Desk Study and Preliminary Risk Assessment

Land off Ashton Old Road, Openshaw

On Behalf of STOR 128 Ltd









Date: September 2016

Our Ref: JER6922

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Amendment Record

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1 INTRODUCTION

1.1 Background

1.1.1 RPS Planning and Development (RPS) was commissioned by STOR 128 Ltd to provide a Desktop Study (DTS) and Preliminary Risk Assessment (PRA) report for an area of land located to the north of Ashton Old Road, Openshaw, Manchester. It is understood that the intended use of this area is to be redeveloped for a peaking power plant.

1.1.2 A plan detailing the extent of the site is presented on Drawing *9722-0001-02* provided in *Appendix 1*. This area is herein referred to as the 'Assessment Site'. It covers an area of approximately 0.2 Hectares and is located at National Grid Reference (NGR) 388622,397460.

1.1.3 The purpose of undertaking this assessment is to assess the potential for the presence of ground contamination at the Assessment Site as a result of former and current land uses at and in the local vicinity of the Assessment Site. The assessment also considers ground stability.

1.1.4 It is understood that the assessment is required to support a planning application for development of the Assessment Site as a Short Term Operating Reserve (STOR) Electricity Peaking Plant. The proposed site layout is presented on Drawing *9722-0002-03*, presented within *Appendix 1*.

1.1.5 The assessment has been undertaken to a standard that is considered suitable to meet the initial requirements of planning as outlined within the National Planning Policy Framework (NPPF).

1.2 Objectives

1.2.1 The objectives of this assessment are to:

- Assess likely existing ground conditions, including geological, hydrogeological and hydrological conditions to establish baseline conditions and allow an assessment of environmental sensitivity;
- Identify the potential contamination sources, both from historical and current activities, that may have led to contamination of the Assessment Site; and
- Develop a PRA including a Conceptual Site Model (CSM) to support an assessment of the likely risks associated with potential contamination at the Assessment Site.

1.2.2 The methodology followed to produce this DTS and PRA is detailed in *Appendix 2*.

1.3 Limitations of the Desktop Study

1.3.1 This assessment is limited to the information available at the time of production including a Groundsure Insights Report (Ref. 1, 2 and 3), published environmental / geological data (Ref. 4, 5, 6 and 7), a Coal Authority CON29M report (Ref. 8) and observations made during a site

reconnaissance visit undertaken by a consultant from RPS on 5th September 2016. It should be noted that the boundary presented on the Groundsure Insights Report (Ref. 1, 2 and 3) varies slightly from the Assessment Site boundary. Whilst the boundaries differ, the Groundsure Insights Report (Ref. 1, 2 and 3) provides the relevant information for the entire Assessment Site.

1.3.2 A copy of the Groundsure Insights Report is presented within *Appendix 3*.

2 SITE WALKOVER

2.1.1 A site walkover survey was performed on 5th September 2016 by an RPS geo-environmental consultant. The main findings of the site walkover survey are detailed below.

2.1.2 The Assessment Site is a relatively flat area of land, surrounded by a raised area at the east and south where buildings adjoin the Assessment Site. The Assessment Site is situated at the rear of a commercial garage to the east and retail premises to the south. A recycling yard / storage area is located immediately to the north and a public footpath / cycle path is located to the west.

2.1.3 There is a distinct change in level between the majority of the Assessment Site (which is flat) and the boundary with the buildings, with the buildings being approximately 0.4m higher than the central area of the Assessment Site. A strip of tarmacadam hardstanding is located between the southern and eastern Assessment Site boundaries and the buildings, currently understood to be used as a fire escape route. Various materials were identified to be stored on this hardstanding, including an IBC, barbeque and some building materials.

2.1.4 The surface of the Assessment Site comprised compacted hardcore and some vegetation (grass and shrub) with a thicker area of vegetation to the west. Rare pieces of plastic and metal (general rubbish) are evident at the ground surface, particularly around the edge of the Assessment Site.

2.1.5 The Assessment Site benefits from a fence at its northern and western boundaries. Buildings form the boundary to the east and south. The fence contains a gate at the north-east corner through which access can be gained.

