

# **M60/M62/M66 Simister Island Interchange**

**TR010064**

## **6.5 FIRST ITERATION ENVIRONMENTAL MANAGEMENT PLAN**

### **APPENDIX H: OUTLINE SURFACE AND GROUND WATER MANAGEMENT PLAN**

APFP Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed  
Forms and Procedure) Regulations 2009

Infrastructure Planning

Planning Act 2008

**The Infrastructure Planning  
(Applications: Prescribed Forms and  
Procedure) Regulations 2009**

**M60/M62/M66 Simister Island Interchange  
Development Consent Order 202[ ]**

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APPENDIX H: OUTLINE SURFACE AND GROUND WATER  
MANAGEMENT PLAN**

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## Outline Surface and Ground Water Management Plan

### H.1 Background

H.1.1 This Outline Surface and Ground Water Management Plan (Outline S&GWMP) sets out the measures that will be used by the Principal Contractor (PC) to mitigate potential adverse impacts on the water environment during the construction of the M60/M62/M66 Simister Island Interchange (the "Scheme"). The Outline S&GWMP will be updated by the PC within the Second Iteration Environmental Management Plan (EMP) where necessary.

### H.2 Purpose

H.2.1 The purpose of the Outline S&GWMP is to detail the water management principles and procedures to:

- Prevent the pollution of and contamination to groundwater and surface waters.
- Protect and preserve the hydro morphological and ecological elements of watercourses and water resources.
- Plan how water would drain from the site during construction.
- Identify measures for the sustainable use of water.

H.2.2 The PC will ensure that the Scheme is executed in a manner compliant with the Outline S&GWMP.

H.2.3 The Outline S&GWMP will set out scheme specific measures relating to:

- To manage the risk of pollution to surface waters and groundwater by capturing and treating construction site runoff, to ensure that it can be discharged into the existing networks or directly to a watercourse.
- To manage water removed from cuttings and excavations during the construction dewatering activities.
- To manage the risk from groundwater flooding (during excavation) through appropriate working practices and with adequate processes and equipment in place for dewatering to ensure safe dry working environments.
- Discharge from dewatering operations to surface water discharge rates would be carefully controlled to achieve no environmentally significant change to flood risk associated with the receiving watercourses because of dewatering discharges. If required, dewatering discharge would be temporarily paused during flood events to prevent any increased flood risk during the flood event.

- For the management of activities within floodplains or near watercourses.
- Consideration of predicted overland fluvial and surface water flood flow paths to ensure they are maintained during construction and safe for construction teams.
- To control the storage, handling, and disposal of potentially polluting substances during construction.
- To identify appropriate methods and mitigation measures when undertaking works within, over, under and adjacent to water bodies.

H.2.4 The Outline S&GWMP will be developed into a S&GWMP in the Second Iteration EMP.

### **H.3 Responsibilities**

H.3.1 In relation to the control and management of works to prevent the pollution of surface and groundwater, the PC will establish the appropriate roles and responsibilities for individual site staff in accordance with the roles and responsibilities set out in this First Iteration EMP.

H.3.2 The PC will be responsible for ensuring that all people working on the site, including sub-contractors, work in line with the requirements of the S&GWMP where appropriate.

### **H.4 Surface Water**

H.4.1 There are numerous main rivers, surface watercourses and other water bodies within a proximity to the scheme. All watercourses within a proximity to the Scheme are located within the River Irwell catchment.

H.4.2 The Scheme crosses one main river, Parr Brook. There are multiple watercourses that are near the Scheme and have the potential to receive run-off during construction, Castle Brook, Parr Brook, River Irk and River Irwell.

H.4.3 A new outfall is required for the following watercourses, to accommodate drainage:

- Castle Brook Tributary

H.4.4 The location of key water environment features is detailed within the Scheme specific Chapter 13: Road Drainage and the Water Environment of the Environmental Statement (TR010064/APP/6.1).

### **H.5 Groundwater**

H.5.1 The mapped superficial deposits within 2km of the Scheme are classified as secondary A and secondary undifferentiated aquifers (DEFRA, 2022),

with pockets of unproductive strata and a high degree of variation in permeability (BGS, 2022).

