	Aquifer designation	Surface watercourse (adjacent and/or <50m)	Geological, including minerals designation or ecological designation (adjacent and/or <50m)	Property e.g. buildings and structures (adjacent and/or <50m)	Other
Countess Filling Station (CL051)	On-site Commercial Off-site Hotel and Restaurant (retail / commercial)	Bedrock - Principal Aquifer Superficial - Secondary A Aquifer	Drain leading to River Avon adjacent to southern boundary of site	None (River Avon – SSSI)	On-site buildings and infrastructure Off Site Hotel and Restaurant	None
Co-operative Filling Station (CL071)	On-site Commercial Off-site Hotel and Restaurant (retail / commercial)	Bedrock - Principal Aquifer Superficial - Secondary A Aquifer	None	None	On-site buildings and infrastructure Off-site Hotel and Restaurant	None

Post-construction development description
None. Sites are located outside of the Scheme. CL051 - Adjacent to Countess Junction comprising proposed Countess Flyover and Countess Roundabout modifications. CL071 – Adjacent to area of A303 which is part of Scheme but no proposed redevelopment taking place.

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis.	On-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - commercial Petrol Filling Station	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Low to likely	Medium	Moderate to moderate/low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Low to likely	Medium	Moderate to moderate/low
		Inhalation of ground gases.	N/A	N/A	N/A

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis.	Off-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	Off-site users - commercial Hotel and Restaurant (retail/commercial)	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely to low	Mild	Very Low to low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely to low	Mild	Very Low to low
		Inhalation of ground gases.	N/A	N/A	N/A
	Controlled waters – groundwater – Principal Aquifer Secondary A	Vertical and lateral migration.	Unlikely to low	Severe	Moderate/low to moderate

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis.	Controlled waters – surface waters River Avon	Groundwater migration, direct run-off from site.	Low	Severe	Moderate
	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	Low	Severe	Moderate
		Aggressive Ground Conditions	Likely	Medium	Moderate
	Ecological/geological designations SSSI – River Avon	Vertical and lateral migration, direct contact.	Low	Medium	Moderate/low
Notes / assumptions Sites assessed without construction of the Scheme. N/A is not applicable as there are no ground gas sources on or adjacent to the site. There are also no residential properties on site or immediate vicinity.					

Construction CSM and Qualitative Risk Assessment: Petrol Filling Stations located outside the Scheme boundary but within the Study Area

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Source	Receptor	Pathway	Probability (R&D66 Table)	Consequence (R&D66 Table)	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis.	On-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - commercial Petrol Filling Station	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Low to likely	Medium	Moderate to moderate/low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Low to likely	Medium	Moderate to moderate/low
		Inhalation of ground gases.	N/A	N/A	N/A

Source	Receptor	Pathway	Probability (R&D66 Table)	Consequence (R&D66 Table)	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis.	Off-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	Off-site users - commercial Hotel and Restaurant (retail/commercial)	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely to low	Mild	Very Low to low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely to low	Medium	Low to Moderate/low
		Inhalation of ground gases.	N/A	N/A	N/A
	Controlled waters – groundwater Principal Aquifer Secondary A	Vertical and lateral migration.	Low	Severe	Moderate

Source	Receptor	Pathway	Probability (R&D66 Table)	Consequence (R&D66 Table)	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis.	Controlled waters – surface waters River Avon	Groundwater migration, direct run-off from site.	Low	Severe	Moderate
	Property receptors – buildings, foundations, and services (on-site and off-site).	Exposure to explosive gases.	Low	Severe	Moderate
		Aggressive Ground Conditions	Likely	Medium	Moderate
	Ecological/geological designations SSSI – River Avon	Vertical and lateral migration, direct contact.	Low	Medium	Moderate/low
Notes / assumptions During construction standard mitigation procedures are assumed to be implemented. Construction workers have been excluded from assessment due to the use of PPE and risk management. N/A is not applicable as there are no anticipated ground gas sources or residents on or adjacent to the sites Whilst the measures detailed in the OEMP will make it unlikely that there will be adverse consequences associated with construction for example through the control of surface run-off and dust, it is considered that there may still be temporary adverse effects during the construction period that might arise through ground disturbance. The adoption of the OEMP 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. Assumes construction phase include remediation that may be required					

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
Residual soil, leachate, and groundwater contamination.	On-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - commercial Petrol Filling Station	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Low to likely	Medium	Moderate to moderate/low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Low to likely	Medium	Moderate to moderate/low
		Inhalation of ground gases.	N/A	N/A	N/A
Residual soil, leachate, and groundwater contamination. Ground gas.	Off-site users – residential	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
Residual soil, leachate, and groundwater contamination. Ground gas.	None	Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	Off-site users - commercial Hotel and Restaurant (retail/commercial)	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely to low	Mild	Very Low to low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely to low	Mild	Very Low to low
		Inhalation of ground gases.	N/A	N/A	N/A
	Controlled waters – groundwater – Principal Aquifer Secondary A	Vertical and lateral migration.	Unlikely to low	Severe	Moderate/low to moderate
	Controlled waters – surface waters River Avon	Groundwater migration, direct run-off from site.	Low	Severe	Moderate
	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	Low	Severe	Moderate
		Aggressive Ground Conditions	Likely	Medium	Moderate

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
	Ecological/geological designations SSSI – River Avon	Vertical and lateral migration, direct contact.	Low	Medium	Moderate/low
Notes / assumptions Assumes remediation required has been undertaken and construction works are complete. N/A is not applicable as there are no known ground gas sources or residential receptors on or adjacent to the sites. A range may be given as remediation strategies will vary in design to focus on specific contaminative risks at each site. Remediation strategies may involve source removal or pathway intervention as appropriate.					

Impact Assessment (Comparison of baseline against construction and post-construction): Petrol Filling Stations located outside the Scheme boundary but within the Study Area

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Exposure to soil contamination - on-site users (residential).	N/A	N/A	N/A	N/A	N/A
Exposure to groundwater contamination - on-site users (residential).	N/A	N/A	N/A	N/A	N/A
Exposure to ground gas - on-site users (residential).	N/A	N/A	N/A	N/A	N/A
Exposure to soil contamination – on-site users (commercial)	Moderate/low to moderate	Moderate/low to moderate	Moderate/low to moderate	Neutral effect	Neutral effect
Exposure to groundwater contamination – on-site users (commercial)	Moderate/low to moderate	Moderate/low to moderate	Moderate/low to moderate	Neutral effect	Neutral effect
Exposure to ground gas – on-site users (commercial)	N/A	N/A	N/A	N/A	N/A

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Exposure to soil contamination - off-site users (residential)	N/A	N/A	N/A	N/A	N/A
Exposure to groundwater contamination – off-site users (residential)	N/A	N/A	N/A	N/A	N/A
Exposure to ground gas – off-site users (residential)	N/A	N/A	N/A	N/A	N/A
Exposure to soil contamination – off-site users (commercial)	Very low to low	Very low to low	Very low to low	Neutral effect	Neutral effect
Exposure to groundwater contamination – off-site users (commercial)	Very low to low	Low to moderate/low	Very low to low	Minor adverse effect	Neutral effect
Exposure to ground gas – off-site users (commercial)	N/A	N/A	N/A	N/A	N/A
Contaminated soil, leachate/groundwater and pollution of aquifers	Moderate/low to moderate	Moderate	Moderate/low to moderate	Minor adverse effect	Neutral effect

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Contaminated soil, leachate/groundwater and impact on surface watercourses	Moderate	Moderate	Moderate	Neutral effect	Neutral effect
Impact on property receptors	Moderate	Moderate	Moderate	Neutral effect	Neutral effect
Impact on ecological/geological designations	Moderate/low	Moderate/low	Moderate/low	Neutral effect	Neutral effect
Overall significance				Neutral effect to minor adverse effect	Neutral effect
Notes / assumptions Assumes remediation required has been undertaken and construction works are complete.					

10.5 Detailed Risk Assessment – Former Gas Works

Table 10.1.10: Detailed risk assessment for the Former Gas Works located outside the Scheme boundary but within the Study Area

Site ID (IDS)	CL045
Site group	Former Gas Works located outside the Scheme boundary but within the Study Area
Site title (Site ID) and land use class	Former Gas Works (1879 - 1901) and Ground Works (1961) – (CL045) Class 3.

Receptors						
Site title (Site ID)	Sensitive land use (human receptor) (adjacent and/or <50m)	Aquifer designation	Surface watercourse (adjacent and/or <50m)	Geological, including minerals designation or ecological designation (adjacent and/or <50m)	Property e.g. buildings and structures (adjacent and/or <50m)	Other
Former Gas Works (1878 - 1922) (CL045)	On-site Public open space Off-site Public open space Residential	Bedrock - Principal Aquifer Superficial - Secondary A Aquifer	River Avon - adjacent to north of site	River Avon - SSSI	On-site Residential property associated with Amesbury Abbey Off-site Residential properties	None

Post-construction development description
Site is located outside of the Scheme. CL045 – Area south of Countess Junction / Countess Flyover - Embankment

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	On-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - Public open space Lords Walk Park (Public open space)	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Medium	Low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Medium	Low
		Inhalation of ground gases.	Unlikely	Medium	Low

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	Off-site users – residential Potential residential properties within Amesbury Abbey grounds. Properties fronting Countess Road	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Medium	Low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Medium	Low
		Inhalation of ground gases.	Unlikely	Mild	Very low
	Off-site users - Public open space Lords Walk Park (public open space)	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Mild	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Mild	Very low
		Inhalation of ground gases.	Unlikely	Mild	Very low
	Controlled waters – groundwater – Principal Aquifer Secondary A Aquifer	Vertical and lateral migration.	Low	Mild to medium	Low to moderate/low

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	Controlled waters – surface waters River Avon	Groundwater migration, direct run-off from site.	Low	Medium	Moderate/low
	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	Unlikely	Medium	Low
		Aggressive Ground Conditions	N/A	N/A	N/A
	Ecological/geological designations SSSI – River Avon	Vertical and lateral migration, direct contact.	Low	Mild	Low
Notes / assumptions Sites assessed without construction of the Scheme. N/A is not applicable as there are no residential properties on site and there are no structures on site					

Source	Receptor	Pathway	Probability (R&D66 Table)	Consequence (R&D66 Table)	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	On-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - Public open space Lords Walk Park (public open space)	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Medium	Low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Medium	Low
		Inhalation of ground gases.	Unlikely	Medium	Low

