



Wates Group Limited

# Environmental Permit Application – Supporting Statement

Phase 1, Channel View, Cardiff

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Wates House,  
Station Approach,  
Leatherhead,  
Surrey,  
KT22 7SW

RSK Environment Limited (RSK) has prepared this document at the instruction Wates Construction Limited, part of the Wates Group.

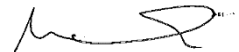
Author Tim Crowe



Project Manager Tim Crowe



Technical Reviewer and Quality Assurance Representative Andrew Przewieslik



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# 1 INTRODUCTION

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RSK Environment Limited (RSK) has been commissioned by Wates Construction Limited; hereafter referred to as Wates, to produce a surface water management plan (SWMP) for the Phase 1 development located off Channel View in Cardiff, South Wales, hereafter referred to as “the site”.

This supporting statement is presented in support of an application for an Environmental Permit to discharge surface waters during the construction phase of the development. Additional and supporting information to that provided in the application forms is included herein.

Sections 1 and 2 also provide a non-technical summary of the planned discharge.

The site is located adjacent to Channel View Road, forming part of the wider Channel View development and covers approximately 1.1 hectares (Ha) in area. The site was formerly occupied by residential apartment blocks with associated hard landscaping, access road and associated below ground infrastructure. The site is noted to be predominantly flat with a slight slope down from north-west to south-east.

The site as a whole is bounded to the north by an area of public open space (POS); to the west by Phase 2 of the Channel View development with residential properties beyond; to the south by residential properties; and to the east by a pedestrian footpath with the River Taff beyond. Phase 1 is located in the south-eastern area of the wider Channel View site.

Access to the site is granted via the south from Channel View Road, located in the south-western corner of the site.

The approximate centre of the site is at National Grid Reference (NGR) ST 18078 73919.

A site location plan is presented as Figure 1 within the supporting SWMP, contained within **Appendix A**.

The following general construction elements are anticipated as part of the development:

- Construction of residential units across the development.
- The majority of the development will comprise hardstanding with small areas for public open space (POS), swales and private gardens.
- Construction of public highways to provide access to new residential areas, including associated infrastructure (foul and surface water (storm) drainage).

All public highways will comprise of standard highway specification. Engineering drawings are presented in Appendix B of the SWMP presented in **Appendix A**.

The proposed development scheme comprises Phase 1 of the wider development comprising:

*“Outline permission for: The redevelopment and extension of part of the Channel View estate for up to 319 residential apartments and houses, up to 285 sq.m of retail floorspace (use class A1), communal gardens incorporating allotments and picnic areas, formal and informal children’s play space landscaping, cycle paths/footpaths, drainage infrastructure, roads and parking; The regeneration of the Marl public open space to*



*include new/improved sports pitches, children's play space, a new 'beach', water features, landscaping, and cycle paths/footpaths; The provision of a new bus/cycle/pedestrian link between Channel View Road and South Clive Street and a new cycle/pedestrian link between South Clive Street and Ferry Road; The provision of a new parking area; together with associated works (All matters reserved for future consideration).*

*Full permission is sought for a first phase of development comprising of new tower blocks (8-13 storeys) providing 81 older-persons (over 55s), community-living accommodation units, A 115 sq.m community café, communal gardens incorporating allotments and picnic areas, landscaping, drainage infrastructure, footpaths, roads, parking and associated works”.*

The site is to be redeveloped for residential land use with associated infrastructure, hardstanding, and areas of soft landscaping. The development of the site will be brought forward in seven phases, with Phase 1 occupying the south-eastern area. Access to the Phase 1 development will be via Channel View Road in the south-western corner of the site.

Demolition of the existing structures within Phase 1 has been completed with the slab removal and grubbing out of below-ground infrastructure to be completed. It is understood that this will be undertaken in phases, prior to construction commencing, to enable the storm water sewer to be diverted.

The development proposals will incorporate the existing surface water sewer, which will be diverted towards the centre of the site, to flow north-east towards the eastern site boundary before flowing north under the existing footpath, where it will discharge via the existing headwall.

Surface water at the site is expected to discharge via a number of swales and bio retention basins located around the periphery of the proposed structures. A number of the swales, along the eastern boundary of the site will be supported by below-ground cellular attenuation crates beneath the swales. Additional cellular attenuation tanks are proposed in the north-eastern corner of the development area and adjacent to the southern and western façades of the northern structure. Surface water discharge from the swales and attenuation crates will be controlled by a number of flow control chambers / orifice plates before discharging via the existing outfall headwall into the River Taff. Flow control chambers will have set discharge rates ranging between 0.7 l/s to 10.6 l/s into the stormwater sewer.

The proposed development will also incorporate area of sustainable urban drainage systems (SuDS), tree planning and permeable paving.

This application seeks to secure an Environmental Permit for the discharges from three locations, including two existing headwalls into the River Taff, located immediately adjacent to the eastern site boundary and to the east of the Marl to the north. A separate temporary discharge point is being allowed for via a pump cell, located within the Marl to the north of the construction site boundary. A summary of the proposed discharges, including receiving surface watercourse and associated NGRs is presented in **Table 1**.

**Table 1: Summary of Proposed Discharge Points from Channel View**

Discharge Point		Type of Activity	Discharge Point	Receiving Surface Watercourse
OF1	Existing outfall headwall	Water Discharge Activity	318126, 173956	River Taff
OF2	The Marl - existing outfall headwall		318126, 173997	
OF3	Temporary Discharge Point via pump cell		318074, 173992	

## 2 SURFACE WATER DISCHARGE DESCRIPTION

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Copies of the engineering drawings for the site are included in Appendix B of the SWMP presented in **Appendix A** and should be referred to in conjunction with this report. The drawings set out the drainage system for surface waters for the development area. With respect to the development, surface water refers to the movement of rainwater and associated site generated run-off across the development footprint.

The surface water drainage system comprises a series of below ground pipes that collect surface waters from roofs, roads, pavements and areas of hardstanding and convey this water off-site to the east, via a headwall into the River Taff (OF1). Surface water from the Marl to the north is expected to drain into a series of below ground drainage pipes before discharging into the River Taff via an existing headwall (OF2). A temporary discharge point (OF3) may be required, into the River Taff. Discharge to this point will be temporary to manage treated surface water from the construction area within Phase 1.