- H.5.2 There are no Source Protection Zones (SPZ) within the groundwater study area or its vicinity (DEFRA, 2022). This indicates that there are no licensed groundwater abstractions used for public water supply.
- H.5.3 Six licensed groundwater abstractions have been identified within the groundwater study area for the Scheme. All these abstractions are associated with industrial/commercial uses, primarily for spray irrigation (for golf courses), or food and drink processing water. Licensed groundwater abstraction information
- H.5.4 There are two main areas within the Order Limits for the Scheme with potential for groundwater flooding to occur at surface level or to property or infrastructure situated below ground level.
- Most of the area in and around M60 J18, extending north to Unsworth along the M66
  - Between M60 J17 and J18 around Oak Bank and north of Parrenthorn Road
- H.5.5 The remainder of the area within the Order Limits is considered to have limited potential for groundwater flooding to occur.
- H.5.6 Detailed baseline groundwater information is presented in the groundwater assessment of the Scheme specific Chapter 13: Road Drainage and the Water Environment of the Environmental Statement (TR010064/APP/6.1).

## H.6 Flood Risk

- H.6.1 The Environment Agency's Flood Map for Planning (Agency, 2021) defines flood zones as:
- Flood Zone 3: areas with greater than a 1% (1 in 100 year) AEP of fluvial flooding
  - Flood Zone 2: areas with between 0.1% (1 in 1000 year) and 1% (1 in 100 year) AEP of fluvial flooding
  - Flood Zone 1: areas with less than 0.1% (1 in 1000 year) AEP of fluvial flooding
- H.6.2 The study area is located within Flood Zone 1 and there are no areas of the Scheme that interact with Flood Zones 2 or 3.
- H.6.3 There are several watercourses near the scheme that have areas of flood risk, but don't intersect with the Order Limits. These watercourses include tributaries of castle brook and tributaries of the River Irk.

- H.6.4 Areas of surface water flood risk are located mainly within localised topographic depressions or against existing road embankments, and the area near Outfall 4 where an attenuation pond has been designed.
- H.6.5 There are two main areas within the Order Limits for the Scheme with potential for groundwater flooding to occur at surface level or to property or infrastructure situated below ground level.
- H.6.6 There are multiple potable and wastewater assets, owned by United Utilities, that have been highlighted within the scheme boundaries. Individual assessments will be taken on each utility, in relation to the Scheme infrastructure. Utilities that are assessed to interact with permanent infrastructure or temporary infrastructure will be diverted or protected to avoid damage.

## H.7 Potential Impacts

### Surface Water Quality

- H.7.1 Sediments and potentially polluting substances (e.g. cement and hydrocarbons) are the two main sources of pollutants to surface water. Listed below are the main sources of pollutants on the Scheme during construction:
- Construction activities where there is an increased pollution risk from mobilised sediments in site runoff. These could reach watercourses directly via overland flow or the drainage network, to impact water quality.
  - Discharge waters from construction drainage and dewatering activities have the potential to be contaminated with pollutants and may therefore result in contamination of a receiving water body.
  - Deposition or accidental spillage of soils, sediments, oils, fuels, or other construction chemicals, or through mobilisation of contamination following disturbance of contaminated ground or groundwater, or through uncontrolled site runoff.
  - The use of cementitious materials such as concrete has the potential to contaminate surface water and groundwater, including altering its pH.
  - Works within or immediately adjacent to a watercourse, such as during the construction or modification of outfall structures can lead to the disturbance or generation of fine sediment, creation of areas of localised scour or have a higher risk of pollution given the proximity of the works to flowing water.
  - Works within or immediately adjacent to a watercourse, such as during the construction or modification of outfall structures can lead to materials, equipment and chemicals falling into the watercourse.

- Works close to existing gullies or drains forming part of the existing highways drainage network may also create preferential pathways, through the drainage network, for pollutants to reach watercourses.
- Areas that are at risk of flooding may also present a greater risk of water pollution should a large fluvial flood event occur during the construction period.

### **Water Resources**

H.7.2 During construction, surface water may need to be abstracted for construction purposes. If not disappplied and where required, an abstraction license from the Environment Agency would be sought. The location, timing, duration, and quantities of water required are not known at this stage. Where relevant, this detail on surface water abstraction would be included within the Second Iteration EMP.

