W Clifford Watts

SERVICING CONSTRUCTION SINCE 1937'

Report No. 2401-001/R/004
12 June 2025
Revision 3

Gransmoor Wet Processing Plant

Environmental Risk Assessment

HOOPER-SARGENT LIMITED

Environmental Permitting Consultancy

Document Control

Document: Environmental Risk Assessment

Project: Gransmoor Wet Processing Plant

Client: W. CLIFFORD WATTS LTD

Report Number: 2401-001/R/004

Document Checking:

Revision	Revision/ Review Date	Details of Issue	Prepared / Authorised
3	12 June 2025	2nd EA Pre-duly making request for information	Phillip Roberts
2	25 April 2025	EA Pre-duly making request for information	Phillip Roberts
1	17 June 2024	Issued for application	Phillip Roberts
0	5 April 2024	Issued for Client Review	Phillip Roberts

Contents

1 Introduction

1.1 Requirement for a Risk Assessment

This Environmental Risk Assessment (ERA) supports an application to vary Environmental Permit referenced EPR/GP3292ZU (the Permit) operated by W Clifford Watts Ltd (the Operator) from a standard rules activity referenced SR2010No.12 (now superseded by the SR2022No1 permission) to a bespoke waste operation. The primary purpose of the variation application is to:

- Add Physico-chemical treatment as an activity to Table 2.1 of the permit to allow operation of a wet processing plant
- Increase the annual throughput of waste accepted for treatment and storage under the permit from 75,000 tonnes to 250,000 tonnes;
- Specify the processing of up to 75,000 tonnes per annum (tpa) of specified, suitable materials for soil manufacture from Table 2.3 of SR2022 (75,000 tpa limit does not apply to 17 05 04);
- Add EWC code 19 02 06: *Wastes from physico chemical treatment* (sediment from on-site soil wash plant only) to the permit to allow its incorporation into soil forming materials; and,
- Increase the total storage capacity to 50,000 tonnes at any one time; and,
- Amend the permit boundary to include land to the south of the existing permitted area for additional storage capacity.

Environment Agency (Agency) Guidance: Risk Assessments for your Environmental Permit[1] (the Risk Assessment Guidance) requires Operators wishing to apply for a new bespoke environmental permit (permit) or change the activities in their existing permit to carry out a risk assessment.

The Risk Assessment Guidance states that where activities are covered by an existing standards rules permit, the Operator can rely on the generic risk assessment for those activities if the assumptions that support them are still valid.

The Risk Assessment Guidance requires Operators to identify any potentially hazardous emissions and their sources that may result in harm to the environment or human health (the Hazard). They must also identify what pathways those potential emissions could take to impact potentially sensitive receptors (the Pathway). Lastly they must identify what receptors could be impacted by the emissions, why they could be impacted and where they are located (the Receptor). If there is a continuous link between the Hazard, the Pathway and the Receptor, the Operator must demonstrate that the risk to the receptor is acceptably low without mitigation, or, describe what controls measures can be implemented to (alone or in combination) reduce or eliminate the emission itself, the risk of exposure or the impact on the receptor.

1.2 Influencing Factors

The risk assessment process should also consider factors that are largely outside the Operators ability to prevent, but should able to anticipate and plan for. These factors may not be the direct source of an emission under normal operating conditions, but may worsen the impacts of an existing source, cause the malfunction or loss of control against an otherwise low risk hazard or make management of the site

[1] Risk assessments for your environmental permit - GOV.UK (www.gov.uk)

activities more challenging. Examples of these factors are the impacts from accidents, flooding and climate change.

1.3 Potential Hazards

The following emission hazards identified in the accompanying Technical Standards report are to be considered in this ERA:

- Emissions that could be hazardous to groundwater or surface water
- Noise and Vibration
- Uncontrolled fugitive emissions including dust
- Visible plumes such as smoke
- Accidents that could result in a harmful emission to the environment as detailed above
- Flooding
- Climate change

1.4 Hazards identified as not significant

The following emissions hazards were not identified as relevant in the accompanying Technical Standards report:

1.4.1 Odour

The type of waste proposed to be stored and treated under the permit do not contain a putrescible or chemical component which could generate an odour risk. Any receptors that may be sensitive to odour are > 500 m from the existing and proposed permit boundary. The risk of odour emissions from this facility is considered to be negligible and will not be considered further.

1.4.2 Pest and Vermin

The type of waste proposed to be stored and treated under the permit do not contain a putrescible component that could attract pests or vermin. Pest and vermin will not be considered further.

1.4.3 Litter

Only granular construction and demolition waste selected for its inert characteristics will be imported for storage and treatment at the site. Although this material can contain incidental items of litter that may become windblown, this is considered unlikely and emissions of litter will not be considered further by this assessment.

1.4.4 Visible Plumes

There are no point source emissions to air associated with this site or the activities carried out within it, including plumes emitted from a stack or similar. Visible plumes will not be considered further in this assessment.

1.5 Potential Pathways

The type of pathways that may be relevant to the risk assessment are:

- Airborne – emissions than can transit through the air and therefore can be influenced by distance, windspeed, wind direction and ground elevation of the hazard source and / or receptor
- Overland – emissions that can transit on the surface of the ground and can therefore be influenced by the type of terrain, engineered or natural surfacing, topographical gradient, vectors that can transport the hazard e.g. vehicles, pests, flowing water or other liquids.
- Through the ground – emissions that can pass vertically or laterally through the ground to impact receptors and therefore can be influenced by physical containment (natural or engineered), ground permeability, underground services creating a preferential pathway, groundwater flow (dispersing or transporting the emission to other receptors such as surface water) and natural attenuative processes (physical, chemical or biological).

1.6 Potential Receptors

The Risk Assessment Guidance requires all receptors to be considered if they are susceptible to harm from emissions from a permitted activity. This includes:

- protected habitats and sites of scientific, geological or historical interest;
- groundwater and water supplies, water courses or water bodies;
- drainage or sewer systems;
- anywhere used to grow food or house livestock;
- homes, schools, hospitals, public buildings and private businesses; and,
- footpaths, playing fields and playgrounds.

Some or all of the above have specific screening distances related to generic risk assessments associated with activities permitted under standard rules permits and these will be referenced where relevant.

2 Hazards

2.1 Waste Storage Pre-Treatment

Section 3 of the accompanying Technical Standards report referenced 2401-001/R/002 Rev 2 describes the waste storage plan for the site. Section 6 describes the plan for storing non-waste materials derived from the quarrying activities as well as those materials which have been processed in accordance with the WRAP Quality Protocol for the production of Aggregates from inert waste (the WRAP Protocol)[2] and material generated from the soil manufacture activity. The non-waste materials are not subject to regulation under the Permit however the Operator recognises that they may have the potential to cause pollution if not properly managed.

The type of waste accepted for storage and treatment under the permit is primarily non-hazardous, inert, granular construction and demolition waste. The existing SR2022No.1 permit allows a range of wastes to be accepted for treatment and the Operator has further restricted itself to those wastes detailed in Appendix C of the WRAP Protocol. SR2022No.1 does not include the following European Waste Catalogue (EWC) codes:

- 10 11 03: *Waste glass-based fibrous materials*

[2] LIT_8709_c60600.pdf (publishing.service.gov.uk)

- 15 01 07: *glass packaging*

The Operator does not require code 10 11 03 or 15 01 07.

The remaining codes in the WRAP Protocol are listed in Table 2.3a or 2.3b of SR2022No1 and subject to the associated Operating techniques for the storage of them in Condition 2.4 i.e.

When located within groundwater Source Protection Zones 1 or 2 the specified wastes below shall be stored and treated on an impermeable surface with a sealed drainage system. When located outside groundwater Source Protection Zones 1 or 2 all permitted wastes shall be stored and treated on hard-standing or on an impermeable surface with sealed drainage system.

The site is not located within a Source Protection Zone 1 or 2 and as such the Operator will continue to store them on hardstanding defined in the SR2022No.1 glossary as:

"hardstanding" is a compacted solid surface capable of withstanding the operation and the loading / unloading of wastes.

Table 2.1 of SR2022No.1 restricts the total quantity of wastes to 50,000 tonnes at any one time.

Waste awaiting treatment will not be stored within 10 m of any watercourse or 50 m of any spring or well or borehole used or not used for the supply of water for domestic, food production or human consumption.

The Operator will not exceed this tonnage across the stockpiles described in Section 3 of the Technical Standards report.

Storage of waste under the proposed activity will still meet the assumptions of the generic risk assessment for SR2022No.1 for the protection of groundwater and surface water and no additional control measures are required.

2.1.1 Dust Generation

Stockpiles of granular construction and demolition waste have the potential to generate dust under dry and windy conditions. Dust can be emitted during deposit at the site by visiting Heavy Goods Vehicles (HGVs), it may also be generated when the material is excavated / dozed from a stockpile for onward processing or stockpile management. Static stockpiles may also generate dust due to wind-whip disturbing the dry outer surface. This could be from the stockpile itself or dried sediment accumulated from surface water run-off in the vicinity of the stockpile.

The Operator will ensure that material deposited in stockpiles at the site will be tipped from excessive height where practicable. The deposit of the material will be carried out in a controlled manner i.e. no short, sudden release of the entire load from the inclined HGV body. For the purposes of aggregate manufacture it is in the Operators commercial interest to restrict where possible waste inputs to granular material with a minimum soil / silt content in order to maximise the proportion of recoverable aggregate. The Operator will also seek to restrict acceptance of already dry and excessively dusty loads to site. Loads which do have a higher soil content will be suitable for soil manufacture.

2.1.2 Noise Generation

Deposit of waste in stockpiles and subsequent excavation or reprofiling has the potential to generate noise from the movement of the material itself and the plant used for the activity. Similar consideration will be

given to the minimisation of noise generation as that to dust generation i.e. material will not be tipped from height where possible and not in a manner which would generate excessive noise. Potentially noisy vehicle movements will be kept to a minimum to maximise operational efficiency and all vehicle / plant will be serviced in accordance with manufacturers recommendations to ensure maintenance issues do not exacerbate noise generation.

2.2 Post-Treatment Residues

Section 5 of the Technical Standards report identified where residual waste is generated as a result of the treatment process. This included:

- Over-sized material (>40 mm) removed by the first scalper screen
- Ferrous metal removed by an Overband magnet from the feed conveyor
- Light fraction material removed from the silty effluent prior to the clarifier
- Silt removed by the thickener and deposited in the silt dewatering lagoons

2.2.1 Oversized Material

Oversized aggregate (>40 mm) removed by the initial scalping screen is deposited in a dedicated stockpile which will generate intermittent impact noise. As the <40 mm material has been directed into the wet treatment process, the potential for the oversize material to retain fines that may otherwise generate dust or sediment is significantly reduced. As this material is inert granular material any run-off is unlikely to contain significant concentrations of dissolved substance which could impact groundwater or surface water. This material is suitable for storage on hardstanding as per SR2022No.1. This material will be crushed to required particle sizes and any material < 40 mm will be fed back into the wet process.

