Cambridge Waste Water Treatment Plant Relocation Project
Anglian Water Services Limited

Appendix 14.2: Contaminated Land Risk Assessments

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1.1.1 The proposed WWTP includes the WWTP site, landscaping proposals and new access connection connecting with the B1047 Horningsea Road.

Table 1-1: Proposed WWTP (baseline)

Source	Pathway	Receptor	Consequence	Mitigated risk		Comments/ Mitigation Measures
				Probability	Risk	
S1: Potential contaminant sources from infilled ponds on WWTP site and dismantled railway line	**P1a**: Direct soil and dust ingestion **P1b**: Dermal contact (indoors & outdoors) **P1c**: Inhalation of dust (indoors & outdoors)	**R1**: On-site land users: walkers, farm workers	Minor	Unlikely	1	Laboratory testing on the proposed WWTP site has determined that no soils tested exceeded the GAC for commercial or public open space land use. Risks to human health are therefore considered to be very low.
		R2: Off-site land users: Adjacent residents, walkers, farm workers	Minor	Unlikely	1	There are residents adjacent to the site and the land is currently used recreationally and for agriculture. Laboratory testing on the proposed WWTP site has determined that no soils tested exceeded the GAC for commercial or public open space land use. Risks to human health are therefore considered to be very low.
S4: Slightly elevated soil leachate	**P2**: Production and vertical	**R4**: Secondary A aquifer	Mild	Unlikely	1	There is limited, very localised made ground on-site. Slightly elevated leachate concentrations have been encountered

Source	Pathway	Receptor	Consequence	Mitigated risk Probability	Risk	Comments/ Mitigation Measures
concentrations of metals and inorganics	migration of leachates in unsaturated area. **P3**: Vertical and horizontal migration of contaminants in saturated area.	(River Terrace Deposits)				during the GI. However, these do not represent a significant source of contamination. There is an existing pathway for leachate from made ground to the underlying superficial deposits. Superficial deposits are only found in limited locations on the proposed WWTP site.
		R5: Principal aquifer (Lower Greensand Group and Chalk)	Medium	Low likelihood	3	There is limited, very localised made ground on-site. Slightly elevated leachate concentrations have been encountered during the GI. However, these do not represent a significant source of contamination. There is an existing pathway for leachate from made ground to the underlying Chalk bedrock on-site. However, the Lower Greensand is protected by the overlying Gault Clay (unproductive aquifer).
	P6: Surface run-off.	**R7**: Drainage channels on and off-site	Minor	Low likelihood	1	There is limited, very localised made ground on-site. Slightly elevated leachate concentrations have been encountered on-site. However, these do not represent a significant source of contamination. Leachate from made ground is currently able to leach into superficial deposits (limited occurrence on proposed WWTP site) and bedrock on-site which is likely in hydraulic continuity with drainage channels on and off-site.

Source	Pathway	Receptor	Consequence	Mitigated risk Probability	Risk	Comments/ Mitigation Measures
S5: Slightly elevated groundwater concentrations of metals and inorganics	**P3**: Vertical and horizontal migration of contaminants in saturated area.	**R4**: Secondary A aquifer (River Terrace Deposits)	Mild	Unlikely	1	Groundwater samples from Chalk were found to contain slightly elevated concentrations of metals and inorganics. The River Terrace Deposits, which are limited in occurrence on the proposed WWTP site, are in hydraulic continuity with Chalk and therefore there is an existing pollutant linkage.
		R5: Principal aquifer (Lower Greensand Group and Chalk)	Medium	Low likelihood	3	Groundwater samples from Chalk were found to contain slightly elevated concentrations of metals and inorganics. The River Terrace Deposits are in hydraulic continuity with Chalk and therefore there is an existing pollutant linkage. The nearest local abstraction which is in use is the Gate House, located 480m east of the proposed extent of the WWTP. The borehole at this location abstracts from the Lower Greensand which is protected by the overlying Gault Clay (unproductive aquifer).
		R7: Drainage channels on and off-site	Minor	Low likelihood	1	Groundwater samples from Chalk were found to contain slightly elevated concentrations of metals and inorganics. This is likely in hydraulic continuity with drainage channels on and off-site. Therefore, this is an existing pollutant linkage.