Source	Receptor	Pathway	Probability (R&D66 Table)	Consequence (R&D66 Table)	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	Off-site users – residential Potential residential properties within Amesbury Abbey grounds. Properties fronting Countess Road	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Medium	Low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Medium	Low
		Inhalation of ground gases.	Unlikely	Mild	Very Low
	Off-site users - Public open space Lords Walk Park (public open space)	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Mild	Very Low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Mild	Very Low
		Inhalation of ground gases.	Unlikely	Mild	Very Low
	Controlled waters – groundwater – Principal Aquifer Secondary A Aquifer	Vertical and lateral migration.	Low	Mild to medium	Low to moderate/low

Source	Receptor	Pathway	Probability (R&D66 Table)	Consequence (R&D66 Table)	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	Controlled waters – surface waters River Avon	Groundwater migration, direct run-off from site.	Low	Medium	Moderate/low
	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	Low	Medium	Moderate/low
		Aggressive Ground Conditions	N/A	N/A	N/A
	Ecological/geological designations SSSI – River Avon	Vertical and lateral migration, direct contact.	Low	Mild to medium	Low to moderate/low
Notes / assumptions During construction standard mitigation procedures are assumed to be implemented. Construction workers have been excluded from assessment due to the use of PPE and risk management. N/A is not applicable as there are no residential properties on site and there are no structures on site. Whilst the measures detailed in the OEMP will make it unlikely that there will be adverse consequences associated with construction for example through the control of surface run-off and dust, it is considered that there may still be temporary adverse effects during the construction period that might arise through ground disturbance. The adoption of the OEMP 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. Assumes construction phase include remediation that may be required					

Post-construction CSM and Qualitative Risk Assessment: Former Gas Works located outside the Scheme boundary but within the Study Area

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
Residual soil, leachate, and groundwater contamination. Ground gas.	On-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - Public open space Lords Walk Park (public open space)	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Medium	Low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Medium	Low
		Inhalation of ground gases.	Unlikely	Medium	Low

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
Residual soil, leachate, and groundwater contamination. Ground gas.	Off-site users – residential Potential residential properties within Amesbury Abbey grounds. Properties fronting Countess Road	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Medium	Low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Medium	Low
		Inhalation of ground gases.	Unlikely	Mild	Very low
	Off-site users - Public open space Lords Walk Park (public open space)	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Mild	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Mild	Very low
		Inhalation of ground gases.	Unlikely	Mild	Very low
	Controlled waters – groundwater – Principal Aquifer Secondary A Aquifer	Vertical and lateral migration.	Low	Mild to Medium	Low to Moderate/low
	Controlled waters – surface waters River Avon	Groundwater migration, direct run-off from site.	Low	Medium	Moderate/low

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
Residual soil, leachate, and groundwater contamination. Ground gas.	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	Unlikely	Medium	Low
		Aggressive Ground Conditions	N/A	N/A	N/A
	Ecological/geological designations SSSI – River Avon	Vertical and lateral migration, direct contact.	Low	Mild	Low
Notes / assumptions Assumes remediation required has been undertaken and construction works are complete. /A is not applicable as there are no residential properties on site and there are no structures on site. A range may be given as remediation strategies will vary in design to focus on specific contaminative risks at each site. Remediation strategies may involve source removal or pathway intervention as appropriate.					

Impact Assessment (Comparison of baseline against construction and post-construction): Former Gas Works located outside the Scheme boundary but within the Study Area

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Exposure to soil contamination - on-site users (residential).	N/A	N/A	N/A	N/A	N/A
Exposure to groundwater contamination - on-site users (residential).	N/A	N/A	N/A	N/A	N/A
Exposure to ground gas - on-site users (residential).	N/A	N/A	N/A	N/A	N/A
Exposure to soil contamination – on-site users (public open space)	Low	Low	Low	Neutral effect	Neutral effect
Exposure to groundwater contamination – on-site users (public open space)	Low	Low	Low	Neutral effect	Neutral effect
Exposure to ground gas – on-site users (public open space)	Low	Low	Low	Neutral effect	Neutral effect

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Exposure to soil contamination - off-site users (residential)	Low	Low	Low	Neutral effect	Neutral effect
Exposure to groundwater contamination – off-site users (residential)	Low	Low	Low	Neutral effect	Neutral effect
Exposure to ground gas – off-site users (residential)	Very low	Very low	Very low	Neutral effect	Neutral effect
Exposure to soil contamination – off-site users (public open space)	Very low	Very low	Very low	Neutral effect	Neutral effect
Exposure to groundwater contamination – off-site users (public open space)	Very low	Very low	Very low	Neutral effect	Neutral effect
Exposure to ground gas – off-site users (public open space)	Very low	Very low	Very low	Neutral effect	Neutral effect
Contaminated soil, leachate/groundwater and pollution of aquifers	Low to Moderate/low	Moderate/low	Low to Moderate/low	Minor adverse effect	Neutral effect

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Contaminated soil, leachate/groundwater and impact on surface watercourses	Moderate/low	Moderate/low	Moderate/low	Neutral effect	Neutral effect
Impact on property receptors	Low	Moderate/low	Low	Minor adverse effect	Neutral effect
Impact on ecological/geological designations	Low	Low to moderate/low	Low	Minor adverse effect	Neutral effect
Overall significance				Neutral effect to minor adverse effect	Neutral effect
Notes / assumptions Assumes remediation required has been undertaken and construction works are complete.					

10.6 Detailed Risk Assessment – Railway Land

Table 10.1.11: Detailed risk assessment for the Railway Land located within the Scheme boundary

Site ID (IDS)	CL025, CL055, CL057
Site group	Railway Land located within the Scheme boundary
Site title (Site ID) and land use class	Former Larkhill Military Light Railway (Dismantled) – (CL025) Class 2 Former Railway Land - historic engine sheds, buildings, tanks and sidings (1926) – (CL055) Class 2 Former SR Bulford Extension Railway (1924 - 1937) – (CL057) Class 2

Receptors						
Site title (Site ID)	Sensitive land use (human receptor) (adjacent and/or <50m)	Aquifer designation	Surface watercourse (adjacent and/or <50m)	Geological, including minerals designation or ecological designation (adjacent and/or <50m)	Property e.g. buildings and structures (adjacent and/or <50m)	Other
Former Larkhill Military Light Railway (Dismantled) (CL025)	None	Bedrock - Principal Aquifer	None	None	None	Site crosses agricultural land and several roads / tracks (including the A303)
Former Railway Land - historic engine sheds, buildings, tanks and sidings (1926) (CL055)	On-site Commercial Off-site Commercial and residential, public open space	Bedrock - Principal Aquifer Superficial - Secondary A Aquifer	River Avon	SSSI- River Avon	On-site Commercial properties Off-site Commercial and residential properties	Agricultural land to the east and forested land to the west and south
Former SR Bulford Extension Railway (1924 - 1937) (CL057)	On-site Commercial and retail Off-site Commercial and residential, public open space	Bedrock - Principal Aquifer Superficial - Secondary 'A'	River Avon	SSSI- River Avon	On-site Commercial and retail Off-site Commercial and residential	Agricultural land to the east and forested land to west and south. Potentially Infilled land <50m away from site.
Post-construction development description						

CL025 – Cutting approach to western portal

CL055 – Proposed corridor for utility connection

CL057 – Proposed corridor for utility connection and section of the A303 between Countess Junction and Amesbury Road Section to be stopped up.

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	On-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - commercial Goods Yard - unknown industrial activity (CL113), Tesco Supermarket	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Low	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Medium	Low
		Inhalation of ground gases.	Unlikely	Medium	Low

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	Off-site users – residential Residential properties including fronting Annetts Close, James Road, London Road, Beacon Close, Countess Road and at Ratfyn.	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Medium	Low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Medium	Low
		Inhalation of ground gases.	Unlikely	Mild	Very low
	Off-site users - commercial/public open space Motor Workshop (CL056), Garage (CL065), electricity substations (CL061, CL081), light industry - (CL069, CL070, CL060, CL059, CL064), Public open space	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Mild	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Mild	Very low
		Inhalation of ground gases.	Unlikely	Mild	Very low
	Controlled waters – groundwater – Principal Aquifer Secondary A Aquifer	Vertical and lateral migration.	Low	Mild to medium	Low to moderate/low

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	Controlled waters – surface waters River Avon	Groundwater migration, direct run-off from site.	Low	Medium	Moderate/low
	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	Unlikely	Medium	Low
		Aggressive Ground Conditions	Unlikely	Medium	Low
	Ecological/geological designations SSSI – River Avon	Vertical and lateral migration, direct contact.	Low	Mild	Low
Notes / assumptions Sites assessed without construction of the Scheme. N/A is not applicable as there are no residential properties on site.					

Source	Receptor	Pathway	Probability (R&D66 Table)	Consequence (R&D66 Table)	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	On-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - commercial Goods Yard - unknown industrial activity (CL113), Tesco Supermarket	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Low	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Medium	Low
		Inhalation of ground gases.	Unlikely	Medium	Low

Source	Receptor	Pathway	Probability (R&D66 Table)	Consequence (R&D66 Table)	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	Off-site users – residential Residential properties including fronting Annetts Close, James Road, London Road, Beacon Close, Countess Road and at Ratfyn.	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Medium	Low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Medium	Low
		Inhalation of ground gases.	Unlikely	Mild	Very low
	Off-site users - commercial/public open space Motor Workshop (CL056), Garage (CL065), electricity substations (CL061, CL081), light industry - (CL069, CL070, CL060, CL059, CL064), Public open space	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Mild	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Mild	Very low
		Inhalation of ground gases.	Unlikely	Mild	Very low
	Controlled waters – groundwater – Principal Aquifer Secondary A Aquifer	Vertical and lateral migration.	Low	Medium	Moderate/low

Source	Receptor	Pathway	Probability (R&D66 Table)	Consequence (R&D66 Table)	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	Controlled waters – surface waters River Avon	Groundwater migration, direct run-off from site.	Low	Medium	Moderate/low
	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	Low	Medium	Moderate/low
		Aggressive Ground Conditions	Unlikely	Medium	Low
	Ecological/geological designations SSSI – River Avon	Vertical and lateral migration, direct contact.	Low	Mild to medium	Low to moderate/low
Notes / assumptions During construction standard mitigation procedures are assumed to be implemented. Construction workers have been excluded from assessment due to the use of PPE and risk management. N/A is not applicable as there are no residents on the site. Whilst the measures detailed in the OEMP will make it unlikely that there will be adverse consequences associated with construction for example through the control of surface run-off and dust, it is considered that there may still be temporary adverse effects during the construction period that might arise through ground disturbance. The adoption of the OEMP 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. Assumes construction phase include remediation that may be required					

