	Data and information							Control and Mitigation Measures				
Outlet	Hazard	Receptor	Pathway	Potential Harm	Probability of exposure	Consequence	Magnitude of risk	Justification for Magnitude	Risk management	Probability of Exposure	Consequence	Residual risk
Which outlet does the hazard relate to?	What is the agent or process with potential to cause harm?	What is at risk? What do I wish to protect?	How might the receptor come into contact with the hazard?	What are the harmful consequences if things go wrong?	How likely is this contact? (with no mitigation measures)	How severe will the consequences be if this occurs?	What is the overall magnitude of the risk?	On what did I base my judgement?	How can I best manage the risk to reduce the magnitude?	How likely is this contact? (with mitigation measures implemented)	How severe will the consequences be if this occurs?	What is the magnitude of the risk after management?
All	Elevated levels of total suspended solids (silt)	Receiving watercourses (Leiston River) Designated / statutory protected areas (including Sizewell Marshes SSSI) Wildlife (including protected species, if present)	1. Through inadequate construction of site drainage system (not built in accordance with design requirements). 2. Through direct contact, e.g. collapse of stockpiles on site, earthworks, topsoil stripping, mobilisation of silt during heavy rainfall 3. Through inadequate SuDS maintenance 4. Failure of proprietary - change wording to sediment treatment systems	Contamination of local watercourses and potential impacts to aquatic species. Reduced capacity of receiving watercourses due to build up of sediment (potentially leading to flooding instances).	High	Medium	High	High probability of exposure as construction activities likely to increase mobilised levels of suspended solids / silt. Medium consequence due to impact of suspended solids on receptors (e.g., decreased oxygen levels in watercourses).	Site drainage systems to be constructed in accordance with design requirements. Designed to capture, store and convey surface water run-off to discharge outlets where infiltration is not suitable and provide initial settlement of suspended solids. Routine monitoring and maintenance of site drainage systems and SuDS features (designed to provide initial treatment of suspended solids. Any issues to be escalated to site management level. Specific requirements to be communicated to contractors and included in any relevant EMS related documentation. Weather monitoring and suitable operation of site drainage features such as lowering levels of WMZ basins. Stockpiles to be located in designated areas on site, away from receptors wherever possible, and potential receptor pathways. To be managed in accordance with construction industry best practice (e.g., height limitations, use of silt prevention measures). Stockpiles will be built up using terraces which will minimise the amount of sediment transported within surface water run-off. Drainage systems will be in place around the perimeter of all stockpiles to capture surface water run-off from the stockpiles. Sweeper tip operations to take place within a bunded area with controlled drainage outlets that can be closed off to prevent outflow of contaminated spill water. Interceptors may be installed in the case of permanent access routes. Treatment systems to be maintained in accordance with manufacturer instructions. Requirements will be briefed to relevant personnel and training on operation of treatment plants to be provided where required. Any faulty / damaged equipment to be repaired or replaced as soon as practicable. Where higher levels of suspended solids are identified, for example through monitoring / sampling, discharging to cease until cause of issue identified. Tankering of the effluent may be undertaken if required. If this occurs, the water will be taken to a suitably licensed facility for disposal by a registered waste carrier. Sampling for TSS will take place as per permit requirements.	Very low	Medium	Low
All (subject to final design)	Concrete / cement - increased pH in discharge streams if washout waters not contained	Receiving watercourses (Leiston River). Designated / statutory protected areas (including Sizewell Marshes SSSI) Wildlife (including protected species, if present)	1. Accidental release during concreting activities failure of pollution prevention measures to contain run-off / escape of washout waters	Contamination of Leiston River. Potential impacts to aquatic species if present.	Medium	Medium	Medium	Concreting activities will be taking place on site in certain areas. These will be temporary however there is the potential for exposure with no mitigation measures.	All concreting related activities to follow construction industry best practice and, where possible, to be located away from surface watercourses and any other site drainage aspects (e.g., WMZ basins, swales etc.). Run-off water from the concrete batching plant (WMZ 2) processes will be captured and stored and re-used for concrete production. Any surplus water that cannot be stored will be treated at the batching plant using pH correction and treatment for sediment prior to discharge to the site surface water drainage system. There are no proposed discharges of concrete washout water or runoff from street sweeping arisings as part of this permit. Sediment / dosing treatment systems to include pH correction where there is a significant risk of non-compliant pH levels. Sampling / monitoring of pH in discharge streams to be undertaken in accordance with permit requirements.	Very low	Medium	Low