1.2 Infrastructure for WWTP (baseline)

1.2.1 The infrastructure for WWTP includes the final effluent pipeline, outfall, transfer tunnel and shafts.

Table 1-2: Infrastructure for WWTP (baseline)

Source	Pathway	Receptor	Consequence	Mitigated risk		Comments/ Mitigation Measures
				Probability	Risk	
S2: Potential contaminant sources such as Railway sidings, existing Cambridge WWTP, electrical substations	**P1a**: Direct soil and dust ingestion **P1b**: Dermal contact (indoors & outdoors) **P1c**: Inhalation of dust (indoors & outdoors)	**R1**: On-site land users: walkers, farm workers	Minor	Unlikely	1	There are several off-site workers and visitors, particularly adjacent to the existing WWTP. This includes the workers at the existing WWTP. There are residents adjacent to the site and the land is currently used recreationally and for agriculture. Laboratory testing has determined that no soils exceeded the GAC for commercial or public open space land use. Risks to human health are therefore considered to be very low.
		R2: Off-site land users: industrial/commercial workers and visitors, adjacent residents	Minor	Unlikely	1	
S4: Slightly elevated soil leachate concentrations of metals and inorganics	**P2**: Production and vertical migration of leachates in unsaturated area. **P3**: Vertical and	**R3**: Secondary A aquifer (River Terrace Deposits and Alluvium)	Mild	Low likelihood	2	Made ground is not present along the treated effluent transfer pipeline. There is limited Made ground along the transfer tunnel route, with the majority being present at the existing WWTP. Slightly elevated leachate concentrations have been encountered on-site. However, these do not represent a significant source of contamination. Leachate from made ground is currently

Source	Pathway	Receptor	Consequence	Mitigated risk Probability	Risk	Comments/ Mitigation Measures
	horizontal migration of contaminants in saturated area.					able to leach into superficial deposits below.
		R4: Principal aquifer (Lower Greensand Group and Chalk)	Medium	Low likelihood	3	Made ground is not present along the treated effluent transfer pipeline. There is limited Made ground along the transfer tunnel route, with the majority being present at the existing WWTP. Slightly elevated leachate concentrations have been encountered on-site. However, these do not represent a significant source of contamination. Leachate from made ground is currently able to leach into chalk bedrock on-site. However, the Lower Greensand is protected by the overlying Gault Clay (a non-aquifer).
	P6: Surface run-off.	**R6**: Drainage channels on and off-site	Minor	Low likelihood	1	Made ground is not present along the treated effluent transfer pipeline. There is limited Made ground along the transfer tunnel route, with the majority being present at the existing WWTP. Slightly elevated leachate concentrations have been encountered on-site. However, these do not represent a significant source of contamination. Leachate from made ground is currently able to leach into superficial deposits and bedrock on-site which is likely in

Source	Pathway	Receptor	Consequence	Mitigated risk Probability	Mitigated risk Risk	Comments/ Mitigation Measures
						hydraulic continuity with drainage channels on and off-site.
S5: Slightly elevated groundwater concentrations of metals and inorganics	**P3**: Vertical and horizontal migration of contaminants in saturated area.	**R3**: Secondary A aquifer (River Terrace Deposits and Alluvium)	Mild	Low likelihood	2	Groundwater samples from Chalk were found to contain slightly elevated concentrations of metals and inorganics. The River Terrace Deposits are in hydraulic continuity with Chalk and therefore there is an existing pollutant linkage.
		R4: Principal aquifer (Lower Greensand Group and Chalk)	Medium	Low likelihood	3	Groundwater samples from Chalk were found to contain slightly elevated concentrations of metals and inorganics. The River Terrace Deposits are in hydraulic continuity with Chalk and therefore there is an existing pollutant linkage. The closest local abstraction is located at Biggin Abbey, approximately 500m from the wastewater transfer tunnel, and is no longer in use.
		R5: Onsite watercourse (the River Cam)	Medium	Low likelihood	3	Groundwater samples from Chalk were found to contain slightly elevated concentrations of metals and inorganics. The River Cam is in hydraulic continuity with Chalk and therefore there is an existing pollutant linkage.