2.1.6 Miscellaneous auto parts (including bumpers and other body work) and some unidentified containers (fluids) were stored near the northern boundary. It is possible that minor spills may have occurred on the Assessment Site in this location, but evidence of major contamination was not noted. It was noted that there were oil stains off the site to the immediate north-east where vehicles park.

2.1.7 A small concrete plinth is present in the south-east of the Assessment Site. The use of this plinth is unknown.

2.1.8 There was evidence of underground services being present at the southern edge of the Assessment Site.

2.1.9 Photographs of the Assessment Site taken during the recent site walkover are provided in *Appendix 4*.

3 LAND USE

3.1.1 This section sets out details of the current and historical land use of the Assessment Site and the surrounding area. The data presented does not represent full details of all land uses, but those that are considered to have the potential to have led to contamination of the Assessment Site. For full details of the land use, the information presented within *Appendix 3* should be consulted.

Table 4.1 - Land Use

Section	Description / Information			Comments / Potential Contamination Sources
Current Site Description / Layout**	The Assessment Site is a roughly rectangular parcel of land located at an elevation of c. 75 metres Above Ordnance Datum (mAOD). Access is proposed from the east, utilising an existing unnamed access road. For further details please see *Section 2.*			The site walkover identified limited potential for contamination. There is considered to be the potential for localised contamination associated with storage of fluids associated with the adjacent garage, impacting the north of the Assessment Site and asbestos contamination within the hardcore materials.
Neighbouring Land Uses**	The Assessment Site is bounded to the north by a recycling yard / storage area, to the east by an auto care centre (RSA), to the south by retail units and to the west by a public footpath / cycle path. The Ashton Old Road (A635) is located beyond the retail units to the south.			There is potential, albeit limited, for contamination from activity at the recycling yard / storage area and auto care centre to impact the Assessment Site.
Site History*	Date		On-site Land Uses	
	From	To		
	1848	1848	The western side of the Assessment Site appears to be occupied by part of the Openshaw Cotton Mill. The majority of the Assessment Site appears to be a forecourt / storage area with access tracks associated with the Openshaw Cotton Mill.	Review of available historical maps show historical industrial land use of the Assessment Site. Historical structures on the Assessment Site appear to have been demolished c. 1979. Publicly available aerial images taken in the period between 2001 and 2009 show disturbed ground at the Assessment Site and the presence of a mechanical excavator. This could be documentation of excavation works creating
	1892	1893	The majority of the Assessment Site appears to be occupied by a rectangular building identified as Beetling Works (Cotton Finishing).	
	1908	1922	Reconfiguration of buildings on and adjacent to the Assessment Site. The Works are identified as Beetling & Finishing Works. The building occupying the Assessment Site appears to be separate - it is unclear whether this is associated with the Beetling & Finishing Works	

Section	Description / Information			Comments / Potential Contamination Sources
			immediately to the south or an Iron Foundry immediately to the north. A tank is identified on the western side of the Assessment Site in 1922.	the current topography at the Assessment Site. There is potential for historical contamination from identified historical industrial land use, including a Cotton Mill and Works (Iron Foundry, Dye and Print Works). It should be noted that maps of the area are unavailable prior to 1848.
	1933	1933	A further structure is identified on the western side of the Assessment Site. The Iron Foundry is identified as Calico Dying & Printing Works. The Beetling & Finishing Works is identified as Raising & Finishing Works.	
	1949	1968	The Building on the Assessment Site is identified as the Calico Dyeing & Printing Works. A chimney and a further tank are identified.	
	1979	Present	The Calico Dying & Printing Works is no longer identified. The building and associated structures appear to have been demolished and the Assessment Site is shown as a bare plot of land except for a strip along the eastern side which appears to be occupied by the adjacent Works building (previously Raising & Finishing Works). An aerial image from June 2009 shows this last section of the Works building which encroaches on the Assessment Site boundary have been demolished.	
	Date		Surrounding Land Uses (250 m radius unless otherwise stated)	
	From	To		
	1848	1848	The majority of the surrounding area comprises fields and buildings in the village of Openshaw. The Manchester and Stockport Canal (Stockport Branch Canal) is identified immediately to the west. The Openshaw Cotton Mill extends to the south and the Ashton Old Road is identified in its current position, further to the south. A Chimney is identified approximately 150 m to the north east. A Boiler Works is identified approximately 200 m to the south.	There is potential for historical contamination from neighbouring industrial land uses including oil, steel, engineering and chemical works. There is potential for laydown of Made Ground to have occurred at the Assessment Site associated with uses in the area, most notably the adjacent Works / Garage / Builder's Yard.