All	Use of coagulants / flocculants in treatment systems (where dosing is identified as being required)	Receiving watercourses (Leiston River). Designated / statutory protected areas (including Sizewell Marshes SSSI) General on-site working areas (where chemicals may be stored) Wildlife (if present) Human health	1. Accidental release through improper storage and use of dosing substances / use or malfunction of treatment plants.	Contamination of Leiston River. Potential impacts to aquatic species if present. Impact to human health if direct contact with site operatives.	Medium	Medium	Medium	Dosing chemicals may be required to be used; these are contained within treatment plant systems. Minimal quantities to be used. High consequence due to potential impact on receiving watercourse however. The risk is medium as treatment systems are designed to dose the appropriate level of chemicals based on the receiving influent (to reduce levels of TSS).	The nature of the proposed coagulation and flocculation dosing process means that the chemicals introduced within the systems will be mostly removed with the waste settlement solids that form in the systems. This will mean that residual levels are the same or lower than pre-dosing levels. The inlet level of suspended solids will be monitored such that the coagulation/flocculation chemicals are only added when the inlet levels are above preset limits to achieve the required TSS reduction, the chemicals are then added on a flow proportional basis to limit the risk of excess dosing chemicals passing through the treatment system. Samples will be taken downstream of any treatments to monitor effluent quality. Treatment systems will be maintained in accordance with supplier recommendations and any faults being reported and acted upon. Chemicals will be stored in an Intermediate bulk container (IBC).	Low	Medium	Low
All	Elevated levels of discharge (in terms of flow rate / volumes) increasing baseline flow rates in receiving receptors	Receiving watercourses (Leiston River). Designated / statutory protected areas (including Sizewell Marshes SSSI)	1. Through failure of flow control mechanisms 2. Unpresented level of rainfalls (going beyond climate change allowance - considered extremely low risk)	Flooding due to receiving watercourses being overwhelmed. Potential for failure of treatment systems on site (inability to cope with increased rainfall volumes) and therefore discharge of untreated water leading to contamination of local watercourses / marine environment. Changes to Sizewell Marshes SSSI water balance	Medium	Low	Low	The proposed discharging activities will ultimately result in changes to receiving watercourses in terms of flow rates / volumes. However these will be temporary. And CC allowance has been incorporated into proposed WMZ sizing and flow rates etc.	Discharge flow rates have been designed in accordance with greenfield run-off rates (as agreed at the DCO stage for the proposed development). This will help to ensure that there is no excessive flows of discharge to the receiving environment that could impact baseline / receiving watercourse volumes and flow rates. The nature of the proposed discharging activities is temporary (during construction only) and will be intermittent (as dependent on rainfall volumes). Therefore any changes to background water levels will be short-term. Surface water drainage designs have also taken into consideration anticipated maximum daily discharge volumes to ensure systems can provide sufficient capacity to attenuate run-off and provide initial treatment.	Very low	Low	Low
All	Presence of unexpected contaminants in discharge streams (for example where pollution prevention measures have failed or have not taken into account certain activities on site)	Receiving watercourses (Leiston River). Designated / statutory protected areas (including Sizewell Marshes SSSI) Wildlife (including protected species, if present)	1. Direct pathway to receiving watercourses if present in discharge streams	Contamination of local watercourses and potential impacts to aquatic species	Low	Medium	Low	Low risk as background assessments have been completed to identify presence of potential contaminants within surface water. Potential for unexpected contaminants through onsite environmental incidents leading to contamination of drainage network.	If the sampling or monitoring results/inspections indicate an issue with the discharge, the activity will be stopped at the earliest opportunity (as soon as identified and as soon as safe to do so), and the surface water run-off will either be collected and removed off-site (e.g., via tankering) or held in the respective WMZ basins, until the issue has been resolved. Further sampling may be undertaken where considered necessary prior to discharge operations re-commencing to be absolutely certain the discharge is not resulting in pollution to the receiving environment.	Very Low	Medium	Low