H.7.3 Water would be pumped into attenuation ponds when required and water bowsers would use them as a water source when dust suppression is required. The management requirements of the use of water from these ponds will be detailed in the Second Iteration EMP. If it is determined by the Environment Agency or Bury Council, who are the Lead Local Flood Authority (LLFA), that alternative supplies such as connections to mains are needed, these will be considered.

### **Hydro morphology**

H.7.4 Potential impacts to the hydro morphology of each watercourse within the study area would include:

- Potential increase in fine sediment delivered from surface runoff and the clearance of vegetation.
- Potential bankside works damaging morphological features of the watercourse. This would potentially directly impact on the hydro morphology of the watercourse.
- Potential for the temporary alteration of existing drainage channels and hydrological connectivity within the catchment affecting hydro morphological processes in downstream receptors, for example altered flow velocities, altered discharge and sediment volumes.

### **Groundwater**

H.7.5 During construction, there is a risk of groundwater contamination from several activities, these include:

- Increased pollution risks, including the accidental spillage of fuels, lubricants, cements, hydraulic fluids or other harmful substances, which may be stored on site during the construction phase, and which could migrate into groundwater bodies.



- Physical contamination of groundwater from ground disturbance could lead to the potential for increased sediment in aquifers reaching groundwater features. This includes activities such as soil stripping; construction of cuttings; foundations for embankments, bridge abutments/gantries; other excavations required for example, attenuation ponds and drainage, and piling.
- The construction of cuttings, foundations, and piling activities (sheet and bored) could create vertical pathways for contaminated groundwater to migrate between aquifers. Even if groundwater is not contaminated, there is potential for mixing of different groundwater chemistries, which could be significant for WFD groundwater body status, as well as for any sensitive groundwater receptors.
- Impedance of groundwater flow from temporary below ground structures, and the potential corresponding impact on groundwater levels and/or quality.
- Dewatering during construction works is likely to locally lower groundwater levels and promote groundwater flow laterally and vertically towards the works. This can in turn impact on groundwater receptors such as:
- Nearby groundwater abstractions, surface water receptors and Groundwater Dependent Terrestrial Ecosystems (GWDTE) potentially resulting in loss of supply for a groundwater abstraction user or a reduction of baseflow contribution to a watercourse or loss of recharge for a GWDTE.
- Mobilising groundwater from areas with pre-existing poor groundwater quality towards the work sites. This would apply for example to any areas with known contamination, petrol stations etc. and may pose contamination risk to discharge to nearby surface water.
- Buildings have the potential to be affected by dewatering which may cause localised settlement.

### **Flood Risk**

H.7.6 Potential impacts during construction in relation to flood risk include:

- Changes in flood risk due to changes storage volume or flow capacity
- Changes in flood risk due to changes in surface water runoff rates and volumes through the removal of vegetation, creation of impermeable surfaces or the diversion of flow.
- Construction drainage and dewatering of below-ground construction elements discharging to watercourses or to ground could increase the rate and volume of runoff and increase the risk of blockages in watercourses that could lead to flow being impeded, and potentially increase flood risk.

- Potential damage to buried services or other water retaining infrastructure.
- Disruption to groundwater flow or the release of artesian pressure due to excavations or construction of below ground structures such as piles.

## **H.8 Permits, License and Consent Requirements**

### **Flood Risk Activity Permit**

- H.8.1 A Flood Risk Activity Permit from the Environment Agency would be required for works within a flood plain (Flood Zone 3), where no exemptions apply. There are no Flood Zone 3's that are currently noted within the Scheme.

### **Ordinary Watercourse Consent**

- H.8.2 An Ordinary Watercourse Consent from the LLFA would be required for works which would affect the flow of water or cross-sectional area of an Ordinary Watercourse. This would also include discharges during construction drainage features.

### **Water discharge**

- H.8.3 If the Environmental Permitting Regulations are not disapplied by the draft DCO (TR010064/APP/3.1) and where required a permit would be obtained for the discharge to Main Rivers or ground of any 'contaminated' construction site runoff or groundwater from dewatering.
- H.8.4 The relevant regulator would be consulted by the PC to obtain the necessary licences where exemptions do not apply. The PC in consultation with the relevant regulator would determine acceptable suspended sediment limits and what pre-treatment may be required, in addition to the volume, rate and duration of flows that can be discharged to watercourses without resulting in significant flood risk or environmental effects, and any constraints on the discharge. All discharge peak flows to watercourses would be carefully controlled in accordance with the requirements of the relevant regulator.
- H.8.5 Discharge of water from dewatering may be to groundwater through groundwater recharge arrangements to manage groundwater levels. The suitability of this method would be investigated through detailed design of the Scheme and further investigations and impact assessments would be required as part of the permitting process with the Environment Agency to confirm rates of abstraction, discharge, flood risk, areas of influence and identify potential receptors within the area of influence.