A SWMP, presented within **Appendix A**, has been developed for Phase 1 of the site, with the surface water mitigation set out within that report. Furthermore, regular inspections and updates of the SWMP should be undertaken through the lifespan of the development to ensure that the mitigation strategy remains appropriate. A site-specific Construction Management Plan (CMP) has also been produced for this site and is included in **Appendix B**.

Surface water discharges from the site will comprise rainfall, falling onto the development area, including haul roads, building footings and areas of disturbed/exposed ground following the installation of below ground infrastructure and the formation of ground levels to finished floor levels (FFL). As a result of general construction activity, silt may become entrained within site surface water drainage. In light of this, mitigation measures have been designed to minimise remobilisation and assist with the removal of silt from site surface water drainage, prior to discharge.

The proposed treatment may comprise both passive and/or active methods to remove silt from water, with a focus on passive mitigation. However, due to the size of the site, during wetter periods/months, there may be a requirement for water treatment using chemical flocculants. The use of chemical treatment methods, as set out in the SWMP will be dependent on the volume of water and successfulness of gravity lead passive means, prior to discharge. Therefore an Environmental Permit is being applied for that includes provision to use flocculants.

Water discharged from the proposed discharge points will consist of rainwater run-off that has been generated and collected within the development site. It is confirmed that no foul water will be present in the proposed discharge and that this permit application is not associated with the pumping or treatment of foul water.

Owing to the nature of activities associated with the development site, silt may become entrained within the rainfall run-off generated within the site. Accordingly, silt mitigation in the form of passive, gravity-driven water treatment, supplemented by active treatment measures, if absolutely necessary during wetter months, has been designed to minimise

the remobilisation of silt and for the removal of silt from water, prior to discharge to surface waters.

A site plan showing the indicative treatment, pumping, monitoring and discharge arrangements associated with the proposed development is presented on Figure 3 of the SWMP, presented in **Appendix A**.

### **3 ENVIRONMENTAL PERMIT PRE-APPLICATION DISCUSSIONS**

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Due to risk posed by the development activity to the identified receiving watercourses, a request for a pre-application discussions was submitted to Natural Resources Wales (NRW). A response was received which stated that NRW could not provide pre-application advice as it may be seen to be providing comment on pre-determining the application.

Copies of email correspondence at time of submission with NRW are presented in **Appendix C**.



## **4 ENVIRONMENTAL MANAGEMENT SYSTEMS**

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Wates Construction have environmental management systems in place. Which are built around the requirements of ISO14001. Wates Construction seek to minimise the impact of their site operations, particularly in relation to climate change, energy, water, waste biodiversity through compliance with the certified system. Wates Construction is audited on a regular basis with relevant employees provided with specific environmental training.

A Copy of the ISO14001 certification held by Wates Construction is presented in **Appendix D**.

## 5 QUALITY OF DISCHARGE WATER

The site has been subject to intrusive ground investigation works by Terra firma Wales in March 2024 (ref: Proposed Phase 1 Residential Development, Channel View, Cardiff, Geotechnical and Geoenvironmental Report, provided for Cardiff City Council, ref: 250324-16017-01, dated March 2024).

The report describe a site wide investigation of soil and controlled water conditions.

The ground investigation report included a contamination risk assessment supported by laboratory analysis of samples collected from the site. This assessment indicated a number of contaminants of concern, associated with the Made Ground beneath the site, above the GAC level. **Table 2** provides a summary of the identified contaminants of concern.

**Table 2: Contaminants of concern**

Contaminant	Associated Threshold (µg/l) (WFD)	Result	Associated Strata	Identified Depth (m)
Lead (Soils)	-	25 – 410 mg/kg	Made Ground	0.3 – 2.7
Lead (Groundwater)	1.2	<0.5 µg/l		Groundwater
Nickel	4	1.8 – 4.8 µg/l		Groundwater
Zinc	10.9	17 – 140 µg/l		Groundwater
Dibenzo(ah)anthracene (Soils)		<0.1 – 2.2 mg/kg		0.3 – 2.7
Dibenzo(ah)anthracene (Groundwater)	-	<0.01 µg/l		Groundwater
Asbestos (Chrysotile)		0.019 % w/w		0.5

\* WFD = Water Framework Directive

Elevated concentrations of Nickel and Zinc have been identified within the groundwater beneath the subject site. The TerraFirma report concluded that the contamination identified at the site is highly unlikely to adversely impact the surrounding environment, given that no sensitive land uses are present within the vicinity of the site. The assessment also set out that the site isn't located within 250 m of a groundwater abstraction and the aquifer designation for the site is Secondary B and Secondary Undifferentiated. Therefore, it is unlikely that future abstractions would be considered.

The geoenvironmental assessment has identified that the elevated concentrations of Zinc and Nickel are associated with the made ground present beneath the subject site and the landfill beneath the Marl, immediately to the north of the site boundary. The assessment concluded that the risk to the aquatic environment from waters and soils beneath the site is low.

Consequently, the principal contaminant to surface waters is considered to be from mobilised silt (suspended solids), during surface water runoff, associated with exposed soils during the enabling and construction phases of the development. The risk from which is further assessed in Section 6.

It should be noted that the following two factors could influence the potential concentration of suspended solids within run-off prior to treatment. These include:

- Amount of exposed sediment available for mobilisation; and
- The volume of rainfall which generates site surface water drainage.

In addition, made ground soils, excavated and stockpiled at the site will require management and protection to ensure that identified contaminants of concern are not allowed to leach into the surface water at the site.

## 6 RISK SCREENING ASSESSMENT

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An assessment of the environmental risks of the operations covered under this application for a discharge consent has been prepared in accordance with the following principles of the H1 methodology and the superseding Environment Agency (EA) surface water pollution risk assessment guidance (<https://www.gov.uk/guidance/surface-water-pollution-risk-assessment-for-your-environmental-permit#when-you-do-not-need-to-carry-out-screening-tests>), as adopted by NRW as continued guidance:

- Step 1 – identify risks
- Step 2 – assess risks
- Step 3 – justify appropriate measures (if needed)
- Step 4 – present the assessment.