All	Human monitoring / laboratory sampling errors leading to failure to identify out-of-specification discharging	Receiving watercourses (Leiston River). Designated / statutory protected areas (including Sizewell Marshes SSSI)	1. Through human error during on-site sampling (incorrect interpretation of results or failure to check results due to breakdown in communication or failure to follow any relevant management system procedures). 2. Through laboratory sampling error when analysing collected samples from site. 3. Online monitoring systems showing erroneous measurements.	Contamination of local watercourses and potential impacts to aquatic species	Medium	Medium	Medium	Human error (uncontrolled factor).	Any personnel required to undertake physical sampling and monitoring on site (in relation to the proposed discharging activities) will have received relevant training and will be considered competent to undertake the required tasks. Any issues with sampling / monitoring equipment will be reported and escalated as per on site procedures and suitable alternative equipment located. Issues will be reported to the Environment Agency if there is any impact on effluent values to be reported as per permit conditions. Only UKAS-accredited laboratories will be used for testing of samples. Refer to Section 7 of the supporting permit application document for further detail on proposed sampling and monitoring requirements. Online monitoring equipment and sensors will be regular maintained as per supplier guidance.	Very Low	Medium	Low
All	Use and storage of fuel / oil (e.g., from refuelling of vehicles, plant and equipment)	Receiving watercourses (Leiston River). Designated / statutory protected areas (including Sizewell Marshes SSSI) Wildlife (including protected species, if present)	1. Accidental release either directly to watercourse (overland flow) or through site drainage systems if not contained. 2. Run-off from haul roads / access routes 3. Run-off from vehicle parking / HGV areas	Contamination of local watercourses and potential impacts to aquatic species	Low	High	Medium	Fuel and oil will be used during construction activities. Therefore there is a risk of spills / leaks occurring.	The use of hydrocarbon traps will be considered as part of the treatment train for the outfalls where considered appropriate. Visual inspection of the WMZ basins and receiving watercourses (where accessible) will be undertaken to check for visible sheen as evidence of hydrocarbon contamination. Contractors will utilise appropriate containment in accordance with relevant legislation and guidance for storage of fuel and oil (e.g., with 110% capacity, double bunded storage tanks, designated refuelling areas etc.). Specific measures will be detailed in relevant construction-related documentation. This can be provided to the Environment Agency upon request. This will be reviewed by the relevant SZC project team prior to any works commencing on site. It is expected that a fuel bowser will be used for refuelling. Where possible, this will remain in a static position in a designated area, away from watercourses / exposed ground. Suitable spill equipment will be available at all times. Vehicles are to be refuelled in designated areas - to be located away from surface watercourses / pathways. Locks should be fitted to all fuel storage tanks to prevent unauthorised access. Interceptors may be implemented in certain areas on site where vehicle parking is due to take place. See Section 7 of the Technical Supporting Document.	Very Low	High	Medium

All	Use of chemicals / hazardous substances in construction activities	Receiving watercourses (Leiston River). Designated / statutory protected areas (including Sizewell Marshes SSSI) Wildlife (including protected species, if present) Site operatives (human health)	1. Accidental release either directly to watercourses (overland flow) or through site drainage systems if not contained.	Contamination of local watercourses and potential impacts to aquatic species. Potential harm to human health through exposure / contact.	Low	High	Medium	Chemicals and / or other hazardous substances may be used during construction activities; therefore there is a risk of spills / leaks occurring.	Use of chemicals to be minimised and, if possible, avoided. Any chemicals and or other hazardous substances that are required to be used during construction activities to be kept in suitable, secure containment in designated areas on site (ideally located away from any watercourses, exposed ground or other possible pathways (such as drainage systems) to receptors). Areas outside of or on the edge of the floodplain to be used for storage where possible. Specific measures to be detailed in contractor environmental management related documentation. COSHH requirements will be adhered too and suitable spill equipment will be made available. See Section 4 in the Technical Supporting Document.	Very Low	High	Medium
All	Generation and storage of construction-related wastes (including both hazardous and non-hazardous, liquids and solids)	Receiving watercourses (Leiston River). Designated / statutory protected areas (including Sizewell Marshes SSSI) Wildlife (including protected species, if present) Site operatives (human health)	1. Accidental release e.g., leaks or spills of liquid wastes due to unsuitable containment, escape of waste during emptying of containers / transfers or movement of waste on site 2. Through direct contact if physically enters watercourse 3. Release of waste mobilised during a flood event.	Contamination of physical environment (including watercourses). Potential harm to human health through exposure to hazardous wastes.	Medium	Low	Low	Consequence will ultimately be dependent on type of wastes however only minimal amounts of liquid wastes expected to occur during initial construction works.	All construction related wastes will be stored in suitable containment in designated areas on site. Specific waste management procedures will be implemented and adhered too. These will be reviewed and approved in accordance with SZC EMS requirements, as required. Wastes will be segregated and maintained in accordance with legal requirements and the Waste Hierarchy, which will be followed on site. Waste containment will be located away from pathways to receptors wherever possible (e.g., away from watercourses, drains, SuDS features). Skips will be removed from working areas on a regular basis to reduce risk of litter / escape of waste on site.	Very Low	Low	Very Low