2.2.2 Ferrous Metal

< 40 mm ferrous metal removed from the Feed Hopper Conveyor is deposited into a dedicated container on the slab which may generate intermittent impact noise, albeit at a low level. The source of the primary feedstock i.e. construction and demolition waste means that this metal is not likely to be contaminated by residues that could generate a contaminating effluent.

2.2.3 Light Fraction Trash

Light fraction material is separated from the main process stream at the Material Washer and the Density Separator. The process water from each of those treatment components is directed through a trash screen which removes the light fraction. The screened water is then directed into the main flow of process water for further treatment. A negligible quantity of light material is also screened out prior to discharge of process water into the clarifier.

The light material primarily consists of litter such as plastic or paper, with timber fragments or similar organic material. This material is not in a saturated state and typically dry by the time it has been removed from the process and stockpiled in a dedicated container. The quantity of material is limited to 10 m^3 and is removed from site once it is economically viable to do so. This material is removed to a suitably permitted sites for recovery or disposal.

2.2.4 Dewatered Silt

The silt removed from the thickening tank / clarifier is pumped into the adjacent de-watering lagoons. Chemical testing of this material indicates it is inert (see Appendix B of technical Standards Report referenced 2402-001/R/002). Testing of the run-off water indicates it is not contaminated and largely meets the maximum allowable leachable concentration of relevant substances in Landfill Directive Waste Acceptance Citeria for inert landfills (LFD inert WAC) and the Drinking Water Standards (DWS). The concentrations of substances that do not meet the LFD inert WAC or DWS are still low enough not to contaminate the output material. On completion of the dewatering process the silt has a clay-like structure with sufficient sheer strength to retain its structure during excavation and deposit. Subject to testing, this silt will be incorporated into soil forming materials or exported from Site for use as a restoration material.

2.3 Waste Treatment

2.3.1 Scalping Screen

The scalping screen uses vibration to mobilise granular material from the hopper across the screen to sort into < 40mm or oversize material. The discharge of each size fraction is directed onto a conveyor into the wet process plant or to the oversize stockpile for crushing. The vibrating screen produces noise from the diesel-powered motor and material agitated on or through the screen. There is also potential for noise form the conveyor albeit minor and when the material is deposited in the wet process feed hopper or oversize stockpile. Dust may be generated from the same sources.

2.3.2 Oversize Crusher

The oversize material is excavated from the stockpile and placed in crusher. Noise emissions may be generated from the deposit of the material in the crusher feed hopper and the motor that powers the crusher gear. The mechanical crushing of the aggregate produces noise as does the associated screen which sorts it into the required particle size prior to deposit from a conveyor into a stockpile. As with the scalping screen dust can be emitted from the same components as the noise.

Certain activities may be restricted or suspended if weather conditions are favourable to the transit of dust or noise emissions from the scalping screen or crusher. This may be subject to wind direction and wind speed, particularly if the wind is blowing toward a receptor.

2.3.3 Overband magnet

The overband magnet operates continually whilst the feed conveyor is moving. An element of noise will be associated with the band magnet motor and removal and discharge of metal into the container. Dust emissions are unlikely.

2.3.4 Screens

Vibrating screens are located at various points along the wet process plant and dry soil treatment plant as follows:

Wet Process Plant

- Pre-Material Washer Screen removing <6 mm material;

- Post-Material Washer Screen separating 4 to 40 mm and <4 mm material; and then splitting the 4 to 40 mm into: 4 to 10mm, 10 to 20 mm; and, 20 to 40 mm;
- Post-Material Washer Density Separator: CDE Screen / dewatering screen removing sharp sand;
- Post-Material Washer Hydro-cyclone: dewatering screen removing fine / fill sand;
- Post Density Separator / Material Washer to remove lights from process water.

In the wet process noise will be associated with the mechanical / vibrating action to agitate the material across the screens to separate according to particle size or encourage dewatering. As it is a wet-process throughout no dust or other emissions are associated with the screening. The process water is uncontaminated and therefore any fugitive spray does not have a contamination potential. Minor noise emissions may be associated with the conveyor transit and deposit of material in its respective stockpiles. The granular material will retain a degree of moisture limited to pore water between particles. The overall volume of this uncontaminated water is insignificant and does not represent a discernible discharge to ground or surface water.

Soil Treatment Plant

- Keestrak K4 Scalping Screen, McCloskey 123 Viper Sizer Scalping Screen and Sandvik QE341 Scalper removes oversized material and break up consolidated materials
- Sandvik QA331 Screen breaks up clods that may have formed in cohesive soils such as clays

Dry screening of soils has the equivalent potential to produce noise emissions as the wet process. It may be more susceptible to the production of dust, however the type of screening carried out sits within the assumptions of the generic SR2022No1 risk assessments and is therefore not considered to represent a significant risk.

2.3.5 Material Washer

The Material Washer screw is constructed with flights and then screw blades to first agitate the feed material to separate granular material bound by more cohesive sandy silts. The sand and silts are directed off in the process water and the granular faction progresses along the screw till it is discharged into the screen discussed above. Noise will be associated with the motor that drives the screw as well as the mechanical agitation of the granular material and process water. This is a wet process and therefore no dust or odour emissions are likely. The Material Washer is designed to ensure no water is wasted from splashing during the process.

2.3.6 Density Separator

The density separator is a completely closed system with the energy to run the treatment process derived from the flow of water through the apparatus. No fugitive emissions are possible with noise limited to the passage of water.

2.3.7 Hydro-Cyclone

The Hydro-cyclone is also a completely closed system with the energy to run the treatment process derived from the flow of water through the apparatus. No fugitive emissions are possible with noise limited to the passage of water.

2.3.8 Clarifier / Thickener

Silty process water is discharged into the top of the clarifier / thickener tank to facilitate removal of the silt. Clarified water flows at a slow rate over the edge of the weirs at the periphery of the tank generating very limited noise. A raking arm rotates slowly on the base of the tank to direct the accumulating silt to the centre of the tank for removal. The raking arm is completely submerged and generates limited noise. Some noise may be generated by the water discharging into the tank.

2.3.9 Dewatering lagoons

The thickened sludge that is accumulated in the bottom of the clarifier / thickener tank is discharged into the silt dewatering lagoons. This releases the water by gravity. The water is removed from the lagoons by an electric pump which then directs it back into the clarifying tank for further treatment. Minor noise emissions may be associated with the dewatering pump.

The water that is liberated from the silt has been tested and the results indicate it is non-hazardous and would meet the Landfill Directive Waste Acceptance Criteria for an inert landfill (LFD Inert WAC).

The lagoons were excavated into the in-situ silt and clay which form a natural geological barrier to lateral and vertical emissions to surface water and groundwater. Potential emissions to water bodies are discussed further in Section 5.3.

2.4 Product Storage

The aggregate, sand and soils recovered from the processed construction and demolition waste is stored in stockpiles on hardstanding at the locations shown on Figure 3 in the accompanying Technical Standards Report referenced 2401-001/R/002. This material is non-hazardous and where it has been subject to the WRAP protocol to produce aggregates it is inert. Subject to compliance with the WRAP Protocol Factory Production Control system, it is no longer considered to be a controlled waste. The wet process will have removed the fine silt from the material reducing the likelihood of fugitive dust generation or mobilisation of solids into sensitive water courses. As a precaution this material will continue to be stored > 10 m from a water course or water body until it is exported from site.

2.5 Vehicle Activity

Various mobile plant are in operation around the proposed activity. These are primarily used for the management of waste and product stockpiles, or the placement of material in the various feed hoppers pending treatment. An excavator is used to remove the silt from the dewatering lagoons and place it into a impermeable slab pending testing for use in soil forming material or export as a restoration material. Visiting HGVs will deposit waste in designated areas pending treatment or reprofiling into stockpiles. Similar vehicles are in operation around the site that are associated with the quarry extension to the north.

Vehicle movement and operation will generate noise at levels associated with a quarry or waste management facility of this scale. The Operator will ensure that when not in use, vehicles are not left with their engines idling which may generate unnecessary noise or exhaust emissions. Vehicles transiting around the site will use the designated haul routes and not travel at excessive speeds which may generate dust emissions. Depending on the ground and weather conditions it may be necessary to limit speeds to a threshold lower than the limit specified in the planning consent. In dry conditions, particularly when wind

speeds may result in dust leaving the site boundary, the Operator will deploy a water bowser to dampen down haul roads. They may also limit traffic to a prescribed route to focus the use of the bowser.

2.6 Fuel Storage, Refuelling and Power Generation

The wet process plant is powered by a diesel fuelled generator located on the concrete slab. Other mobile plant are also diesel powered. The diesel-powered generator has the potential to generate noise and particulates from its exhaust during operation. The diesel tank and fuel lines to the generator have the potential to release diesel fuel if subject to mechanical damage or fatigue due to poor maintenance.

The diesel tank and other mobile plant are refuelled using a mobile fuel bowser.

The diesel tank and generator is located on the concrete slab and benefits from secondary containment to 110% of the tank volume. The tank and generator are also protected from accidental collision by site plant by the physical location of the tank adjacent to the wet process plant and barriers.

2.7 Accidents

The existing management controls significantly reduce the risk of emissions harmful to human health and environment occurring under normal operating conditions. However there may be instances where damage to site infrastructure may occur unintentionally as a result of an error or accident result in a potentially polluting emission. Intentional damage of infrastructure can also potentially occur as a result of trespass and vandalism. Other interruptions to the activity can also occur as a result of vehicle or plant breakdown. Plant or waste stockpiles are also at risk of fire if a source of ignition, fuel and oxygen is present. Damage can occur as a direct result of the fire or secondary impacts such as contaminated run-off from water used to fight the fire. If not contained the fire could spread to other plant or flammable materials.

The most likely incident to occur is mechanical damage from a collision to a vehicle, plant or storage vessel which results in release of fuel that may contaminated the ground, groundwater or surface water. The process water presents a significantly lower risk to the environment and human health, however damage to any storage vessel or pipework may result in a release of a significant volume of water which may cause damage to other infrastructure or mobilise pollutants e.g. from a bunded fuel store. The loss of process water supply also means the wet process cannot continue until the damage is fixed and sufficient water is available to restart the process.

All personnel are legally required to be compliant with safe traffic management on site and site rules used to enforce it. Speed limits will be complied with to ensure drivers do not lose control of their vehicles that may result in a collision. Particular care will be taken with the operation of vehicles in the vicinity of fuel storage areas or other storage vessel that if compromised may result in adverse environmental or operational impacts.

