

Hampshire Water Transfer and Water Recycling Project

Environmental Statement – Appendix 19.12 Water Recycling Plant site Sustainable Drainage System dispersion modelling

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The Southern Water logo graphic consists of three stylized, wavy blue lines of varying lengths, positioned to the right of the text 'Southern Water.'

REPORT

HWTWRP – Proposed Water Recycling Plant SuDS Outfall Discharge

Conceptual Site Model (CSM) and Dispersion Modelling
Factual Report

Client: Southern Water

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1 Introduction

1.1 Purpose of this report

The purpose of this report is to present potential water quality effects associated to discharges from the Sustainable Drainage System (SuDS) proposed at the Water Recycling Plant (WRP). The emerging SuDS design includes a dedicated surface water collection system which would discharge to the Hermitage Stream via a new outfall. The Hermitage Stream is a tidally influenced watercourse flowing along the eastern boundary of the WRP site into Langstone Harbour. The indicative proposed outfall to the Hermitage Stream is located upstream of the Harts Farm Way road bridge at National Grid Reference (NGR) 470374 105664.

A Conceptual Site Model (CSM) has been developed which considers potential sources of pollution on the WRP site during operation and potential pathways to the Hermitage Stream. This report does not consider construction impacts which are described separately in the preliminary Outline Construction Environmental Management Plan (CEMP). Dispersion modelling has also been completed to assess potential changes to salinity within the Hermitage Stream as a result of freshwater discharges from the outfall.

This factual report does not include interpretation of effects and impacts, this is to be considered further in the Winter 2024/5 Consultation Technical Report and Environmental Statement (ES).

2 Proposed Water Recycling Plant - Site setting

The WRP site covers approximately 63,705m² and is located on a former dilute and disperse landfill. The site is currently covered with soft ground with rainfall percolating into the ground, mixing with the domestic landfill waste and then discharging to adjacent water bodies in an uncontrolled manner.

The site is located adjacent to a number of internationally and nationally significant nature conservation designations, including:

- Chichester and Langstone Harbours Ramsar Site and Special Protection Area (SPA). The SPA designation relates to the presence of particular bird species. The SPA is identified as being sensitive to recreational activities.
- Solent Maritime Special Area of Conservation (SAC). The primary reasons for the site as a SAC relate to the estuarine system, grasses and Atlantic salt meadows.
- Langstone Harbour Site of Special Scientific Interest (SSSI). The citation of the site as a SSSI includes the presence of saltmarsh, grasses and bird species.

The WRP site will include a main process building, administration building, chemical storage units, holding tanks, further plant and equipment and parking.

3 Outline WRP SuDS design

A meeting was held with the SuDS design team on 18th September 2024 to understand the design principles.

An emerging SuDS design has been developed utilising the Simple Index Approach tool. The Simple Index Approach is a risk-based method for selecting appropriate SuDS for the treatment of surface water runoff. The approach, as outlined in CIRIA C753 'The SuDS Manual' (2015), assigns pollution hazard indices for a given land use based on the expected pollution hazard level. The pollutants considered are total suspended solids (TSS), metals and fuel related hydrocarbons. Suitable SuDS features are then selected to achieve a combined mitigation index score greater than the pollution hazard index and hence indicating the pollution has been suitably managed.

At the time of drafting this report, the emerging SuDS design has not been consulted on with key regulators, such as the Environment Agency and Natural England, however this is proposed as a next step.

The tool has considered the highest possible risk hazard index of 'Sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured'. The aggregated surface water pollution mitigation index has been based upon the use of a combination of the following systems:

- Filter strips.
- Swales.
- A detention basin.

Additional mitigation measures include:

- Pervious paving (loose gravel) overlying areas of an impermeable surface (hard standing / geomembrane or similar).
- Bioretention systems and filter strips which will be underlain by permeable surfaces.
- Check dams to slow down flows and assist with particulate settlement.
- Geomembrane lining a detention basin and swales.
- Concrete kerbs/sleeping policeman will form a continuous sealed bund around parts of the concrete road, falling to a gully / linear type drain within the chemical/fuel delivery areas. This will then drain to the foul pumping station which pumps to the foul sewerage network i.e. to Budds Farm waste treatment works inlet. These features will be appropriately sized to account for climate change and storm events.
- Skimmers and interceptors (including the car parking area, chemical delivery bays and fuel delivery areas).
- An interlocking system whereby the drainage from the bund which normally drains to the foul pumping station within the areas where fuel and chemical deliveries are taking place will be diverted to an offline interceptor tank so if any spillages occur these are captured. Once the delivery is complete and the delivery hoses have been washed out the drainage is diverted back to the normal route. The potential for human error associated with this mechanism is negligible as the system is controlled by a key card which initiates the switch over between discharging to foul drainage into the offline interceptor tank. As it is a closed system at no time will rainwater runoff / or chemical spillages in this area enter the outfall into the Hermitage Stream.