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
Residual soil, leachate, and groundwater contamination. Ground gas.	On-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - commercial Goods Yard - unknown industrial activity (CL113), Tesco Supermarket	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Low	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Medium	Low
		Inhalation of ground gases.	Unlikely	Medium	Low

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
Residual soil, leachate, and groundwater contamination. Ground gas.	Off-site users – residential Residential properties including fronting Annetts Close, James Road, London Road, Beacon Close, Countess Road and at Ratfyn.	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Medium	Low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Medium	Low
		Inhalation of ground gases.	Unlikely	Mild	Very low
	Off-site users - commercial/public open space Motor Workshop (CL056), Garage (CL065), electricity substations (CL061, CL081), light industry - (CL069, CL070, CL060, CL059, CL064), Public open space	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Mild	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Mild	Very low
		Inhalation of ground gases.	Unlikely	Mild	Very low
	Controlled waters – groundwater – Principal Aquifer Secondary A aquifer	Vertical and lateral migration.	Low	Mild	Low

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
Residual soil, leachate, and groundwater contamination. Ground gas.	Controlled waters – surface waters River Avon	Groundwater migration, direct run-off from site.	Low	Mild	Low
	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	Unlikely	Medium	Low
		Aggressive Ground Conditions	Unlikely	Medium	Low
	Ecological/geological designations SSSI – River Avon	Vertical and lateral migration, direct contact.	Low	Mild	Low
Notes / assumptions Assumes remediation required has been undertaken and construction works are complete. N/A is not applicable as there are no residential receptors on the sites. A range may be given as remediation strategies will vary in design to focus on specific contaminative risks at each site. Remediation strategies may involve source removal or pathway intervention as appropriate.					

Impact Assessment (Comparison of baseline against construction and post-construction): Railway Land located within the Scheme boundary

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Exposure to soil contamination - on-site users (residential).	N/A	N/A	N/A	N/A	N/A
Exposure to groundwater contamination - on-site users (residential).	N/A	N/A	N/A	N/A	N/A
Exposure to ground gas - on-site users (residential).	N/A	N/A	N/A	N/A	N/A
Exposure to soil contamination – on-site users (commercial)	Moderate/low	Moderate/low	Moderate/low	Neutral effect	Neutral effect
Exposure to groundwater contamination – on-site users (commercial)	Low	Low	Low	Neutral effect	Neutral effect
Exposure to ground gas – on-site users (commercial)	Low	Low	Low	Neutral effect	Neutral effect

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Exposure to soil contamination - off-site users (residential)	Low	Low	Low	Neutral effect	Neutral effect
Exposure to groundwater contamination – off-site users (residential)	Low	Low	Low	Neutral effect	Neutral effect
Exposure to ground gas – off-site users (residential)	Very low	Very low	Very low	Neutral effect	Neutral effect
Exposure to soil contamination – off-site users (commercial/public open space)	Very low	Very low	Very low	Neutral effect	Neutral effect
Exposure to groundwater contamination – off-site users (commercial / public open space)	Very low	Very low	Very low	Neutral effect	Neutral effect
Exposure to ground gas – off-site users (commercial / public open space)	Very low	Very low	Very low	Neutral effect	Neutral effect
Contaminated soil, leachate/groundwater and pollution of aquifers	Low to moderate/low	Moderate/low	Low	Minor adverse effect	Minor beneficial effect

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Contaminated soil, leachate/groundwater and impact on surface watercourses	Moderate/low	Moderate/low	Low	Neutral effect	Minor beneficial effect
Impact on property receptors	Low	Moderate/low	Low	Minor adverse effect	Neutral effect
Impact on ecological/geological designations	Low	Low to moderate/low	Low	Minor adverse effect	Neutral effect
Overall significance				Neutral effect to minor adverse effect	Minor beneficial effect to neutral effect
Notes / assumptions Assumes remediation required has been undertaken and construction works are complete.					

Table 10.1.12: Detailed risk assessment for the Railway Land located outside the Scheme boundary but within the Study Area

Site ID (IDS)	CL105					
Site group	Railway Land located outside the Scheme boundary but within the Study Area					
Site title (Site ID) and land use class	Former Railway Buildings and Sidings near Countess Road – (CL105) Class 2.					
Receptors						
Site title (Site ID)	Sensitive land use (human receptor) (adjacent and/or <50m)	Aquifer designation	Surface watercourse (adjacent and/or <50m)	Geological, including minerals designation or ecological designation (adjacent and/or <50m)	Property e.g. buildings and structures (adjacent and/or <50m)	Other
Former Railway Buildings and Sidings near Countess Road – (CL105)	On-site Residential Off-site Residential	Bedrock - Principal Aquifer	None	None	On-site Residential properties Off-site Further Residential properties	Agricultural land on site, to the north, south, east and west.
Post-construction development description						
None. Site is located outside of the land required for the construction of the Scheme. Within area of proposed Utility Corridor						

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB.	On-site users – residential Residential Buildings fronting Countess Road	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Low	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Low	Medium	Moderate/low
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - commercial/public open space None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB.	Off-site users – residential Residential Buildings fronting Countess Road	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Medium	Low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Medium	Low
		Inhalation of ground gases.	N/A	N/A	N/A
	Off-site users - commercial/public open space None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	Controlled waters – groundwater – Principal Aquifer	Vertical and lateral migration.	Low	Medium	Moderate/low

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB	Controlled waters – surface waters None	Groundwater migration, direct run-off from site.	N/A	N/A	N/A
	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	N/A	N/A	N/A
		Aggressive Ground Conditions	Unlikely	Medium	Low
	Ecological/geological designations None	Vertical and lateral migration, direct contact.	N/A	N/A	N/A
Notes / assumptions Sites assessed without construction of the Scheme. N/A is not applicable as there are no commercial properties on or adjacent to the site. Also there are no sensitive watercourses or ecological/geological designated sites within or adjacent to the site.					

Source	Receptor	Pathway	Probability (R&D66 Table)	Consequence (R&D66 Table)	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB	On-site users – residential Residential Buildings fronting Countess Road	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Low	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Low	Medium	Moderate/low
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - commercial/public open space None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A

Source	Receptor	Pathway	Probability (R&D66 Table)	Consequence (R&D66 Table)	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB,	Off-site users – residential Residential Buildings fronting Countess Road	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Medium	Low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Low	Medium	Moderate/low
		Inhalation of ground gases.	N/A	N/A	N/A
	Off-site users - commercial/public open space None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	Controlled waters – groundwater – Principal Aquifer	Vertical and lateral migration.	Low	Medium	Low to moderate/low

Source	Receptor	Pathway	Probability (R&D66 Table)	Consequence (R&D66 Table)	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB,	Controlled waters – surface waters None	Groundwater migration, direct run-off from site.	N/A	N/A	N/A
	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	N/A	N/A	N/A
		Aggressive Ground Conditions	Unlikely	Medium	Low
	Ecological/geological designations None	Vertical and lateral migration, direct contact.	N/A	N/A	N/A
Notes / assumptions During construction standard mitigation procedures are assumed to be implemented. Construction workers have been excluded from assessment due to the use of PPE and risk management. N/A is not applicable as there are no commercial properties on or adjacent to the site. Also there are no sensitive watercourses or ecological/geological designated sites within or adjacent to the site. Whilst the measures detailed in the OEMP will make it unlikely that there will be adverse consequences associated with construction for example through the control of surface run-off and dust, it is considered that there may still be temporary adverse effects during the construction period that might arise through ground disturbance. The adoption of the OEMP 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. Assumes construction phase include remediation that may be required					

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
Residual soil, leachate, and groundwater contamination.	On-site users – residential Residential Buildings fronting Countess Road	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Low	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Low	Medium	Moderate/low
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - commercial/public open space None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
Residual soil, leachate, and groundwater contamination.	Off-site users – residential Residential Buildings fronting Countess Road	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Medium	Low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Medium	Low
		Inhalation of ground gases.	N/A	N/A	N/A
	Off-site users - commercial/public open space None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	Controlled waters – groundwater – Principal Aquifer	Vertical and lateral migration.	Low	Mild to medium	Low to moderate/low
	Controlled waters – surface waters None	Groundwater migration, direct run-off from site.	N/A	N/A	N/A

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
Residual soil, leachate, and groundwater contamination.	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	N/A	N/A	N/A
		Aggressive Ground Conditions	Unlikely	Medium	Low
	Ecological/geological designations None	Vertical and lateral migration, direct contact.	N/A	N/A	N/A
Notes / assumptions Assumes remediation required has been undertaken and construction works are complete. N/A is not applicable as there are no commercial properties on or adjacent to the site. Also there are no sensitive watercourses or ecological/geological designated sites within or adjacent to the site. A range may be given as remediation strategies will vary in design to focus on specific contaminative risks at each site. Remediation strategies may involve source removal or pathway intervention as appropriate.					

Impact Assessment (Comparison of baseline against construction and post-construction): Railway Land located outside the Scheme boundary but within the Study Area

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Exposure to soil contamination - on-site users (residential).	Moderate/low	Moderate/low	Moderate/low	Neutral effect	Neutral effect
Exposure to groundwater contamination - on-site users (residential).	Moderate/low	Moderate/low	Moderate/low	Neutral effect	Neutral effect
Exposure to ground gas - on-site users (residential).	N/A	N/A	N/A	N/A	N/A
Exposure to soil contamination – on-site users (commercial/public open space)	N/A	N/A	N/A	N/A	N/A
Exposure to groundwater contamination – on-site users (commercial/public open space)	N/A	N/A	N/A	N/A	N/A
Exposure to ground gas – on-site users (commercial/public open space)	N/A	N/A	N/A	N/A	N/A

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Exposure to soil contamination - off-site users (residential)	Low	Low	Low	Neutral effect	Neutral effect
Exposure to groundwater contamination – off-site users (residential)	Low	Moderate/low	Low	Minor adverse effect	Neutral effect
Exposure to ground gas – off-site users (residential)	N/A	N/A	N/A	N/A	N/A
Exposure to soil contamination – off-site users (commercial)	N/A	N/A	N/A	N/A	N/A
Exposure to groundwater contamination – off-site users (commercial)	N/A	N/A	N/A	N/A	N/A
Exposure to ground gas – off-site users (commercial)	N/A	N/A	N/A	N/A	N/A
Contaminated soil, leachate/groundwater and pollution of aquifers	Moderate/low	Moderate/low	Low to moderate/low	Neutral effect	Minor beneficial effect

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Contaminated soil, leachate/groundwater and impact on surface watercourses	N/A	N/A	N/A	N/A	N/A
Impact on property receptors	Low	Low	Low	Neutral effect	Neutral effect
Impact on ecological/geological designations	N/A	N/A	N/A	N/A	N/A
Overall significance				Neutral effect to minor adverse effect	Minor beneficial effect to neutral effect
Notes / assumptions Assumes remediation required has been undertaken and construction works are complete.					