No flammable waste is imported to site for treatment. The light material removed from the wet process plant is potentially flammable once dry. This material is not stored in the vicinity of the fuel storage tank on the low chance a fire could activate at either location. The quantity of light material is managed to prevent excessive accumulation that could result in self-heating or a large fire that could severely damage the wet plant if it were to combust.

The activity is carried out at a very remote location with no major urban centres nearby. The site is secured by palisade fencing and lockable security gates at the main entrance. The Gransmoor Dyke that flows along the entirety of the western boundary represents a significant barrier to unauthorised entry. A ditch located to the east of the site access road will prevent unauthorised access via the field to the east.

2.8 Flooding

Flooding of the site may result in disruption to normal site operations and damage to infrastructure. It may also inundate areas which under normal circumstances do not represent a risk of pollution provided appropriate controls are in place e.g. waste storage areas, bunded areas, buildings etc. Flood water may mobilise polluting substances from those locations to other more sensitive settings such as water courses, habitats or human receptors.

Data from the Flood Map for Planning Website[3] indicates that the area of site occupied by the western-most part of the de-watering lagoon is in a Flood Zone 3 and at high risk of flooding. However the Operator has advised that the site has never flooded in that or any other area. It is considered likely that the topographical mapping is based on older LiDAR data taken at a time there was a shallow excavation in that area of Site (please see Section 3 of the accompanying Site Condition Report referenced 2401-001/R/003). That previously low-lying area has since been backfilled with quarried material. It is understood that the lagoons were excavated from in-situ silt / clay however. A topographical survey provided by the Operator confirms the surface elevation of the ground to the north of the lagoons is the same or higher than the ground to the east that is not in the Flood Zone 3. Flooding is therefore not considered to be a risk to the operation of this site.

2.9 Climate Change

Table 6 of the accompany Technical Standards report examined how Climate Change may impact activities at the site. Table 1 below lists the impacts likely to impact the site operations.

Table 1 – Climate Change Impacts

Impact	Description	Relevant (Yes / No)	Justification
Summer Daily Maximum temperature			
2	Equipment fire	Yes	Plant used for treatment of waste
4	Dust emissions	Yes	Waste / aggregates stored in stockpiles
5	Water supply	Yes	Wet process plant reliant on water for effective operation
Drier Summers			
1	Water restrictions	Yes	Activity relies on water for wet treatment process
Storms			
3	Lightning strikes	Yes	Potential damage to infrastructure

2.9.1 Equipment Fire

Increased summer temperatures may cause electrical components in plant or other equipment to exceed their safe heat rating and increase the risk of malfunction or fire. The Operator will review the heat rating

[3] Flood map for planning - GOV.UK (flood-map-for-planning.service.gov.uk)

of all their equipment and if an issue is likely implement additional protections such as providing shade or supplementary cooling systems.

2.9.2 Dust Emissions

Certain components of the waste management process at the site may be a source of fugitive dust emissions. Existing controls previously will continue to be implemented, however the Operator will place particular focus on weather forecasts to predict when prolonged dry spells are imminent. This will enable the Operator to consider what resources need to be available to mitigate dust emissions and if there is likely to be a shortfall i.e. low water levels in the central de-watering lagoon, consider which operations at site need to be prioritised.

2.9.3 Water Supply

The Operator currently uses water abstracted from the central de-watering lagoon to supplement the process water recirculated within the Wet Process Plant (WPP) and dust mitigation measures such as wetting down the haul roads or stockpiles as required. At present some of the water abstracted from the central lagoon is discharged into the adjacent Gransmoor Drain to manage groundwater levels in the quarrying activities to the north. The Operator is reviewing the following to predict water use under a range of conditions:

- volume of water abstracted from the central lagoon;
- volume of water is used in the WPP;
- volume of water used to damp down roads / stockpiles;
- water levels in the central lagoon throughout the year;
- volume of water discharged to surface water.

By doing so they can understand and potentially predict if the current water supply will be sufficient to permit continuation of normal or potentially restricted operations during drought events. If there is perceived to be a shortfall, they may consider alternative water conservation or contingency storage measures.

2.9.4 Water Restrictions

The Operator is not currently dependant on a direct mains water supply to manage the WPP or dust mitigation measures at site. They are subject to a groundwater abstraction licence for the dewatering of their central lagoon however to manage water levels in the quarrying operations elsewhere on site. Based on the installation log of BH01 ~100 m to the north there is potentially a ~ 5m thick layer of clay approximating to an elevation of 0.82 mAOD and -4.88 mAOD. This based on the BH01 installation log and may differ subject to the dip or variability of the drift strata 100 m from BH01. This clay layer effectively seals the base of the void and contains the water.

Groundwater is likely discharging into the lagoon from the 0.5 m thick band of sand at an elevation approximating to 1.32 mAOD and 0.82 mAOD (based on the BH1 log). It is assumed that this lagoon is not recharged from the groundwater in the underlying chalk as the piezometric pressure surface is reported to be at 10 mAOD.

In the event that due to drought recharge of groundwater was reduced, the Operator would retain a substantial volume of water in the base of the void that they could continue to utilise at the site.

2.9.5 Lightning Strikes

Climate change may bring with it an increased risk of severe storms, including thunder storms and an increased risk of lightning strikes. A lightning strike to any plant or building on site may result in significant damage or injury to the occupants or nearby personnel. The topography in the surrounding area is relatively flat and therefore the plant and buildings represent discrete features which may be more vulnerable to a strike. The Operator may therefore consider fitting lightning conductors to structures of concern with reference to an appropriate standard if appropriate e.g. BS EN 62305: *Protection against Lightning*.

3 Potential Pathways

3.1 Airborne Pathways

The potential pathways for dust and particulates to reach sensitive receptors are via the air via wind transmission. Transit of airborne emissions will therefore be determined by the prevailing wind direction and physical obstructions. Additionally, there may be an interrelationship between the nature of a potentially harmful emission and how it behaves in transit. Annual average meteorological observations taken from the weather station at Driffield[4] approximately 7.5 km to the west of the site have been used to determine the prevailing wind direction. The prevailing wind direction is from the west / southwest (19.7 % of the time) and evenly distributed from the south-southeast through to the southwest on aggregate 45.2% of the time. This means any receptor to the east, northeast of the site is most likely to receive emissions from the site if they are within a relevant screening distance (see Section 5.1), with receptors to the north, northwest to northeast the next most likely to receive emissions if relevant.

Wind blowing from the west, southwest is not obstructed by any significant barriers such as mature stands of trees or buildings. There may be an element of shelter afforded when wind blows directly from the south by the mature trees established on the raised topographical feature 'Barf Hill' to the south of site. The landscape immediately adjacent to the site is otherwise characterised by flat topography, dominated by arable fields.

3.2 Overland Pathways

Airborne emissions of particulates may be blown across the surface of the land and if unobstructed may reach sensitive receptors. The majority of the site is surrounded by a mature hedgerow and trees. This is less prevalent on the eastern boundary of the current permit boundary, however the boundary of that area of site is characterised by numerous material stockpiles which act as a barrier to windblown emissions across the ground. The extent of the waste and non-waste stockpiles is shown in Figures 1 and 3 of the accompanying Technical Standards report. Figure 1 shows stockpiles A and F (granular waste and waste soil and stones) to be positioned between the WPP and the closest residential receptor 505 m to the east, Gransmoor Low House (see Table 2 below). To the west of the WPP are stockpiles C, D (non-waste gravels), H (concrete) and I (crushed / screened concrete). These represent a barrier between the WPP and the closest receptor 1.15 km to the west, Little Kelk Village.

The ground surface may also act as a pathway for the mobilisation of potentially polluting substances in surface water run-off dissolved or in suspension. The primary pollutant of concern would be mobilisation of suspended solids which could enter a surface water receptor and cause increased turbidity or silt accumulation. There are no direct discharges of surface water runoff from the site to surface watercourses. Groundwater removed from quarry dewatering activities is discharged to the Gransmoor Drain, however the water in the former quarry void also does not receive direct run-off from the site. All waste activities including storage and treatment of waste will be carried out > 10 m from any watercourse or water body as a precaution, with earth bunding used to direct water away from them as required.

Water containing dissolved substances, as a film e.g. oil or direct spillages of polluting liquids e.g. fuel may flow over the ground surface and enter surface water courses / bodies as above, or may soak into the

[4] Driffield Wind Forecast, East Riding of Yorkshire YO25 6 - WillyWeather

ground away from the point of emission. Any fuel or other polluting liquids will also be stored in accordance with DEFRA Guidance[5]. As a minimum it will be > 10 m from any watercourse or water body. The generator that powers the WPP is located within a secure metal container with 110 % bunding capacity. The generator fuel tank is filled using a mobile tanker brought to site that also services the other plant.

3.3 Through the Ground

Spillages on the ground of process water containing dissolved pollutants or potentially polluting liquids such as fuel will likely result in a significant proportion of that liquid percolating into the subsurface. That liquid may then transit vertically until it encounters an impermeable or low permeability barrier such as clay and then spread laterally across it. It may also travel vertically or laterally via sub-surface structures such as buried services or boreholes. Sub-surface receptors such as groundwater may also act as a pathway for pollutant transmission to other receptors such as surface water if they are in continuity with one another.

4 Receptors

4.1 Receptor Locations

When identifying the receptors, the closest or the most sensitive (if different from the closest) have been considered in each direction from the hazard. Account has been taken of the pathway and mechanism of transport to the sensitive receptor e.g. wind direction, ground conditions or physical topography. Receptors are considered sensitive where people and habitats that occupy them have the potential to be adversely affected by the emissions.

The probability of exposure is determined by the distance of the receptor to the site and the likelihood of the hazard reaching the receptor (e.g. frequency of prevailing wind in that direction). This stage of the assessment assumes that exposure has resulted from an uncontrolled emission i.e. without mitigation. The nearest sensitive receptors to the site are identified in drawing referenced 2401-001/D/003 attached in Appendix A. The distance of these receptors to the proposed permit boundary, their direction relative to the main treatment activities and the frequency the wind blows in the direction of the receptor is detailed in Table 2 below.

Table 2 – Potentially Sensitive Receptors

Receptor ID	Receptor Name	Receptor Description	Distance from Proposed Permit Boundary (m)	Direction from Main Site	Frequency Downwind (%)
1	Turtle Hill Farm	Farm	505	NE	10.3
2	Gransmoor Low House	Farm	505	ENE	19.7
3	Gransmoor Village	Residences	850	ESE	3.5
4	Park House	Farm	1,000	S	0.7
5	Manor Farm	Farm / Residence	1,100	SW	2.5
6	Little Kelk Village	Residences	1,150	W	1.8
7	Whitehall Farm	Farm / Residence	910	NW	7.4
8	Neptune Sonar	Commercial	940	NNW	11.4
9	Kelk Lake	Water Body	700	NNW	11.4
10	Gransmoor Drain	Water course	<10	W	1.8

[5] Oil storage regulations for businesses - GOV.UK (www.gov.uk)

Receptor ID	Receptor Name	Receptor Description	Distance from Proposed Permit Boundary (m)	Direction from Main Site	Frequency Downwind (%)
11	Quarry Dewatering Lagoon	Water Body	<10	Central	0.7

4.2 Human Receptors

The closest human receptors in each direction from the site are detailed in Table 2. There are no human receptors located within 500 m of the current permit boundary. This does not change with the expansion of the permit boundary further to the south.

