

**TEMPORARY CONSTRUCTION COMPOUND AT
M62 JUNCTION 19**
Drainage Strategy

HE548642-COS-HDG-SII_MLT-SG-W-0001

October 2025

Document Control

Project Director:	Ben Wade
Originator (Company):	Costain
Document Number:	HE548642-COS-HDG-SII_MLT-SG-W-0001
Rev Number:	P01
Date:	16/10/25
Document Status:	Planning Application

Document history and status

Revision	Date	Description	By	Check	Review	Approved
P01	16/10/25	For issue for Planning Appliaiton	SO	CS	CS	PE

The original format of this document is copyright to National Highways.

M60/M62/M66 Simister Island

Junction 19 Temporary Compound Drainage Strategy

Introduction

This Drainage Strategy Report has been prepared to support the Town and Country Planning Application for the proposed temporary site compound at M62 Junction 19. The compound will be used to support the delivery of the M60/M62/M66 Simister Island Scheme.

The purpose of this report is to set out the approach to both surface water and foul water drainage, ensuring compliance with relevant planning policy, National Highways design standards, and environmental protection requirements. The strategy is designed to ensure that the temporary development:

- does not increase flood risk locally or downstream,
- avoids pollution of controlled waters and the highway drainage system, and
- can be safely constructed, operated, maintained, and decommissioned.

Site Location and Description

The proposed site compound is located to the south of the M62 at Junction 19, positioned to provide strategic access to the motorway network while avoiding impacts upon the Local Road Network.

The compound will accommodate:

- Site offices and welfare facilities
- Car parking for staff and visitors
- A security hut and access control point
- Materials storage areas (structures, lighting, traffic management, drainage materials etc). Note that there will be no storage of earthworks materials or aggregates at the J19 Site Compound.
- Secure compounds for traffic management equipment
- Fuel storage and jet wash facilities
- Material testing laboratory and stores buildings

The Site Compound Layout drawing (Figure 1) defines the proposed arrangement. The site topography falls gently towards existing ditch features, with levels around 132.0 m AOD at the proposed attenuation basin. Existing surface drainage infrastructure includes open ditches, manholes, pipes, attenuation basin and an interceptor.

The site area was previously utilised by National Highways in 2016-2018 for a temporary construction compound for works to the Strategic Road Network, before being returned to agricultural land. A new temporary compound was then constructed in early 2023 for National Highways M62 Upgrade Schemes. This was demobilised in 2024, however, the temporary compound infrastructure remains in place.