10.7 Detailed Risk Assessment – Light Industrial Sites

Table 10.1.13: Detailed risk assessment for the Light industrial sites located within the Scheme boundary

Site ID (IDS)	CL037, CL050					
Site group	Light industrial sites located within the Scheme boundary					
Site title (Site ID) and land use class	Former Sewage Outfall (disused 1924, removed 1970) – (CL037) Class 2 Pumping Station – (CL050) Class 2					
Receptors						
Site title (Site ID)	Sensitive land use (human receptor) (adjacent and/or <50m)	Aquifer designation	Surface watercourse (adjacent and/or <50m)	Geological, including minerals designation or ecological designation (adjacent and/or <50m)	Property e.g. buildings and structures (adjacent and/or <50m)	Other
Former Sewage Outfall (disused 1924, removed 1970) (CL037)	None	Bedrock - Principal Aquifer	None	None	None	Former position crosses path / bridleway
Pumping Station (CL050)	On-site Maintenance / commercial Off-site Commercial Residential	Bedrock - Principal Aquifer Superficial - Secondary A Aquifer	Drain leading to River Avon	River Avon SSSI	On-site Pumping station Off-site Commercial Residential	-
Post-construction development description						
CL037 –Tunnel CL050 –Countess flyover and Countess roundabout						

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB.	On-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - commercial Pumping station - maintenance	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Mild	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Mild	Very low
		Inhalation of ground gases.	N/A	N/A	N/A

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB.	Off-site users – residential Countess Farm	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Mild	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Mild	Very low
		Inhalation of ground gases.	N/A	N/A	N/A
	Off-site users - commercial Countess Farm	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Mild	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Mild	Very low
		Inhalation of ground gases.	N/A	N/A	N/A
	Controlled waters – groundwater – Principal Aquifer Secondary A Aquifer	Vertical and lateral migration.	Low	Mild	Low

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB.	Controlled waters – surface waters River Avon	Groundwater migration, direct run-off from site.	Low	Mild	Low
	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	N/A	N/A	N/A
		Aggressive Ground Conditions	N/A	N/A	N/A
	Ecological/geological designations SSSI – River Avon	Vertical and lateral migration, direct contact.	Unlikely	Minor	Very low
Notes / assumptions Sites assessed without construction of the Scheme. N/A is not applicable as there are no residential properties on the site. There is also no known gas source to provide a risk to humans and or property.					

Source	Receptor	Pathway	Probability (R&D66 Table)	Consequence (R&D66 Table)	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB.	On-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - commercial Pumping station - maintenance	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A

Source	Receptor	Pathway	Probability (R&D66 Table)	Consequence (R&D66 Table)	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB.	Off-site users – residential Countess Farm	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Mild	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Mild	Very low
		Inhalation of ground gases.	N/A	N/A	N/A
	Off-site users - commercial Countess Farm	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Mild	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Mild	Very low
		Inhalation of ground gases.	N/A	N/A	N/A
	Controlled waters – groundwater – Principal Aquifer Secondary A Aquifer	Vertical and lateral migration.	Low	Mild	Low

Source	Receptor	Pathway	Probability (R&D66 Table)	Consequence (R&D66 Table)	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB.	Controlled waters – surface waters River Avon	Groundwater migration, direct run-off from site.	Low	Mild	Low
	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	N/A	N/A	N/A
		Aggressive Ground Conditions	N/A	N/A	N/A
	Ecological/geological designations SSSI – River Avon	Vertical and lateral migration, direct contact.	Unlikely	Minor	Very low
Notes / assumptions During construction standard mitigation procedures are assumed to be implemented. Construction workers have been excluded from assessment due to the use of PPE and risk management. N/A is not applicable as there are no residential properties on the site. There is also no known gas source to provide a risk to humans and or property. Whilst the measures detailed in the OEMP will make it unlikely that there will be adverse consequences associated with construction for example through the control of surface run-off and dust, it is considered that there may still be temporary adverse effects during the construction period that might arise through ground disturbance. The adoption of the OEMP 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. Assumes construction phase include remediation that may be required.					

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
Residual soil, leachate, and groundwater contamination.	On-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - commercial Pumping station - maintenance	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Mild	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Mild	Very low
		Inhalation of ground gases.	N/A	N/A	N/A

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
Residual soil, leachate, and groundwater contamination.	Off-site users – residential Countess Farm	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Mild	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Mild	Very low
		Inhalation of ground gases.	N/A	N/A	N/A
	Off-site users - commercial Countess Farm	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Mild	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Mild	Very low
		Inhalation of ground gases.	N/A	N/A	N/A
	Controlled waters – groundwater – Principal Aquifer Secondary A Aquifer	Vertical and lateral migration.	Low	Mild	Low
	Controlled waters – surface waters River Avon	Groundwater migration, direct run-off from site.	Low	Mild	Low

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
Residual soil, leachate, and groundwater contamination.	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	N/A	N/A	N/A
		Aggressive Ground Conditions	N/A	N/A	N/A
	Ecological/geological designations SSSI – River Avon	Vertical and lateral migration, direct contact.	Unlikely	Minor	Very low
Notes / assumptions Assumes remediation required has been undertaken and construction works are complete. N/A is not applicable as there are no residential properties on the site. There is also no known gas source to provide a risk to humans and or property. A range may be given as remediation strategies will vary in design to focus on specific contaminative risks at each site. Remediation strategies may involve source removal or pathway intervention as appropriate.					

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Exposure to soil contamination - on-site users (residential).	N/A	N/A	N/A	N/A	N/A
Exposure to groundwater contamination - on-site users (residential).	N/A	N/A	N/A	N/A	N/A
Exposure to ground gas - on-site users (residential).	N/A	N/A	N/A	N/A	N/A
Exposure to soil contamination – on-site users (commercial)	Very low	N/A	Very Low	N/A	Neutral effect
Exposure to groundwater contamination – on-site users (commercial)	Very low	N/A	Very Low	N/A	Neutral effect
Exposure to ground gas – on-site users (commercial)	N/A	N/A	N/A	N/A	N/A

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Exposure to soil contamination - off-site users (residential)	Very low	Very low	Very Low	Neutral effect	Neutral effect
Exposure to groundwater contamination – off-site users (residential)	Very low	Very low	Very Low	Neutral effect	Neutral effect
Exposure to ground gas – off-site users (residential)	N/A	N/A	N/A	N/A	N/A
Exposure to soil contamination – off-site users (commercial)	Very low	Very low	Very Low	Neutral effect	Neutral effect
Exposure to groundwater contamination – off-site users (commercial)	Very low	Very low	Very Low	Neutral effect	Neutral effect
Exposure to ground gas – off-site users (commercial)	N/A	N/A	N/A	N/A	N/A
Contaminated soil, leachate/groundwater and pollution of aquifers	Low	Low	Low	Neutral effect	Neutral effect

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Contaminated soil, leachate/groundwater and impact on surface watercourses	Low	Low	Low	Neutral effect	Neutral effect
Impact on property receptors	N/A	N/A	N/A	N/A	N/A
Impact on ecological/geological designations	Very low	Very low	Very Low	Neutral effect	Neutral effect
Overall significance				Neutral effect	Neutral effect
Notes / assumptions Assumes remediation required has been undertaken and construction works are complete.					

Table 10.1.14: Detailed risk assessment for the Light industrial sites located outside the Scheme boundary but within the Study Area

Site ID (IDS)	CL005, CL021, CL056, CL059, CL061, CL064, CL066, CL081, CL082, CL091, CL102
Site group	Light Industrial sites located outside the Scheme but within the Study Area
Site title (Site ID) and land use class	Pumping House – (CL005) Class 2 Pump House (and associated former Covered Reservoir - potentially infilled) – (CL021) Class 2 MA Motors and recovery - Motor Garage – (CL056) Class 2 Industrial Repairs and Servicing (Reconditioning Gears) – (CL059) Class 2 Electricity Sub Station – (CL061) Class 2 Precision Engineer (Engineering Services) – (CL064) Class 2 Depot and Warehousing (Minton Distribution Park) – (CL066) Class 2 Electricity Sub Station – (CL081) Class 2 Sewage Works – (CL082) Class 2 'New Barn' - current unknown industrial activity from aerial photography – (CL091) Class 1 Motor Works – (CL102) Class 2 Goods Yard - Unknown activity – (CL113) Class 1
Receptors	

Site title (Site ID)	Sensitive land use (human receptor) (adjacent and/or <50m)	Aquifer designation	Surface watercourse (adjacent and/or <50m)	Geological, including minerals designation or ecological designation (adjacent and/or <50m)	Property e.g. buildings and structures (adjacent and/or <50m)	Other
Pumping House (CL005)	On-site maintenance / commercial	Bedrock - Principal Aquifer	None	None	On-site Pumping House	
Pump House (and associated former Covered Reservoir - potentially infilled) (CL021)	On-site Maintenance / commercial	Bedrock - Principal Aquifer	None	None	On-site Pumping House	
MA Motors and recovery - Motor Garage (CL056)	On-site Commercial Off-site Residential	Bedrock - Principal Aquifer Superficial - Secondary A Aquifer	None	None	On-site Commercial property Off-site Electricity Substation and residential properties	
Industrial Repairs and Servicing Recondition Gears – (CL059)	On-site Commercial Off-site Commercial Residential	Bedrock - Principal Aquifer	Drain leading to River Avon	None	On- site Commercial property Off-site Light industry commercial properties Residential properties	
Electricity Sub Station – (CL061)	On-site maintenance / commercial	Bedrock - Principal Aquifer Superficial - Secondary A Aquifer	None	None	On-site Infrastructure - electricity substation and pylons	
Precision Engineer (Engineering Services) – (CL064)	On-site Commercial Off-site Commercial	Bedrock - Principal Aquifer	Drain leading to River Avon	None	On-site Commercial property Off-site Light industry commercial properties Residential properties	