Source	Pathway	Receptor	Consequence	Mitigated risk		Comments/ Mitigation Measures
				Probability	Risk	
		R6: Drainage channels on and off-site	Minor	Low likelihood	1	Groundwater samples from Chalk were found to contain slightly elevated concentrations of metals and inorganics. This is likely in hydraulic continuity with drainage channels on and off-site. Therefore, this is an existing pollutant linkage.

1.3 Waterbeach Pipeline (baseline)

1.3.1 The Waterbeach Pipeline includes a transfer section running from the north near Waterbeach (at the existing Waterbeach WWTP) to Low Fen Drove Way, a section crossing the area of land required for the construction of the proposed WWTP, and a section south of the A14 which connects to the area of land where the existing Cambridge WWTP is located.

Table 1-3: Waterbeach Pipeline (Baseline)

Source	Pathway	Receptor	Consequence	Mitigated risk		Comments/ Mitigation Measures
				Probability	Risk	
S3: Potential contaminant sources including railway, existing Waterbeach WWTP, off-site landfill.	**P1a**: Direct soil and dust ingestion **P1b**: Dermal contact (indoors & outdoors) **P1c**: Inhalation of dust (indoors & outdoors)	**R1**: On-site land users: WWTP workers and visitors, walkers, farm workers	Minor	Unlikely	1	The existing Waterbeach WWTP has occasional workers and visitors. There are residents adjacent to the site and the land is currently used recreationally and for agriculture. Laboratory testing has determined that no soils exceeded the GAC for commercial or public open space land use. Risks to human health are therefore
		R2: Off-site land users: adjacent residents	Minor	Unlikely	1	

Source	Pathway	Receptor	Consequence	Mitigated risk		Comments/ Mitigation Measures
				Probability	Risk	
						considered to be very low.
	P2: Production and vertical migration of leachates in unsaturated area.	**R4**: Secondary A aquifer (River Terrace Deposits)	Mild	Low likelihood	2	Laboratory testing of leachate was not undertaken as part of the ground investigation. However, the majority of the site has been used for agricultural purposes and comprise natural materials. The ground investigation was targeted to potential contaminant sources. There were no exceedances of human health GACs, no elevated
	P3: Vertical and horizontal migration of contaminants in saturated area.	**R5**: Principal aquifer (Lower Greensand Group and Chalk)	Medium	Low likelihood	3	
	P6: Surface run-off.	**R6**: Onsite watercourse (the River Cam)	Medium	Low likelihood	3	
		R7: Drainage channels on and off-site	Minor	Low likelihood	1	

Source	Pathway	Receptor	Consequence	Mitigated risk		Comments/ Mitigation Measures
				Probability	Risk	
						contaminants within soil samples and limited made ground was encountered on-site. Significant contamination from soil leachate is unlikely to be encountered on-site. No groundwater samples were taken. However, due to lack of contaminant sources or made ground, these are likely to be consistent with groundwater samples taken from

Source	Pathway	Receptor	Consequence	Mitigated risk		Comments/ Mitigation Measures
				Probability	Risk	
						other ground investigations.

2 Construction Contaminated Land Risk Assessments

2.1 Proposed WWTP (construction)

2.1.1 The proposed WWTP includes the WWTP site, landscaping proposals and new access connection connecting with the B1047 Horningsea Road.

Table 2-1: Proposed WWTP (Construction)

Source	Pathway	Receptor	Consequence	Mitigated risk		Comments/ Mitigation Measures
				Probability	Risk	
S1: Potential contaminant sources from infilled ponds on WWTP site and dismantled railway line	**P1a**: Direct soil and dust ingestion **P1b**: Dermal contact (indoors & outdoors) **P1c**: Inhalation of dust (indoors & outdoors)	**R1**: On-site land users: WWTP visitors	Minor	Low likelihood	1	There are residents adjacent to the site and the land is currently used recreationally and for agriculture. Laboratory testing on the proposed WWTP site has determined that no soils tested exceeded the GAC for commercial or public open space land use. Risks to human health are therefore considered to be very low. Dust may be created during works which could migrate off-site. The risks from this will be mitigated through the use of a Code of Construction Practice (CoCP).
		R2: Off-site land users: Adjacent residents, walkers, farm workers	Minor	Low likelihood	1	