Groundwork and construction for the Phase 1 development, is yet to commence. Initial phases of works will comprise the removal of hardstanding and grubbing out of foundation, followed the diversion of the existing surface water sewer, prior to construction works commencing.

### **Step 1: Identify Risks**

The H1 overview document identifies the following different types of risk to the environment.

- Odour – there are no potentially odorous activities or chemicals associated with the construction work.
- Noise & vibration – construction noise & vibration will occur but be limited to the allowed working hours (0800-1800 Monday to Friday and 0800 to 1300 Saturday). Noise & vibration resulting from the discharge activity are not envisaged as being significantly more noticeable than from the other construction activities at the site.
- Accidents – the potential for accidents to occur exists. The potential for contamination of the receiving surface waters (River Taff) will be managed to acceptable levels by the control measures put in place for the construction activities.
- Fugitive emissions to air and water - no significant risks have been identified for emissions to air. The potential for contamination of the surface water receptors will be managed to acceptable levels by the control measures put in place for the construction activities.
- Controlled releases to air – there are no point source emissions to air.
- Controlled discharges to surface water – discharge locations have been identified to the River Taff (OF1, OF2 and OF3), referenced in Figure 3 of the SWMP presented in **Appendix A**.
- Controlled discharges to ground or groundwater – there are no discharges to groundwater.
- Global warming potential of air emissions – negligible as surface water discharge.

- Contamination of soil and groundwater – Risk has been identified as low. The potential for contamination of the surface water receptors will be managed to acceptable levels by the control measures put in place for the construction activities.
- Site waste – the quantity of site waste generated will be small and consist primarily of silt/sediment removed from the surface water management system. This would be re-used at site (where feasible) under the appropriate regulatory approvals or disposed of at an appropriate facility.

### **Steps 2/3/4 – Assess Risks**

In accordance with the H1 methodology and the EA surface water pollution risk assessment guidance, as adopted by NRW, the following activities have been considered relevant to the proposed permit application and therefore carried forward in this risk screening assessment:

- Accidents.
- Surface water discharges.

Due to the proximity of nearby surface waters and the aquifer designation, it is not considered necessary to consider risks to groundwater. As summarised in Section 4.1 of the accompanying SWMP presented in **Appendix A**, Given the identified geological succession, and that the site does not lie within 250m of an SPZ or a surface water abstraction point, the site is not considered to pose a significant risk to sensitive controlled waters receptors.

#### Accidents

The site will be secured by fencing with no public access. Therefore accidental releases as a result of vandalism is not likely. However, the potential for accidents/accidental releases of contaminants, such as fuel and liquid flocculants and coagulants, on the construction site cannot be discounted and as such is assessed.

A risk assessment for accidents is presented in **Table 3**.

#### Surface Water Discharges

Prior to the commencement of construction activities at the site, rainwater falling across the development site would discharge by one of the following pathways:

- Infiltrate into the topsoil, percolating into the underlying geology and ultimately the drainage discharging into the River Taff; or
- Flow via overland flow, down gradient into onsite surface water gullies which discharge into the River Taff; or

Accordingly, the surface watercourses which the proposed discharges will enter are the same as those which received run-off prior to the commencement of construction activities.

The water to be discharged from the site comprises site surface water drainage from the development area.

As identified previously, the principal potential contaminant to surface waters is mobilised silt (suspended solids).



All proposed flocculants and coagulants usage will be in accordance with manufacturer specifications and dosing rates. This will ensure no significant impact on receiving waters. Dosing trials will be undertaken prior to their usage. Further detail on the usage of these materials is provided in Sections 5.3.2 and 5.3.3 of the SWMP presented in **Appendix A**.

As detailed in the SWMP, the potential risks associated with the proposed discharge will be reduced by the implementation of management and mitigation measures.

The management and mitigation measures installed at the site will remove suspended solids from site surface water drainage and ensure that discharges from the site will be clean and uncontaminated. Regular monitoring will be supported by sample collection and analysis, while chemical treatment measures are in use, to confirm appropriate discharge quality is maintained.

The discharge will be at ambient conditions so there will be no temperature effects as a result of the management and mitigation measures.

As the discharge will not contain any hazardous substances, sanitary determinants or other pollutants, detailed specific substances assessments are not considered to be necessary.

The proposed site surface water discharge risk assessment (including accidents) is presented in **Table 3**.

**Table 3: Risk Assessment for Proposed Site Surface Water Drainage Discharge**

Hazard	Receptor	Pathway	Risk Management	Probability of exposure	Consequence	What is the overall risk?
Leak/spillage of hazardous material on site (e.g. oils and fuels)	River Taff	Via overland flow or via the surface water drainage system (storm system)	<p>Containment measures for storage. All fuel stored on impermeable ground in appropriate containers such as bunded cells with double walls. Additional capacity, drip trays/sump pallet will also be deployed, if required.</p> <p>Spill kits will be maintained adjacent to storage areas.</p> <p>Minimisation of storage volumes.</p> <p>Regular maintenance &amp; inspection</p>	Unlikely	Contamination of the River Taff with hazardous substances.	Low – due to procedures detailed in site environment management plans (e.g. fuel/oil use and storage, waste/material storage).

Hazard	Receptor	Pathway	Risk Management	Probability of exposure	Consequence	What is the overall risk?
Leak of oil/fuel from pumps used as part of a water treatment system or other temporary pumping activity	River Taff	Via overland flow or via the surface water drainage system (storm system)	<p>Containment measures for storage. All fuel stored on impermeable ground in appropriate containers such as bunded cells with double walls. Additional capacity, drip trays/sump pallet will also be deployed, if required.</p> <p>Spill kits will be maintained adjacent to storage areas.</p> <p>Minimisation of storage volumes.</p> <p>Regular maintenance &amp; inspection</p>	Unlikely	Contamination of the River Taff with hazardous substances.	Low – due to procedures detailed in site environment management plans (e.g. fuel/oil use and storage, waste/material storage).