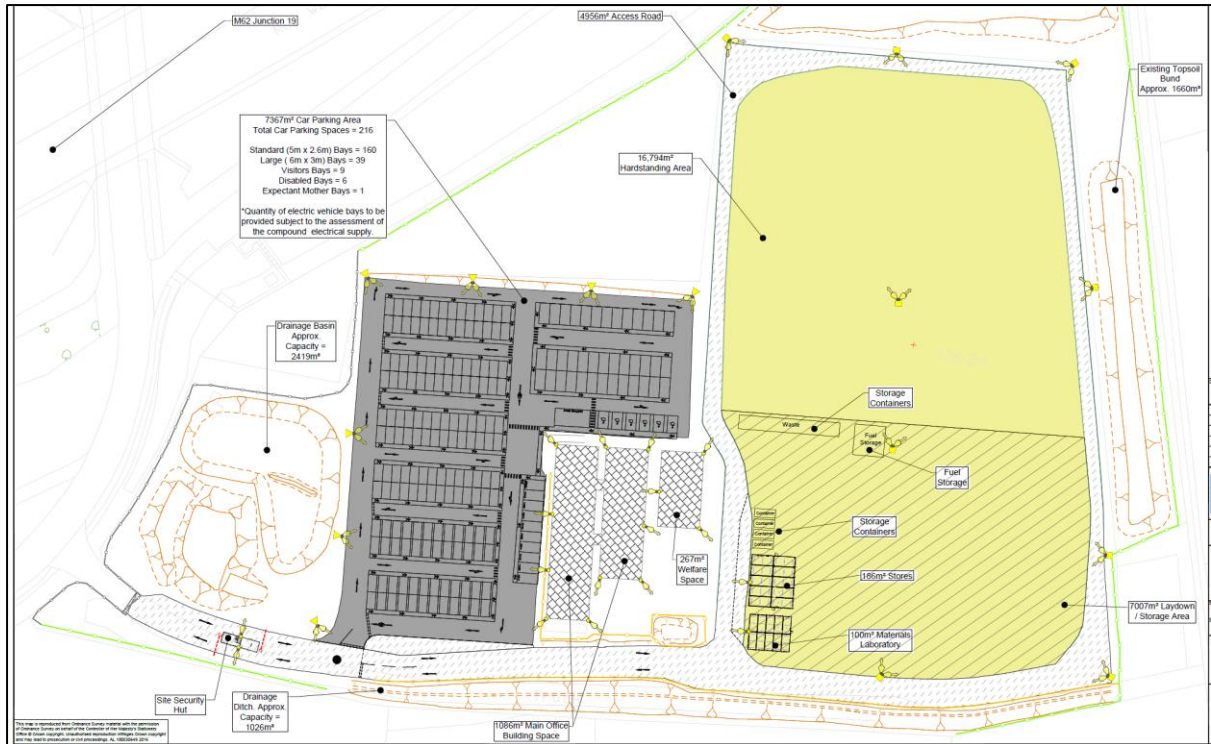


Figure 1 - Junction 19 Draft Compound Layout

Baseline Drainage Conditions

The previous site prior to its development for the M62 Scheme temporary site compound in 2023, was agricultural land draining into the existing National Highways network (See Figure 2):

- Calculated greenfield runoff rate = 35.7 l/s.



Figure 2 - Pre-existing site condition (2022)

The M62 Scheme temporary site compound was constructed in early 2023; installing new hardstanding areas and drainage infrastructure which drained into the same National Highways outfall connection, but providing additional drainage features and attenuation measures (See Figure 3):



Figure 3 - Temporary Site Compound constructed in 2023 and current as-built site condition

The surface water for the site drains under gravity through existing drainage infrastructure and ultimately to the existing outfall chamber which connects into the National Highways Drainage Network.

Surface water runoff is divided into three main catchment areas as follows, these are shown on figure 4 – draft Drainage General Arrangement Plan:

- Catchment 1 (34,522 m²) – Shown in orange in Figure 4: This is the main area of the site comprising hardstanding areas for carpark, offices, welfare, material storage, access roads etc which drain south under gravity to the existing ditch system which runs along the southern perimeter of the site.
- Catchment 2 (3,405 m²) – Shown in yellow in Figure 4: This is the attenuation basin area and surrounding soft landscaped land. Surface runoff for this catchment drains into the attenuation basin and then flows into the pipework towards the outfall.
- Catchment 3 (507 m²) – Shown in blue in Figure 4: This is the area of hardstanding highway at the access to the site which drains into the existing drainage network between existing chambers CP01 and CP02.

The total catchment area is 34,434m², areas beyond these catchments have been verified not to contribute to the proposed network. All surface water runoff will pass through the interceptor prior to discharge to ensure adequate treatment and separation of hydrocarbons.

Surface Water System Components

The drainage chamber and pipework schedule is to be read in conjunction with the Drainage GA drawing and Drainage Risk Assessment (DRA). The design and schedule sets out the existing temporary drainage infrastructure installed to service the M62 Junction 19 Site Compound. All works to install the existing drainage system were undertaken in accordance with the MCHW Volume 1 Specification for Highway Works (SHW) and the MCHW Volume 3 F Series Drawings.

- **Surface Water Network**

- A series of pipes, ditches and chambers convey flows from catchment areas to the outfall via the installed interceptor. The attenuation basin stores water in peak flow conditions.
- Pipe design has been undertaken based on hydraulic capacity, with cover levels and invert levels referenced separately in the manhole and pipe schedule.
- Manhole Assets
 - Existing Catchpits CP02 and CP03 are 1050 mm chambers with 300 mm outlet pipes discharging to outfall via the existing in-line interceptor I1.
 - Newly installed catchpit CP01 Cover Level: 133.518 mAOD, chamber diameter 1800 mm. Incorporates Proposed Orifice Plate (100 mm Ø) to limit discharge to 33 l/s, in line with agreed greenfield run-off restrictions. Outfalls via Pipe 1.006 (300 mm Ø) with provision of backdrop (263 mm).
 - Existing Manholes D1–D6 Located along the existing ditch alignment. Varying cover levels (137.377 m to 133.908 m AOD). Associated with ditch outfalls (Ditch Type 1 and Type 2), with incoming and outgoing pipe diameters ranging from 450 mm to existing ditch sections. Depths between 0.5 m and 1.4 m, with D6 including a headwall sump (sump depth to 1.708 m). These assets are retained in the proposed system.
- Pipes with less than 1.2m cover will receive Type Z surround for structural protection.
- Connection to an existing ditch through PCC headwall (IL 132.500 m AOD), headwall includes debris screen.