Source	Pathway	Receptor	Consequence	Mitigated risk		Comments/ Mitigation Measures
				Probability	Risk	
	P4: Direct contact with buried structures and infrastructure.	**R6**: Buried structures and infrastructure: water supply pipe infrastructure, concrete structures (e.g. foundations), and tunnels.	Mild	Low likelihood	2	Information from the ground investigation should be used to inform the material requirements in the design phase.
S4: Slightly elevated soil leachate concentrations of metals and inorganics	**P2**: Production and vertical migration of leachates in unsaturated area. **P3**: Vertical and horizontal migration of contaminants in saturated area. **P5**: Man-made contaminant transport pathways including utilities,	**R3**: Secondary A aquifer (River Terrace Deposits)	Mild	Unlikely	1	There is limited made ground on-site. Superficial deposits are only found in limited locations on the proposed WWTP site. Slightly elevated leachate concentrations have been encountered on-site. However, these do not represent a significant source of contamination. The Chalk, superficial deposits (if present) and made ground are in hydraulic continuity, and so construction works are
		R4: Principal aquifer (Lower Greensand Group and Chalk)	Medium	Low likelihood	3	
		R6: Drainage channels on and off-site	Minor	Low likelihood	1	

Source	Pathway	Receptor	Consequence	Mitigated risk		Comments/ Mitigation Measures
				Probability	Risk	
	piling for foundations, tunnels, and pipelines.					unlikely to change this existing pollutant linkage.
S5: Slightly elevated groundwater concentrations of metals and inorganics	**P3**: Vertical and horizontal migration of contaminants in saturated area. **P5**: Man-made contaminant transport pathways including utilities, piling for foundations, tunnels, and pipelines.	**R3**: Secondary A aquifer (River Terrace Deposits)	Mild	Unlikely	1	Groundwater samples from the Chalk were found to contain slightly elevated concentrations of metals and inorganics. The Chalk is in hydraulic continuity with the superficial deposits, which have limited presence on the proposed WWTP site, and the drainage channels on-site. Surface water samples from Quy Fen, Allicky Farm Pond and the Black Ditch were found to contain slightly elevated concentrations of metals and inorganics. This is consistent with the water quality encountered within groundwater samples. Therefore, construction works are unlikely to change
		R4: Principal aquifer (Lower Greensand Group and Chalk)	Medium	Low likelihood	3	
	P3: Vertical and horizontal migration of contaminants in saturated area.	**R6**: Drainage channels on and off-site	Minor	Low likelihood	1	

Source	Pathway	Receptor	Consequence	Mitigated risk		Comments/ Mitigation Measures
				Probability	Risk	
						this existing pollutant linkage.

2.2 Infrastructure for WWTP (construction)

2.2.1 The infrastructure for WWTP includes the final effluent pipeline, outfall, transfer tunnel and shafts.

Table 2-2: Infrastructure for WWTP (Construction)

Source	Pathway	Receptor	Consequence	Mitigated risk Probability	Mitigated risk Risk	Comments/ Mitigation Measures
S2: Potential contaminant sources such as Railway sidings, existing Cambridge WWTP, electrical substations	**P1a**: Direct soil and dust ingestion **P1b**: Dermal contact (indoors & outdoors) **P1c**: Inhalation of dust (indoors & outdoors)	**R1**: On-site land users: walkers, farm workers	Minor	Low likelihood	1	There are residents adjacent to the site and the land is currently used recreationally and for agriculture. There are off-site workers adjacent to the existing WWTP- where shafts and tunnels will be constructed. Laboratory testing has determined that no soils exceeded the GAC for commercial or public open space land use. Risks to human health are therefore considered to be very low. The adjacent residents and users of surrounding land will not have access to the site during the construction. However, dust may be created during works which could migrate off-site. The risks from this will be mitigated through the use of a CoCP.
		R2: Off-site land users: industrial/commercial workers and visitors, adjacent residents	Minor	Low likelihood	1	
	P4: Direct contact with buried	**R6**: Buried structures and infrastructure: water supply pipe	Mild	Low likelihood	2	Information from the ground investigation will be used to inform