Hazard	Receptor	Pathway	Risk Management	Probability of exposure	Consequence	What is the overall risk?
Discharge of water containing suspended solids (silt)	River Taff	Overland flow from site boundary, or discharged from outfall(s)	<p>Silt mitigation measures set out within site-specific SWMP including silt fences, cut off bunds, temporary basins, flocculant treatments.</p> <p>Regular monitoring and testing of discharge.</p>	Low	Contamination of the River Taff with suspended solids (silt).	<p>Low – with management and monitoring measures in the SWMP to reduce the potential for additional silt to be present in the site surface water drainage. Suspended solids to be removed from site surface water drainage via a combination of both active and passive management systems prior to discharge.</p> <p>If the water shows signs of silt, the discharge will be suspended and the management systems inspected for signs of a fault.</p> <p>Any faults with the passive management measures will be immediately rectified, with discharges recommencing under close observation to confirm fault resolution.</p> <p>Faults with flocculant based management measures will be addressed in consultation with the system supplier. Once resolved, discharges will recommence under close observation.</p>

Hazard	Receptor	Pathway	Risk Management	Probability of exposure	Consequence	What is the overall risk?
Discharge of water containing chemicals from active treatment process (Ferric Chloride & Aquatreat 2084)	River Taff	Overland flow from site boundary, or discharged from outfall(s)	<p>Completion of a thorough chemical dosing trial by the supplier of the active treatment system to determine the appropriate chemical dosing rates prior to the commencement active treatment activities.</p> <p>Regular monitoring and testing of discharge to confirm adequate discharge quality.</p> <p>In the event that elevated concentrations of determinands are identified, discharge via the active management system will cease until system supplier situation resolved.</p>	Low	Contamination of the River Taff with dosing chemicals.	<p>Low – The completion of a dosing trial by the supplier of the active management system will ensure that the correct volumes of the chemicals are applied to the incoming water and that there are no residual chemicals in the treated water upon discharge.</p> <p>If monitoring and testing identify the potential imbalance in chemical dosing rates, the management system supplier will be contacted and a revised dosing trial will be undertaken and chemical dosing rates will be updated as necessary.</p>



Hazard	Receptor	Pathway	Risk Management	Probability of exposure	Consequence	What is the overall risk?
Discharge of water containing chemicals from passive treatment process (Ferric Chloride 25)	The River Taff	Overland flow from site boundary, or discharged from outfall(s)	<p>Completion of a thorough chemical dosing trial by the supplier of the active treatment system to determine the appropriate chemical dosing rates prior to the commencement active treatment activities.</p> <p>Regular monitoring and testing of discharge to confirm adequate discharge quality.</p> <p>In the event that elevated concentrations of determinands are identified, discharge via the active management system will cease until system supplier situation resolved.</p>	Low	Contamination of the River Taff with dosing chemicals.	<p>Low – The completion of a dosing trial by the supplier of the passive management system will ensure that the volumes of the chemicals are applied to the incoming water and that there are no residual chemicals in the treated water upon discharge.</p> <p>If monitoring and testing identify the potential imbalance in chemical dosing rates, the management system supplier will be contacted and a revised dosing trial will be undertaken and chemical dosing rates will be updated as necessary.</p>

Hazard	Receptor	Pathway	Risk Management	Probability of exposure	Consequence	What is the overall risk?
Spillage of collected solids from sediment collection systems	River Taff	Overland flow from site boundary, or discharged from outfall(s)	<p>Preparation and review of activity specific method statements for cleaning sediment collection systems.</p> <p>Method statements to consider risks associated with spillages of collected solids.</p> <p>Discharges from outfalls prevented during sediment collection.</p> <p>Site spillage control procedures.</p> <p>Deployment of additional silt management / spill kits.</p>	Very unlikely	Contamination of the River Taff with suspended solids (silt).	<p>Low – settlement system to be cleaned in such a way as to prevent silt spillage.</p> <p>Discharge outfalls to be bunged during cleaning.</p> <p>Cleaning to be completed by competent persons.</p>

Hazard	Receptor	Pathway	Risk Management	Probability of exposure	Consequence	What is the overall risk?
Failure of pumping equipment – overflow of water from drainage etc.	River Taff	Via surface flow or surface water drainage system	Management measures set out within site-specific SWMP	Unlikely	Contamination of the River Taff with suspended solids (silt).	Low – water is contained on site within surface water detention basins if pumps fail.
Vandalism – unplanned release of fuel, liquid flocculants and coagulants.	River Taff	Via surface flow or surface water drainage system	Site is secure without public access.  Sensitive materials stored securely in lockable containers.	Unlikely	Contamination of the River Taff	Low - due to security arrangements.

## 7 DISCHARGE VOLUMES

The maximum discharge rate from all outfalls will be a combined total of 14.7 litres per second (l/s).

The discharge rates from the temporary discharge point (OF3), will be controlled by a pump via a flow control to limit the discharge and flow rate to the pump cell. The maximum flow rate will be limited to that agreed through planning for the permanent discharge point. Discharge via the existing headwalls (OF1 and OF2) will be controlled by a flow control chamber on the final hydrobreak, prior to outfall.

Depending on site arrangements, flow rates shall be controlled by utilising the physical restricted channel infrastructure, via the permanent outfall, or the temporary dedicated pump system, with the discharge rate set to the appropriate flow rate. It is assumed that these two methods will be used in combination, during periods of heavy rainfall, to manage surface water at the site.

Table 3 provides a summary of the maximum daily discharge rate from the Phase 1 development site.

**Table 4: Summary of Maximum Daily Discharge Rates, Phase 1, Channel View**

Maximum Instantaneous Discharge Rate	Maximum Discharge Rate (per minute)	Maximum Hourly Discharge Rate	Maximum Daily Discharge Rate
14.7 l/s	882 l/min	52,920 l/hr	1,270,080 L/day

## 8 TREATMENT

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It is proposed that the application of flocculants, as well as potentially coagulants and pH balancers are utilised in addition to passive, gravity-driven silt settlement methods, to ensure that clean, silt free water is discharged from the site. As set out in previous sections, a SWMP has been prepared and is contained within **Appendix A**, which sets out the proposed silt management strategy in detail.