The addition of hardstanding and impermeable membranes during the construction of the WRP will alter the means by which ground gas is presently venting to atmosphere. It is proposed that pressure relief systems will be incorporated into the Proposed Development to provide a means of gas venting.

The results of the Simple Index Approach are summarised in **Table 3-1**. The results show that the components (filter strips, swales and a detention basin) are likely to have a very high mitigation potential for reducing pollutant levels in the runoff and should be sufficient for the proposed land use.

Table 3-1: Simple Index Approach Results

Parameter	Suspended Solids score	Metals score	Fuel related hydrocarbons score
Combined Pollution Mitigation Indices for the Runoff Area	0.90	0.95	>0.95
Sufficiency of Pollution Mitigation Indices	Sufficient	Sufficient	Sufficient

The maintenance of the SuDS system during the operation of the WRP site follows the standard practice as described in The SuDS Manual (2015). Specifically: Tables 15.1 (filter strips), 17.1 (swales), 18.3 (bioretention systems) and 20.15 (pervious pavements). These tables provide guidance on the operation and maintenance requirements for each of the control measures set out above. They include the required action (i.e. removal of debris, grass cutting, inspections etc) and recommended frequency (i.e. weekly, monthly, yearly or as required).

Further information on the SuDS design and maintenance protocols will be presented in the Flood Risk Assessment (FRA) for the WRP site which will form part of the Environmental Statement.

4 Site operation and chemical storage

As part of the operation of the WRP site a number of chemicals are required to complete water processing and to support its routine operation. These chemicals along with associated potential environmental risks are summarised in **Table 4-1**.

Table 4-1: Potential Sources of Pollution Related to the Operation of the WRP

Chemical / Potential Sources of Pollution	Delivery Method	Environmental Hazard Posed*	Location and relevant mitigation
Hydrochloric Acid based on 36% general use.	Tanker	pH can have a hazardous effect	Delivered to an area with the interlocking system. Under normal conditions the runoff from rainfall will fall to foul drainage but when the system is engaged it is forced into a separate offline interceptor tank.
Citric Acid		Not regarded as dangerous to the environment. However, large or frequent spills may have an effect.	
Sodium Hypochlorite		Toxicity: hazard code H400, hazard statement: very toxic to aquatic life, hazard class: hazardous to the aquatic environment, acute toxicity and hazard category 1.	
Sodium bisulfite		Toxicity: Not classified as data is not available. Identified by Sigma Aldrich as potentially being harmful to aquatic life.	
Sodium Hydroxide 20%		pH can have a hazardous effect to the aquatic environment.	
Hydrated Lime		pH can have a hazardous effect to the aquatic environment.	
Hydrogen Peroxide based on 30%		Toxicity: Harmful to aquatic organisms may cause long-term adverse effects in the aquatic environment.	
Diesel		Toxicity: hazard code H411, hazard statement: toxic to aquatic life with long lasting effects, hazard class: hazardous to the aquatic environment, chronic toxicity and hazard category 2.	
Sodium dodecyl sulfate	Intermediate Bulk Container (IBC) /Drum	Toxicity: toxic to the aquatic environment.	Potentially occasionally used as rock salt on the road system.
Vitec 3000		May be harmful to aquatic life if large volumes are released into the aquatic environment.	
Tetrasodium EDTA		Not considered harmful to aquatic organisms	
Sodium Chloride	-	Not classified	Potentially occasionally used as rock salt on the road system.
AdBlue	From site vehicles	Not classified as hazardous for environment.	Car parking. SuDS design includes a number of measures to capture chemicals, including interceptors and skimmers (see Section 3)
Lubricating Oil		Toxicity: hazard code H413, hazard statement: may cause long lasting harmful effects to aquatic life, hazard class: hazardous to the aquatic environment, chronic toxicity and hazard category 4.	
Petrol		Toxicity: hazard code H411, hazard statement: toxic to aquatic life with long lasting effects, hazard class: hazardous to the aquatic environment, chronic toxicity and hazard category 2.	
Diesel		Toxicity: hazard code H411, hazard statement: toxic to aquatic life with long lasting effects, hazard class: hazardous to the aquatic environment, chronic toxicity and hazard category 2.	
Washing up liquid (trade grade)		Toxicity: hazard code H400, hazard statement: very toxic to aquatic life, hazard class: hazardous to the aquatic environment, acute toxicity and hazard category 1.	