4.3 Surface Water Receptors

4.3.1 Gransmoor Drain

The Gransmoor Drain flows north to south along the immediate length of the current western permit boundary and will continue along the western boundary of the proposed extension to the permit boundary. Field drains to the east of the site also flow into the Gransmoor Drain near the site entrance off Kelk Lane.

According to data from DEFRA[6], the Gransmoor Drain (Burton Agnes to Lissett Area) is classified as having 'moderate' Ecological Status and moderate Physico-chemical quality elements, but 'fails' due to the presence of Priority Hazardous Elements identified as mercury and Polybrominated diphenyl ethers (PBDE, a group of brominated flame retardants). It is noted from the DEFRA website that all waterbodies fail this status, presumably due the prevalence of certain substances. The reasons stated by DEFRA for the water course not achieving 'good' status were poor agricultural soil management, sewage discharge and agricultural land drainage. Quarrying and waste management activities were not stated as reasons for not achieving good status.

4.3.2 Quarry Dewatering Lagoon

The quarry dewatering lagoon abuts the southern extent of the existing permit boundary. When extended it will sit wholly within the permit boundary of it. It is understood that this lagoon is fed by groundwater issuing from the drift deposits and surface water. The MJCA Baseline report submitted in support of the planning application for the northern quarry extension indicated that dewatering of the lagoon inferred a hydraulic in the superficial deposits toward the lagoon.

Data from water sampling carried out in March 2024 (attached in Appendix B) indicates concentrations of all substances assigned an Environmental Quality Standard (EQS) were below the EQS thresholds or reported as not detected at an appropriately low reporting limit. As this water is likely to have a groundwater component to it, a comparison has been made against the Drinking Water Stands (DWS) and no limits are exceeded.

4.3.3 Other Water Bodies

There are numerous small water-filled voids located around the northern extension area, most likely filled with a combination of surface water or groundwater. A larger water body call Kelk Lake is located approximately 695 m northwest of the application Site. A series of lagoons have formed in former quarry

[6] Gransmoor Drain (Burton Agnes to Lissett Area) | Catchment Data Explorer | Catchment Data Explorer

voids to the south of the site, the closest being 850 m from the current permit boundary or shortened to 480 m with the proposed southward extension to it. There is no direct hydraulic connection to any of the above water bodies.

4.3.4 Surface Water Drinking Water Safeguard Zones / Protected Areas

The proposed activity is located within Drinking Water Safeguard Zone (Surface Water) referenced SWSGZ6010: *Humber_SWSGZ6010_Tophill Low.* This is associated with Drinking Water Protected Area (Surface Water) referenced GB104026067000: *Hull from West Beck to Arram Beck* which is located approximately 7.8 km to the south-southwest of the site. The application site sits immediately adjacent to the Gransmoor Drain which flows north to south along its western boundary. The Gransmoor Drain then flows east and discharges into the North Sea just south of Barmston. It is therefore very unlikely that Drinking Water Protected Area referenced GB104026067000 could be adversely impacted by any emissions from the site as there is no direct or indirect connection to it from the site.

4.4 Groundwater Receptors

The Environment Agency has designated the chalk bedrock below the site as a Principal Aquifer and describe Principal Aquifers as "*Principal and secondary aquifers provide significant quantities of drinking water, and water for business needs. They may also support rivers, lakes and wetlands.*"[7] The 1980 British Geological Survey (BGS) Hydrogeological map of East Yorkshire[8] indicates a groundwater flow in the chalk underlying the site to be toward the southeast. The map indicates that the top of the chalk in the vicinity of the site is at -10 mAOD with a water level of 10 mAOD indicating the water in the chalk is in continuity with the drift deposits. A thick layer of clay is noted above the chalk in BH1 (5.7 m) and BH04 (8m) which are located along the northern permit boundary. No logs are available further south.

The Superficial Drift Deposits underlying the site are designated as Secondary A Aquifers which means "*secondary A aquifers comprise permeable layers that can support local water supplies, and may form an important source of base flow to rivers".* As stated above it is assumed that groundwater from the drift deposits is discharging into the main lagoon to the south of the WPP. The application site is not located within a Source Protection Zone (SPZ). The nearest SPZ is approximately 3.5 km to the north between Burton Agnes and Thornholme.

4.5 Protected Sites

The nearest Site of Scientific Interest (SSSI) Is the River Hull Headwaters which is 1.7 km to the west of the Site. There is no direct hydraulic connection between the Site and this SSSI.

[7] Protect groundwater and prevent groundwater pollution - GOV.UK (www.gov.uk)
[8] British Geological Survey (BGS) | large image viewer | IIPMooViewer 2.0

5 Risk Assessment

5.1 Risk Screening

Aspects of the proposed activity will continue to meet the assumptions of the generic risk assessments that support the Standard Rules Permit and associated Management Plan guidance where relevant.

5.1.1 Dust Risk

There are no sensitive human or European or SSSIs within 500 m of the current or proposed permit boundary, nor are there any National Nature Reserves, Local Nature Reserves, Local Wildlife Site, Ancient woodland or Scheduled Ancient Monuments within 50 m of the current or proposed activity. The Operator will continue to treat non-hazardous waste only and contrary to the assumptions of the SR2022No1, the majority of waste progressing through the treatment process will be wetted down and will not generate dust. There is no requirement for an Emissions Management Plan to be provided with the permit application as the site is not within 2 km of an Air Quality Management Area for PM10s or within 500 m of a sensitive human receptor. Despite the significant distance between the activity and sensitive receptors, the Operator will be implementing measures to mitigate the potential impact of dust emissions.

Stockpiles of dry granular construction and demolition waste have the potential to generate dust under dry and windy conditions. Dust can be emitted during deposit at the site by visiting HGVs, when it is deposited from conveyors or when the material is excavated from a stockpile for onward profiling. Grading and profiling of the material will be carried out by the excavator after deposit from an HGV, deposit in feed hoppers or its removal from an existing stockpile. Static stockpiles or running surfaces may also generate dust due to wind-whip disturbing the dry outer surface. This could be from the stockpile itself, dried sediment accumulated from surface water run-off in the vicinity of the stockpile or general dust accumulation on access roads or tracks. The potential for dust generation from any source can occur under normal conditions, but the Operator may need to anticipate longer periods of dry weather as a result of climate change.

The Operator will ensure that material deposited in stockpiles at the site will be tipped from excessive height where practicable. The deposit of the material will be carried out in a controlled manner i.e. no short, sudden release of the entire load from the inclined HGV body. This will include adjusting the height of conveyors to be as close to the top of the stockpile as possible. The Operator will seek to restrict acceptance of already dry and excessively dusty loads to site. This requires potential suppliers but primarily the Operator themselves, to declare if the waste has the potential to generate dust on receipt or deposit. As the primary supplier to the Site, the Operator can control the full process and prevent dusty material from being brought to Site without appropriate control measure being in place or in extreme circumstances, preventing its acceptance completely.

The existing layout of the site is conducive to movement of road-going HGVs i.e. a flat profile throughout the majority of the site and therefore they will be able to transit to the point of deposit. This reduces the requirement for double-handling the material with onsite dumpers running between a tipping bay and point of use.

A portable bowser will be available at the deposit area throughout the duration of the recovery activity to damp-down all loads during dusty conditions, or, which are deemed excessively dusty by the TCM or other site staff.

The types of plant to be employed at the activity will be tracked 360 excavators and bulldozers. This will be used to position the waste as required. Visiting HGVs will be sheeted during transit and only remove that sheeting immediately prior to deposit of waste at the designated areas inside the site. There is potential for visiting vehicles to track mud onto the public highway when they leave site. Mud or other debris tracked onto a public highway can extend the potential for dust generation away from site.

The Operator will ensure that when not in use, vehicles are not left with their engines idling which may generate unnecessary exhaust emissions. Vehicles transiting around the site will use the designated haul routes and not travel at excessive speeds which may generate dust emissions. Depending on the ground and weather conditions it may be necessary to limit speeds to a threshold lower than the limit specified in the planning consent. In dry conditions, particularly when wind speeds may result in dust leaving the site boundary, the Operator will deploy a water bowser to dampen down haul roads. They may also limit traffic to a prescribed route to focus the use of the bowser.

The operative located at the weighbridge will continually check the status of the hardstanding between the site entrance and main operational area to ensure it is clean and if observed to deteriorate, instruct the road sweeper to attend as soon as practicably possible. This will address the direct issue of mud being tracked onto the road and becoming a slip hazard / nuisance to other vehicles, and indirectly prevent accumulation of mud that could dry out along the length of the road and generate dust. The frequency of checks and vigilance overall may be increased during particularly busy periods or during dry and windy conditions when dust emissions are most likely to occur.

5.1.2 Noise

The SR2022No1 permit allows the Operator to treat soils and granular waste using suitable plant to mechanically sort, separate, screen, crush and blend waste as a soil, soil substitute or aggregate. The addition of the wet process plant activity to the facility will not increase the noise generation potential of the site. No limit is applied to the daily throughput of waste through that type of plant which may vary according to commercial demand. The annual waste throughput limit is therefore considered irrelevant to noise generation as the impacts are instantaneous. There are no sensitive human or ecological receptors within the prescribed screening distances in SR2022No1.

Deposit of waste in temporary stockpiles, in the feed hoppers and subsequent reprofiling of stockpiling has the potential to generate noise from the movement of the material itself and the plant used for the activity. Similar consideration will be given to the minimisation of noise generation as that to dust generation i.e. material will not be tipped from height where possible and not in a manner which would generate excessive noise. Vehicle movements will be kept to a minimum to maximise operational efficiency and all vehicles / plant will be serviced in accordance with manufacturers recommendations to ensure maintenance issues do not exacerbate noise generation.

Noise emissions which may otherwise impact the closest receptor 505 m to the east (Gransmoor Low House) will be mitigated in part by the position of the larger waste stockpiles toward the east of the operational area. This obstructs the line-of-site for noise to directly impact that sensitive receptor.

All Site plant will be fitted with silencers on their exhausts and / or other noise attenuation measures. To minimise the impact of intrusive noise generation, the planning consent prohibits the operation of the activity between the hours of 07:00 and 18:00 Monday to Friday, and 08:00 to 12:30 on Saturdays. Any activity is prohibited on a Sunday, bank holidays and public holidays. The planning consent also requires

the operator to ensure that ambient noise levels do not exceed 48 dB at a noise sensitive properties off Moor Lane 1 km to the north and Main Street 1.2 km to the west.