As outlined in the attached SWMP, the proposed silt management strategy will utilise passive / gravity driven systems installed across the site. Mitigation is to be installed as far as practicable, including a temporary surface water detention basin, silt fencing, surface water ditches/swales and over pumping to a pump cell over soft landscaping.

The proposed passive / gravity driven systems include the deployment of silt mats, silt fencing, cut-off ditches and a temporary catchment basin. It is considered that through the operational practices contained in the SWMP, these systems would provide the main silt interception measures and remain in place throughout the site's lifecycle.

Due to site constraints, the proximity of the site to the receiving waters and unassisted gravity settlement rates likely to be apparent, it is considered appropriate to supplement the deployment of the abovementioned management systems with measures utilising flocculants. Depending on site conditions and requirements, and suitable dosing trials, flocculants will be deployed in either passive measures (via flocculant dosed silt mats and gel flocculant blocks) or pump assisted (active) systems.

Flocculants deployed in the active pumping system will likely utilise Ferric Chloride as a coagulant and the anionic polymer AQ2084 (otherwise known as Aquatreat 2084) as the flocculant. However, this will be confirmed by undertaking a dosing trial prior to designing and implementing. If required, a pH balancer (sodium hydroxide) will be included into the treatment process to ensure that pH levels of water discharged from the treatment system do not fall below pH 6. A settlement test and validation report will be prepared for the site by the treatment equipment provider. Copies of the appropriate material safety data sheets (MSDS) will be presented and retained on site if required for use.

Prior to the commencement of passive treatment activities, a dosing trial will be completed to confirm the appropriate management calculations for the treatment system.

It is anticipated that these active treatment measures are utilised during periods of heavier rainfall; such as the winter months, to provide additional treatment and immediate discharge capacity across the development site.

The active pump and treat system will likely comprise lamella clarifiers, utilising liquid flocculant, coagulant and pH balancer. These comprise a pump passing water through a chemical pre-treatment system, which will dose incoming water with a flocculant, coagulant, and a pH balancer (if required). The dosing rate will vary depending on the incoming volume of suspended solids within the water.

The dosed water will then be distributed into the lamella clarifiers utilising a gravity based settlement system, which will remove the particles from suspension and capture them within individual settlement tank units.



The treated water will then be discharged from the treatment system and transferred via dedicated pipework to the designated discharge point (OF3).

Depending on site conditions, the pumps supporting the liquid flocculant, coagulant and pH balancer pump and treat system will operate on a float switch or manually.

In addition to the application of the aforementioned chemical coagulant and flocculant, if there is a lack of natural buffering within the on-site waters, there is the potential for the pH of the treated water to drop below 6 following the introduction of Ferric Chloride.

In such an event, the chemical pre-treatment system will include the introduction of a pH balancer such as sodium hydroxide on a pH proportional basis to increase the water pH to neutral.

The application of a pH balancer is not required at every treatment site and its usage is determined by the natural buffering capacity of the on-site water. The pH of the water will be regularly monitored throughout the treatment system use, to determine whether the addition of sodium hydroxide is required.

As set out, a site plan showing the indicative treatment, pumping, monitoring and discharge arrangements, associated with the proposed development is presented as Figure 3 of the SWMP contained within **Appendix A**.

It is considered important to highlight that, owing to the nature of activities undertaken at the site, there is the potential for certain aspects of the proposed treatment system to be relocated to facilitate the continuation of wider site activities, such as updated vehicle movement routes or material storage areas.

The treatment system aspects that have the potential to be relocated include the final placement of the active treatment systems within the development area and the route of the dedicated pipework transferring to the appropriate discharge point(s).

Whilst the routes and positions depicted in the enclosed site plan provide a representative arrangement layout, it is considered prudent to mark these as indicative locations due to their potential to be relocated during the construction lifecycle.

Regular sampling and monitoring will be undertaken at the designated discharge points.

Prior to any discharge of treated water, it is necessary to test and monitor the water quality, to ensure that the treatment has been successful and that suspended solids have been removed. For suspended solids, a maximum compliance limit of 50 mg/l will be used.

Should a Ferric Chloride coagulant be used, total and dissolved iron (as Fe) would also be analysed for, to confirm that concentrations do not exceed the maximum threshold stated in the Environmental Permit. Limits of 5 mg/l and 1 mg/l are proposed for total iron (as Fe) and dissolved iron (as Fe), respectively in line with treatment system supplier advice.

When operational, the treatment system would be visually inspected on a daily basis. Should any evidence of faults or pollution incidents be identified, the treatment and discharge will be suspended and suitable expertise from the supplier sought to address any issues or concerns prior to restarting the treatment process.

Water samples would be collected at the point of discharge and submitted to an external testing laboratory for analysis of the following determinands:

- Total suspended solid (TSS);
- pH;
- Total iron;
- Dissolved iron; and
- Total aluminium (where flocculant has the potential to contain aluminium).

It may be necessary to monitor water quality with respect to TSS whilst on site and at short notice for decision making on treatment and discharge options. One option would be the use of a portable turbidity meter. Turbidity is measured in nephelometric turbidity units (NTU); which relates to the transparency or clarity of the water. This test can be conducted in a few minutes in the field using appropriate equipment.

There is no standard correlation between TSS and NTU. Therefore, if on-site NTU measures are required, a relationship between TSS and NTU should be established.

Turbidity measurements would be collected at appropriate intervals at the designated discharge points.

The use of NTU testing as an on site screening criterion would ensure that treated discharge is stopped immediately, if the NTU suggests that the TSS would be exceeded and allows for further corrective actions to be put in place.

Maintenance of the surface water mitigation measures, in the form of the settlement tanks, surface water detention basins and their de-silting would be needed throughout the operational lifespan of the equipment.

The maintenance of active silt treatment measures will be undertaken by the equipment supplier at regular intervals. Passive equipment is to be maintained by the site operator, with appropriate assistance from the equipment supplier. It is likely that silted tanks used for active treatment would be cleaned out and replaced by clean tanks as required.