Chemical / Potential Sources of Pollution	Delivery Method	Environmental Hazard Posed*	Location and relevant mitigation
		hazard code H411/H412, hazard statement: toxic/harmful to aquatic life with long lasting effects, hazard class: hazardous to the aquatic environment, chronic toxicity and hazard category 2/3.	
Antifreeze		Not regarded as dangerous for the environment	
Lithium-Ion batteries	Electric Vehicles	Assume its contents could have an adverse effect	
Nickel-metal hydride batteries	Hybrid Vehicles		

*Source: reagent website, nexchem, thermofisher scientific, green chem – adblu, environment agency (Conocophillips) and sigmaaldrich websites (accessed, October 2024). Where available a hazard statement code has been provided for reference.

5 Approach to assessment of risk to surface waters

Pollution risk and associated environmental impacts can be assessed through the identification of Potential Pollutant Linkages (PPLs). The assessment involves the development of a CSM which describes the relationship between onsite potential sources of pollution (and pollutants), potential receptors to such pollution and anticipated pathways between the two. Where all three (source-pathway-receptor linkage) are present or considered to be present, they are described as a PPL. This is considered a suitable mechanism to determine the potential risks posed to the Hermitage Stream as developing a site-specific CSM in this instance allows the sensitivity of the receptors to be considered along with the actual plausibility of an impact occurring.

The potential identified sources are discussed in **Table 5-1** and the potential receptors and pathways are discussed in **Table 5-2**.

5.1 Potential pollution sources

Table 5-1: Potential Onsite Sources

Potential Source	Associated Pollutants
Chemicals being stored within the Interlocking System Location	Hydrochloric Acid, Citric Acid, Sodium Hypochlorite, Sodium bisulfite, Sodium Hydroxide 20%, Hydrated Lime, Hydrogen Peroxide, Diesel, Sodium dodecyl sulfate, Vitac 3000 and Tetrasodium Ethylenediaminetetraacetic acid (ETDA)
Use of Road Salt	Sodium Chloride and potentially other metals
Pollutants which may be present or used in the car parking area	Sodium Chloride, AdBlue, Lubricating Oil, Petrol, Diesel, Washing up liquid (trade grade), Antifreeze, Lithium Ion and Nickel-metal hydride batteries
Overland surface water runoff from other areas i.e. rainwater.	Suspended solids such as silt.

Overland surface water runoff has the potential to dilute the brackish water present within Hermitage Stream. This has been considered separately and is discussed in **Section 5.5**.

5.2 Potential receptors and pathways

Table 5-2: Potential Receptors and Pathways

Receptors	Pathways
Surface Waters – Hermitage Stream and downstream water bodies (e.g. Langstone Harbour)	Lateral surface water runoff into the outfall
Ecologically sensitive receptors	Via potential impacts to water bodies (e.g. changes to water quality, salinity).

5.3 Summary of potential pollutant linkages

The presence of the interlocking system means that the circumstances that a PPL occurs is improbable based on the isolation of the system from the wider surface water management system. There is an interruption in the PPL due to the absence of a pathway into the Hermitage Stream and downstream water bodies therefore it has not been considered further.

The overland surface water runoff from other areas will be intercepted by the proposed SuDS i.e. removal of suspended solids. Additional mitigation such as geo membranes etc. will prevent in some instances mixing with the underlying landfill waste prior to discharge. If the rainwater does mix with the underlying landfill waste, it will not be surface water runoff and will be contributing to the underlying groundwater table. This has not been considered further as the focus of this risk assessment is the risk posed by surface water

runoff. The runoff from the overland systems which are underlain by an impermeable membrane or hardstanding will constitute rainwater only with no additional pollutants of concern therefore it is considered that there is an interruption of the PPL due to the source being rainfall and the removal of suspended solids via the proposed mitigation. Therefore, this runoff has not been considered further.

5.4 Conceptual Site Model and Qualitative Risk Assessment

The CSM and Qualitative Risk Assessment are presented in **Table 5-3**. Definitions of probability and consequence have been based on guidance in CIRIA 552 (2001) and summarised in **Appendix A**.

A combination of probability and consequences produces a risk level based on the risk evaluation and likely action required. The pollution risk, can be defined using the risk matrix which can be found in **Appendix A**. The limitations associated with the assessment are also provided in **Appendix A**.