Depot and Warehousing (Minton Distribution Park) (CL066)	On-site Commercial Off-site Commercial / retail	Bedrock - Principal Aquifer	Drain leading to River Avon	None	On-site Commercial property Off-site Commercial / retail properties	
Electricity Sub Station – (CL081)	On-site maintenance / commercial Off-site Commercial, public open space	Bedrock - Principal Aquifer Superficial - Secondary A Aquifer	River Avon	SSSI – River Avon	On-site Infrastructure - electricity substation Off-site Commercial property	
Sewage Works – (CL082)	On-site Commercial	Bedrock - Principal Aquifer Superficial - Secondary A Aquifer	None	None	On -site Commercial property Off-site Infrastructure - electricity substation	
'New Barn' - current unknown industrial activity – (CL091)	On-site Commercial	Bedrock - Principal aquifer	None	None	On -site Commercial / farm property	
Motor Works (CL102)	On-site Commercial Off Site Commercial	Bedrock - Principal aquifer	None	None	On Site Commercial Off Site Commercial	
Goods Yard - Unknown activity (CL113)	On-site Commercial Off-site Commercial, public open space	Bedrock - Principal Aquifer Superficial - Secondary A Aquifer	River Avon	River Avon - SSSI	Off-site Commercial and Infrastructure - electricity substation	
Post-construction development description						
None. Sites are located outside the Scheme boundary. All locations are within areas where limited proposed works are proposed e.g, road closures, utility corridors etc.						

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB.	On-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - commercial Pump house and electricity substations maintenance, grain production and storage facility, motor workshop/works, engineering workshop, Minton Distribution Park, sewage works, farm/warehouse site workers, goods yard	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Low	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Low	Medium	Moderate/low
		Inhalation of ground gases.	N/A	N/A	N/A

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB.	Off-site users – residential Rollestone Camp and other residential properties	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Medium	Low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Medium	Low
		Inhalation of ground gases.	N/A	N/A	N/A
	Off-site users - commercial/public open space Truck repair shop, light industry businesses /business park, supermarket, recycling centre, sewage works, warehouse distribution, motor works, public open space	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Mild	Very Low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Mild	Very Low
		Inhalation of ground gases.	N/A	N/A	N/A
	Controlled waters – groundwater – Principal Aquifer Secondary A Aquifer	Vertical and lateral migration.	Low	Mild to medium	Low to moderate/low

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB.	Controlled waters – surface waters River Avon	Groundwater migration, direct run-off from site.	Low	Mild to medium	Low to moderate/low
	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	N/A	N/A	N/A
		Aggressive Ground Conditions	Low	Mild	Low
	Ecological/geological designations SSSI - River Avon	Vertical and lateral migration, direct contact.	Low	Mild	Low
Notes / assumptions Sites assessed without construction of the Scheme. N/A is not applicable as there are no residential properties on the site. There is also no known gas source to provide a risk to humans and or property.					

Construction CSM and Qualitative Risk Assessment: Light Industrial sites located outside the Scheme but within the Study Area

Source	Receptor	Pathway	Probability	Consequence	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB.	On-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - commercial Pump house and electricity substations maintenance, grain production and storage facility, motor workshop/works, engineering workshop, Minton Distribution Park, sewage works, farm/warehouse site workers, goods yard	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Low	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Low	Medium	Moderate/low
		Inhalation of ground gases.	N/A	N/A	N/A

Source	Receptor	Pathway	Probability	Consequence	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB.	Off-site users – residential Rollestone Camp and other residential properties	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Medium	Low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Medium	Low
		Inhalation of ground gases.	N/A	N/A	N/A
	Off-site users - commercial/public open space Truck repair shop, light industry businesses /business park, supermarket, recycling centre, sewage works, warehouse distribution, motor works, public open space	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Mild	Very Low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Mild	Very Low
		Inhalation of ground gases.	N/A	N/A	N/A
Soil, leachate and	Controlled waters – groundwater – Principal Aquifer Secondary A Aquifer	Vertical and lateral migration.	Low	Mild to medium	Low to moderate/low

Source	Receptor	Pathway	Probability	Consequence	Risk with construction stage mitigation
groundwater contamination. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB.	Controlled waters – surface waters River Avon	Groundwater migration, direct run-off from site.	Low	Mild to medium	Low to moderate/low
	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	N/A	N/A	N/A
		Aggressive Ground Conditions	Low	Mild	Low
	Ecological/geological designations SSSI - River Avon	Vertical and lateral migration, direct contact.	Low	Mild	Low
Notes / assumptions During construction standard mitigation procedures are assumed to be implemented. Construction workers have been excluded from assessment due to the use of PPE and risk management. N/A is not applicable as there are no residential properties on the site. There is also no known gas source to provide a risk to humans and or property. Whilst the measures detailed in the OEMP will make it unlikely that there will be adverse consequences associated with construction for example through the control of surface run-off and dust, it is considered that there may still be temporary adverse effects during the construction period that might arise through ground disturbance. The adoption of the OEMP 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. Assumes construction phase include remediation that may be required.					

Post-construction CSM and Qualitative Risk Assessment: Light Industrial sites located outside the Scheme but within the Study Area

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
Residual soil, leachate, and groundwater contamination.	On-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - commercial Pump house and electricity substations maintenance, grain production and storage facility, motor workshop/works, engineering workshop, Minton Distribution Park, sewage works, farm/warehouse site workers, goods yard	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Low	Medium	Moderate/low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Low	Medium	Moderate/low
		Inhalation of ground gases.	N/A	N/A	N/A

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
Residual soil, leachate, and groundwater contamination.	Off-site users – residential Rollestone Camp and other residential properties	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Medium	Low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Medium	Low
		Inhalation of ground gases.	N/A	N/A	N/A
	Off-site users - commercial/public open space Truck repair shop, light industry businesses /business park, supermarket, recycling centre, sewage works, warehouse distribution, motor works, public open space	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Mild	Very Low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Mild	Very Low
		Inhalation of ground gases.	N/A	N/A	N/A
	Controlled waters – groundwater – Principal Aquifer Secondary A Aquifer	Vertical and lateral migration.	Low	Mild to medium	Low to moderate/low

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
Residual soil, leachate, and groundwater contamination.	Controlled waters – surface waters River Avon	Groundwater migration, direct run-off from site.	Low	Mild to medium	Low to moderate/low
	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	N/A	N/A	N/A
		Aggressive Ground Conditions	Low	Mild	Low
	Ecological/geological designations SSSI - River Avon	Vertical and lateral migration, direct contact.	Low	Mild	Low
Notes / assumptions Assumes remediation required has been undertaken and construction works are complete. N/A is not applicable as there are no residential properties on the site. There is also no known gas source to provide a risk to humans and or property. A range may be given as remediation strategies will vary in design to focus on specific contaminative risks at each site. Remediation strategies may involve source removal or pathway intervention as appropriate.					

Impact Assessment (Comparison of baseline against construction and post-construction): Light Industrial sites located outside the Scheme but within the Study Area

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Exposure to soil contamination - on-site users (residential).	N/A	N/A	N/A	N/A	N/A
Exposure to groundwater contamination - on-site users (residential).	N/A	N/A	N/A	N/A	N/A
Exposure to ground gas - on-site users (residential).	N/A	N/A	N/A	N/A	N/A
Exposure to soil contamination – on-site users (commercial)	Moderate/low	Moderate/low	Moderate/low	Neutral effect	Neutral effect
Exposure to groundwater contamination – on-site users (commercial)	Moderate/low	Moderate/low	Moderate/low	Neutral effect	Neutral effect
Exposure to ground gas – on-site users (commercial)	N/A	N/A	N/A	N/A	N/A

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Exposure to soil contamination - off-site users (residential)	Low	Low	Low	Neutral effect	Neutral effect
Exposure to groundwater contamination – off-site users (residential)	Low	Low	Low	Neutral effect	Neutral effect
Exposure to ground gas – off-site users (residential)	N/A	N/A	N/A	N/A	N/A
Exposure to soil contamination – off-site users (commercial)	Very low	Very low	Very Low	Neutral effect	Neutral effect
Exposure to groundwater contamination – off-site users (commercial)	Very low	Very low	Very Low	Neutral effect	Neutral effect
Exposure to ground gas – off-site users (commercial)	N/A	N/A	N/A	N/A	N/A
Contaminated soil, leachate/groundwater and pollution of aquifers	Low	Low	Low	Neutral effect	Neutral effect

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Contaminated soil, leachate/groundwater and impact on surface watercourses	Low to Moderate/low	Low to Moderate/low	Low to Moderate/low	Neutral effect	Neutral effect
Impact on property receptors	N/A	N/A	N/A	N/A	N/A
Impact on ecological/geological designations	N/A	N/A	N/A	N/A	N/A
Overall significance				Neutral effect	Neutral effect
Notes / assumptions Assumes remediation required has been undertaken and construction works are complete.					