### **Watercourse Diversion**

- H.8.6 The temporary diversion of a watercourse could require a transfer licence from the Environment Agency. This is to be confirmed by the PC prior to construction. There currently are no temporary diversions of watercourses planned for the scheme, however if this falls into scope the transfer license will be applied for with the Environmental Agency. Details of this will be included in the Second Iteration EMP.

### **Water Resources**

- H.8.7 If the Environmental Permitting Regulations are not disapplied by the draft DCO (TR010064/APP/3.1) and where required a permit would be obtained for surface water abstractions during construction. The location, timing, duration, and quantities of water required are not known at this stage.

### **Groundwater Abstraction**

- H.8.8 During construction any significant dewatering, principally from cuttings, widenings and pond excavations considered likely to intercept groundwater, would be subject to an abstraction licence issued by the Environment Agency, unless exempt. Detailed site-specific dewatering assessments would be developed for cuttings, widenings and deep pond excavations as required to inform the detailed design, temporary works, and subsequent permit applications. The dewatering assessments would confirm rates of abstraction and area of influence and identify potential receptors within the area of influence.

### **Piling**

- H.8.9 Where contaminant land or groundwater issues have been identified, a piling risk assessment will be developed prior to the relevant piling being undertaken to ensure that the piling method would not have any adverse impact by creating new pathways for the migration of potential contamination, primarily in relation to the protection of water resources.

## **H.9 Control Measures During Construction**

### **General**

- H.9.1 Temporary site drainage will be utilised to manage the risk due to heavy rainfall or flood events during construction works. Temporary drainage systems will be sized to provide an appropriate standard of flood protection and assessed individually.
- H.9.2 Good practice procedures that will be utilised include:

- Drainage ditches with check dams and sediment traps will be installed across site in appropriate locations to reduce the likelihood of surface water collecting in work areas.
- Pre-earthworks drainage will be installed where appropriate to intercept and accommodate shallow groundwater.
- Outfalls from temporary drainage systems would be to local surface water bodies discussed in the S&GWMP.
- Sediment barriers will be installed adjacent to and within temporary drainage ditches and nearby watercourses, as applicable, to reduce the likelihood of flooding.
- Minimising stockpile of materials and locating more than 10m away from any watercourses, attenuation ponds site drainage

#### **Emergency response planning**

- H.9.3 An emergency pollution response plan will be developed in accordance with Pollution Prevention Guideline (PPG) 21: Pollution Incidence Response Planning and communicated to all personnel. Emergency spill control equipment such as spill kits, oil booms and absorbent materials will be held at appropriate locations on site and within site compounds in line with the measures set out in this First Iteration EMP. The plan will include procedures for reporting any incidents to the appropriate regulatory bodies.

#### **Weather resilience planning**

- H.9.4 The PC will consider the potential impacts of extreme weather events. To ensure resilience of the site to such extreme weather events, the PC will use a short to medium-range weather forecasting service from the Met Office or other approved weather forecast provider to manage climate-related risks and inform programme management and impact mitigation measures. The PC will register with the Environment Agency's Floodline Warnings Direct service.
- H.9.5 The PC's Environmental Management System (EMS) will consider all measures deemed necessary and appropriate to manage extreme weather events and should specifically cover training of personnel and prevention and monitoring arrangements.

#### **Site Establishment**

- H.9.6 A site-specific method statement will be produced for temporary drainage during the detailed design phase of the scheme and included in the Second Iteration EMP. General principles will be considered in the method statement, including:

- Construction of attenuation ponds early, temporary, and permanent, early in the program to allow discharge points for water during construction.
- Use of attenuation ponds prior to discharge into watercourses to ensure that sediment settles prior to being discharged into watercourses from an outfall.
- Haul road construction will be planned to minimise vehicle traffic on soil, which can adjust topography and create pockets of standing water.
- Sustainable Drainage Systems (SuDS) would be used where practicable to ensure no increase in runoff rates or volumes from work areas, storage areas or compound areas to drainage ditches or watercourses.