# **APPENDIX A**

## **SITE-SPECIFIC SURFACE WATER MANAGEMENT PLAN**

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**Wates Group Limited**

# **Channel View, Phase 1**

Surface water and silt management plan

315486 R01 (02)

**MAY 2024**



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# 1 INTRODUCTION

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## 1.1 Scope and objectives

RSK Environment Limited (RSK) was commissioned by Wates Group Limited (Wates), to produce a surface water and silt management plan (SWMP) for the land known as Channel View, Phase 1 located to the west of Cardiff city centre, Wales. This project has been carried out to the agreed brief as set out in RSK e-mail dated 1 December 2023.

This site-specific SWMP has been developed to outline the mitigation measures and water/silt management strategies for the site known as Phase 1, Channel View, as shown on **Figure 1**.

The objectives of this SWMP are as follows:

- Employ appropriate mitigation, including monitoring and implementation of contingencies to control and minimise surface water pollution associated with site activities.

The following aspects have been considered during the development of this SWMP:

- The development activities that produce potential sources of surface water pollution and their point(s) of release to surface water receptors; and
- The mitigation measures that are to be implemented to prevent, as far as is practicably feasible, the potential effect of any surface water pollution release, and details of the persons responsible for the actions at the site.

This document must be considered as a '**living**' document and must be regularly reviewed and amended to reflect site-specific changes or conditions as the development/build progresses.

It is recommended that a digital and/or hardcopy of this report is retained within the site compound for reference by site staff.

This report is subject to the RSK service constraints given in **Appendix A**.



## 2 SITE SETTING

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### 2.1 Development proposals

The proposed development scheme comprises Phase 1 of the wider development comprising:

*“Outline permission for: The redevelopment and extension of part of the Channel View estate for up to 319 residential apartments and houses, up to 285 sq.m of retail floorspace (use class A1), communal gardens incorporating allotments and picnic areas, formal and informal children’s play space landscaping, cycle paths/footpaths, drainage infrastructure, roads and parking; The regeneration of the Marl public open space to include new/improved sports pitches, children’s play space, a new ‘beach’, water features, landscaping, and cycle paths/footpaths; The provision of a new bus/cycle/pedestrian link between Channel View Road and South Clive Street and a new cycle/pedestrian link between South Clive Street and Ferry Road; The provision of a new parking area; together with associated works (All matters reserved for future consideration).*

*Full permission is sought for a first phase of development comprising of new tower blocks (8-13 storeys) providing 81 older-persons (over 55s), community-living accommodation units, A 115 sq.m community café, communal gardens incorporating allotments and picnic areas, landscaping, drainage infrastructure, footpaths, roads, parking and associated works”.*

### 2.2 Site location

The site is located adjacent to Channel View Road, forming part of the wider Channel View development and covers approximately 1.1 hectares (Ha) in area. The site was formerly occupied by residential apartment blocks with associated hard landscaping, access road and associated below ground infrastructure. The site is noted to be predominantly flat with a slight slope down from north-west to south-east.

The site as a whole is bounded to the north by an area of public open space (POS); to the west by Phase 2 of the Channel View development with residential properties beyond; to the south by residential properties; and to the east by a pedestrian footpath with the River Taff beyond. Phase 1 is located in the south-eastern area of the wider Channel View site.

Access to the site is granted via the south from Channel View Road, located in the south-western corner of the site.

The approximate centre of the site is at National Grid Reference (NGR) ST 18078 73919.

A site location plan is presented as **Figure 1**.

#### 2.2.1 Environmental designations

The site does not lie in a ‘designated environmentally sensitive area’ considered appropriate to the scope of this SWMP.

The River Taff is located adjacent to the eastern boundary of the site and is designated a statutory main river. Whilst the River Taff adjacent to the site isn’t designated as an

environmentally sensitive area, the Severn Estuary, to which the River Taff drains, located 1.5 km south, is designated a Ramsar site, site of special scientific interest (SSSI), special areas of conservation (SPC) and special protection area (SPA).

## **2.3 Site geology & hydrogeology**

RSK have been provided with copies of an intrusive ground investigation report and draft remedial strategy for the wider Channel View development. Details of the reports are set out below with pertinent details included in the following sections:

- Terrafirma, Geotechnical and Geo-environmental Report: Proposed residential development at Channel View Cardiff, prepared for Cardiff County Council, July 2020, Job No: 16017
- Terrafirma Wales (TFW), Draft Preliminary Remediation Strategy Report, Phase 1, Channel View, Cardiff, January 2024, Job No: 16017/RS

### **2.3.1 Geology**

Published geological maps indicate that the bedrock geology beneath the site is expected to comprise the Mercia Mudstone Group, comprising mudstone. Superficial deposits beneath the site are expected to comprise Tidal Flat Deposits containing clay, silt and sand. Due to the development history of the site, Made Ground is expected to be present beneath the Phase 1 site.

The area of POS, bounding the Phase 1 site to the north, is recorded as being a historic landfill (The Marls), operational between 1936 and 1945. The landfill is recorded as accepting inert, industrial, commercial, household and special waste categories.

A geotechnical and geo-environmental ground investigation was undertaken by Terrafirma in April 2020 across the wider Channel View site. The investigation comprised three cable percussive boreholes with rotary-core follow on. In addition, four shallow windowless sample boreholes were advanced. However, none of the investigation locations were undertaken within the Phase 1 boundary. Locations BH03 and WS02 were located adjacent to the northern and southern Phase 1 boundaries, respectively. Ground conditions in these boreholes identified a thickness of Made Ground ranging between 3.20 m to 5.30 m comprising gravelly sand with significant amounts of anthropogenic material (metal, slag, brick, glass and coal), overlying superficial Tidal Flat Deposits comprising silty clay over sandy silty gravel and cobbles of mixed lithologies. The Mercia Mudstone was encountered in BH03 at 19.60 m below ground level (bgl).

No geological faults or other lines of geological weakness are shown to cross the site.

The ground investigation report identified a number of contaminants above the generic acceptance criteria (GAC) deemed appropriate for the site and its setting. Leachate testing from samples obtained in BH03, located adjacent to the northern site boundary, identified elevated concentrations of copper, zinc and chromium above the guideline criteria. Analysis of potential contaminants of concern from within the groundwater found elevated concentrations of copper and chromium, when compared against Water Framework Directive (WFD) thresholds for inland freshwater environments (freshwater EQS).