- **Attenuation Basin**

- An attenuation basin has been designed to provide temporary storage for surface water runoff during periods of heavy rainfall. In dry weather the basin remains empty, but during storm events it fills and then gradually releases water back into the drainage network at a controlled rate.
 - *Normal/Dry Conditions:* Under baseline conditions, the downstream drainage system (manhole with flow control device) conveys flows freely into the National Highways outfall drainage system. The basin remains empty because the invert of the connecting pipe is set higher than normal water levels in the network.
 - *Storm / Peak Flow Conditions:* When rainfall exceeds the capacity of the downstream system, water levels in the carrier drain or manhole rise. Once the water level exceeds the invert of the pipe connection to the basin, hydraulic head causes water to backflow up a two-way pipe and into the attenuation basin. The basin provides temporary storage, preventing downstream flooding or overloading of the network.

- *Post-Storm / Drawdown Phase:* As flows in the downstream system reduce, water levels in the manhole/carrier drain drop back down.
The stored water in the basin now has a higher water level relative to the downstream system, so it flows back down the same two-way pipe in the opposite direction. Outflow is controlled by an flow control device (orifice plate) to limit discharge to the agreed maximum rate (33 l/s).
 - Attenuation basin is designed to ensure storage volume (1,091m³) and greenfield discharge rate (33 l/s) are not exceeded, in compliance with CIRIA SuDS Manual and SHW. This rate is below the greenfield equivalent (35.7 l/s), ensuring no increased flood risk.
 - Freeboard of 300mm provided above maximum water level (133.130 m AOD).
 - Cover/bund level: 133.650 mAOD. Invert: 132.000 mAOD. Maximum water level to be confirmed on GA drawing (based on 1 in 10 year return period storage).
Net attenuation volume calculated between design water level and invert level.
Side slopes at 1 in 3 gradient. Designed as a dry basin.
 - Groundwater levels are well below the proposed attenuation basin invert level of 132.0 m AOD, reducing the risk of groundwater ingress.
- **Flow Control**
 - Flow restriction achieved via a 100mm orifice plate at chamber CP01.
 - The control ensures maximum discharge of 33 l/s to the outfall network.
- **Interceptor**
 - Kingspan Class 1 Bypass Separator (NSBE Series) installed within surface water drainage network between CP02 and CP03 to prevent hydrocarbons (e.g. petrol, diesel, oils) from being discharged to the environment.
 - Separation Principle: Works on the principle of gravity separation. Oil and light hydrocarbons (lower density than water) rise to the surface, while silts settle to the base. Cleaned water passes beneath a baffle to the outlet.
 - Design Characteristics:
 - Class 1 coalescing separator, designed to achieve a discharge concentration of ≤5 mg/l oil under standard test conditions.
 - Units are supplied with an internal coalescer and oil alarm probe housing (Ø76 mm tube provided for alarm sensor installation).
 - Surface water enters via a 300 mm (or similar) pipe, flows through internal baffles or coalescing filters, and discharges via an outlet of equal size.
 - Installed on a concrete base with cover and frame suitable for site loading.
 - Inlet and outlet pipework connected to site drainage network.
 - Alarm cables ducted between the separator and monitoring system.
 - Selected model sized to accommodate the compound's design peak flow (up to 33 l/s discharge, in line with agreed outfall rate).
 - Provides bypass treatment for larger flows (storm events) while maintaining full treatment for first flush / polluted runoff.
 - Access/Maintenance: Manhole cover and access shaft provided for inspection, de-sludging and oil removal.
 - The existing Interceptor I1 is recorded as a chamber with a depth of approx. 1.8 m and 300 mm outlet pipe.
 - Regular inspection and maintenance (removal of silt and oil residues) is required to maintain efficiency
- **Outfall and Existing Assets**

- Outfall point is located at existing chamber EX MH where the system discharges into the National Highways Drainage Catchment towards the M62.
- Project correspondence (August 2025) between Costain and National Highways confirms the discharge arrangements: Greenfield principle: strategy based on not exceeding pre-existing greenfield runoff rate to the National Highways network.
- Greenfield runoff rates have been derived using IH 124 (UKSUDS greenfield runoff rate estimation tool). This provided a 1 in 1 year value of 35l/s and a Qbar value of 42l/s. The attenuation basin was then sized for a 1 in 10 year weather event with no flooding with a maximum discharge rate from the site limited to 33l/s.

Foul Water Drainage

Baseline Conditions

The foul water drainage strategy for the M62 Junction 19 Site Compound has been developed to provide safe and sustainable treatment of foul effluent generated by up to 230 staff at peak operation.