All	Unauthorised site access / vandalism impacting treatment and discharge activities	Receiving watercourses (Leiston River). Designated / statutory protected areas (including Sizewell Marshes SSSI) Wildlife (including protected species, if present) Site Operatives On site drainage / treatment infrastructure Surrounding residents	1. Through direct physical contact. 2. Through accidental damage during unauthorised site access. Potential for damage to discharge treatment equipment or infrastructure (such as WMZ basins, SuDS) used as part of on site drainage systems if directly impacted by acts of vandalism or forced site entry.	If site drainage / treatment infrastructure is damaged, this could lead to discharge of contaminated effluent leading to pollution of receiving receptors and potential impacts on wildlife.	Low	Low	Low	Low probability of exposure as site drainage infrastructure / treatment systems themselves not anticipated to be directly targeted by acts of vandalism or unauthorised site access.	Suitable security measures and arrangements are to be implemented on site. This may include the following: - Boundary security fencing to prevent unauthorised entry - Controlled access points - CCTV surveillance - Chemicals and fuels securely stored (locked) In the event that a vandalism event is experienced on site, the Police would be contacted and emergency clean-up contractors (if required). If a vandalism event results in pollution to the watercourses, or other form of environmental pollution, the Environment Agency would be notified and further action undertaken as necessary. The Police would be contacted in the event of a vandalism incident on site.	Very Low	Low	Very low
All	Wheel-washing activities	Receiving watercourses (Leiston River). Designated / statutory protected areas (including Sizewell Marshes SSSI) Wildlife (including protected species, if present)	1. Mobilisation of debris / silt from wheel washing activities which could enter site drainage infrastructure if not properly contained. Potential to reach receiving watercourses. 2. Potential for run-off containing hydrocarbons (fuel / oil) from vehicle engines (overland flow from leaks or spills - accidental release).	Blockage of drainage infrastructure leading to potential increase of flood risk to site. Mobilisation of contaminants such as suspended solids.	Medium	Low	Low	Wheel washing activities are likely to be required to be undertaken on site; however this will be temporary and short duration.	Mist sprays should be used where possible to minimise the amount of water used and hence the volume of run-off created from wheel washing activities. Run-off from mist sprays to be directed to surface water drainage system for treatment prior to discharge. The surface water drainage system is expected to provide adequate treatment for run-off and wheel-washing facilities to prevent uncontrolled run-off from site operations.	Low	Low	Low
All	Flooding on site (parts of the site within Flood Risk Zone 3).	On-site surface water drainage infrastructure and treatment systems Receiving watercourses (Leiston River). Nearby human receptors (where present)	If flooding were to occur on site, this could result in: 1. Blockage of drainage systems and reduced effectiveness of SuDS methods (e.g., overflow of attenuation basins) 2. Reduced capacity of receiving watercourses due to blockages (off-site) or build up of sediment 3. Periods of heavy and/or prolonged rainfall overwhelming site drainage system. The receiving watercourses may also breach banks if flooding is severe.	Damage to drainage and treatment infrastructure which could lead to uncontrolled / untreated discharges off-site. In turn, this could lead to contamination of receiving watercourses and potential impacts on aquatic species (where present).	Low	High	Medium	Site is located within Flood Risk Zones; however this has been taken into consideration as part of design of site drainage infrastructure and suggested treatment measures.	Designs for the surface water drainage strategy (for run-off and groundwater during construction) have taken into consideration the 1 in 100 year + climate change allowance (20%) rainfall event. Systems such as WMZ basins are expected to be constructed in accordance with design requirements, therefore they will be built to hold certain quantities of rainfall prior to treatment and discharge. Weather conditions will be monitored on site.	Very Low	High	Medium