Section	Description / Information			Comments / Potential Contamination Sources
	1892	1893	The area has urbanised including residential and industrial developments. Industrial land uses within 250 m of the Assessment Site include a Steam Hammer Works, Iron Works, Oil Works, Engineering Works, Brewery, Steel Works, Carriage & Wagon Works with associated railway sidings and two Cotton Mills. A tramway is identified running along the Ashton Old Road and a Tramway Depot is located approximately 50 m to the east of the Assessment Site. A Sand Pit is identified approximately 100 m to the north-east. A number of Brick Works are identified within 1 km.	There is potential for contamination and ground gas generation as a result of infilling of the adjacent historical canal to the west and Sand Pit to the north east. The historical Openshaw Bridge Works approximately 50 m to the east was specifically identified as manufacturing / handling insulation material from 1933 – 1949. There is potential for these activities to have included asbestos and therefore associated fibres may be present in the surrounding soils.
	1906	1908	The Iron Foundry immediately to the north is identified. Further residential and industrial developments in the area. An Electric Motor Works is identified approximately 300 m to the north. The Sand Pit to the north-east is no longer identified, potentially infilled. A Brick Field is identified approximately 200 m to the north-east. An Electricity Sub Station is identified approximately 50 m to the south. Gorton Rubber Works is identified beyond this to the south. A Chemical Works is identified approximately 110 m to the north-west. Railway sidings associated with Carriage, Wagon, Locomotive and Engineering Works have expanded to the south west. Tramway Depot identified as disused.	
	1918	1923	The Brick Field is identified as disused. Further residential development to the north east, in the place of the former Sand Pit. Steam Hammer Works to the west have expanded. A tank is identified associated with the Iron Foundry to the north. Calico Dying and Printing Works identified to the north.	

Section	Description / Information			Comments / Potential Contamination Sources
	1933	1938	Victoria Steel Works identified 200 m to the north west. Openshaw Bridge Works (Insulating Material) identified in the location of the former Tramway Depot. Oil Works to the south no longer identified.	
	1949	1968	Reconfiguration of industrial land uses to the south to include a Warehouse, Tyre Works, Electricity Sub Station, Chemical & Colour Works and Preserving Works. The Stockport Branch Canal no longer identified after 1968. The Tramway along Old Ashton Road is no longer identified.	
	1979	1985	Calico Dying and Printing works no longer identified, the associated buildings and tanks have been replaced by a Builders Yard immediately to the north. Engine Sheds / Depots / Locomotive Works and railway sidings to the south west have been replaced by New Smithfield Market and Warehouses. A path is identified in the place of the former Stockport Branch Canal. A Vehicle Dismantler's Yard is identified approximately 150 m to the south.	
	1991	1995	The Works building immediately to the south and east of the Assessment Site is identified as a Garage. Works buildings to the west of the former Stockport Branch Canal are no longer identified. The Openshaw Bridge Works to the east are no longer identified. The Vehicle Dismantler's Yard is identified as a Scrap Yard.	
	2002	Present	Government Offices are identified approximately 100 m to the south. A number of Works buildings within 500 m of the Assessment Site are no longer identified and several have been replaced by depots, including a Coal Depot approximately 400 m to the south.	