A Klargester BioDisc package treatment plant has been installed to ensure that all foul effluent is appropriately treated prior to discharge to the National Highways network, protecting local water quality and complying with environmental requirements.

During the previous temporary compound construction, the installed Klargester was not fully completed, with works still required to undertake the final ducting and electrical connections. There was also no consent in place to operate the Klargester as a package treatment plant, and so the previous temporary operating regime used the Klargester as a cess pit tank which was emptied on a regular basis with the effluent being removed from site in a tanker. The proposal would be to continue to operate the Klargester as a cess pit tank, removing foul waste from site, until the necessary connections have been installed and a consent has been granted to operate the package treatment plan.

System Description

The Klargester BioDisc unit is a biological treatment system designed for medium-sized populations. It is well-suited to temporary compounds, as it delivers a high level of treatment without the need for a permanent connection to a mains sewer.

The unit operates in three key stages:

1. Primary Settlement Zone – Incoming foul water passes into a settlement tank, allowing heavier solids to sink and lighter materials (e.g. fats, oils, greases) to rise.
2. Biological Treatment (Rotating Biological Contactor) – Wastewater then flows over a series of slowly rotating discs colonised by a natural biomass. As the discs rotate, bacteria attached to their surface break down organic pollutants in the wastewater.
3. Final Settlement Tank – Clarification occurs, with remaining suspended solids settling before the treated effluent discharges to the downstream system.

A sludge return system ensures that settled solids are recycled to the primary settlement zone, maintaining effective biological activity. The system is designed to run continuously, with

automatic restart capability in the event of power interruption.

Capacity and Suitability

- Design Population Equivalent (PE): Sized for up to 230 people in line with the compound's peak staff numbers.
- Daily Flow Capacity: Approximately 22.5 m³/day (for a BL-sized BioDisc unit).
- Treatment Standard: Capable of reducing biological oxygen demand (BOD), suspended solids, and ammoniacal nitrogen to levels suitable for discharge to a receiving watercourse or soakaway system.
- Operating Condition: The BioDisc remains operational at all times, ensuring that effluent is treated before entering the downstream drainage system and the existing interceptor.
- This ensures that wastewater generated from toilets, showers, canteen facilities, and welfare units within the compound is managed in a controlled and environmentally safe manner.

Installation Summary

The installed BioDisc unit has been constructed in line with the manufacturer's installation and operation guidance:

- Excavation & Base: The unit was set within an excavated pit on a reinforced concrete base to provide structural stability and prevent flotation.
- Backfilling: The unit was surrounded with concrete or suitable granular material, placed in layers and compacted to avoid voids.
- Inlet and Outlet Connections: Foul water is conveyed to the BioDisc via PVCu/GRP pipes (diameters as per the schedule), with gravity flow into the primary chamber. The outlet discharges via a 300 mm pipe towards the existing downstream interceptor (I1).
- Ventilation: The unit is connected to a high-level vent stack to maintain airflow, protect the biomass, and prevent odour issues.
- Control Panel: A dedicated control cabinet manages the rotor drive motor, sludge return pump, and rotation alarms. Power is provided via a dedicated electrical supply with appropriate isolation and protection.

Operation and Maintenance

- Continuous Operation: The discs rotate constantly to maintain a healthy biomass. Start-up requires the tank to be filled with clean water before sewage inflows commence, ensuring stable biological growth (typically established in 4–8 weeks).
- Sludge Removal: The primary settlement and final settlement tanks require desludging approximately every 6–12 months, depending on occupancy levels. A vacuum tanker will be used, with access provided at ground level.
- Maintenance Regime: Routine checks include verifying rotor operation, checking oil/grease levels, inspecting silt accumulation, and ensuring alarms are functioning correctly.
- Alarms: A Loss of Rotation (LOR) alarm is installed, providing early warning in case of motor or gearbox malfunction.
- Operational Restrictions: Harmful substances such as oils, solvents, paints, chemicals, or excessive disinfectants must not be discharged into the system. Only domestic-type sewage from toilets, showers, and welfare facilities should enter the plant.

Environmental Protection

The foul water treatment strategy ensures that:

- All foul effluent from the compound is fully treated prior to discharge.
- The treated discharge is directed into the existing petrol/oil interceptor (I1) before entering the wider drainage system, providing additional protection against hydrocarbon pollution.

Regular inspection, desludging, and maintenance of both the Kingspan BioDisc and Kingspan Class 1 Bypass Separator interceptor are essential to maintain performance and protect the receiving water environment.