All	Fire and fire water run-off	On-site surface water drainage infrastructure and treatment systems Receiving watercourses (Leiston River). Nearby human receptors (where present)	If fire were to occur on site, the proposed discharging activities could be affected by: 1. Direct damage from physical contact with fire (to treatment systems for example) which could lead to uncontrolled / untreated discharges off-site. 2. Contamination of site drainage infrastructure and receiving watercourses from collection of fire water run-off.	Discharge pipes / treatment systems may become damaged or destroyed. Contaminated fire water run-off could enter watercourse if not managed. Fuel and chemicals also present on site which could enter watercourse if impacted by fire (i.e. leaks)	Low	Medium	Medium	In the event of a fire, fire services may be required need to use water and other chemicals to bring the fire under control. If this is not properly contained on site, it could enter the site drainage system and therefore receiving watercourses.	Measures will be in place on site to prevent the risk of fire occurring. These will be detailed in the appropriate construction-related documentation and approved by the relevant SZC project teams. In the event of a fire, the local Fire Service would be contacted. The majority of site run-off is directed to WMZ basins, which would therefore enable the run-off to be held and then tankered off-site. Discharging activities would cease in the event of a fire. Where run-off is not directed to WMZ basins, every possible measure will be undertaken to limit the extent of contaminated fire water run-off from entering local watercourses. An emergency clean-up contractor will be in place and will be contacted where necessary.	Very Low	Medium	Low
All	Climate change-related impacts including: - Increased frequency and duration of periods of heavy rainfall, potential for on-site flooding - Drought - Extreme temperatures (heat / cold)	On-site surface water drainage infrastructure and treatment systems Receiving watercourses (Leiston River). Nearby human receptors (where present)	1. Through failure of flow control mechanisms.	Climate change impacts listed may impact day-to-day operation. for example interruptions to power supply from cables freezing / overheating. Extreme heat could increase the temperature of the discharge.	Medium	Medium	Medium	Climate change impacts have been taken into consideration as part of design of site drainage infrastructure and suggested treatment measures.	Designs for the surface water drainage strategy (for run-off and groundwater during construction) have taken into consideration the 1 in 100 year + climate change allowance (20%) rainfall event. Systems such as WMZ basins are expected to be constructed in accordance with design requirements, therefore they will be built to hold certain quantities of rainfall prior to treatment and discharge. Weather conditions will be monitored daily on site.	Very Low	Medium	Low
All outlets connected to a WMZ basin	Contamination of discharge water with polymers used in the sludge treatment process (as part of SuDS maintenance for WMZ basins)	Receiving watercourses (Leiston River). Wildlife (including protected species, if present)	1. Failure of the sludge treatment process leading to polymer contaminated water being returned to the basins then passing through surface water treatment plant and into the environment through the discharge.	Contamination of coastal waters and surface water leading to poor water quality and wildlife impacts.	Low	Medium	Medium	The introduction of polymers to the discharge has the potential to harm the environment.	During operation of the sludge removal process a skilled operator will be continually monitoring the process. Any issues with the treatment process will be captured early and managed on site. The polymer is added at a very dilute concentration and any leak would take a long time before significant levels of polymer were to escape. However, the polymer is delivered at roughly 50% active and transported in 1,000 litre IBC's, these IBC's should be stored on a bund in case of spillage or damage to the container.	Very Low	Medium	Low
			1. Trace levels of polymer in water being returned to the basins then passing through surface water treatment plant and into the environment through the discharge.	Contamination of coastal waters and surface water leading to poor water quality and wildlife impacts.	Low	Low	Low	The introduction of polymers to the discharge has the potential to harm the environment, although in this case the levels would be negligible.	The treated water would only have trace levels present, this would be further diluted when the water is returned to the basin for additional dilution and treatment. However, the polymer is delivered at roughly 50% active and transported in 1,000 litre IBC's, these IBC's should be stored on a bund in case of spillage or damage to the container.	Very Low	Low	Very Low
All	Use of lighting	Wildlife; Local residents	N/A to the proposed discharge activities. Lighting may be used as part of the construction works; however this does not relate directly to the proposed discharge activities requiring permitting. Lighting will be covered as required in contractor / supplier management systems.									
All	Noise and vibration	Wildlife; Site staff; General public; Local residents	N/A to standalone water discharge activities									
All	Emissions to air	Wildlife; Site staff; General public; Local residents	N/A to standalone water discharge activities									
All	Odour	Wildlife; Site staff; General public; Local residents	N/A to standalone water discharge activities									
All	Dust	Wildlife; Site staff; General public; Local residents	N/A to the proposed discharge activities.									