Section	Description / Information		Comments / Potential Contamination Sources
	Distance & Direction	Details	
Active landfills (500 m)*	Off-site	None recorded within 500 m of the Assessment Site	-
Historical landfills (500 m)*	Off-site	A historical landfill site is identified adjacent to the west, associated with the historical Stockport Branch Canal, Ref F056 which is registered as having accepted inert waste, liquid sludge. Dates of operation are unavailable. The following historical landfill sites are also identified: - 437 m to the north at Clayton Industrial Estate, Ref F048. No further information is provided with regard to this landfill. - 499 m to the north at Crabtree Forge, Ref F049, registered as having accepted inert industrial waste between December 1942 and December 1992. Landfilling activity was licensed from April 1982.	There is potential for contamination as a result of infilling of the Stockport Branch Canal due to proximity to the Assessment Site however this is dependent on the condition of the canal liner and nature of the infill sludge. From review of historical maps, infilling of the canal is understood to have occurred between 1968 and 1980. As a result of the time elapsed and inert nature of the infill material, ground gas generation is considered likely to have peaked. The further landfills identified to the north are considered to represent a limited risk is due to their distance from the Assessment Site.
Waste Treatment, Transfer and Disposal Sites (500 m)*	304 m south	Composting Facility operated by Fairfield Materials Management Ltd. The EPR reference number is EA/EPR/VP3194CQ/S002. Permitted size is <25,000 tonnes and an annual tonnage of 0 is recorded. The Licence is recorded as issued in November 2005 and surrendered in December 2012.	These waste sites are considered to have limited potential to have led to contamination of the Assessment Site due to the nature of the activities and distance from the Assessment Site. All recorded activities were carried out under environmental permits which have subsequently been surrendered. Activities are
	453 m south-west	Composting Facility operated by Fairfield Materials Management Ltd. The EPR reference number is EA/EPR/QP3098CP/V002. Permitted size	

Section	Description / Information		Comments / Potential Contamination Sources
		is <25,000 tonnes and an annual tonnage of 5,500 is recorded. The Licence is recorded as issued in July 2003, modified in November 2005 and surrendered in December 2012.	therefore considered likely to have been well controlled.
	496 m south-east	Material Recycling Treatment Facility operated by Mr K Foster. The EPR reference number is EA/EPR/FP3692CZ/S002. Permitted size is <25,000 tonnes and an annual tonnage of 75,000 is recorded. The Licence is recorded as issued in March 1998 and surrendered in September 2000.	
Current potentially contaminative industrial land use* (250 m)	35 m south-west, 89 m south, 230 m north-west	Electricity Sub Stations	Due to the proximity of the Autocare Centre garage, this is considered to have the potential to have led to contamination at the Assessment Site however no pollution incidents are recorded associated with this land use. The further identified surrounding commercial and industrial land uses are considered unlikely to have led to contamination at the Assessment Site due to distance and the nature of the activities.
	47 m east, 125 m south, 139 m south, 197 m north	Vehicle repair, testing and servicing. The closest to the Assessment Site being Autocare Centre Ltd.	
	106 m north-east	Air Products – adhesives and sealants	
	130 m south	AG Coating Ltd – industrial coatings and finishings	
	166 m south-west	Recycling, reclamation and disposal	
	174 m south, 177 m south, 226 m south	Unspecified works or factories	

Section	Description / Information		Comments / Potential Contamination Sources
	241 m north	Depot	
Petrol and Fuel Sites* (500 m)	Off-site	A Morrisons petrol station is located 332 m to the east of the Assessment Site. An obsolete service station (Openshaw Service Station) is located 313 m to the west of the Assessment Site	Given the distance from the Assessment Site it is considered unlikely these active and historical petrol stations will have led to contamination of the Assessment Site.
Authorisations / IPC / IPPC (250 m)*	Off-site	None recorded.	-
Licensed Discharge Consents (250 m)*	Off-site	None recorded.	-
Recorded Pollution Incidents (250 m)*	Off-site	A single pollution incident is recorded by the Environment Agency (EA) within 250 m of the Assessment Site, relating to the release of construction and demolition materials and wastes to land 135 m to the north-west in November 2002, under incident identification number 121035. The impact to land was defined as Category 3 (Minor).	This pollution incident is considered unlikely to have to have led to contamination at the Assessment Site based on its location and nature (i.e. release of inert material to land).
Sites Determined as Contaminated Land under Part IIA EPA 1990**	Off-site	Three small areas of contaminated land have been identified within the residential area to the east of the Assessment Site, 119 m, 171 m and 216 m to the east respectively. These are described as contaminated land owing to the presence of arsenic, heavy metals and Polycyclic Aromatic Hydrocarbons (PAH), identified in 2004.	The presence of sites that have been determined in accordance with Part IIA of the EPA 1990 demonstrates that contamination is present, albeit at a reasonable distance from the Assessment Site. Contamination from these sites is considered unlikely to have impacted the Assessment Site.