5.1.3 Mud

The risk of mud being tracked onto a public road from the proposed activity is no greater than the assumptions of the SR2022No1 generic risk assessment. Maintaining the risk management measures already required by the Operators SR2022No1 i.e. keeping haul roads clear of mud, employing a road sweeper to clean the road near the site entrance are considered to be appropriate.

5.2 Emissions to Water

5.2.1 Storage and Treatment of Waste

The waste imported for storage and treatment under the proposed bespoke permit is unchanged from that permitted under SR2022No.1 with the exception of the addition of 19 02 06 which represents the silt excavated form the settlement lagoon, which will now be incorporated into soil forming materials subject to testing. The quantity of waste to be stored pending treatment will also be no higher than the 50,000 tonnes prescribed in Table S2.1 of SR2022No.1. SR2022No.1 permits the storage and treatment of the wastes listed in Tables 2.3a and 2.3b of that permit on a compacted solid hardstanding. These measures will continue to be appropriate for the storage and treatment of waste inputs, and the storage of outputs which subject to meeting a prescribed specification such as the WRAP Protocol and no longer be considered as waste. The excavated silt will be stored on an impermeable surface with sealed draining pending completion of testing for its onward use.

5.2.2 Run-off from Waste and Non-Waste

The primary difference between the waste activities permitted by SR2022No.1 and those to be regulated under a bespoke permit is the addition of the WPP. Both types of activity will treat soils, granular construction and demolition waste, and produce an aggregate that meets the WRAP Protocol or soils. In both scenarios the type of material to be treated will be identical and stored on hardstanding. Both processes will also produce waste fines material and remove other waste residues such as litter, metals or organic materials. Under the WPP the fines will be contained as water-bound silt and the litter or organic material will be removed from the WPP. The non-ferrous metal will be removed prior to the WPP. As described in Section 2.2.3, any litter or organic material will be deposited into a dedicated container.

The silts removed from the WPP and the process water that carries it will not be discharged from any point in the WPP. Water is lost from the WPP only through evaporation and retention in the pore spaces of the non-waste outputs, which will also eventually evaporate. There is very limited potential for what would be a negligible quantity of water to flow from the output stockpiles at deposit. Unlike a dry treatment process all fines will be removed from the WPP outputs, significantly reducing the risk of solids being mobilised from the output stockpiles which may otherwise present a risk to surface water receptors.

The risk to surface water and groundwater receptors from the dry storage of waste prior to treatment and the storage of wetted residual waste outputs and non-waste aggregates is considered to be insignificant and is not considered further.

5.3 Process Water and Silt Waste

The clean water fed into the WPP and the silt laden process water removed from it is an entirely closed system throughout. This includes the silt de-watering lagoons positioned after the thickener tank that remove the silt from suspension. The silt-laden process water is directed to a 9 m diameter thickening tank where it is dosed with flocculants to rapidly drop the silt out of suspension. This silt accumulates on the base of the tank where it is directed to the central collection and discharge point by a rotating arm. The wet silt is then pumped into the head of one of two adjacent lagoons where the silt spreads out releasing water as it settles. The gradient of the lagoon encourages the water to flow to the opposite end of the lagoon where it overtops into a smaller pond. The water in this pond is then pumped back into the thickening tank to remove any residual solids before the water is directed to the dedicated storage tank pending re-use in the WPP. This process was a bespoke solution engineered by the Operator and it is considered appropriate to carry out a risk assessment to establish if it is equivalent of better than the requirements of CIRIA 736: *Containment Systems for the Prevention of Pollution.*

5.3.1 Source

The silt fines removed by the WPP are derived from the treatment of non-hazardous, inert waste. This should contain low or absent concentrations of readily leachable substances or total concentrations of organic species such as hydrocarbons. Testing of the dewatered silt by the Operator indicates that it is non-hazardous and would meet the LFD Inert WAC.

The chemical composition of the silt itself cannot directly impact water receptors as the solids cannot readily transit through the ground matrix, including a granular sand or gravel. The primary source of potentially contaminating substances is the process water that drains from the silt. As the silt is the component within the original waste feedstock most likely to retain potentially contaminating substances, consolidation of the silt means the concentrations will likely be higher than the original feedstock. This may be reflected by the process water that drains from it.

below summarises the data from samples taken from the thickening tank and the silt dewatering lagoon in March 2024 (all data in Appendix A).

Table 3 – Comparison of Process Water (PW) Concentrations and Relevant Quality Standards

Substance	Units	Thickener Tank PW	Silt De-watering lagoon PW	LFD Inert WAC 10:1 Max Allowable Eluent Con[c]	Dewatering lagoon PW Above / Below LFD Inert WAC	DWS	Dewatering Lagoon PW Above / Below DWS
Conductivity at 25°C	µS/cm	755	822	N/A	N/A	2500	Below
Dissolved Organic Carbon	mg/l	7.27	9.75	50	Below	N/A	N/A
Nitrate as N	mg/l	4.8	0.6	N/A	N/A	50	Below
Ammoniacal Nitrogen as N	mg/l	0.4	0.09	N/A	N/A	0.39	Below
Chloride as Cl	mg/l	32	42	N/A	N/A	250	Below
Fluoride as F	mg/l	0.4	0.3	1	Below	N/A	N/A
Arsenic as As	mg/l	0.004	0.003	0.05	Below	0.01	Below
Cadmium as Cd	mg/l	<0.00002	<0.00002	0.004	Below	0.005	Below
Total Chromium as Cr	mg/l	<0.001	<0.001	0.05	Below	0.05	Below
Copper as Cu	mg/l	0.006	0.01	0.2	Below	2	Below
Iron as Fe	mg/l	<0.01	<0.01	N/A	N/A	0.2	Below
Lead as Pb	mg/l	<0.001	<0.001	0.05	Below	0.01	Below

Substance	Units	Thickener Tank PW	Silt De-watering lagoon PW	LFD Inert WAC 10:1 Max Allowable Eluent Con[c]	Dewatering lagoon PW Above / Below LFD Inert WAC	DWS	Dewatering Lagoon PW Above / Below DWS
Manganese as Mn	mg/l	0.009	0.039	N/A	N/A	0.05	Below
Mercury as Hg	mg/l	<0.00003	<0.00003	0.001	Below	0.001	Below
Nickel as Ni	mg/l	0.002	0.003	0.04	Below	0.02	Below
Sodium as Na	mg/l	24	27	N/A	N/A	200	Below
Total Sulphur as SO4	mg/l	168	318	100	**Above**	250	**Above**
Zinc as Zn	mg/l	0.005	0.003	0.4	Below	N/A	N/A
Benzo[a]pyrene	µg/l	0.29	0.53	N/A	N/A	0.01	**Above**
Total PAH 16	µg/l	2.44	4.51	N/A	N/A	0.1	**Above**
Phenol	mg/l	<0.05	<0.05	0.1	Below	N/A	N/A
Benzene	µg/l	<1	<1	N/A	N/A	1	Below

Metals including cadmium, chromium, mercury, Iron and lead were not detected in either sample. Substances concentrations were typically higher (35% on average) in process water from the silt dewatering lagoon than the thickening tank. With the exception of sulphate, the data indicates that the process water in the silt dewatering lagoons does not contain substances at concentrations above the maximum expected in the eluent for a 10:1 LFD Inert WAC leachability test. Comparison against the more stringent Drinking Water Standard (DWS) thresholds indicates the process water in the silt dewatering lagoons would exceed the sulphate, total Polycyclic Aromatic Hydrocarbon (PAH) and Benzo[a]pyrene (BaP) DWS thresholds. Sulphur (as SO_4) is considered to be a conservative pollution indicator i.e. it will not be attenuated as it passes through a ground matrix, only diluted. PAHs including BaP are subject to physical, chemical and biological attenuation as they pass through a ground matrix and their concentrations reduced significantly as a result.

5.3.2 Pathway

The silt dewatering lagoons are understood to be excavated into the undisturbed, superficial drift geological deposits. Based on the installation log of BH1 which is 20 m to the northwest of the lagoons, the lagoons are enclosed laterally (to a depth of 3.8 m) by sandy / gravelly silt and underlain by 1.5 m of clay. The silt is likely to represent a low-permeability matrix. The underlying clay is likely to have a significantly lower permeability of < $1x10^{-9}$ m/s. There is a 0.5 m thick sand and gravel layer beneath the clay and below that a further 5.7 m thickness of clay which overlies the solid chalk geology. It is assumed that the rate of any vertical emissions from the silt de-watering lagoon will be impeded first by the silt and then significantly more so by the clay. Water percolating through the silt may flow across the surface of the clay layer and issue from the side of the quarry de-watering lagoon 50 m further to the south. A very small component may eventually percolate through the clay and into the 0.5 m thick sand / gravel layer but that too will likely issue from the side of the lagoon. The rate and volume of process water percolating through the underlying geology is expected to be significantly lower than the rate of abstraction from the ponds.

5.3.3 Receptor

The primary receptor to potential vertical discharges of process water from the silt dewatering lagoons is the water flowing through the 0.5 m thick sand and gravel layer beneath the silt and clay deposits. This would be considered to be part of the Secondary A Aquifer designated to the Superficial Drift Deposits.

The groundwater in the sand and gravel likely discharges into the quarry dewatering lagoon where it is abstracted for use on site in the WPP or dust mitigation measures. This water is also discharged into the adjacent Gransmoor Drain under a consent from the Yorkshire and Humber Internal Drainage Board.

A comparison of the data from samples taken from the quarry dewatering lagoon, and the Gransmoor Drain upstream and downstream of the site is in Table 4 below. Where relevant Environmental Quality Standards (EQS) have been listed for reference.