Table 5-3: Conceptual Site Model

Source	Pathway	Receptor	Potential Consequence of Pollutant Linkage	Likelihood of Pollutant Linkage	Risk Classification	Justification
Use of Road Salt	Lateral surface water runoff into the outfall and via waterbodies to the Ecological sensitive areas	Surface Waters – Hermitage Stream and downstream water bodies	Minor	Low Likelihood	Very Low	<p>The use of road salt is likely to be isolated to those periods of icy weather therefore any increased loading to the environment is likely to be limited in timeframe.</p> <p>The surface water draining off the site outfalls to a brackish environment therefore this could temporarily increase the salt loading to the immediate environment albeit the proportion once diluted will be minimal. As described in the SuDS manual planning will be tolerant to salt. Any metals that might be within the salt will be removed by the SuDS design as per the Simple Index Approach.</p> <p>The presence of road salt is considered to be of minor potential consequence as it may cause slight pollution to a non-sensitive water resource.</p> <p>The low likelihood of it occurring is based on although there may be a pollutant linkage present based on the proposed mitigation measures there is no certainty that an impact will occur.</p>
		Ecologically sensitive receptors	Minor	Low Likelihood	Very Low	<p>The use of road salt is likely to be isolated to those periods of icy weather therefore any increased loading to the environment is likely to be limited in timeframe. The citations for the ecological designations identify that the environment, grasses and bird species are prevalent. The presence of diluted road salt once passed into the areas of designated ecological importance would not cause a significant change to population densities in the environment or in any ecosystem especially given its already saline nature hence the consequence of effect being minor.</p>

Source	Pathway	Receptor	Potential Consequence of Pollutant Linkage	Likelihood of Pollutant Linkage	Risk Classification	Justification
						The low likelihood of it occurring is based on although there may be a pollutant linkage present based on the proposed mitigation measures there is no certainty that an impact will occur.
Pollutants which may be present or used in the car parking area	Lateral surface water runoff into the outfall and via waterbodies	Surface Waters – Hermitage Stream and downstream water bodies	Minor	Low Likelihood	Very Low	<p>The proposed SuDS is designed to remove suspended solids, fuel related hydrocarbons and metals as indicated in the calculation of the Simple Index Approach. It is proposed that a separator is installed within the car parking area which will provide further mitigation to limit the possibility of pollutants reaching the surface waters. The vehicles parked within the WRP car park will be limited to approximately 20 and vehicles will be a modern/serviced fleet meaning that the potential for a leak in relation to these is unlikely to occur.</p> <p>The presence of leaked pollutants from the car park area is considered to be of minor potential consequence as it may cause slight pollution to a non-sensitive water resource.</p> <p>Although there may be a pollutant linkage present based on the proposed mitigation measures there is no certainty that an impact will occur, therefore a low likelihood of it occurring can be assumed.</p>
		Ecologically sensitive receptors	Minor	Low Likelihood	Very Low	<p>The proposed SuDS is designed to remove suspended solids, fuel related hydrocarbons and metals as indicated in the calculation of the Simple Index Approach. It is proposed that a separator is installed within the car parking area which will provide further mitigation in relation to potential impacts which may be caused to sensitive habitats/species and associated designations. The vehicles parked within the WRP car park will be limited to approximately 20 and vehicles will be a modern/serviced fleet meaning that the potential for a leak in relation to these is unlikely to occur.</p> <p>The presence of leaked pollutants from the car park area is considered to be of minor potential consequence as by the time it has reached the ecological designated receptors it would not cause a significant change to population densities in the environment or in any ecosystem hence the consequence of effect being minor.</p>

Source	Pathway	Receptor	Potential Consequence of Pollutant Linkage	Likelihood of Pollutant Linkage	Risk Classification	Justification
						The low likelihood of it occurring is based on although there may be a pollutant linkage present based on the proposed mitigation measures there is no certainty that an impact will occur.

5.5 Assessment of potential salinity effects within the Hermitage Stream

The outline SuDS design will capture rainfall that already falls on the site, however the SuDS will result in an increase in impermeable area and will concentrate surface water flows to a single point discharge. The proposed SuDS discharge will be at a lower salinity than that in the receiving brackish water in the Hermitage Stream given it will largely be made up of rainfall. The discharge location into the Hermitage Stream is within the tidal limit therefore this location would be expected to experience a dynamic pattern of differences in salinity concentrations over the tidal cycle and differences in rainfall patterns and therefore flows in the Hermitage Stream.

To assess the potential changes associated with the discharge of surface water into the Hermitage Stream, modelling using a Mike 21 hydraulic model was undertaken for both neap and spring tides. Further information on the Mike 21 model and associated calibration is provided in the '*Eastney Long Sea Outfall - dispersion modelling for selected chemicals identified in preliminary H1 screening assessment*' report (Royal HaskoningDHV, 2024).

5.5.1 Dispersion modelling – input parameters

The input parameters for the model are set out below in **Table 5-4**.