The ground investigation report concluded that the elevated concentrations of copper and chromium are likely to be as a result of leaching from the landfill to the north (The Marl). In addition, the report summarised that the concentrations identified are varied across the wider development site and are highly unlikely to adversely impact the adjacent River Taff.

The greatest risk to the adjacent surface water body is considered to be during the construction period, as a result of de-watering, excavation of contaminated soils and surface water runoff. With good-practice management measures in place, the ground investigation assessment considered that the risk would be negligible. The assessment report set out the following control measures that should be considered during the construction phase:

- Prepare a drainage plan and mark the manholes to prevent pollutants accidentally reaching the surface water sewers;
- Carry out any activities that could cause pollution in a designated, bunded area, away from rivers or foundation excavations. Where possible it should drain to the foul sewer;
- Use settlement ponds to remove silty water;
- Store all oils and chemicals in a fully bunded area to prevent leaks or spills;
- Get advice on whether you need an environmental permit and apply in good time.

### **2.3.2 Hydrology and Hydrogeology**

The underlying bedrock geology at the site is classified as a secondary undifferentiated aquifer.

The site is not located within a groundwater source protection zone (SPZ).

Groundwater was recorded in BH03, during the intrusive ground investigation at 6.00 m bgl. Resting water levels were recorded as part of the investigations' return groundwater and ground gas monitoring rounds. A total of 6 No. return monitoring rounds were undertaken. However, the installation within BH03 was damaged and, as a result, no measurements were able to be recorded. Resting groundwater levels across the wider development site were noted to be between 3.39 m and 5.65 m bgl.

The nearest surface water feature to the site is the River Taff, which flows from north to south directly adjacent to the eastern boundary. This river feeds Cardiff Bay, which is managed by a series of lock gates.

An existing below-ground storm sewer is present beneath the site and is fed by the wider residential setting to the west, existing surface water drains and highway gullies, both on site and off site to the west. The surface water storm sewer discharges from the eastern site boundary into the River Taff (OF1) at approximate National Grid Reference ST 18126 73956. A second below-ground surface water drainage network is known to be present off site to the north. A series of below-ground pipes have been traced, which discharge surface water from across The Marls POS area into the River Taff, via a second headwall outfall (OF2), located to the north of the Phase 1 boundary. This is thought to be located at approximate National Grid Reference ST 18126 73997.

## 2.4 Site drainage arrangements

The site is to be redeveloped for residential land use with associated infrastructure, hardstanding, and areas of soft landscaping. The development of Channel View will be brought forward in seven phases, with Phase 1 occupying the south-eastern area of the site. Access to the Phase 1 development will be via Channel View Road in the south-western corner of the site.

Demolition of the existing structures within Phase 1 has been completed with the slab removal and grubbing out of below-ground infrastructure yet to be completed. It is understood that this will be undertaken in phases, prior to construction commencing, to enable the storm water sewer to be diverted.

The development proposals will incorporate the existing surface water sewer, which will be diverted towards the centre of the site, to flow north-east towards the eastern site boundary before flowing north under the existing footpath, where it will discharge via the existing headwall.

Surface water at the site is expected to discharge via a number of swales and bio retention basins located around the periphery of the proposed structures. A number of the swales, along the eastern boundary of the site will be supported by below-ground cellular attenuation crates beneath the swales. Additional cellular attenuation tanks are proposed in the north-eastern corner of the development area and adjacent to the southern and western façades of the northern structure. Surface water discharge from the swales and attenuation crates will be controlled by a number of flow control chambers / orifice plates before discharging via the existing outfall headwall into the River Taff. Flow control chambers will have set discharge rates ranging between 0.7 l/s to 10.6 l/s into the stormwater sewer.

The proposed development will also incorporate area of sustainable urban drainage systems (SuDS), tree planning and permeable paving.

The proposed development plan for Channel View Phase 1 is presented as **Figure 2**.

Engineering drawings showing the site surface water drainage arrangements are presented in **Appendix B**.

Surface water discharges from the site will be rainfall dependent and consist of run-off from the active development area, including haul roads, building footings and areas of disturbed/exposed ground following the installation of below-ground infrastructure.

Given the sensitivity of the adjacent watercourse, collected surface water during the construction phase will need to be managed on site and discharged under controlled measures to the adjacent soft landscaping.

## 2.5 Site discharge locations and discharge rates

Site surface water run-off, from the permanent drainage system, will be discharged from the site boundary via the existing outfall headwall (OF1). A temporary discharge point (OF3), from excavations during the construction phase, will likely be required while the storm sewer is diverted. A second, existing outfall headwall from surface water drainage from The Marl is located offsite to the north. Temporary discharge from the construction

works to the pump cell, located on soft ground to the north, may impact the outfall from this location (OF2). The approximate discharge points for the temporary discharge and permanent discharge points are set out in **Table 1**.

**Table 1:** Discharge points

		Easting	Northing
OF1	Existing outfall headwall	318126	173956
OF2	The Marl - existing outfall headwall	318126	173997
OF3	Temporary Discharge Point via pump cell	318074	173992

The discharge rates from the temporary discharge point, will be controlled by a pump on site. The maximum flow rate will be limited to that agreed through planning for the permanent discharge point, set at the greenfield runoff rate. Discharge from OF1 will be limited by the flow control chamber on the final hydrobreak. This is expected to be limited to 14.7 l/s.

## **3 SENSITIVE RECEPTORS**

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### **3.1 Identified sensitive receptors to surface water pollution**

A review of published Ordnance Survey (OS) mapping data and a walkover of the site and its surroundings, indicates that the River Taff, a statutory main river, runs along the eastern boundary of the site, flowing from north to south. The river discharges into the Severn Estuary via Cardiff Bay. The Severn Estuary, located approximately 1.5 km south, is designated a Ramsar site, SSSI, SPA and SPC. The River Taff and Severn Estuary are considered to be the primary receptors associated with site discharge activities.

Secondary receptors associated with site discharge activities include:

- Residents in completed phases (upon completion and occupation).
- On site highways, highway gullies and associated below-ground infrastructure (once constructed)
- Wider public highway realm off site beyond the construction site entrances and site boundaries.
- Residents beyond the site boundaries within existing properties and POS.