Source	Pathway	Receptor	Consequence	Mitigated risk Probability	Risk	Comments/ Mitigation Measures
	structures and infrastructure.	infrastructure, concrete structures (e.g. foundations), and tunnels.				the material requirements in the detailed design phase.
S4: Slightly elevated soil leachate concentrations of metals and inorganics	**P2**: Production and vertical migration of leachates in unsaturated area. **P3**: Vertical and horizontal migration of contaminants in saturated area. **P5**: Man-made contaminant transport pathways including utilities, piling for	**R3**: Secondary A aquifer (River Terrace Deposits)	Mild	Low likelihood	2	Contaminants in the made ground could naturally leach into the aquifers which are in hydraulic continuity with surface water bodies. Man-made contaminant transport pathways such as shafts, tunnels and pipelines could create rapid pathways to the aquifer which could then migrate towards surface water bodies. However, made ground is not present along the treated effluent transfer pipeline. There is limited made ground along the transfer tunnel route, with the majority being present at the existing WWTP. Slightly elevated leachate concentrations have been encountered on-site. However, these do not represent a significant source of contamination.
		R4: Principal aquifer (Lower Greensand Group and Chalk)	Medium	Low likelihood	3	
		R5: Onsite watercourse (the River Cam)	Medium	Low likelihood	3	

Source	Pathway	Receptor	Consequence	Mitigated risk Probability	Risk	Comments/ Mitigation Measures
	foundations, tunnels, and pipelines.					
	P3: Vertical and horizontal migration of contaminants in saturated area.	**R6**: Drainage channels on and off-site	Minor	Low likelihood	1	
S5: Slightly elevated groundwater concentrations of metals and inorganics	**P3**: Vertical and horizontal migration of contaminants in saturated area. **P5**: Man-made contaminant transport pathways including utilities, piling for foundations,	**R3**: Secondary A aquifer (River Terrace Deposits)	Mild	Low likelihood	2	Groundwater samples from the Chalk were found to contain slightly elevated concentrations of metals and inorganics. The Chalk is in hydraulic continuity with the superficial deposits, which have limited presence on the proposed WWTP site, and the drainage channels on-site. Surface water samples from Quy Fen, Allicky Farm Pond and the Black Ditch were found to contain slightly elevated concentrations of metals and inorganics. This is consistent with the water quality encountered within groundwater samples.
		R4: Principal aquifer (Lower Greensand Group and Chalk)	Medium	Low likelihood	3	

Source	Pathway	Receptor	Consequence	Mitigated risk Probability	Mitigated risk Risk	Comments/ Mitigation Measures
	tunnels, and pipelines.					Therefore, construction works are unlikely to change this existing pollutant linkage.
	P3: Vertical and horizontal migration of contaminants in saturated area.	**R6**: Drainage channels on and off-site	Minor	Low likelihood	1	
		R5: Onsite watercourse (the River Cam)	Medium	Low likelihood	3	

2.3 Waterbeach construction

2.3.1 The Waterbeach Pipeline includes a transfer section running from the north near Waterbeach (at the existing Waterbeach WWTP) to Low Fen Drove Way, a section crossing the area of land required for the construction of the proposed WWTP, and a section south of the A14 which connects to the area of land where the existing Cambridge WWTP is located.

Table 2-3: Waterbeach Pipeline (Construction)

Source	Pathway	Receptor	Consequence	Mitigated risk		Comments/ Mitigation Measures
				Probability	Risk	
S2: Potential contaminant sources such as Railway sidings, existing Cambridge WWTP, electrical substations **S3:** Potential contaminant sources including railway, existing Waterbeach WWTP, off-site landfill.	**P1a**: Direct soil and dust ingestion **P1b**: Dermal contact (indoors & outdoors) **P1c**: Inhalation of dust (indoors & outdoors)	**R1**: On-site land users: walkers, farm workers	Minor	Unlikely	1	Laboratory testing has determined that no soils exceeded the GAC for commercial or public open space land use. There are residents adjacent to the site and the land is currently used recreationally and for agriculture. The adjacent residents and users of surrounding land will not have access to the site during the construction. Dust may be created during works which could migrate off-site. The risks from this will be mitigated through the use of a Code of Construction Practice (CoCP).
		R2: Off-site land users: adjacent residents	Minor	Unlikely	1	