#### **Induction of site personnel**

- H.9.7 All personnel will attend a site induction before commencing work on site. The briefing will emphasise the sensitivity of the watercourses, surrounding habitat and methods and working practices employed to protect the water environment. A site map will be available which identifies all known constraints relating to the water environment. Ongoing toolbox talks will be delivered as appropriate to outline the risks and hazards to the water environment and what measures should be deployed throughout the work programme.

#### **Programming**

- H.9.8 Where possible the PC will program activities considering the wetter months of the year. Programming considerations that will be considered and applied, where possible, include:
- Temporary or permanent drainage construction prior to works commencing, where practicable.
  - Earthworks and deep excavations will be completed in the drier months (Spring – Autumn). If this is not possible, stringent mitigation methods will be applied.
  - Vegetation clearance will be phased, where practicable, to minimise the areas of exposed ground and reduce the potential risk of site runoff.

#### **Agricultural Land Drainage**

- H.9.9 Care will be taken to ensure that existing land drainage systems are not compromised because of construction of the Scheme. Where practicable, the land drainage systems that are known to be present will be maintained. Existing agricultural land in each quadrant of the scheme is expected to have land drainage systems present. Trial trenches and

desktop surveys will be undertaken to better understand the land drainage systems in each quadrant of the scheme and the PC will assess the need for additional surveys during the detailed design phase.

- H.9.10 If existing agricultural land drains are encountered during construction, then the location will be recorded. Temporary drainage will be located to intercept existing field drains and ditches, to maintain the integrity of the network. If existing agricultural drainage systems are damaged, then the drains will be reinstated in a condition that is at least as effective as the previous condition.

### **Utilities**

- H.9.11 Utilities that are assessed to interact with permanent infrastructure or temporary infrastructure will be diverted or protected to avoid damage. Utilities that have are present within the order limits will be highlighted on the statutory utility drawings and included in permits to dig that are issued prior to excavation works. Best practice procedures will be completed during the construction and issuing of the permit to dig, to ensure that the location and depth of the utility is known to workers prior to the excavation commencing.

### **Dewatering**

- H.9.12 Dewatering may be required across site within work areas, storage areas and compound areas. Where dewatering is required, the water would be discharged following settlement to remove suspended solids; the rate, volume and duration of any discharge would be agreed with the regulating authority. Any contaminated groundwater intercepted during construction which cannot be treated to achieve consented discharge parameters would be tanked and disposed of offsite at an appropriate licensed location.

### **Polluting Substances**

- H.9.13 The control, storage, handling, and disposal of polluting substances will be controlled through the following methods:
- Daily inspections of plant and machinery.
  - Drip trays will be used for plant that is static for prolonged periods.
  - Spill kits will be available on-site in all mobile plant, where practicable.
  - Fuel tanks will be in a secure and designated area on hard standing, away from drainage and watercourses.
  - Liquid chemicals will be stored in a secure container or designated area that is clearly labelled and away from drainage and watercourses.



- Concrete deliveries will be managed to ensure that they travel only on designated haul routes or impermeable surfaces, where practicable.

### **Silt Pollution**

- H.9.14 The risks of silt pollution are heightened during periods where activities are located on or near to watercourses or ponds. These areas are at most risk when exposed soil is present, and without appropriate control measures there exists the potential for uncontrolled releases of sediment into surface watercourses.
- H.9.15 The PC will implement a series of methods to manage sediment runoff and eliminate the likelihood of producing silt and silty water. The detail of these measures will be incorporated into the method statements for each activity which will be drafted prior to construction. Any measures deployed to manage sediment runoff will be regularly inspected and maintained, in line with manufacturer's instructions (e.g. silt fencing). Inspection and maintenance of silt pollution control measures will form part of the weather resilience planning, which will include conducting checks before, during and after forecasted poor weather.
- H.9.16 Given the varying nature of the watercourses, topography and local hydrology across site and activities being carried out, the above sediment and pollution control measures will be reviewed, and the most appropriate approaches adopted.
- H.9.17 Any in-channel works which require temporary works to divert watercourses will consider measures to prevent the release of sediment laden water into the surrounding water environment. Isolated works areas will be formed with the channel diverted using gravity flumes or by over-pumping. There should be suitable provision made to ensure high flows are able to by-pass works without creating issues with flooding. Appropriate precautions will be taken when working instream, or adjacent to watercourses; to appropriately manage the potential for deposition of silt or release of other forms of suspended material or pollution within the water column. Instream prevention and control measures to reduce or avoid sediment ingress into the watercourse, include (but not exclusively):
- Avoiding instream activity during wet weather.
  - Stilling ponds.
  - Sediment absorbent matting.
  - Bank reinstatement / stabilisation.
- H.9.18 Wherever possible, the use of construction materials on site will be free from contaminated material to avoid potential contamination of the watercourse. All works will be planned in detail and subject to specific