* Based on review of Groundsure reports and historical maps.

** Based on site reconnaissance and review of Groundsure reports.

4 ENVIRONMENTAL SETTING

4.1.1 This section sets out details of the environmental setting of the Assessment Site and the surrounding areas (*Table 5-1*).

Table 5.1 - Environmental Sensitivity

Section	Description / Information				Issues / Comments
Geology and Hydrogeology ** ^	Strata	Description	Aquifer Status	Anticipated Approx. thickness (m)	
	Made Ground	Made Ground is anticipated to be present across the Assessment Site as a result of historical structures and activities identified on historical maps and observations during the site walk over.	Not applicable	Unknown	Ground gas and contamination may be present associated with the anticipated Made Ground beneath the Assessment Site.
	Till Deposits (Diamicton)	Till deposits are indicated to be present across the Assessment Site. BGS borehole logs in the vicinity of the Assessment Site identify this material to predominantly comprise a sandy clay, with bands of sand, lenses of silt and some gravel. BGS borehole SJ89NE1127 located <50 m to the south-east of the Assessment Site terminates within this material at 24 meters below Ground Level (mbGL).	Secondary (undifferentiated)	Approx. 20 m	As a result of the thickness of Till Deposits identified in the vicinity of the Assessment Site and the presence of cohesive material within the variable unit, it is considered likely to act as a low permeability barrier restricting vertical migration of any contamination into the underlying Chester Pebble Beds Formation.

Section	Description / Information				Issues / Comments
	Chester Pebble Beds Formation	This formation comprises fine to coarse grained sandstone which is described as commonly pebbly, with conglomerates and sporadic siltstones. BGS borehole log SJ89NE42 approximately 300 m to the south west of the Assessment Site identifies red sandstone at 18.3 mbGL, at a thickness of 57.9 m, underlain by the Manchester Marls Formation. The Manchester Marls Formation (described as comprising calcareous mudstone and siltstone, a Secondary B aquifer) is identified to crop out approximately 120 m to the north east and therefore the thickness of the Chester Pebble Beds Formation at the Assessment Site it likely to be less than identified within borehole log SJ89NE42.	Principal	<58 m (thinning to the north-east)	
Groundwater Vulnerability**	The underlying Superficial Deposits comprising Till is classified by the EA as a Secondary Undifferentiated aquifer. This means that the deposit has previously been designated as both minor and non-aquifers in different locations due to the variable characteristics of the deposits in question. This appears to constitute a limited groundwater resource at the Assessment Site due to the presence of cohesive material. The underlying Chester Pebble Beds Formation is classified as a Principal aquifer, this means it is likely to provide a high level of water storage and may support water supply and / or river base flow on a strategic scale. No current groundwater abstraction licenses are identified within 1 km of the Assessment Site.				The Superficial Deposits (Till) present across the Assessment Site are not considered a significant groundwater resource. The presence of a substantial thickness of Till Deposits should restrict vertical migration of contamination to the Principal aquifer within the Chester Pebble Beds Formation.

Section	Description / Information	Issues / Comments
Geology and Hydrogeology in Surrounding Area (500 m)**	With regard to superficial deposits, an area of Till approximately 250 m to the west of the Assessment Site is designated as a Secondary (A) aquifer, likely due the presence of more permeable material (greater proportion of sand and gravel) within the Till Deposits. With regard to bedrock, the majority of the surrounding area is designated as a Principle aquifer, with an area designated as a Secondary (b) aquifer, associated with the Manchester Marls Formation.	The designated groundwater resources located in the surrounding area are of a similar type to those on the Assessment Site.