10.8 Detailed Risk Assessment – Infilled Land

Table 10.1.15: Detailed risk assessment for the Infilled Land sites located within the Scheme boundary

Site ID (IDS)	CL010, CL014, CL015, CL020, CL041
Site group	Infilled Land located within the Scheme
Site title (Site ID) and land use class	Winterbourne Stoke Chalk Pit (1879 - 1926) – (CL010) Class 2 Unspecified Pit (1878 - 1926) – (CL014) Class 2 Infilled Land / Area of Fill / Demolition Rubble – (CL015) Class 2 Infilled and unspecified Pits and Ground Workings (1879 - 1957) – (CL020) Class 2 Former Quarry (1899 - 1961) – (CL041) Class 2

Receptors						
Site title (Site ID)	Sensitive land use (human receptor) (adjacent and/or <50m)	Aquifer designation	Surface watercourse (adjacent and/or <50m)	Geological, including minerals designation or ecological designation (adjacent and/or <50m)	Property e.g. buildings and structures (adjacent and/or <50m)	Other
Winterbourne Stoke Chalk Pit (1879 - 1926) (CL010)	None	Bedrock - Principal Aquifer Superficial - Secondary A aquifer	None	None	None	None
Unspecified Pit (1878 - 1926) (CL014)	None	Bedrock - Principal Aquifer	None	None	None	None
Infilled Land / Area of Fill / Demolition Rubble (CL015)	None	Bedrock - Principal Aquifer	None	None	None	None
Infilled and unspecified Pits and Ground Workings (1879 - 1957) (CL020)	None	Bedrock - Principal Aquifer	None	None	None	None

Former Quarry (1899 - 1961) (CL041)	None	Bedrock - Principal aquifer	Drain to River Avon	None (SSSI – River Avon)	A303	Located on alignment of current A303
Post-construction development description						
CL010 – south of River Till Viaduct embankment east CL014 – north of River Till Viaduct embankment east CL015 – north of River Till Viaduct embankment east and Drainage are four (east of River Till) CL020 – south of Longbarrow cutting east CL041 – east of eastern portal, Amesbury Cutting, west of Countess Junction						

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	On-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - commercial/public open space None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	Off-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	Off-site users - commercial/public open space None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	Controlled waters – groundwater – Principal Aquifer Secondary A aquifer	Vertical and lateral migration.	Low	Mild	Low

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	Controlled waters – surface waters River Avon	Groundwater migration, direct run-off from site.	Unlikely	Mild	Very low
	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	N/A	N/A	N/A
		Aggressive Ground Conditions	N/A	N/A	N/A
	Ecological/geological designations SSSI - River Avon	Vertical and lateral migration, direct contact.	Unlikely	Mild	Very low
Notes / assumptions Sites assessed without construction of the Scheme. N/A is not applicable as there are no residential or commercial receptors or properties on or adjacent to the site. Gas source potentially present but no viable receptors.					

Source	Receptor	Pathway	Probability	Consequence	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	On-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - commercial/public open space None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A

Source	Receptor	Pathway	Probability	Consequence	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	Off-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	Off-site users - commercial/public open space None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	Controlled waters – groundwater – Principal Aquifer Secondary A Aquifer	Vertical and lateral migration.	Low	Mild	Low

Source	Receptor	Pathway	Probability	Consequence	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	Controlled waters – surface waters River Avon	Groundwater migration, direct run-off from site.	Low	Mild	Low
	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	N/A	N/A	N/A
		Aggressive Ground Conditions	N/A	N/A	N/A
	Ecological/geological designations SSSI - River Avon	Vertical and lateral migration, direct contact.	Low	Mild	Low
Notes / assumptions During construction standard mitigation procedures are assumed to be implemented. Construction workers have been excluded from assessment due to the use of PPE and risk management. N/A is not applicable as there are no residential or commercial receptors or properties on or adjacent to the site. Gas source potentially present but no viable receptors. Whilst the measures detailed in the OEMP will make it unlikely that there will be adverse consequences associated with construction for example through the control of surface run-off and dust, it is considered that there may still be temporary adverse effects during the construction period that might arise through ground disturbance. The adoption of the OEMP 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. Assumes construction phase include remediation that may be required					

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
Residual soil, leachate, and groundwater contamination. Ground gas.	On-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - commercial/public open space None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
Residual soil, leachate, and groundwater contamination. Ground gas.	Off-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	Off-site users - commercial/public open space None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
Residual soil, leachate, and groundwater contamination. Ground gas.	Controlled waters – groundwater – Principal Aquifer Secondary A Aquifer	Vertical and lateral migration.	Unlikely	Minor	Very Low
	Controlled waters – surface waters River Avon	Groundwater migration, direct run-off from site.	Unlikely	Minor	Very low

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	N/A	N/A	N/A
		Aggressive Ground Conditions	N/A	N/A	N/A
	Ecological/geological designations SSSI - River Avon	Vertical and lateral migration, direct contact.	Unlikely	Minor	Very low
Notes / assumptions Assumes remediation required has been undertaken and construction works are complete. N/A is not applicable as there are no residential or commercial receptors or properties on or adjacent to the site. Gas source potentially present but no viable receptors. A range may be given as remediation strategies will vary in design to focus on specific contaminative risks at each site. Remediation strategies may involve source removal or pathway intervention as appropriate.					

Impact Assessment (Comparison of baseline against construction and post-construction): Infilled Land sites located within the Scheme boundary

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Exposure to soil contamination - on-site users (residential).	N/A	N/A	N/A	N/A	N/A
Exposure to groundwater contamination - on-site users (residential).	N/A	N/A	N/A	N/A	N/A
Exposure to ground gas - on-site users (residential).	N/A	N/A	N/A	N/A	N/A
Exposure to soil contamination – on-site users (commercial/public open space)	N/A	N/A	N/A	N/A	N/A
Exposure to groundwater contamination – on-site users (commercial/public open space)	N/A	N/A	N/A	N/A	N/A
Exposure to ground gas – on-site users (commercial/public open space)	N/A	N/A	N/A	N/A	N/A

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Exposure to soil contamination - off-site users (residential)	N/A	N/A	N/A	N/A	N/A
Exposure to groundwater contamination – off-site users (residential)	N/A	N/A	N/A	N/A	N/A
Exposure to ground gas – off-site users (residential)	N/A	N/A	N/A	N/A	N/A
Exposure to soil contamination – off-site users (commercial)	N/A	N/A	N/A	N/A	N/A
Exposure to groundwater contamination – off-site users (commercial)	N/A	N/A	N/A	N/A	N/A
Exposure to ground gas – off-site users (commercial)	N/A	N/A	N/A	N/A	N/A
Contaminated soil, leachate/groundwater and pollution of aquifers	Low	Low	Very Low	Neutral effect	Minor beneficial effect

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Contaminated soil, leachate/groundwater and impact on surface watercourses	Very low	Low	Very low	Minor adverse impact	Minor beneficial effect
Impact on property receptors	N/A	N/A	N/A	N/A	N/A
Impact on ecological/geological designations	Very low	Low	Very low	Minor adverse impact	Minor beneficial effect
Overall significance				Neutral effect to minor adverse effect	Neutral effect to minor beneficial effect
Notes / assumptions Assumes remediation required has been undertaken and construction works are complete.					

Table 10.1.16: Detailed risk assessment for the Infilled Land sites located outside the Scheme boundary but within the Study Area

Site ID (IDS)	CL006, CL021, CL039, CL052, CL063, CL098
Site group	Infilled Land located outside the Scheme boundary but within the Study Area
Site title (Site ID) and land use class	Possible Infilled Ground - former Covered Reservoir – (CL006) Class 2. Pump House (and associated former Covered Reservoir) – (CL021) Class 2. Disused Tip (1974) – (CL039) Class 2. Former Gravel Pit (1926 - 1961) – (CL052) Class 2 Former Chalk Pit (1878 - 1961) – (CL063) Class 2 Unknown Filled Ground (pit, quarry, etc) – (CL098) Class 2

Receptors						
Site title (Site ID)	Sensitive land use (human receptor) (adjacent and/or <50m)	Aquifer designation	Surface watercourse (adjacent and/or <50m)	Geological, including minerals designation or ecological designation (adjacent and/or <50m)	Property e.g. buildings and structures (adjacent and/or <50m)	Other
Possible Infilled Ground - former Covered Reservoir (CL006)	None	Bedrock - Principal Aquifer	None	None	None	Surrounded by agricultural land
Disused Tip (1974) (CL039)	None	Bedrock - Principal Aquifer	None	None	None	Agricultural land on and off site
Former Gravel Pit (1926 - 1961) (CL052)	None	Bedrock - Principal Aquifer Superficial - Secondary A Aquifer	River Avon	River Avon - SSSI	None	Surrounded by agricultural land
Former Chalk Pit (1878 - 1961) (CL063)	On-site Public open space Off-site Commercial Public open space	Bedrock - Principal Aquifer Superficial - Secondary A Aquifer	None	None	Off-site Commercial properties	Park land (Ratfyn Farm B&B), farmland on all sides, large pond to the north

Unknown Filled Ground (pit, quarry, etc) (CL098)	Off-site Residential	Bedrock - Principal Aquifer	None	On Site National Nature Reserve - SSSI - Parsonage Down	Off-site Commercial / residential property	Surrounded by agricultural land
Post-construction development description						
None. Sites are located outside the Scheme boundary						

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	On-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - commercial/public open space Lords Walk Park/Ratfyn B&B grounds	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Low	Mild	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Mild	Very low
		Inhalation of ground gases.	Low	Mild	Very low

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	Off-site users – residential Cherry Lodge Farm Ratfyn Farm B&B	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Medium	Low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Medium	Low
		Inhalation of ground gases.	Unlikely	Medium	Low
	Off-site users - commercial/public open space Ratfyn Farm B&B Lords Walk Park (public open space)	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Mild	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Mild	Very low
		Inhalation of ground gases.	Unlikely	Mild	Very low
	Controlled waters – groundwater – Principal Aquifer Secondary A Aquifer	Vertical and lateral migration.	Low	Mild	Low

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	Controlled waters – surface waters River Avon	Groundwater migration, direct run-off from site.	Low	Mild	Low
	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	Unlikely	Medium	Low
		Aggressive Ground Conditions	Unlikely	Medium	Low
	Ecological/geological designations SSSI - River Avon National Nature Reserve - SSSI - Parsonage Down	Vertical and lateral migration, direct contact.	Low	Mild	Low
Notes / assumptions Sites assessed without construction of the Scheme. N/A is not applicable as there are no residential receptors or properties on the site.					