Table 4 – Surface Water Quality

Substance	Units	Upstream	Quarry Dewatering Lagoon	Downstream	EQS (Annual Average)	EQS (Maximum Allowable Con[c])
Conductivity at 25°C	µS/cm	691	650	701	N/A	N/A
BOD (5 day)	mg O2/l	<1	<1	<1	N/A	N/A
COD (Settled)	mg/l	12	<5	7	N/A	N/A
Total Alkalinity	mg/l	241	209	247	N/A	N/A
Total Suspended Solids	mg/l	<5	<5	<5	N/A	N/A
Total Organic Carbon	mg/l	3.84	1.07	3.56	N/A	N/A
Dissolved Organic Carbon	mg/l	4.08	1.01	3.83	N/A	N/A
Nitrate as N	mg/l	7.4	2.6	7.8	N/A	N/A
Ammoniacal Nitrogen as N	mg/l	0.03	0.04	0.04	N/A	N/A
Chloride as Cl	mg/l	33	27	34	250	N/A
Fluoride as F	mg/l	0.2	0.3	0.2	N/A	N/A
Arsenic as As	mg/l	<0.001	<0.001	<0.001	0.05	N/A
Boron as B	mg/l	<0.01	<0.01	<0.01	N/A	N/A
Cadmium as Cd	mg/l	<0.00002	<0.00002	<0.00002	0.00025	0.0015
Calcium as Ca	mg/l	139	121	139	N/A	N/A
Total Chromium as Cr	mg/l	<0.001	<0.001	<0.001	0.0047	N/A
Copper as Cu	mg/l	<0.001	<0.001	<0.001	0.001	N/A
Iron as Fe	mg/l	0.01	<0.01	<0.01	1	N/A
Lead as Pb	mg/l	<0.001	<0.001	<0.001	0.0012	0.014
Magnesium as Mg	mg/l	9	12	10	N/A	N/A
Manganese as Mn	mg/l	0.027	0.028	0.014	0.123	N/A
Mercury as Hg	mg/l	<0.00003	<0.00003	<0.00003	N/A	0.00007
Nickel as Ni	mg/l	0.001	<0.001	<0.001	0.004	0.034
Phosphorus as P	mg/l	<0.1	<0.1	<0.1	N/A	N/A
Potassium as K	mg/l	2	2	2	N/A	N/A
Sodium as Na	mg/l	14	13	14	N/A	N/A
Total Sulphur as SO4	mg/l	48	90	51	400	N/A
Zinc as Zn	mg/l	<0.002	0.003	0.003	0.0109	N/A
>C8-C10 (SCU)	mg/l	<0.01	<0.01	<0.01	N/A	N/A
Total TPH >C8-C40 (SCU)	mg/l	0.01	0.01	0.02	N/A	N/A
Acenaphthene	µg/l	<0.01	<0.01	<0.01	N/A	N/A
Acenaphthylene	µg/l	<0.01	<0.01	<0.01	N/A	N/A
Anthracene	µg/l	<0.01	<0.01	<0.01	N/A	N/A
Benzo[a]anthracene	µg/l	<0.01	<0.01	<0.01	N/A	N/A
Benzo[a]pyrene	µg/l	<0.01	<0.01	<0.01	0.00017	0.27
Benzo[b]fluoranthene	µg/l	<0.01	<0.01	<0.01	N/A	0.017
Benzo[g,h,i]perylene	µg/l	<0.01	<0.01	<0.01	N/A	0.0082
Benzo[k]fluoranthene	µg/l	<0.01	<0.01	<0.01	N/A	0.017

Substance	Units	Upstream	Quarry Dewatering Lagoon	Downstream	EQS (Annual Average)	EQS (Maximum Allowable Con[c])
Chrysene	µg/l	<0.01	<0.01	<0.01	N/A	N/A
Coronene	µg/l	<0.01	<0.01	<0.01	N/A	N/A
Dibenzo[a,h]anthracene	µg/l	<0.01	<0.01	<0.01	N/A	N/A
Fluoranthene	µg/l	<0.01	0.03	<0.01	N/A	N/A
Fluorene	µg/l	<0.01	<0.01	<0.01	N/A	N/A
Indeno[1,2,3-cd]pyrene	µg/l	<0.01	<0.01	<0.01	N/A	N/A
Naphthalene	µg/l	<0.01	<0.01	<0.01	2	130
Phenanthrene	µg/l	<0.01	<0.01	<0.01	N/A	N/A
Pyrene	µg/l	<0.01	<0.01	<0.01	N/A	N/A
Phenol	mg/l	<0.05	<0.05	<0.05	0.0077	N/A
Methylphenols	mg/l	<0.05	<0.05	<0.05	N/A	N/A
Dimethylphenols	mg/l	<0.05	<0.05	<0.05	N/A	N/A
Trimethylphenols	mg/l	<0.05	<0.05	<0.05	N/A	N/A
Total Phenols	mg/l	<0.2	<0.2	<0.2	N/A	N/A
Benzene	µg/l	<1	<1	<1	10	N/A

Concentrations of substances up and down stream of the site are comparable. They are also comparable with the data from the quarry dewatering lagoon, albeit the lagoon has lower concentrations of Chemical Oxygen Demand, Total Organic Carbon, Dissolved Organic Carbon and Nitrate. It is assumed that the Gransmoor Drain is impacted by agricultural run off reflected by the water quality. None of the substances tested for exceed the more conservative Annual Average EQS or are reported at a concentration less than the limit of laboratory detection. Sulphate is higher in the lagoon than the Gransmoor Drain but this may be reflective of the wider site activities such as the inert landfill site further to the south.

The presence of the WPP silt dewatering lagoons since 2019 does not appear to have impacted the quality of the quarry dewatering lagoon, indicating the containment measures afforded by the low permeability geological ground conditions are sufficient.

6 Accident Management Plan

6.1 Potential Accidents of Concern

Accidental spillage of potentially hazardous substances through loss of containment is the primary environmental risk of concern that could be attributed to the activities at this site. This could result from collision between vehicles, collision or mechanical damage to the fuel tank, or damage to the process water treatment or storage tanks. The sections below identify:

- Potential sources and types of contaminating liquids
- How an accident may release those substances and the pathways they may take
- Which receptors will be at risk from any spillages
- What preventative or mitigation measures are in place to reduce or remove the impact to the environment.

6.2 Sources of Contamination

The types of potentially polluting liquids retained at site are as follows:

- Diesel fuel for the generator / site plant – high hazard potential
- Lubricating, brake or coolant fluids associated with site vehicles or other site plant - high hazard potential
- Flocculent used to settle solids in the thickening tank – low hazard potential (See Section 5.3)
- Process water in the WPP, thickener / clarifier, clarified water storage tank – low hazard potential (see Section 5.3)

Accident Scenarios

Failure of the fuel tank, fuel lines or components containing fuel due to damage incurred during an accident leaking onto site roads, open ground, quarry excavations or material stockpiles at site.

Failure of the brake, lubricating or coolant lines or components containing contaminating liquids due to damage incurred during an accident leaking onto site roads, open ground, quarry excavations or material stockpiles at site.

Failure of the brake, lubricating or coolant lines or components containing contaminating liquids due to damage incurred during an accident leaking onto site roads, open ground, quarry excavations or material stockpiles at site.

Failure of the Flocculent Storage tank or feed lines due to damage incurred caused by a vehicle colliding with the tank or metering apparatus or container storing the tank.

Failure of various sumps or vessels and feed lines in the WPP, the thickener tank or the clarified water storage tank due to collision by a vehicle or accidental damage to the buried pipework that connects the WPP to the thickener / storage tanks during excavation.

6.3 Spillage Pathways

The ground in the vicinity of the sources of concern is anticipated to consist of in-situ drift deposits (likely alluvial silt overlain by compacted hardstanding or a concrete slab directly below the WPP itself). Elsewhere on site the ground may consist of in-situ sand and gravels overlain by a compacted hardstanding as appropriate.

Liquids may seep into the underlying ground (surface spillages or leaks from buried pipework) or flow overland to topographical low points. Spillages on the ground may flow across impermeable strata (on the surface or subsurface) such as silt or clay and then seep into permeable ground at a location distant from the initial point of spillage. Spillages that enter the central quarry dewatering lagoon may be actively pumped from there into the adjacent Gransmoor Drain. The water in the Central Dewatering Lagoon is considered to be in contact with groundwater and spillages in that lagoon could enter the groundwater via that pathway.

6.4 Receptors

Contamination may reach groundwater located in permeable strata in the superficial draft deposits via seepage through the ground i.e. the Secondary A Aquifer. This is considered to be a high-risk receptor.

The Gransmoor Drain is considered by DEFRA to have 'moderate' ecological status and 'moderate' Physico-Chemical Quality due to upstream agricultural impacts. This receptor is still considered to be a high-risk receptor.

6.5 Risk Assessment and Risk Minimisation

All vehicles will be subject to a strict preventative maintenance regime to ensure optimum performance and minimisation of accidental leaks of contaminating liquids. All vehicles will be subject to a visual inspection at the beginning and close of each day to identify any leaks or spills from the machine itself or on the ground where it has been parked or operating.

Where it is necessary for more than one vehicle to operate in the same area at once, particular care will be taken to prevent collision by use of appropriate signage, 2-way communications, work planning and oversight by the site manager. Where possible all vehicles will carry with them a spill kit or have easy, direct access to a spill kit at the site offices or be in close communications with site personnel who can deploy a spill kit in the event of an accident.

The thickener tank is positioned between the silt dewatering lagoons and the site offices / water storage tanks and aggregate storage bays, and is therefore at low risk of accidental collision. The storage tanks are enclosed between the site offices / storage container and the carpark and therefore shielded from collision by large plant. The generator is located in a secure metal container which is internally bended to at least 110% of the generator fuel tank.

Only vehicles authorised to operate in the vicinity of the WPP will do so and be driven by competent, appropriately trained staff. Vehicles need only attend to the material stockpiles and feed hopper which are physically distant from the main WPP body that contains the process water. The likelihood of a vehicle colliding with the WPP is very low.

The position of the underground services connecting the WPP to the thickener and storage tanks will be marked on site and on a plan, which will be reviewed prior to commencement of any intrusive works in the

vicinity. If works are necessary in the vicinity of the buried pipework their exact location will be determined and marked on the ground prior to works commencing. During such works a supervising person will observe the operation of the excavator to ensure they do not disturb the services and halt work immediately if there is any concerns or observable damage.

All surface water bodies will be inspected on a minimum daily basis for the presence of hydrocarbon or other liquid contamination. This may be evident by an oily sheen or unusual discoloration of the water. If identified pumping to and from that water body must cease immediately until the cause can be established and addressed. Containment booms and adsorbent materials will be stored near to the central quarry dewatering lagoon in the event they need to be deployed at short notice when a spillage occurs or if one is identified. Any booms / absorbent materials used to contain a spillage will be disposed of at an off-site appropriately permitted facility.

6.6 Emergency Procedures

In the event of a collision or any kind of damage incurred to a vehicle or site plant, the vehicle will cease operation immediately. The safety / health of all persons involved is a priority and any emergency care will be administered first i.e. medical assistance, calling fire service to extinguish fire / free trapped individuals, call the police if criminal act is considered to be a factor.

When safe to do so the extent of any contamination will be assessed. In addition to any fuel or liquids spilt from the vehicles, the Operator may also need to manage contaminated water or other fire-fighting residues that may have accumulated. The vehicle or plant in question will remain in its location to prevent spreading the contamination elsewhere on site. If it is necessary to move the vehicle to make repairs or make the area safe, it should only be moved the minimum distance required and to a location where any further spillages can be satisfactorily contained. The vehicle should not be removed from site until all the contaminating liquids have been removed or the risk of further leaks has been minimised. This is to stop contamination of transport vehicles, roads or onward destinations.