Section	Description / Information		Issues / Comments
	Distance & Direction	Details	
SPZs* (500 m)	On-site	None Identified.	-
	Off-site	None identified.	-
Surface Water (250 m)*	On-site	None identified.	-
	Off-site	None identified.	-
Flooding Vulnerability**	On-site	The Assessment Site is not within 250 m of an EA designated floodplain.	The Assessment Site is not considered to be at significant risk from flooding from rivers.
Licensed Water Abstractions (1 km)*	Off-site	There are no current groundwater abstraction licences recorded within 1 km of the Assessment Site. A single active surface water abstraction license is identified, regarding abstraction of cooling water from to Ashton Canal 985 m to the north-west.	A single active surface water license is recorded within 1 km of the Assessment Site. The Assessment Site is not considered to have the potential to impact this abstraction due to distance.
Conservation Areas & Sensitive Land Use (1 km)*	On-site	None identified.	-
	Off-Site	None identified	-

	Is the site potentially affected?	Details	
Radon*	No	The Assessment Site is not in a Radon Affected Area, as less than 1 % of properties are above the Action Level.	Radon protective measures are not considered necessary at the Assessment Site.

Section	Description / Information		Issues / Comments
Coal Mining*^	Yes	The Pennine Lower Coal Measures Formation is identified to crop out >1 km to the west of the Assessment Site. The Assessment Site is located within the specified search distance of an identified mining area therefore a Coal Authority Non-Residential Mining Report was obtained (*Ref. 8*). The report identifies the Assessment Site is in a surface area that could be affected by underground coal mining within 1 seam at 830 m depth, last worked in 1915. The report states that any movement in the ground due to coal mining activity should have stopped. The Coal Authority has not received a damage notice or claim for the Assessment Site, or any property within 50 metres, since records began in October 1994.	Historical coal mining has been identified at significant depth beneath the Assessment Site and any subsidence associated with this mining is considered to have ceased. Risk to the Assessment Site as a result of historical coal workings is therefore considered to be low.
Foundered Strata / Landslide*	On-site	The Groundsure report suggests the following hazard ratings at the Assessment Site: • Maximum shrink-swell hazard rating is very low; • Maximum landslides hazard rating is very low; • Maximum soluble rocks hazard rating is negligible; • Maximum compressible ground hazard rating is negligible; • Maximum collapsible rocks hazard rating is very low; and • Maximum running sand hazard rating is very low.	Natural ground stability hazards at the Assessment Site are considered to be negligible to very low.

* Based on review of Groundsure reports.

** Based on review of geological and hydrogeological maps and Groundsure reports.

^ Based on review of Coal Authority CON29M Non-Residential Mining Report (Ref. 8).

5 CONCEPTUAL SITE MODEL AND PRELIMINARY RISK ASSESSMENT

5.1.1 In line with CLR-11 (Ref. 9) guidance, a conceptual site model and preliminary risk assessment have been developed to qualitatively assess potential contaminant sources, receptors and potential pollutant linkages identified at the Assessment Site. The risk level relevant to each linkage is stated in the context of potential risk to future site users based on the proposed development, as well as controlled water receptors (the underlying Secondary Undifferentiated and Principal aquifers).

5.1.2 The risk assessment is based on the proposed development of the Assessment Site for the proposed end use as a Peaking Power Plant.

5.1.3 The assessment is presented in *Table 6-1*.

Table 6.1 - Summary of Pollutant (Source-Pathway-Receptor) Linkages

Source	Pathway	Receptor	Risk	Notes
HUMAN HEALTH RECEPTORS				
Chemical contamination in soils and Made Ground associated with historical industrial land use at the Assessment Site (Cotton Mill, Iron Foundry, Dye and Print Works) and the surrounding area, including infilling of the adjacent Stockport Branch Canal.	Ingestion / dermal contact of soil / dust and inhalation of vapours	Future site users (including site staff and visitors)	Moderate	The end use of the Assessment Site is considered low sensitivity with regards to human health and it is understood the majority of the Assessment Site is proposed to be covered by hardstanding as part of the final development. Aerial images from circa 2000-2009 show disturbance of the ground at the Assessment Site and the presence of a mechanical excavator. It is considered possible that elevated contaminants may be present within the Made Ground as a result of historical industrial activities upon and adjacent to the Assessment Site.
Soil gas (Made Ground and adjacent landfill)	Migration of gases through underlying soils and accumulation within the proposed development causing an explosive risk and exposure of visitors	Future site users (including site staff and visitors) and buildings	Low to Moderate	The end use of the Assessment Site is considered to be low sensitivity with respect to ground gas, being subject to limited occupation. A historical landfill site is identified adjacent to the Assessment Site, associated with infilling of the Stockport Branch Canal. The landfill is recorded to have accepted inert waste (liquid sludge) and from review of historical maps, infilling of the canal is understood to have occurred between 1968 and 1980. As a result of the time elapsed and inert nature of the infill material, gas production from this source is considered likely to have peaked.