Source	Pathway	Receptor	Consequence	Mitigated risk		Comments/ Mitigation Measures
				Probability	Risk	
	P2: Production and vertical migration of leachates in unsaturated area. **P3**: Vertical and horizontal migration of contaminants in saturated area. **P5**: Man-made contaminant transport pathways including utilities, piling for foundations, tunnels, and pipelines.	**R3**: Secondary A aquifer (River Terrace Deposits)	Mild	Low likelihood	2	Laboratory testing of leachate was not undertaken as part of the ground investigation. However, the majority of the site is agricultural and ground investigation was targeted to potential contaminant sources. There were no exceedances of human health GACs, no elevated contaminants within soil samples and limited made ground was encountered on-site. Significant contamination from soil leachate is unlikely to be encountered on-site.
		R4: Principal aquifer (Lower Greensand Group and Chalk)	Medium	Low likelihood	3	
	As above, and P6: Surface run-off.	R5: Onsite watercourse (the River Cam)	Medium	Low likelihood	3	Contaminants in the made ground could naturally leach into the aquifers which are in hydraulic continuity with surface water bodies. Man-made contaminant transport pathways such as shafts, tunnels and pipelines could create rapid pathways to the
		R6: Drainage channels on and off-site	Minor	Low likelihood	1	

Source	Pathway	Receptor	Consequence	Mitigated risk		Comments/ Mitigation Measures
				Probability	Risk	
						aquifer which could then migrate towards surface water bodies. Therefore, construction works are unlikely to change this existing pollutant linkage.

3 Operation Contaminated Land Risk Assessments

3.1 Proposed WWTP Operation

3.1.1 The proposed WWTP includes the WWTP site, landscaping proposals and new access connection connecting with the B1047 Horningsea Road.

Table 3-1: Proposed WWTP (Operation)

Source	Pathway	Receptor	Consequence	Mitigated risk Probability	Risk	Comments/ Mitigation Measures
S7: Use of the site as a new WWTP	**P1a**: Direct soil and dust ingestion **P1b**: Dermal contact (indoors & outdoors) **P1c**: Inhalation of dust (indoors & outdoors)	**R1**: On-site land users: WWTP visitors	Minor	Unlikely	1	Laboratory testing has determined that no soils exceeded the GAC for commercial or public open space land use. Risks to human health during operation are therefore considered to be very low. Excavation required for shafts and tunnels which will create excess materials. These will predominantly be from clean and natural material. These are proposed for reuse on the WWTP site. This will not be accessible by the public. Uncontaminated naturally occurring materials will
	P1c: Inhalation of dust (indoors & outdoors)	**R2**: Off-site land users: Adjacent residents, walkers, farm workers	Minor	Unlikely	1	

Source	Pathway	Receptor	Consequence	Mitigated risk Probability	Risk	Comments/ Mitigation Measures
						require appropriate materials management including recording of material movement and testing. If made ground is proposed for reuse, this will be need to be appropriately managed under a materials management plan. Testing will be required to prove the material is safe for reuse in terms of risks to human health and controlled waters.
	P4: Direct contact with buried structures and infrastructure.	**R6**: Buried structures and infrastructure: water supply pipe infrastructure, concrete structures (e.g. foundations), and tunnels.	Mild	Unlikely	1	Information from the ground investigation will be used to inform the material requirements in the design phase.
S4: Slightly elevated soil leachate concentrations of	**P2**: Production and vertical migration of leachates in unsaturated area.	**R3**: Secondary A aquifer (River Terrace Deposits)	Mild	Low likelihood	2	There is limited made ground on-site. Superficial deposits are only found in limited