method statements which will clearly outline the risks and the mitigation or control measures to address the risks.

### **Fuel Handling and COSHH Materials**

H.9.19 The storage, dispensing, containment and use of all fuels, oils and COSHH materials and wastes would be undertaken in accordance with the Control of Substances Hazardous to Health Regulations 2002 (Gov.Uk, 2002) and good practice guidance.

H.9.20 Control measures that will be utilised include:

- Storage in a secure and sheltered area.
- Segregated from other materials.
- Records of materials and waste that is stored and removed from site will be maintained.
- Storage areas will not be within 10m of a watercourse or site drainage systems.
- Refueling will not be permitted within 10m of a watercourse.
- Spill kits would be provided within close proximity to fuel and oil storage areas, with plant that is operating in isolated areas, and in welfare facilities, where practicable.

### **Cement, Concrete and Grout**

H.9.21 Cements, concrete and grouts are highly alkaline and corrosive and can cause serious pollution to the ground and surface waters.

H.9.22 The PC will instruct concrete suppliers that where practicable, concrete washout activities should be undertaken off site. If required, in emergency circumstances, designated areas will be provided for washing out concrete delivery lorries, concrete pumps and grout lines.

H.9.23 Any work involving concrete and cement carried out over, under or near an ordinary watercourse will be carried out in accordance with any conditions set out in an Ordinary Watercourse Consent. Where such work is required, detailed method statements will be produced to meet the conditions of the consent, identifying controls that will be implemented to ensure wet cement does not meet the water environment.

H.9.24 For all concrete work, neither wet or dry concrete / cement will be allowed to enter watercourses and the following practices will be followed:

- Concrete and cement mixing will be carried out on an impermeable designated area.
- Designated area will be located at least 20 m away from a watercourse or drain and will consist of a small skip lined with an impermeable



membrane. Concrete quantities will be accurately calculated to minimise concrete wastage.

- However, any excess concrete will be allowed to dry and will be used, if possible, as inert rubble on site. Otherwise removed from site by a licensed waste carrier for disposal to an appropriately licensed facility.
- Designated concrete wash out areas will be created for drivers to wash out their delivery wagons.
- Water from the washout areas will be stored and the suspended solids allowed to settle out.
- Where possible, the settled water will be re-used for mixing concrete and washing out.
- Excess washout water will either be discharged to the foul sewer (with permission from the local sewerage provider) or disposed off-site by a registered waste carrier. All concrete washout areas will be clearly demarcated on site.

H.9.25 Where it is necessary to work with concrete in water, where practicable concrete mixes will be specified and those which minimise pollution risks when used or alternative control measures will be put in place. A detailed method statement will be in place where there is likely to be working with concrete or cement near water, detailing appropriate control measures to be put in place. This would include the following:

- Divert the flow of water away from the working area or by damming upstream and over-pumping the water beyond the working area.
- Loose cement and/or concrete will be removed prior to the return of the watercourse to its original course.
- Tools and equipment will not be cleaned in the watercourse. Should it be necessary to clean tools and equipment on site, this will be done well away from watercourses.
- Washout water will not be poured away into watercourses or surface drains or disposed of in any way as to cause/permit a discharge into a watercourse.
- If concrete must be sprayed, sheeting will be used to cover the water surface and the open faces of the structure to prevent deposits of concrete dropping into the water. The area will be thoroughly cleaned before removing the sheeting.
- In the event of release of concrete into a watercourse, all measures will be taken to stop further ingress of material.
- Where work is being undertaken adjacent to a watercourse, regular checking and monitoring should be undertaken and recorded.