Table 5-4: Model input parameters

Parameter	Model input
Outfall – discharge location coordinates	NGR 470374 105664
Outfall – discharge location height	Above Mean High Water Spring (requirement for outfall not to be tidally locked), i.e. model assumes flow enters above water surface
Outfall – maximum flow	0.09 m ³ /s
Outfall – storm duration	16 hours
Hermitage Stream flow conditions	Q95
Salinity of discharge	0 (freshwater)
Salinity of Hermitage Stream	Varying salinity throughout the simulation (see Figure 5-4)

River flows were assumed to be at Q95 thus representing a theoretical worst case (i.e. lower flows within the Hermitage Stream).

The model simulated seven days of both the spring and neap tidal cycle, following the SuDS discharge in the first day of the simulation once the model has sufficiently 'warmed up' to stabilise water levels and current speeds throughout the domain from their initial conditions and for saline mixing around the SuDS outfall to reach a steady equilibrium due to tidal/freshwater mixing. The timeseries of SuDS discharge was derived from model outputs of a two-year return period storm event. The 960 minute (16 hour) storm duration was adopted for conservatism, based on the highest volume of discharged water across the event. **Figure 5-1** presents all discharge timeseries for the two year return period storm event.

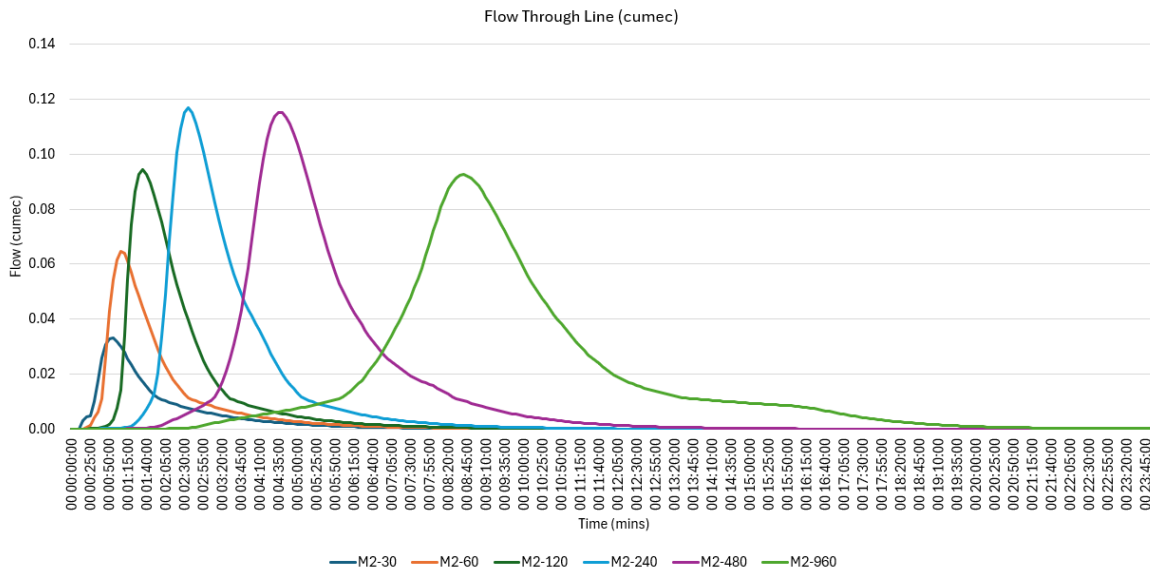


Figure 5-1: 2 year SuDS discharge flow rates (30, 60, 120, 240, 480 and 960 min durations)

Figure 5-2 and Figure 5-3 below illustrate the modelled difference in minimum salinity for neap and spring tides respectively.

5.5.2 Summary of model outputs

The model simulations demonstrate that the most significant change occurs in the main channel during the neap tide simulation, as natural variations in salinity are lower during this period due to the decreased tidal range. The lowest difference in minimum salinity during the neap simulation is -7 PSU just upstream of the confluence with Brockhampton Stream.

During the spring tide simulation, the majority of the difference in minimum salinity occurs along the banks of the Hermitage Stream where the water level is shallow, this is down to -6 PSU along the bank close to the outfall.

For both the neap and spring tide simulations the change in salinity due to the SuDS discharge is contained mostly downstream of the A27 road bridge, apart from small, localised areas >-1 PSU where water depth may be shallow at some points of the simulation.

Overall, the magnitude of change in salinity due to the SuDS discharge, compared with the natural fluctuations in ambient salinity levels throughout the tidal cycle is small, as presented in Figure 5-4 where a timeseries of baseline salinity is extracted from the model in the centre of the channel at the location of the outfall during the neap tide simulation. Beside this, a conservative case has been covered in this scenario, where a low river flow (Q95) is modelled alongside a high SuDS discharge event (2-year storm event).