Source	Receptor	Pathway	Probability	Consequence	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	On-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - commercial/public open space Lords Walk Park/Ratfyn B&B grounds	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Low	Mild	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Mild	Very low
		Inhalation of ground gases.	Low	Mild	Very low

Source	Receptor	Pathway	Probability	Consequence	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	Off-site users – residential Cherry Lodge Farm Ratfyn Farm B&B	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Medium	Low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Medium	Low
		Inhalation of ground gases.	Unlikely	Medium	Low
	Off-site users - commercial/public open space Ratfyn Farm B&B Lords Walk Park (public open space)	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Mild	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Mild	Very low
		Inhalation of ground gases.	Unlikely	Mild	Very low
	Controlled waters – groundwater – Principal Aquifer Secondary A Aquifer	Vertical and lateral migration.	Low	Mild	Low

Source	Receptor	Pathway	Probability	Consequence	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	Controlled waters – surface waters River Avon	Groundwater migration, direct run-off from site.	Low	Mild	Low
	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	Unlikely	Medium	Low
		Aggressive Ground Conditions	Unlikely	Medium	Low
	Ecological/geological designations SSSI - River Avon National Nature Reserve - SSSI - Parsonage Down	Vertical and lateral migration, direct contact.	Low	Mild	Low
Notes / assumptions During construction standard mitigation procedures are assumed to be implemented. Construction workers have been excluded from assessment due to the use of PPE and risk management. N/A is not applicable as there are no residential receptors or properties on the site. Whilst the measures detailed in the OEMP will make it unlikely that there will be adverse consequences associated with construction for example through the control of surface run-off and dust, it is considered that there may still be temporary adverse effects during the construction period that might arise through ground disturbance. The adoption of the OEMP 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. Assumes construction phase include remediation that may be required					

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
Residual soil, leachate, and groundwater contamination. Ground gas.	On-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - commercial/public open space Lords Walk Park/Ratfyn B&B grounds	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Low	Mild	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Mild	Very low
		Inhalation of ground gases.	Low	Mild	Very low

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
Residual soil, leachate, and groundwater contamination. Ground gas.	Off-site users – residential Cherry Lodge Farm Ratfyn Farm B&B	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Medium	Low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Medium	Low
		Inhalation of ground gases.	Unlikely	Medium	Low
	Off-site users - commercial/public open space Ratfyn Farm B&B Lords Walk Park (public open space)	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Low	Mild	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Mild	Very low
		Inhalation of ground gases.	Low	Mild	Very low
	Controlled waters – groundwater – Principal Aquifer Secondary A Aquifer	Vertical and lateral migration.	Unlikely	Medium	Low
Residual soil, leachate, and groundwater	Controlled waters – surface waters River Avon	Groundwater migration, direct run-off from site.	Unlikely	Medium	Low

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
contamination. Ground gas.	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	Unlikely	Medium	Low
		Aggressive Ground Conditions	Unlikely	Mild	Very low
	Ecological/geological designations SSSI - River Avon National Nature Reserve - SSSI - Parsonage Down	Vertical and lateral migration, direct contact.	Low	Mild	Low
Notes / assumptions Assumes remediation required has been undertaken and construction works are complete. N/A is not applicable as there are no residential receptors or properties on the site. A range may be given as remediation strategies will vary in design to focus on specific contaminative risks at each site. Remediation strategies may involve source removal or pathway intervention as appropriate.					

Impact Assessment (Comparison of baseline against construction and post-construction): Infilled Land located outside the Scheme boundary but within the Study Area

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Exposure to soil contamination - on-site users (residential).	N/A	N/A	N/A	N/A	N/A
Exposure to groundwater contamination - on-site users (residential).	N/A	N/A	N/A	N/A	N/A
Exposure to ground gas - on-site users (residential).	N/A	N/A	N/A	N/A	N/A
Exposure to soil contamination – on-site users (commercial/public open space)	Very Low	Very Low	Very Low	Neutral effect	Neutral effect
Exposure to groundwater contamination – on-site users (commercial/public open space)	Very Low	Very Low	Very Low	Neutral effect	Neutral effect
Exposure to ground gas – on-site users (commercial/public open space)	Very Low	Very Low	Very Low	Neutral effect	Neutral effect

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Exposure to soil contamination - off-site users (residential)	Low	Low	Low	Neutral effect	Neutral effect
Exposure to groundwater contamination – off-site users (residential)	Low	Low	Low	Neutral effect	Neutral effect
Exposure to ground gas – off-site users (residential)	Low	Low	Low	Neutral effect	Neutral effect
Exposure to soil contamination – off-site users (commercial)	Very low	Very low	Very low	Neutral effect	Neutral effect
Exposure to groundwater contamination – off-site users (commercial)	Very low	Very low	Very low	Neutral effect	Neutral effect
Exposure to ground gas – off-site users (commercial)	Very low	Very low	Very low	Neutral effect	Neutral effect
Contaminated soil, leachate/groundwater and pollution of aquifers	Low	Low	Low	Neutral effect	Neutral effect

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Contaminated soil, leachate/groundwater and impact on surface watercourses	Low	Low	Low	Neutral effect	Neutral effect
Impact on property receptors	Low	Low	Low	Neutral effect	Neutral effect
Impact on ecological/geological designations	Low	Low	Low	Neutral effect	Neutral effect
Overall significance				Neutral effect	Neutral effect
Notes / assumptions Assumes remediation required has been undertaken and construction works are complete.					

10.9 Detailed Risk Assessment – Farm Sites

Table 10.1.17: Detailed risk assessment for Farm sites located within the Scheme boundary

Site ID (IDS)	CL001, CL034, CL036					
Site group	Farm sites located within the Scheme boundary					
Site title (Site ID) and land use class	Pig Farm (Berwick Down) - (CL001) Class 1. Pig Farm (Longbarrow Roundabout) - (CL034) Class 1. Former Stonehenge Pedigree Stock Farm (1924 - 1926) – (CL036) Class 1.					
Receptors						
Site title (Site ID)	Sensitive land use (human receptor) (adjacent and/or <50m)	Aquifer designation	Surface watercourse (adjacent and/or <50m)	Geological, including minerals designation or ecological designation (adjacent and/or <50m)	Property e.g. buildings and structures (adjacent and/or <50m)	Other
Pig Farm (CL001)	None	Bedrock - Principal Aquifer	None	None	None	<50m away from potentially infilled land (CL002)
Pig Farm (CL034)	None	Bedrock - Principal Aquifer	None	None	None	Agricultural land on all sides Wooded area to west. Livestock on site
Former Stonehenge Pedigree Stock Farm (1924 - 1926) (CL036)	On-site and Off-site Stonehenge (Public open space)	Bedrock - Principal Aquifer	None	None	None	Agricultural land on and off site on all sides
Post-construction development description						
CL001 - At grade at western extremity of the Scheme CL034 - Cutting approach to western portal CL036 - Tunnel and existing A303 converted to byway.						

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	On-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - public open space Stonehenge Down	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Minor	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Minor	Very low
		Inhalation of ground gases.	N/A	N/A	N/A

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	Off-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	Off-site users – public open space Stonehenge Down	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Minor	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Minor	Very low
		Inhalation of ground gases.	N/A	N/A	N/A
	Controlled waters – groundwater – Principal Aquifer	Vertical and lateral migration.	Unlikely	Mild	Very low

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	Controlled waters – surface waters None	Groundwater migration, direct run-off from site.	N/A	N/A	N/A
	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	N/A	N/A	N/A
		Aggressive Ground Conditions	N/A	N/A	N/A
	Ecological/geological designations None	Vertical and lateral migration, direct contact.	N/A	N/A	N/A
Notes / assumptions Sites assessed without construction of the Scheme. N/A is not applicable as there are no residential receptors or properties on the site. Also there are no surface water courses or ecological/geological designations on or adjacent to the sites.					

Source	Receptor	Pathway	Probability	Consequence	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	On-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - public open space Stonehenge Down	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Minor	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Minor	Very low
		Inhalation of ground gases.	N/A	N/A	N/A

Source	Receptor	Pathway	Probability	Consequence	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	Off-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	Off-site users – public open space Stonehenge Down	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Minor	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Minor	Very low
		Inhalation of ground gases.	N/A	N/A	N/A
	Controlled waters – groundwater – Principal Aquifer	Vertical and lateral migration.	Unlikely	Mild	Very low

Source	Receptor	Pathway	Probability	Consequence	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	Controlled waters – surface waters None	Groundwater migration, direct run-off from site.	N/A	N/A	N/A
	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	N/A	N/A	N/A
		Aggressive Ground Conditions	N/A	N/A	N/A
	Ecological/geological designations None	Vertical and lateral migration, direct contact.	N/A	N/A	N/A
Notes / assumptions During construction standard mitigation procedures are assumed to be implemented. Construction workers have been excluded from assessment due to the use of PPE and risk management. N/A is not applicable as there are no residential receptors or properties on the site. Also there are no surface water courses or ecological/geological designations on or adjacent to the sites. Whilst the measures detailed in the OEMP will make it unlikely that there will be adverse consequences associated with construction for example through the control of surface run-off and dust, it is considered that there may still be temporary adverse effects during the construction period that might arise through ground disturbance. The adoption of the OEMP 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. Assumes construction phase include remediation that may be required					

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
Residual soil, leachate, and groundwater contamination. Ground gas.	On-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - public open space Stonehenge Down	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Minor	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Minor	Very low
		Inhalation of ground gases.	N/A	N/A	N/A

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
Residual soil, leachate, and groundwater contamination. Ground gas.	Off-site users – residential None	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	N/A	N/A	N/A
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	N/A	N/A	N/A
		Inhalation of ground gases.	N/A	N/A	N/A
	Off-site users – public open space Stonehenge Down	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Minor	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Minor	Very low
		Inhalation of ground gases.	N/A	N/A	N/A
	Controlled waters – groundwater – Principal Aquifer	Vertical and lateral migration.	Unlikely	Mild	Very low
Residual soil, leachate, and	Controlled waters – surface waters None	Groundwater migration, direct run-off from site.	N/A	N/A	N/A

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
groundwater contamination. Ground gas.	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	N/A	N/A	N/A
		Aggressive Ground Conditions	N/A	N/A	N/A
	Ecological/geological designations None	Vertical and lateral migration, direct contact.	N/A	N/A	N/A
Notes / assumptions Assumes remediation required has been undertaken and construction works are complete. N/A is not applicable as there are no residential receptors or properties on the site. Also there are no surface water courses or ecological/geological designations on or adjacent to the sites. A range may be given as remediation strategies will vary in design to focus on specific contaminative risks at each site. Remediation strategies may involve source removal or pathway intervention as appropriate.					