### **Wheel Wash Facilities**

- H.9.26 Site wheel washing facilities will be established at designated locations, located outside of any floodplain or a minimum 10m distance from watercourses. Cleaning will be carried out in a bunded area and wastewater will either be recycled within this system and any discharge shall be from a filter sump and will only be undertaken when the water quality has been checked. Any contaminated waste will be removed from site by a licensed waste carrier for disposal to an appropriately licensed facility.

### **Site Compound Facilities (including Car Parks)**

- H.9.27 Site compounds and car parks are located away from all surface water features and watercourses and outside of the functional floodplain.
- H.9.28 A site drainage plan will be prepared in advance of construction to identify the location of all watercourses and drains/drainage paths.
- 1.1.1 All drainage on site will be identified and colour coding will be used to distinguish between surface water, foul sewer, and combined drainage. This will ensure that all those working on site are aware of the type of drain in the event of a pollution incident. Pollution control measures such as oil interceptors, placement of bunds or silt traps will be used to prevent silt run-off entering drains.
- H.9.29 A site drainage plan, showing the colour coded drainage, will be produced for each compound. These plans will be displayed on the site notice boards. The compound drainage will also be included on site constraints plan. The site drainage will be included in the Schedule of Inspection for the site compounds, which will include silt traps and oil interceptors, to ensure these facilities are maintained.
- H.9.30 Sewage will either drain to the public foul sewer with consent from the local sewerage undertaker or to a cesspit / effluent tank (depending on the availability of the local sewerage network), from where it will be collected and disposed of by a registered waste carrier.
- H.9.31 The tanks within portable toilet facilities will be emptied regularly. Sewage from portable facilities will be disposed by a registered waste carrier (a copy of their Waste Carriers Licence will be provided and verified by the Environment Agency Public Register). Waste transfer tickets for all movements of sewage / foul water will be retained on site and kept on records.

### **Stockpiles and Exposed Ground**

H.9.32 Exposed ground and materials stockpiled on site, such as topsoil, hardcore and sand, can pollute water with silt and the air with dust. All stockpiles on site will be well managed and maintained in accordance with best practice guidance outlined in Pollution Prevention Guidance (PPG) 6: Working at construction and demolition sites.

H.9.33 Where appropriate, the following measures will be implemented:

- No topsoil or other material will be stockpiled within the floodplain or within 10m of any watercourse or drain.
- In advance of vegetation clearance and soil stripping operations commencing within 10m of a watercourse, appropriate control measures will be implemented to prevent contamination.
- Where possible, stockpiles will be located on level ground.
- Slope stability of the stockpiles will be checked and maintained. The sides of stockpiles will be graded to prevent ponding and to help shed rainwater.
- Consideration will be given to covering stockpiles however it is more practicable to dampen down and seal to prevent the material from drying out and causing dust.
- Runoff from stockpiles will be controlled so as not to enter drains or ditches etc.
- Silt fencing will be used around the stockpile areas where required to prevent suspended solids from escaping.
- Contaminated material will be stockpiled on an impermeable surface, in a bunded area, at least 10 m away from the nearest watercourse and will be covered to prevent contaminated run-off.
- Any runoff from a contaminated stockpile will be legally disposed of.
- Where possible, works will be phased to reduce stockpiling.
- Top soiling and seeding of finished slopes will be carried out as soon as possible as work progresses to establish grass at the earliest opportunity, which will help to minimise runoff problems.
- Any stockpiles of topsoil / subsoil which will remain for a reasonable length of time will be seeded, to bind the material together preventing both dust and surface water run-off.
- Where feasible, the main earthmoving activities will be undertaken during the late spring and summer months.
- Wherever possible, topsoil will be left in place to minimise the amount of unprotected ground exposed to run-off. Where topsoil removal is required, it will take place as late as possible prior to other early works in the area.