If the incident has occurred near to the central quarry dewatering lagoon, any pumping from the lagoon will be halted as soon as is safe to do so. This will prevent transmission of contamination to the Gransmoor Drain.

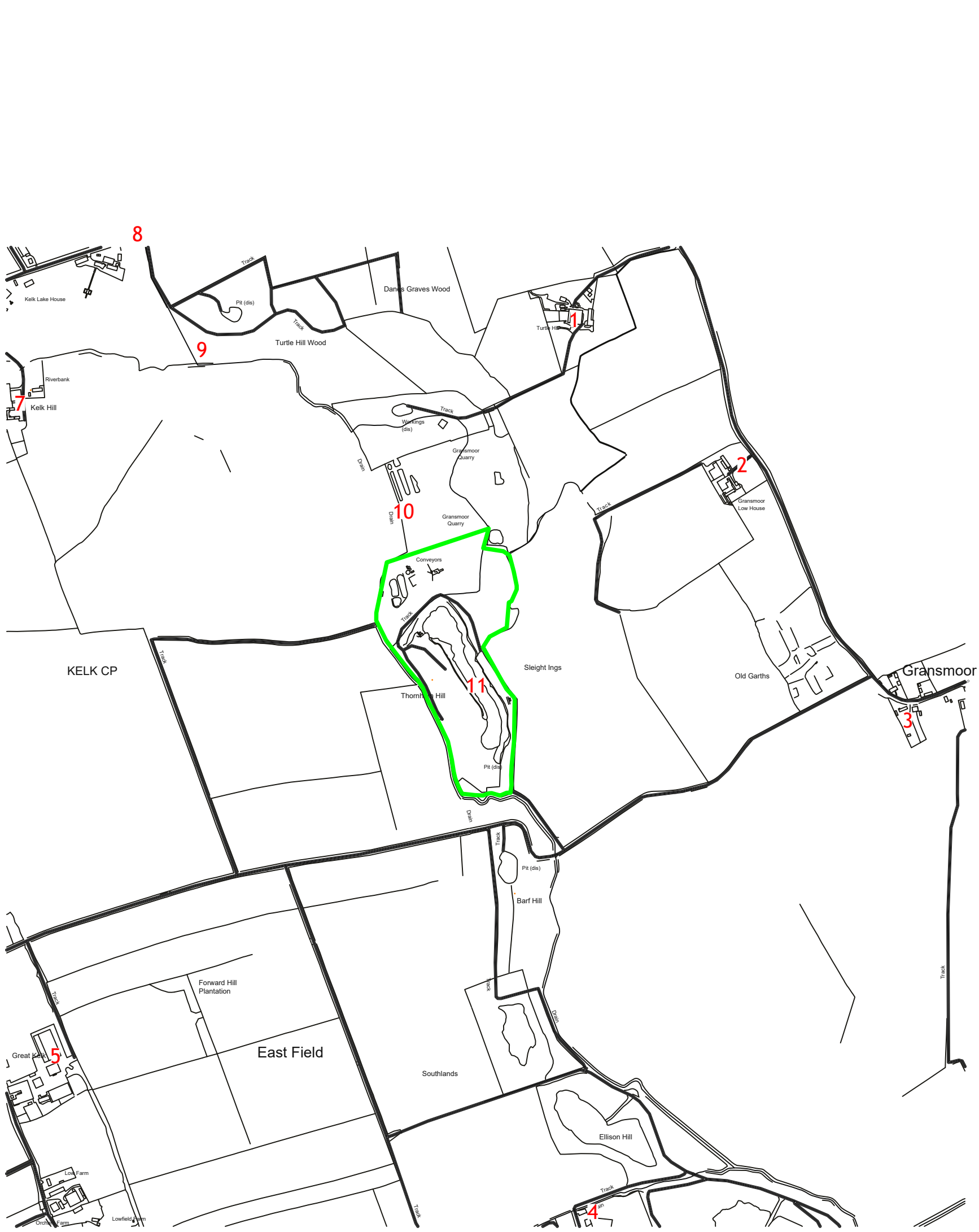
If safe to do so absorbent materials or containment booms will be deployed immediately to prevent liquids entering the lagoon or surrounding ground. It may also be appropriate to construct low bunds from on-site material to hold the liquid or direct it to a location when it can be more easily managed and removed.

Any contaminating liquids, absorbent material or contaminated ground must be removed from the site as a matter of urgency to prevent it spreading further or becoming increasingly difficult to manage. Any such material should be sent to an appropriately permitted facility for treatment or disposal. The condition of the ground and surface water management features in the location of any pollution incidents should be inspected and their decontamination independently verified before the activity recommences i.e. pumping of surface water.

It may be the case that a leak or damage is noted after the vehicle had transited from another area of site. The Operator must make a review of all locations the vehicle has been operation in since the issue had likely occurred and ensure contamination is not more widespread. If so, appropriate mitigation measures must also be engaged at those locations also.

If a hydrocarbon contamination is noted on any of the water bodies within the site, oil absorbent booms will be deployed to soak up the contaminant. Contamination of the banks of the water body may also have occurred and this will also require decontamination or removal and disposal of the surface layer.

APPENDIX A – Drawing referenced 2401-001/D/003: Receptors



Title:
Receptor Locations

Site Location
1 Receptor Location

Client:
W Clifford Watts

Project:
Gransmoor Wash Plant

Drawing Ref:
2401-001/D/003

Scale@A3:
1:10000

Date:
04/06/24

HOOPER-SARGENT LIMITED
Environmental Permitting Consultancy

APPENDIX B – Water Quality Testing Data March 2024

SOCOTEC
Environmental Chemistry

Certificate of Analysis

Client: Clifford Watts Ltd

Project: 24032155

Quote: BEC240334296 V1.2

Project Ref: GR2024

Site: Gransmoor

Contact: Iain Ferguson

Address: Wattshouse, Lancaster Road
Carnaby Industrial Estate
Bridlington
East Yorkshire
YO15 3QY

E-Mail: lainf@wcwatts.co.uk

Phone: 07884 312 267

No. Samples Received: 5

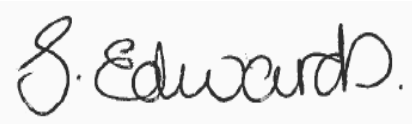
Date Received: 16/03/2024

Analysis Completed: 26/03/2024

Date Issued: 26/03/2024

Report Type: Version 01

This report supersedes any versions previously issued by the laboratory



Reported by Customer Service Co-Ordinator
Samantha Edwards
01283 554 541
Samantha.Edwards@socotec.co.uk

Project Number: 24032155

Client: Clifford Watts Ltd
Date Issued: 26/03/2024
Project Name: GR2024 - Gransmoor

Samples Analysed

Text ID	Sample Reference	Sampling Date	Sample Type	Sample Description
24032155-001	1	13/03/2024 09:20:00	WATER	Ground Water
24032155-002	2	13/03/2024 09:30:00	WATER	Ground Water
24032155-003	3	13/03/2024 09:40:00	WATER	Ground Water
24032155-004	4	13/03/2024 09:50:00	WATER	Ground Water
24032155-005	5	13/03/2024 10:00:00	WATER	Ground Water

Project Number: 24032155

Client: Clifford Watts Ltd
Date Issued: 26/03/2024
Project Name: GR2024 - Gransmoor