Source	Pathway	Receptor	Consequence	Mitigated risk Probability	Risk	Comments/ Mitigation Measures
metals and inorganics	**P3**: Vertical and horizontal migration of contaminants in saturated area. **P5**: Man-made contaminant transport pathways including utilities, piling for foundations, tunnels, and pipelines.	**R4**: Principal aquifer (Lower Greensand Group and Chalk)	Medium	Low likelihood	3	locations on the proposed WWTP site. Slightly elevated leachate concentrations have been encountered on-site. However, these do not represent a significant source of contamination. The majority of the site will be under hardstanding or under the earth bank that will surround the site. This will be comprised of clean natural material (from tunnel cuttings and shafts). This will reduce leaching through any made ground present on-site to sensitive aquifers below or to surface water sources. Uncontaminated naturally occurring materials will require appropriate materials management including recording of material movement and testing.
		R6: Drainage channels on and off-site	Minor	Low likelihood	1	

Source	Pathway	Receptor	Consequence	Mitigated risk Probability	Risk	Comments/ Mitigation Measures
						If made ground is proposed for reuse, this will be need to be appropriately managed under a materials management plan. Testing will be required to prove the material is safe for reuse in terms of risks to human health and controlled waters.
S5: Slightly elevated groundwater concentrations of metals and inorganics	**P3**: Vertical and horizontal migration of contaminants in saturated area. **P5**: Man-made contaminant transport pathways including utilities, piling for foundations, tunnels, and pipelines.	**R2**: Secondary A aquifer (River Terrace Deposits)	Mild	Low likelihood	2	Groundwater samples were found to contain slightly elevated concentrations of metals and inorganics. Superficial deposits are only found in limited locations on the proposed WWTP site. Superficial deposits, bedrock aquifers and drainage channels on-site are in hydraulic continuity. Therefore, operation of the site is unlikely to change this existing pollutant linkage.
		R4: Principal aquifer (Lower Greensand Group and Chalk)	Medium	Low likelihood	3	
		R6: Drainage channels on and off-site	Minor	Low likelihood	1	

3.2 Infrastructure Operation

3.2.1 The infrastructure for WWTP includes the final effluent pipeline, outfall, transfer tunnel and shafts.

Table 3-2: Infrastructure for WWTP (Operation)

Source	Pathway	Receptor	Consequence	Mitigated risk		Comments/ Mitigation Measures
				Probability	Risk	
S2: Potential contaminant sources such as Railway sidings, existing Cambridge WWTP, electrical substations	**P1a**: Direct soil and dust ingestion **P1b**: Dermal contact (indoors & outdoors) **P1c**: Inhalation of dust (indoors & outdoors)	**R1**: On-site land users: walkers, farm workers	Minor	Unlikely	1	Laboratory testing has determined that no soils exceeded the GAC for commercial or public open space land use. Risks to human health during construction are therefore considered to be very low.
		R2: Off-site land users: industrial/commercial workers and visitors, adjacent residents	Minor	Unlikely	1	
	P4: Direct contact with buried structures and infrastructure.	**R6**: Buried structures and infrastructure: water supply pipe infrastructure, concrete structures (e.g. foundations), and tunnels.	Mild	Unlikely	1	Information from the ground investigation should be used to inform the material requirements in the design phase.

Source	Pathway	Receptor	Consequence	Mitigated risk		Comments/ Mitigation Measures
				Probability	Risk	
S4: Slightly elevated soil leachate concentrations of metals and inorganics	**P2**: Production and vertical migration of leachates in unsaturated area. **P3**: Vertical and horizontal migration of contaminants in saturated area. **P5**: Man-made contaminant transport pathways including utilities, piling for foundations, tunnels, and pipelines.	**R4**: Secondary A aquifer (River Terrace Deposits)	Mild	Low likelihood	2	Made ground is not present along the treated effluent transfer pipeline. There is limited Made ground along the transfer tunnel route, with the majority being present at the existing WWTP. Slightly elevated leachate concentrations have been encountered on-site. However, these do not represent a significant source of contamination. Shafts and pipelines will be founded in superficial deposits, Chalk and Gault Clay, which are already in hydraulic continuity. The surface water features are also in continuity with chalk and superficial deposits. Therefore, operation of the site is unlikely to change this existing pollutant linkage.
		R5: Principal aquifer (Lower Greensand Group and Chalk)	Medium	Low likelihood	3	
		R6: Onsite watercourse (the River Cam)	Medium	Low likelihood	3	
		R7: Drainage channels on and off-site	Minor	Low likelihood	1	