### **Excavation Activities**

- H.9.34 Excavations can increase the risk of pollution occurring to groundwater and surface water environments caused by production of silt and sediment laden runoff; exposure of contaminated soils/materials and collection of rainwater of contaminated runoff to collect in excavations.
- H.9.35 Similarly, excavations have the potential to intercept groundwater. Where this occurs suitable groundwater control measures will be put in place. This may include the use of filter drains and sump pumps to draw down groundwater below the excavation, or coffer dams to exclude water from excavations.
- H.9.36 The following control measures will be reviewed and implemented, where applicable, to minimise risk to the surface water and groundwater environments:
- All authorisations to remove, treat and discharge water ingress, where required, will be in place prior to excavation.
  - Groundwater ingress into excavations extending below the water table will be controlled using a sump pump, protected by a filter system to lessen the mobilisation of suspended material.
  - All discharge waters should be passed through suitably sized settlement systems with appropriate treatment to remove suspended solids (this may include the use of a Siltbuster, where required).
  - The discharge outputs must be regularly monitored for elevated suspended solids, smell, evidence of oil. This should be recorded at least twice daily on either a site-specific inspection sheet or the site diary.
  - If the pump is to be operating for a long period, then it must be inspected frequently by a competent person.
  - All other considerations to any other mitigation measures outlined to ensure compliance with volumetric or quality related constraints shall be adhered to.
  - Use of cut-off drains or ditches around the perimeter or upslope of cuttings or excavations to reduce the volume of water entering the works area. Thereby, reducing the amount of contaminated water to be treated and disposed.
  - In areas where potentially contaminated land is identified, specific mitigation measures will be designed to manage and contain potential contamination. Detailed method statements will be prepared for works in these areas.

## **H.10 Monitoring and Measurement**

- H.10.1 The Environmental Manager and site team are responsible for ensuring that checks are carried out, to ensure these are carried out in accordance with requirements of the environmental good practice, legislation, and the requirements of the Second Iteration EMP.
- H.10.2 River levels and the three-day weather/flood risk forecasts will be regularly checked. Works in or near watercourses should be suspended when out-of-bank river flows are forecast, and plant moved to a position of safety. Following a flood event, any temporary works in watercourses or their floodplains will be checked for integrity prior to commencing works.
- H.10.3 When carrying out any discharges, the dewatering system and discharge points shall be monitored on a daily/shift basis, ensuring that both upstream of the discharge point and downstream are reviewed to ensure there is no impact on the watercourse. If pollution is noted, works will be suspended immediately, and the Environmental Manager notified.
- H.10.4 The inspection regime for the site compound will include facilities such as the site drainage, with any silt traps and oil interceptors to ensure these facilities are maintained during the constructions works. A site drainage plan, showing the colour coded drainage, will be produced. These plans will be displayed on the site notice boards.
- H.10.5 Baseline checks of ordinary watercourses will be conducted prior to construction and the results recorded using a Water Monitoring Form. Regular visual monitoring of watercourses shall be completed during construction and shall include control of the following parameters:
- Changes in water colour.
  - Change in water transparency.
  - Oily sheen on water surface.
  - Floating debris.
  - Scums and foams.
  - Dead/ decaying plants, animals, and fish.
- H.10.6 When required, visual inspections may be supplemented with quantitative monitoring at sensitive locations using field measurement device and should be carried out by a suitably qualified EcoW / appointed Water Quality Consultant. Water samples may be sent to an accredited testing laboratory for more detailed analysis. Determinants may include, but not limited to:
- pH

- Turbidity/ suspended solids
- Ammoniacal nitrogen
- Electrical conductivity
- Heavy metals
- Petroleum hydrocarbons
- Polyaromatic hydrocarbons
- Volatile organic carbons
- Biological or chemical oxygen demand.

H.10.7 There are two approaches that may be employed to ensure that mitigation appropriate and maintaining compliance: the methods are:

- Temporal: Baseline water quality monitoring shall be conducted across the Scheme study area prior to commencement of the early works to capture seasonal and spatial baseline data. Baseline data and the relevant Environmental Quality Standards (EQS) will be used to create trigger values for construction. The duration of the sampling program and frequency of data collection and the trigger values to be used during construction are to be agreed with the Environment Agency.
- Spatial: Upstream control locations and locations downstream of the works area will be sampled at the same time so that any change between the two locations can be determined. Frequency of monitoring is dependent upon risk of works and should be agreed with the Environment Agency.

H.10.8 All water quality monitoring records will be managed in accordance with the control of records requirements of the PCs Environmental Management System.

H.10.9 Monitoring data collected during the early works period will be compared to the baseline/control data set to identify any impacts of the development on the surface water environment and to identify any requirement for further remedial measures.

## H.11 References

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