Difference in maximum salinity due to the additional SuDS discharge is very small (<0.1PSU) so is not discussed further in this section.

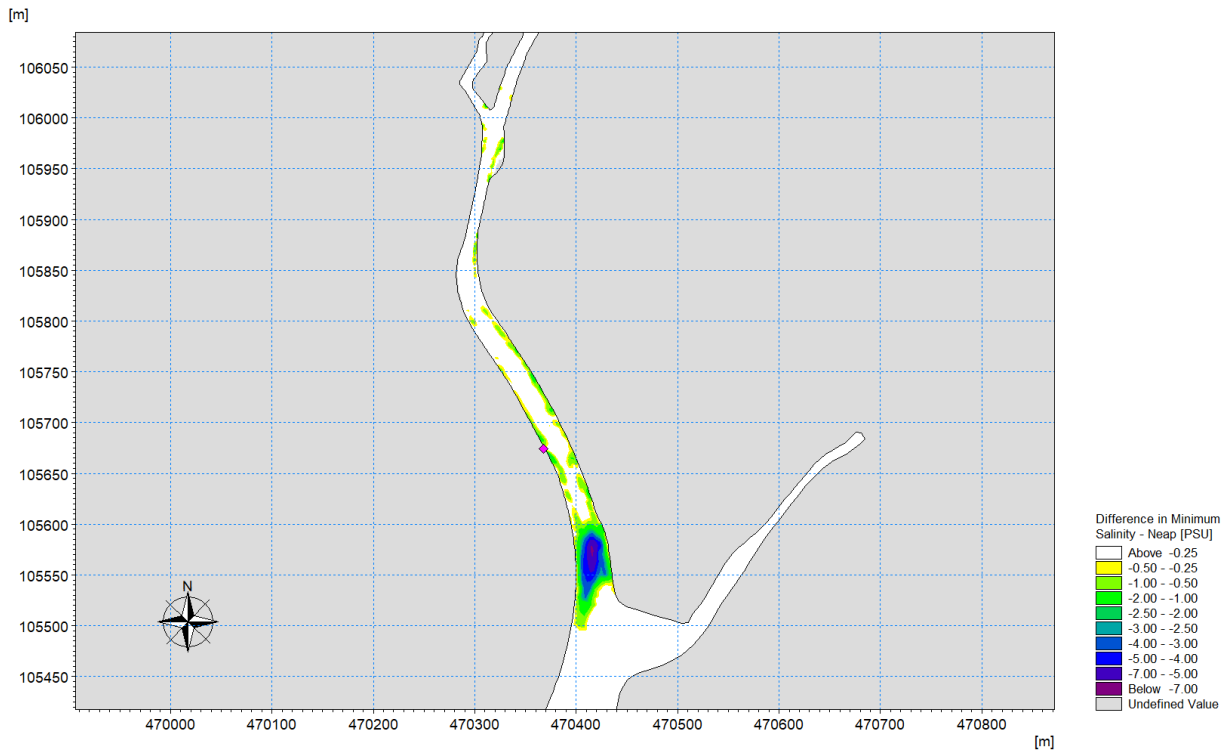


Figure 5-2: Maximum differences in minimum salinity (PSU) neap tidal condition – outfall location represented by pink diamond