Table 6.1 - Summary of Pollutant (Source-Pathway-Receptor) Linkages (continued)

Source	Pathway	Receptor	Risk	Notes
CONTROLLED WATER RECEPTORS				
Chemical contamination in soils in Made Ground and in shallow groundwater relating to historical uses of the Assessment Site.	Leaching of contaminants within the unsaturated zone and vertical migration to groundwater within the superficial deposits and subsequent horizontal migration	Off-site surface water courses	Low	The historical and current land use is considered to have the potential to have led to contamination of the Assessment Site. The nearest surface water course is identified to be the Ashton Canal, approximately 700 m to the north-east of the Assessment Site. The potential for lateral migration of any contamination within the dissolved phase to the Ashton Canal is considered to be limited based on the length of the pathway and expected low permeability of the Till deposits underlying the Assessment Site. Attenuation and dilution of any contamination within the dissolved phase would be expected prior to discharge at the Rochdale Canal.
	Leaching of contaminants within the unsaturated zone and vertical migration to groundwater within the superficial deposits	Shallow groundwater within the Till deposits - Secondary (undifferentiated) aquifer	Low to Moderate	The historical and current land use is considered to have the potential to have led to contamination of the Assessment Site. The Till deposits in the area appear to be dominated by cohesive material and are expected to be of low permeability. Sensitivity is considered to be low as a result of the historical industry (including landfills) in the surrounding area, which may have led to widespread degradation of the quality of the shallow groundwater in the vicinity. No groundwater abstractions are identified in the area.

	Shallow groundwater within the Till deposits (vertical migration)	Deep groundwater (Chester Pebble Beds Formation) – Principal aquifer	Low	The historical and current land use is considered to have the potential to have led to contamination of the Assessment Site. The low permeability Till deposits encountered beneath the Assessment Site are anticipated to inhibit vertical migration to the underlying Principal aquifer within the bedrock which is anticipated to be present at circa 20 mbGL). The potential risk to the underlying deep groundwater is therefore considered to be low.

6 CONCLUSIONS

6.1.1 RPS Planning and Development (RPS) was commissioned by STOR 128 Ltd to provide a Desk Study and Preliminary Risk Assessment (PRA) report for an area of land located to the immediate north of Ashton Old Road, Openshaw. It is understood that the intended use of this area is for a Peaking Power Plant.

6.1.2 The assessment comprised a site reconnaissance survey and a review of available records to confirm the potential for contamination at the Assessment Site and the environmental sensitivity of the Assessment Site and its surrounding areas.

6.1.3 The assessment has identified the potential for contamination within the Made Ground and / or natural soils as a result of historical land uses on and adjacent to the Assessment Site, most notably an Iron Foundry, Dye and Print Works and infilling of the adjacent Stockport Branch Canal with inert waste (liquid sludge).

6.1.4 A preliminary Conceptual Site Model (CSM) was developed to inform a PRA that assesses the potential risks posed from the identified potential contamination sources, to controlled waters, human health and the risk from ground gas. The risk to human health was considered to be moderate and risk to controlled waters was considered to be low to moderate. The risk from ground gas was also considered to be low to moderate.

6.1.5 A review of coal mining risk was undertaken including a review of a Coal Authority Report and coal field plans. The review identified that there is a low risk from recorded historical coal workings due to the depth of coal seams in the vicinity of the Assessment Site. The Coal Authority Report did not identify the potential for unrecorded workings.

6.1.6 Whilst the proposed end use is considered to be low sensitivity it is considered that ground investigation works should be undertaken to characterise the contamination status of the shallow materials and clarify the risk from ground gas.

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