Impact Assessment (Comparison of baseline against construction and post-construction): Farm sites located within the Scheme boundary

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Exposure to soil contamination - on-site users (residential).	N/A	N/A	N/A	N/A	N/A
Exposure to groundwater contamination - on-site users (residential).	N/A	N/A	N/A	N/A	N/A
Exposure to ground gas - on-site users (residential).	N/A	N/A	N/A	N/A	N/A
Exposure to soil contamination – on-site users (public open space)	Very Low	Very Low	Very Low	Neutral effect	Neutral effect
Exposure to groundwater contamination – on-site users (public open space)	Very Low	Very Low	Very Low	Neutral effect	Neutral effect
Exposure to ground gas – on-site users (public open space)	N/A	N/A	N/A	N/A	N/A

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Exposure to soil contamination - off-site users (residential)	N/A	N/A	N/A	N/A	N/A
Exposure to groundwater contamination – off-site users (residential)	N/A	N/A	N/A	N/A	N/A
Exposure to ground gas – off-site users (residential)	N/A	N/A	N/A	N/A	N/A
Exposure to soil contamination – off-site users (public open space)	Very low	Very low	Very low	Neutral effect	Neutral effect
Exposure to groundwater contamination – off-site users (public open space)	Very low	Very low	Very low	Neutral effect	Neutral effect
Exposure to ground gas – off-site users (commercial)	N/A	N/A	N/A	N/A	N/A
Contaminated soil, leachate/groundwater and pollution of aquifers	Very low	Very low	Very low	Neutral effect	Neutral effect

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Contaminated soil, leachate/groundwater and impact on surface watercourses	N/A	N/A	N/A	Neutral effect	Neutral effect
Impact on property receptors	N/A	N/A	N/A	Neutral effect	Neutral effect
Impact on ecological/geological designations	N/A	N/A	N/A	Neutral effect	Neutral effect
Overall significance				Neutral effect	Neutral effect
Notes / assumptions Assumes remediation required has been undertaken and construction works are complete.					

Table 10.1.18: Detailed risk assessment for Farm sites located outside the Scheme boundary but within the Study Area

Site ID (IDS)	CL003, CL012					
Site group	Farm sites located outside the Scheme boundary but within the Study Area					
Site title (Site ID) and land use class	Cherry Lodge Farm (formerly Homanton Farm) – (CL003) Class 1. Manor Farm – (CL012) Class 1.					
Receptors						
Site title (Site ID)	Sensitive land use (human receptor) (adjacent and/or <50m)	Aquifer designation	Surface watercourse (adjacent and/or <50m)	Geological, including minerals designation or ecological designation (adjacent and/or <50m)	Property e.g. buildings and structures (adjacent and/or <50m)	Other
Cherry Lodge Farm (formerly Homanton Farm) (CL003)	On-site Residential Commercial	Bedrock - Principal Aquifer	None	National Nature Reserve - Parsonage Down	On-site Residential and commercial property	<50m away from potentially infilled land (CL098)
Manor Farm (CL012)	On-site Residential Commercial Off-site Residential, Commercial	Bedrock - Principal Aquifer Superficial - Secondary A Aquifer	River Till	River Till - SSSI	On-site Residential and commercial property Off-site Residential, Commercial property	None
Post-construction development description						
None. Sites are located outside the land required for the construction of the Scheme. Sites are located south of River Till Viaduct and north of Parsonage Down.						

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	On-site users – residential Cherry Lodge Farm Manor Farm	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Minor	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Minor	Very low
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - commercial Cherry Lodge Farm Manor Farm	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Minor	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Minor	Very low
		Inhalation of ground gases.	N/A	N/A	N/A

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	Off-site users – residential	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Minor	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Minor	Very low
		Inhalation of ground gases.	N/A	N/A	N/A
	Off-site users - commercial Petrol filling Station, Public House	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Minor	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Minor	Very low
		Inhalation of ground gases.	N/A	N/A	N/A
	Controlled waters – groundwater – Principal Aquifer Secondary A Aquifer	Vertical and lateral migration.	Unlikely	Mild	Very low

Source	Receptor	Pathway	Probability	Consequence	Risk at baseline without mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	Controlled waters – surface waters River Till	Groundwater migration, direct run-off from site.	Low	Mild	Low
	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	N/A	N/A	N/A
		Aggressive Ground Conditions	N/A	N/A	N/A
	Ecological/geological designations National Nature Reserve - Parsonage Down SSSI-River Till	Vertical and lateral migration, direct contact.	Unlikely	Mild	Very low
Notes / assumptions Sites assessed without construction of the Scheme. N/A is not applicable as there are no known potential gas sources on the sites.					

Construction CSM and Qualitative Risk Assessment: Farm sites located outside the Scheme boundary but within the Study Area

Source	Receptor	Pathway	Probability	Consequence	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	On-site users – residential Cherry Lodge Farm Manor Farm	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Minor	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Minor	Very low
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - commercial Cherry Lodge Farm Manor Farm	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Minor	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Minor	Very low
		Inhalation of ground gases.	N/A	N/A	N/A

Source	Receptor	Pathway	Probability	Consequence	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	Off-site users – residential	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Minor	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Minor	Very low
		Inhalation of ground gases.	N/A	N/A	N/A
	Off-site users - commercial Petrol filling Station, Public House	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Minor	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Minor	Very low
		Inhalation of ground gases.	N/A	N/A	N/A
	Controlled waters – groundwater – Principal Aquifer Secondary A Aquifer	Vertical and lateral migration.	Unlikely	Mild	Very low

Source	Receptor	Pathway	Probability	Consequence	Risk with construction stage mitigation
Soil, leachate and groundwater contamination. Ground gas. Potential for a range of inorganic and organic contaminants including but not limited to: heavy metals, ammonia, acids, organic compounds, inorganic compounds, asbestos, hydrocarbons, PAH, solvents, lubricants, fuel oils, alkalis, PCB, methane and carbon dioxide.	Controlled waters – surface waters River Till	Groundwater migration, direct run-off from site.	Low	Mild	Low
	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	N/A	N/A	N/A
		Aggressive Ground Conditions	N/A	N/A	N/A
	Ecological/geological designations National Nature Reserve - Parsonage Down SSSI-River Till	Vertical and lateral migration, direct contact.	Unlikely	Mild	Very low
Notes / assumptions During construction standard mitigation procedures are assumed to be implemented. Construction workers have been excluded from assessment due to the use of PPE and risk management. N/A is not applicable as there are no known potential gas sources on the sites. Whilst the measures detailed in the OEMP will make it unlikely that there will be adverse consequences associated with construction for example through the control of surface run-off and dust, it is considered that there may still be temporary adverse effects during the construction period that might arise through ground disturbance. The adoption of the OEMP 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. Assumes construction phase include remediation that may be required					

Post-construction CSM and Qualitative Risk Assessment: Farm sites located outside the Scheme boundary but within the Study Area

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
Residual soil, leachate, and groundwater contamination. Ground gas.	On-site users – residential Cherry Lodge Farm Manor Farm	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Minor	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Minor	Very low
		Inhalation of ground gases.	N/A	N/A	N/A
	On-site users - commercial Cherry Lodge Farm Manor Farm	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Minor	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Minor	Very low
		Inhalation of ground gases.	N/A	N/A	N/A

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
Residual soil, leachate, and groundwater contamination. Ground gas.	Off-site users – residential	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Minor	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Minor	Very low
		Inhalation of ground gases.	N/A	N/A	N/A
	Off-site users - commercial Petrol filling Station, Public House	Direct contact, ingestion, inhalation of dust/vapour with/from contaminated soils.	Unlikely	Minor	Very low
		Direct contact, ingestion, inhalation of vapour with/from contaminated waters.	Unlikely	Minor	Very low
		Inhalation of ground gases.	N/A	N/A	N/A
	Controlled waters – groundwater – Principal Aquifer Secondary A Aquifer	Vertical and lateral migration.	Unlikely	Mild	Very low
Residual soil, leachate, and groundwater	Controlled waters – surface waters River Till	Groundwater migration, direct run-off from site.	Low	Mild	Low

Source	Receptor	Pathway	Probability	Consequence	Risk with permanent works mitigation
contamination. Ground gas.	Property receptors – buildings, foundations, and services (on-site and off-site)	Exposure to explosive gases.	N/A	N/A	N/A
		Aggressive Ground Conditions	N/A	N/A	N/A
	Ecological/geological designations National Nature Reserve - Parsonage Down SSSI-River Till	Vertical and lateral migration, direct contact.	Unlikely	Mild	Very low
Notes / assumptions Assumes remediation required has been undertaken and construction works are complete. N/A is not applicable as there are no known potential gas sources on the sites. A range may be given as remediation strategies will vary in design to focus on specific contaminative risks at each site. Remediation strategies may involve source removal or pathway intervention as appropriate.					

Impact Assessment (Comparison of baseline against construction and post-construction): Farm sites located outside the Scheme boundary but within the Study Area

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Exposure to soil contamination - on-site users (residential).	Very Low	Very Low	Very Low	Neutral effect	Neutral effect
Exposure to groundwater contamination - on-site users (residential).	Very Low	Very Low	Very Low	Neutral effect	Neutral effect
Exposure to ground gas - on-site users (residential).	N/A	N/A	N/A	N/A	N/A
Exposure to soil contamination – on-site users (commercial)	Very Low	Very Low	Very Low	Neutral effect	Neutral effect
Exposure to groundwater contamination – on-site users (commercial)	Very Low	Very Low	Very Low	Neutral effect	Neutral effect
Exposure to ground gas – on-site users (commercial)	N/A	N/A	N/A	N/A	N/A

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Exposure to soil contamination - off-site users (residential)	Very Low	Very Low	Very Low	Neutral effect	Neutral effect
Exposure to groundwater contamination – off-site users (residential)	Very Low	Very Low	Very Low	Neutral effect	Neutral effect
Exposure to ground gas – off-site users (residential)	N/A	N/A	N/A	N/A	N/A
Exposure to soil contamination – off-site users (commercial)	Very low	Very low	Very low	Neutral effect	Neutral effect
Exposure to groundwater contamination – off-site users (commercial)	Very low	Very low	Very low	Neutral effect	Neutral effect
Exposure to ground gas – off-site users (commercial)	N/A	N/A	N/A	N/A	N/A
Contaminated soil, leachate/groundwater and pollution of aquifers	Very low	Very low	Very low	Neutral effect	Neutral effect

Contaminant linkage	Baseline	Construction	Post-construction	Construction impact	Post-construction impact
	Risk	Risk	Risk	Significance	Significance
Contaminated soil, leachate/groundwater and impact on surface watercourses	Low	Low	Low	Neutral effect	Neutral effect
Impact on property receptors	N/A	N/A	N/A	Neutral effect	Neutral effect
Impact on ecological/geological designations	Very Low	Very Low	Very Low	Neutral effect	Neutral effect
Overall significance				Neutral effect	Neutral effect
Notes / assumptions Assumes remediation required has been undertaken and construction works are complete.					

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