Source	Pathway	Receptor	Consequence	Mitigated risk		Comments/ Mitigation Measures
				Probability	Risk	
S5: Slightly elevated groundwater concentrations of metals and inorganics	**P3**: Vertical and horizontal migration of contaminants in saturated area. **P5**: Man-made contaminant transport pathways including utilities, piling for foundations, tunnels, and pipelines.	**R4**: Secondary A aquifer (River Terrace Deposits)	Mild	Low likelihood	2	Groundwater samples were found to contain slightly elevated concentrations of metals and inorganics. Superficial deposits, bedrock aquifers and surface water bodies on-site are in hydraulic continuity. Therefore, operation of the site is unlikely to change this existing pollutant linkage.
		R5: Principal aquifer (Lower Greensand Group and Chalk)	Medium	Low likelihood	3	
		R6: Onsite watercourse (the River Cam)	Medium	Low likelihood	3	
		R7: Drainage channels on and off-site	Minor	Low likelihood	1	

3.3 Waterbeach Operation

3.3.1 The Waterbeach Pipeline includes a transfer section running from the north near Waterbeach (at the existing Waterbeach WWTP) to Low Fen Drove Way, a section crossing the area of land required for the construction of the proposed WWTP, and a section south of the A14 which connects to the area of land where the existing Cambridge WWTP is located.

Table 3-3: Waterbeach Pipeline (Operation)

Source	Pathway	Receptor	Consequence	Mitigated risk		Comments/ Mitigation Measures
				Probability	Risk	
S8: Waterbeach Pipelines and trenches	P1a: Direct soil and dust ingestion P1b: Dermal contact (indoors & outdoors) P1c: Inhalation of dust (indoors & outdoors)	R1: On-site land users: WWTP workers and visitors, walkers, farm workers	Minor	Unlikely	1	Laboratory testing has determined that no soils exceeded the GAC for commercial or public open space land use. Risks to human health are therefore considered to be very low.
	P4: Direct contact with buried structures and infrastructure.	R6: Buried structures and infrastructure: water supply pipe infrastructure, concrete structures (e.g. foundations), and tunnels.	Mild	Unlikely	1	Information from the ground investigation should be used to inform the material requirements in the design phase.

Source	Pathway	Receptor	Consequence	Mitigated risk		Comments/ Mitigation Measures
				Probability	Risk	
	P2: Production and vertical migration of leachates in unsaturated area. P3: Vertical and horizontal migration of contaminants in saturated area. P5: Man-made contaminant transport pathways including utilities, piling for foundations, tunnels, and pipelines.	R4: Secondary A aquifer (River Terrace Deposits)	Mild	Low likelihood	2	Laboratory testing of leachate was not undertaken as part of the ground investigation and groundwater results were not available at the time of writing. However, the majority of the site is agricultural and ground investigation was targeted to potential contaminant sources. There were no exceedances of human health GACs, no elevated contaminants within soil samples and limited made ground was
		R5: Principal aquifer (Lower Greensand Group and Chalk)	Medium	Low likelihood	3	
	As above, and P6: Surface run-off.	**R6**: Onsite watercourse (the River Cam)	Medium	Low likelihood	3	
		R7: Drainage channels on and off-site	Minor	Low likelihood	1	

Source	Pathway	Receptor	Consequence	Mitigated risk		Comments/ Mitigation Measures
				Probability	Risk	
						encountered on-site. Significant contamination from soil leachate is unlikely to be encountered on-site. Pipelines will be founded in superficial deposits and bedrock. These are already in hydraulic continuity with the River Cam and drainage channels. Therefore, operation of the site is unlikely to change this existing pollutant linkage.

Get in touch

You can contact us by:

Emailing at **info@cwwtpr.com**

Calling our Freephone information line on **0808 196 1661**

Writing to us at **Freepost: CWWTPR**

Visiting our website at [redacted]

You can view all our DCO application documents and updates on the application on The Planning Inspectorate website:

https://infrastructure.planninginspectorate.gov.uk/projects/eastern/cambridge-waste-water-treatment-plant-relocation/