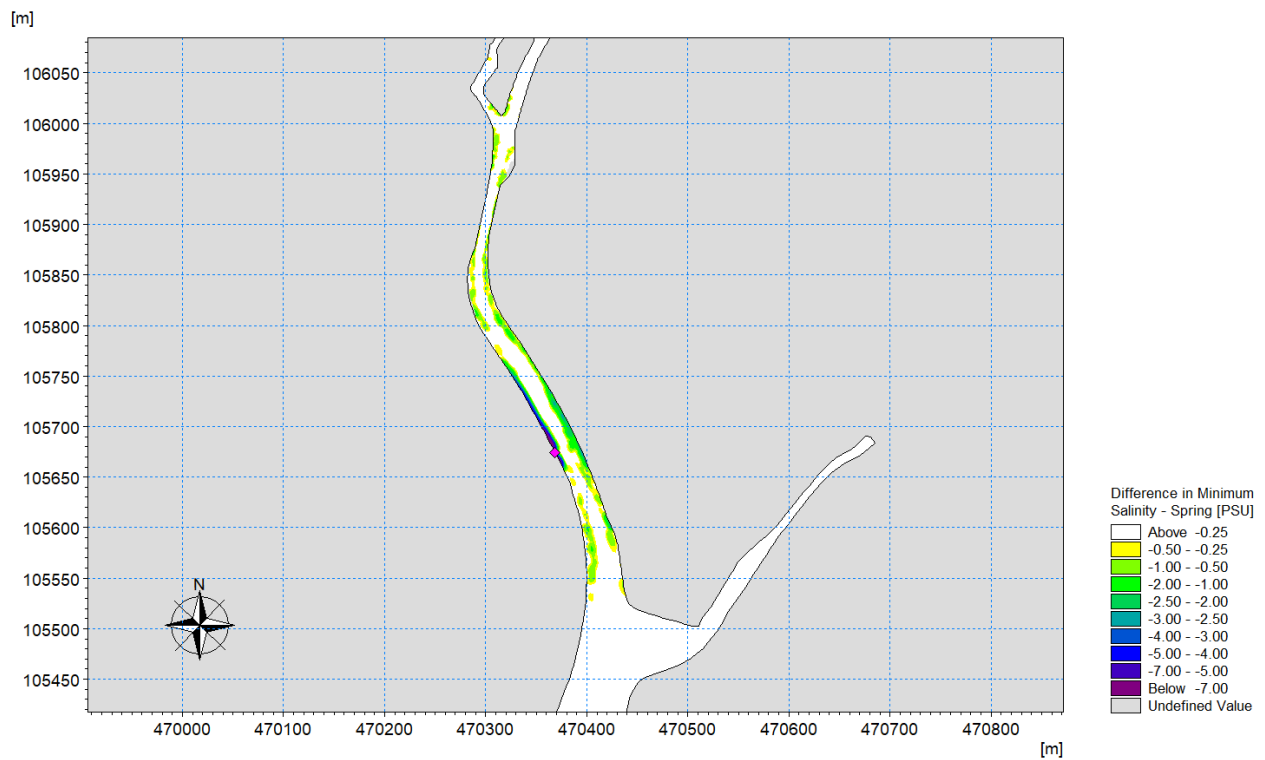


Figure 5-3: Maximum differences in minimum salinity (PSU) spring tidal condition - outfall location represented by pink diamond

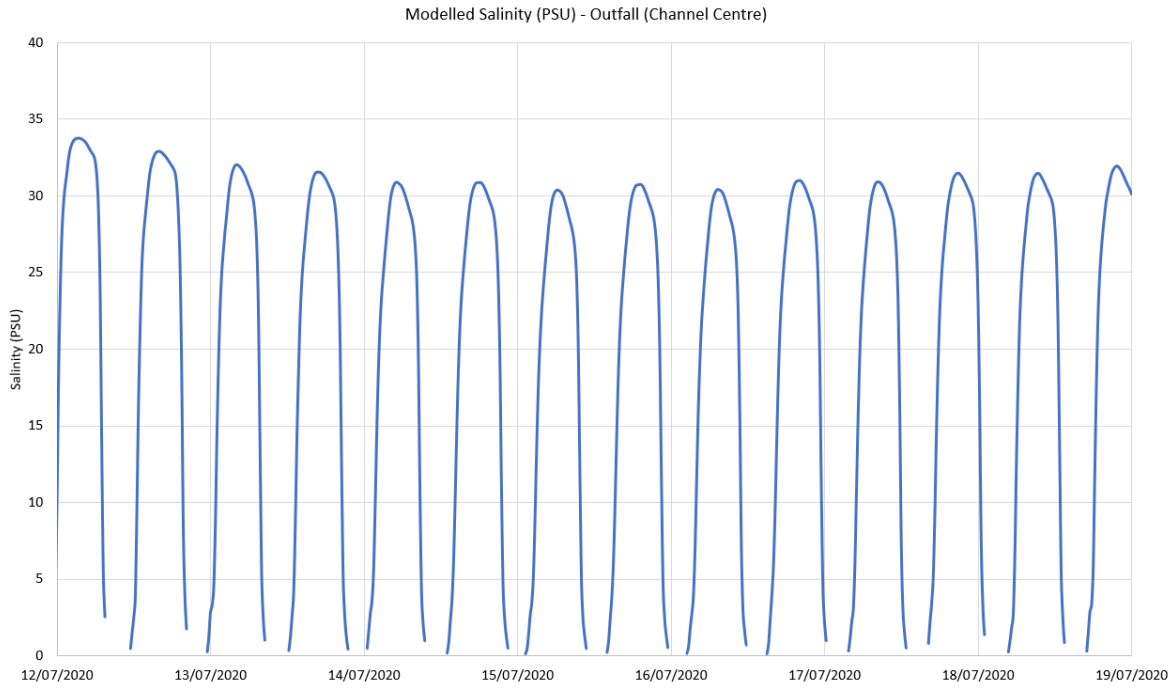


Figure 5-4: Modelled salinity in the centre of Hermitage Stream (at the outfall) during neap tide

6 Conclusions

The risk posed to waterbodies by the proposed outfall is considered to be very low from the following potential sources of pollution:

- The use of rock salt on roads for de-icing.
- Pollutants which may be present in the car parking area.