UKAS TESTING 1252

Analysis Results

Method Code	Analysis	MDL	Accred.	SOCOTEC Sample ID:	24032155-001	24032155-002	24032155-003	24032155-004	24032155-005
				Sampling Date:	13/03/2024 09:20	13/03/2024 09:30	13/03/2024 09:40	13/03/2024 09:50	13/03/2024 10:00
				Customer ID:	1	2	3	4	5
PHCONDW	Conductivity at 25°C	100 µS/cm	U		691	755	822	650	701
WSLM20	BOD (5 day)	1 mg O2/l	U		<1.0	<1.0* B	1.8* B	<1.0* B	<1.0* B
WSLM11	COD (Settled)	5 mg/l	U		12	26	30	<5	7
WSLM12	Total Alkalinity	2 mg/l	U		241	180	96.7	209	247
WSLM10	Total Suspended Solids	5 mg/l	U		<5	12	19	<5	<5
TOCW	Total Organic Carbon	0.4 mg/l	U		3.84	7.14	9.54	1.07	3.56
TOCW	Dissolved Organic Carbon	0.4 mg/l	U		4.08	7.27	9.75	1.01	3.83
KONENS	Nitrate as N	0.2 mg/l	U		7.4	4.8	0.6	2.6	7.8
KONENS	Ammoniacal Nitrogen as N	0.01 mg/l	U		0.03	0.40	0.09	0.04	0.04
KONENS	Chloride as Cl	1 mg/l	U		33	32	42	27	34
ISEF	Fluoride as F	0.1 mg/l	U		0.2	0.4	0.3	0.3	0.2
ICPMSW (Dissolved)	Arsenic as As	0.001 mg/l	U		<0.001	0.004	0.003	<0.001	<0.001
ICPWATVAR (Dissolved)	Boron as B	0.01 mg/l	U		<0.01	0.04	0.05	<0.01	<0.01
ICPMSW (Dissolved)	Cadmium as Cd	0.00002 mg/l	U		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
ICPWATVAR (Dissolved)	Calcium as Ca	1 mg/l	U		139	123	138	121	139
ICPMSW (Dissolved)	Total Chromium as Cr	0.001 mg/l	U		<0.001	<0.001	<0.001	<0.001	<0.001
ICPMSW (Dissolved)	Copper as Cu	0.001 mg/l	U		<0.001	0.006	0.010	<0.001	<0.001
ICPWATVAR (Dissolved)	Iron as Fe	0.01 mg/l	U		0.01	<0.01	<0.01	<0.01	<0.01
ICPMSW (Dissolved)	Lead as Pb	0.001 mg/l	U		<0.001	<0.001	<0.001	<0.001	<0.001
ICPWATVAR (Dissolved)	Magnesium as Mg	1 mg/l	U		9	14	13	12	10
ICPMSW (Dissolved)	Manganese as Mn	0.002 mg/l	U		0.027	0.009	0.039	0.028	0.014
ICPMSW (Dissolved)	Mercury as Hg	0.00003 mg/l	U		<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
ICPMSW (Dissolved)	Nickel as Ni	0.001 mg/l	U		0.001	0.002	0.003	<0.001	<0.001
ICPWATVAR (Dissolved)	Phosphorus as P	0.1 mg/l	N		<0.1	<0.1	<0.1	<0.1	<0.1
ICPWATVAR (Dissolved)	Potassium as K	1 mg/l	U		2	11	10	2	2
ICPWATVAR (Dissolved)	Sodium as Na	1 mg/l	U		14	24	27	13	14
ICPWATVAR (Dissolved)	Total Sulphur as SO4	3 mg/l	U		48	168	318	90	51
ICPMSW (Dissolved)	Zinc as Zn	0.002 mg/l	U		<0.002	0.005	0.003	0.003	0.003
TPHFID (SCU)	>C8-C10 (SCU) (EH_CU_1D_Total)	0.01 mg/l	N		<0.01	<0.01	<0.01	<0.01	<0.01
	Total TPH >C8-C40 (SCU) (EH_CU_1D_Total)	0.01 mg/l	N		0.01	0.04	0.05	0.01	0.02
	>C10-C12 (SCU) (EH_CU_1D_Total)	0.01 mg/l	N		<0.01	<0.01	<0.01	<0.01	<0.01
	>C12-C16 (SCU) (EH_CU_1D_Total)	0.01 mg/l	N		<0.01	<0.01	<0.01	<0.01	<0.01
	>C16-C21 (SCU) (EH_CU_1D_Total)	0.01 mg/l	N		<0.01	<0.01	<0.01	<0.01	<0.01
	>C21-C35 (SCU) (EH_CU_1D_Total)	0.01 mg/l	N		<0.01	0.04	0.04	<0.01	<0.01
PAHMSW	Acenaphthene	0.01 µg/l	U		<0.01* B	<0.01* B	0.01* B	<0.01* B	<0.01* B
	Acenaphthylene	0.01 µg/l	U		<0.01	<0.01	<0.01	<0.01	<0.01
	Anthracene	0.01 µg/l	U		<0.01	<0.01	<0.01	<0.01	<0.01
	Benzo[a]anthracene	0.01 µg/l	U		<0.01	0.24	0.41	<0.01	<0.01
	Benzo[a]pyrene	0.01 µg/l	U		<0.01	0.29	0.53	<0.01	<0.01
	Benzo[b]fluoranthene	0.01 µg/l	U		<0.01	0.34	0.62	<0.01	<0.01
	Benzo[g,h,i]perylene	0.01 µg/l	U		<0.01	0.16	0.29	<0.01	<0.01
	Benzo[k]fluoranthene	0.01 µg/l	U		<0.01	0.13	0.24	<0.01	<0.01
	Chrysene	0.01 µg/l	U		<0.01	0.22	0.38	<0.01	<0.01
	Coronene	0.01 µg/l	U		<0.01	<0.01	<0.01	<0.01	<0.01
	Dibenzo[a,h]anthracene	0.01 µg/l	U		<0.01	<0.01	<0.01	<0.01	<0.01
	Fluoranthene	0.01 µg/l	U		<0.01	0.39	0.77	0.03	<0.01
	Fluorene	0.01 µg/l	U		<0.01	<0.01	<0.01	<0.01	<0.01
	Indeno[1,2,3-cd]pyrene	0.01 µg/l	U		<0.01	0.18	0.33	<0.01	<0.01
	Naphthalene	0.01 µg/l	U		<0.01	<0.01	<0.01	<0.01	<0.01
	Phenanthrene	0.01 µg/l	U		<0.01	0.06	0.13	<0.01	<0.01
	Pyrene	0.01 µg/l	U		<0.01	0.37	0.74	<0.01	<0.01
	Total PAH 16	0.16 µg/l	U		<0.16	2.44	4.51	0.18	<0.16
PHEHPLCUV	Phenol	0.05 mg/l	U		<0.05	<0.05	<0.05	<0.05	<0.05
	Methylphenols	0.05 mg/l	U		<0.05	<0.05	<0.05	<0.05	<0.05
	Dimethylphenols	0.05 mg/l	U		<0.05	<0.05	<0.05	<0.05	<0.05
	Trimethylphenols	0.05 mg/l	U		<0.05	<0.05	<0.05	<0.05	<0.05
	Total Phenols	0.2 mg/l	U		<0.20	<0.20	<0.20	<0.20	<0.20
VOCHSAW	Benzene	1 µg/l	U		<1	<1	<1	<1	<1
	Ethylbenzene	0.5 µg/l	U		<0.5	<0.5	<0.5	<0.5	<0.5
	m and p-Xylene	1 µg/l	U		<1	<1	<1	<1	<1
	o-Xylene	1 µg/l	U		<1	<1	<1	<1	<1
	Toluene	1 µg/l	U		<1	<1	<1	<1	<1

Project Number: 24032155

Client: Clifford Watts Ltd
Date Issued: 26/03/2024
Project Name: GR2024 - Gransmoor

Deviating Sample Report

Sample Reference	Text ID	Method Code	Incorrect Container	Incorrect Label	Headspace	Incorrect/No Preservative	No Sampling Date	Holding Time
1	24032155-001	**PHCONDW**						✓
1	24032155-001	**WSLM20**						✓
2	24032155-002	**PHCONDW**						✓
2	24032155-002	**WSLM20**						✓
3	24032155-003	**PHCONDW**						✓
3	24032155-003	**WSLM20**						✓
4	24032155-004	**PHCONDW**						✓
4	24032155-004	**WSLM20**						✓
5	24032155-005	**PHCONDW**						✓
5	24032155-005	**WSLM20**						✓

Analysis Method

Method Code	Method Description	Analysis Method
ICPMSW (Dissolved)	Arsenic (Diss.) in Water by ICPMS	Filtered
ICPMSW (Dissolved)	Cadmium (Diss.) in Water by ICPMS	Filtered
ICPMSW (Dissolved)	Chromium (Diss.) in Water by ICPMS	Filtered
ICPMSW (Dissolved)	Copper (Diss.) in Water by ICPMS	Filtered
ICPMSW (Dissolved)	Lead (Diss.) in Water by ICPMS	Filtered
ICPMSW (Dissolved)	Manganese (Diss.) in Water by ICPMS	Filtered
ICPMSW (Dissolved)	Mercury (Diss.) in Water by ICPMS	Filtered
ICPMSW (Dissolved)	Nickel (Diss.) in Water by ICPMS	Filtered
ICPMSW (Dissolved)	Zinc (Diss.) in Water by ICPMS	Filtered
ICPWATVAR (Dissolved)	Boron (Diss.) in Water by ICPOES	Filtered
ICPWATVAR (Dissolved)	Calcium (Diss.) in Water by ICPOES	Filtered
ICPWATVAR (Dissolved)	Iron (Diss.) in Water by ICPOES	Filtered
ICPWATVAR (Dissolved)	Magnesium (Diss.) in Water by ICPOES	Filtered
ICPWATVAR (Dissolved)	Phosphorus (Diss.) in Water by ICPOES	Filtered
ICPWATVAR (Dissolved)	Potassium (Diss.) in Water by ICPOES	Filtered
ICPWATVAR (Dissolved)	Sodium (Diss.) in Water by ICPOES	Filtered
ICPWATVAR (Dissolved)	Total Sulphur as SO4 (Diss.) in Water	Filtered
ISEF	Fluoride by ISE	Unfiltered
KONENS	Ammoniacal Nitrogen as N	Filtered
KONENS	Chloride by Colorimetry	Filtered
KONENS	Nitrate as N by Colorimetry	Filtered
PAHMSW	17 PAHs (inc. Coronene) by GCMS	Unfiltered
PHCONDW	Electrical Conductivity @ 25°C	Unfiltered
PHEHPLCUV	Phenols Suite by HPLC UV	Unfiltered
TOCW	DOC: Dissolved Organic Carbon	Filtered
TOCW	TOC: Total Organic Carbon	Unfiltered
TPHFID (SCU)	TPH (>C8-C35) Banded plus (>C8-C40) Total with SCU	Unfiltered
VOCHSAW	BTEX by GCMS	Unfiltered

WSLM10	TSS: Total Suspended Solids	Unfiltered
WSLM11	COD: Chemical Oxygen Demand (Settled)	Unfiltered
WSLM12	Total Alkalinity as CaCO3	Unfiltered
WSLM20	BOD: Biological Oxygen Demand (Total)	Unfiltered

Result Report Notes

Letters alongside results signify that the result has associated report notes.
The report notes are as follows:

Letter	Note
A	Due to the matrix of the sample the laboratory has had to deviate from our standard protocols to be able to process the sample and provide a result. Where applicable the accreditation has been removed and this should be taken into consideration when utilising the data.
B	The QC associated with this result has not wholly met the QMS requirements, the accreditation has therefore been removed. However, the Laboratory has confidence in the performance of the method as a whole and that the integrity of the data has not been significantly compromised.
C	Due to matrix interference, the internal standard and/or surrogate has not met the QMS requirements. This should be taken into consideration when utilising the data.
D	A non-standard volume or mass has been used for this test which has resulted in a raised detection limit.
E	Due to the parameter value being beyond our calibration range (and following the maximum size of dilution allowed, where applicable), the result cannot be quantified and as such the result will appear as a greater than symbol (>) with the accreditation removed. This data should be used for indicative purposes only.
F	Based on the sample history, appearance and smell a dilution was applied prior to testing. Unfortunately, the result is either above (>) or below (<) our calibration range. Results above our calibration range have accreditation removed. The data should be used for indicative purposes only.
G	The day 5 oxygen reading was below the capability of the instrument to detect, and therefore the calculated BOD has been reported unaccredited for guidance purposes only.

HWOL Acronym Key

Acronym	Description
HS	Headspace Analysis
EH	Extractable Hydrocarbons - i.e everything extracted by the solvent(s)
CU	Clean up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
+	Operator to indicate cumulative e.g. EH_CU+HS_1D_Total

Project Number: 24032155

Client: Clifford Watts Ltd
Date Issued: 26/03/2024
Project Name: GR2024 - Gransmoor

Additional Information

This report refers to samples as received. SOCOTEC UK Ltd takes no responsibility for accuracy or competence of sampling by others.

Results within this report relate only to the samples tested.

The accreditation codes are as follows:

U = UKAS accredited analysis
M = MCERT accredited analysis
N = Unaccredited analysis

Any accreditation marked with ^ signify results are reported on a dry weight basis of 105 ° C.

All Air Dried and Ground Samples (ADG) are oven dried at less than 35° C.

This report shall not be reproduced except in full, without written approval of the laboratory.

Opinions and interpretations given are outside the scope of our UKAS accreditation.

Any results marked with * are not covered by our scope of UKAS accreditation. If applicable, further report notes have been added.

Any solid samples where the Major Constituents are not one of the following (Sand, Silt, Clay, Made Ground) are not one of our accredited matrix types.

Any samples marked with a tick in the deviant table is deviant for the specific reason.

Any samples reported as IS, NA, ND mean the following:

IS = Insufficient Sample to complete analysis
NA = Sample is not amenable for the required analysis
ND = Results cannot be determined

Items listed with a 'SUB' method code prefix have been carried out by another SOCOTEC department or by an external subcontracted laboratory.

Our deviating sample report does not include deviancy information for Subcontracted analysis. Please see the report from the subcontracted lab for information regarding any deviancies for this analysis.

Summaries of analysis methods are available upon request.

End of Certificate of Analysis