The CSM demonstrates that sources of potential pollution are present, receptors are adjacent and the discharge flows into the receptor. There may be a pollutant linkage present, however, based on the proposed mitigation measures there is no certainty that an impact will occur. The pathway under which such a circumstance is likely to occur is unlikely due to the mitigation measures being installed at the WRP site as part of the Proposed Development.

The emerging SuDS design, and adequacy of control measures, are due to be consulted upon with key regulators as a next step.

To assess the potential changes associated with the discharge of surface water into the Hermitage Stream, dispersion modelling was undertaken for both neap and spring tides. Overall, the magnitude of change in salinity due to the SuDS discharge (compared with the natural fluctuations in ambient salinity levels throughout the tidal cycle) is considered small. Interpretation of this effect will be provided within the Winter Consultation 2024/5 Technical Report and Environmental Statement (ES).

7 References

CIRA (2001) C552: Contaminated land risk assessment. A guide to good practice

CIRIA (2015) C753: The SuDS Manual

Natural England SSSI citation (2024) Langstone Harbour SSSI
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Reagent (2024) www.reagent.co.uk (accessed, October 2024)

Royal HaskoningDHV (2024) Eastney Long Sea Outfall - dispersion modelling for selected chemicals identified in preliminary H1 screening assessment' report

Sigmaaldrich (2024) www.sigmaaldrich.com (accessed, October 2024)



**Appendix A - Qualitative
Environmental Risk Assessment
Methodology**

Qualitative Methodology

The risk assessment considers the sources and potential receptors identified, together with linking pathways. These linkages are summarised in the Preliminary Conceptual Site Model and Qualitative Risk Assessment within the report, where the associated environmental risk is assessed in relation to the potential source associated with the operation and associated receptors. This assessment also takes account of specific chemicals of concern or groups of similar chemicals of concern. The column designated as 'Potential Consequence of Source- Pathway – Receptor-Linkage' in the Preliminary Conceptual Site Model and Qualitative Risk Assessment gives an indication of the sensitivity of a given receptor to a particular source/chemical of concern being considered. It is a worst case classification and is based on full exposure via the particular linkage being examined. The derivation of the classes used to rank this particular aspect is as follows based on CIRIA 552 'Contaminated Land Risk Assessment, A Guide to Good Practice' 2001:

Classification	Controlled Water	Ecological
Severe	Substantial pollution of sensitive water resources	Significant change to the number of one or more species or ecosystems
Medium	Pollution of sensitive water resources	Change to population densities of non-sensitive species
Mild	Pollution to non-sensitive water resources	Some change to population densities but with no negative effects on the function of the ecosystem
Minor	Slight pollution to non-sensitive water resources	No significant changes to population densities in the environment or in any ecosystem

Subsequently, in the column designated 'Likelihood of PPL, an assessment is made of the probability of the selected source and receptor being linked by the identified pathway. This assessment is ranked based on-site specific conditions as follows:

Classification of probability	Definition
High likelihood	There is a pollution linkage and an event that either appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution
Likely	There is a pollution linkage and all the elements are present and in the right place, which means that it is probable that an event will occur Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term
Low likelihood	There is a pollution linkage and circumstances are possible under which an even could occur. However, it is by no means certain that even over a longer period such event would take place, and is less likely in the shorter term
Unlikely	There is a pollution linkage, but circumstances are such that it is improbable that an event would occur in the very long term

The 'Risk Classification' column is an overall assessment of the actual risk, which considers the likely consequence of a given risk being realised and the likelihood of that risk being realised. The risk classifications are assigned using the following consequence/likelihood matrix:

Matrix				
Severe	Moderate to low	Moderate	High	Very High
Medium	Low	Moderate to Low	Moderate	High
Mild	Very Low	Low	Moderate to Low	Moderate
Minor	Very Low	Very Low	Low	Moderate to Low
Likelihood	Unlikely	Low likelihood	Likely	High likelihood

Overall risks are described as follows:

Risk descriptions	
Very Low	The presence of the identified source does not give rise to the potential to cause unacceptable harm.
Low	It is possible that harm could arise to a designated receptor from an identified source, however, this is unlikely to be unacceptable.
Moderate	It is possible that harm could arise to a designated receptor from an identified source, but it is likely that such harm would be relatively localised or non-permanent - remedial action may be necessary.
High	A designated receptor is likely to experience unacceptable harm from an identified source without remedial action.
Very High	There is a high probability that severe unacceptable harm could arise to a designated receptor from an identified source without appropriate remedial action.