Shallow groundwater has been recorded within the site's surroundings during previous phases of ground investigation. Given that the groundwater is expected to be in continuity with the adjacent river, it is considered necessary to review the risks to the adjacent surface water from the groundwater beneath the site.

## 4 SURFACE WATER POLLUTION SOURCE INVENTORY

### 4.1 Potential pre-existing contamination considerations

The site investigation work completed for The Marl located to the north of the development area, indicated that leachate testing measured elevated concentrations of selected heavy metals above the guideline criteria. Analysis of potential contaminants of concern from within the groundwater found elevated concentrations of copper and chromium, when compared against WFD thresholds for freshwater EQS. Given the location of the borehole and samples obtained, the elevated concentrations of copper and chromium are likely to be as a result of leaching from the landfill. In addition, the report summarised that the concentrations identified are varied across the wider development site and are highly unlikely to adversely impact the adjacent River Taff.

The Phase 1 site has been subject to intrusive ground investigation works by TerraFirma Wales in March 2024 (ref: Proposed Phase 1 Residential Development, Channel View, Cardiff, Geotechnical and Geoenvironmental Report, provided for Cardiff City Council, ref: 250324-16017-01 Draft, dated March 2024).

The ground investigation report included a contamination risk assessment supported by laboratory analysis of samples collected from the site. This assessment indicated a number of contaminants of concern, associated with the Made Ground beneath the site, above the GAC level. **Table 2** provides a summary of the identified contaminants of concern.

**Table 2: Contaminants of concern**

Contaminant	Associated Threshold (µg/l) (WFD)	Result	Associated Strata	Identified Depth (m)
Lead (Soils)	-	25 – 410 mg/kg	Made Ground	0.3 – 2.7
Lead (Groundwater)	1.2	<0.5 µg/l		Groundwater
Nickel	4	1.8 – 4.8 µg/l		Groundwater
Zinc	10.9	17 – 140 µg/l		Groundwater
Dibenzo(ah)anthracene (Soils)		<0.1 – 2.2 mg/kg		0.3 – 2.7
Dibenzo(ah)anthracene (Groundwater)	-	<0.01 µg/l		Groundwater
Asbestos (Chrysotile)		0.019 % w/w		0.5

\* WFD = Water Framework Directive



Elevated concentrations of Nickel and Zinc have been identified within the groundwater beneath the subject site.

The geoenvironmental assessment has identified that the elevated concentrations of Zinc and Nickel are associated with the made ground present beneath the subject site and the landfill beneath the Marl, immediately to the north of the site boundary. The assessment concluded that the risk to the aquatic environment from waters and soils beneath the site is low.

Given the geological succession beneath the subject site, the site does not lie within 500 m of a groundwater SPZ or a surface water abstraction point and there are no sensitive land uses within the vicinity of the site, the site is not considered to pose a significant risk to sensitive controlled waters receptors.

Stands of Japanese Knotweed have been identified along the bank of the River Taff. Four stands are present and have associated exclusion zones as presented on Figure 3. Works to construct the surface water sewer within the existing public footpath, to the east of the eastern site boundary, are expected to be undertaken within the exclusion zone for one of these stands.

A Japanese Knotweed specialist has been commissioned by Wates to undertake a programme of remediation which involves the removal of impacted soils, treatment of the stands (over a 5 year period) and lining of the trench (used to provide the sewer diversion) with an appropriate membrane.

Excavation and removal of the impacted soils within the service trench will be undertaken under a watching brief by a suitably qualified ecologist. However, given the proximity to the watercourse, the expected depth of the trench and the potential continuity between the surface watercourse and groundwater within the trench, there is likely to be a requirement to dewater the excavation during the works. There is therefore a risk that Rhizomes from the Japanese Knotweed, without control measures could be over-pumped and impact an area of the site or its surroundings. It is therefore essential that mitigation measures, as set out in **Section 5.2.4** are implemented for the duration of the works.

Consequently, the principal contaminant to surface waters is considered to be from mobilised silt (suspended solids), during surface water runoff, associated with exposed soils during the enabling and construction phases of the development.

## 4.2 Sources of surface water pollution

Due to the nature of site activities, there is the potential for suspended solids to be generated and mobilised in surface water run-off.

**Table 3** provides a summary of the surface water pollution source inventory as well as associated hazards, receptors, and consequences.



**Table 3: Surface water pollution sources identified for Channel View, Phase 1**

Hazard	Receptor	Pathway	Consequence at Receptor
Leak/spillage of hazardous material on site (e.g., oils and fuels).	River Taff	Via infiltration, overland flow or via the surface water drainage system (storm system).	Contamination of River Taff with hazardous substances.
Leak of oil/fuel from pumps used as part of a water treatment system or other temporary pumping activity.			
Discharge of water containing suspended solids (silt).		Overland flow from site boundary, or discharged from the outfalls.	Contamination of River Taff with suspended solids (silt).
Discharge of water containing chemicals from active treatment process.		Overland flow from site boundary, or discharged from the outfalls.	Contamination of River Taff with dosing chemicals.
Discharge of water containing chemicals from passive treatment process.		Overland flow from site boundary, or discharged from the outfalls.	
Spillage of collected solids from settlement system.		Overland flow from site boundary, or discharged from the outfalls.	Contamination of River Taff water with suspended solids (silt).
Failure of pumping equipment – overflow of water from drainage etc.		Via surface flow or surface water drainage system.	
Vandalism – resulting in release of contaminants from containers.		Via surface flow.	Contamination of River Taff
Discharge of water containing Japanese Knotweed Rhizomes	River Taff and surroundings	Over-pumping to an area of soft landscaping or the River Taff	Inadvertent spreading of invasive species to the River Taff or surrounding environment.

## **5 SURFACE WATER DISCHARGE CONTROL MEASURES**

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### **5.1 Introduction**

The potential sources, pathways and receptors to surface water pollution associated with discharges from the site have been considered and assessed for Phase 1 of the Channel View development.

In order to prevent unacceptable surface water pollution and reduce the risk of surface water pollution incidents or accidents, the following control measures will be employed at the site, as required and reviewed on a regular basis.

Wates Group Limited and/or their appointed groundwork contractor shall be responsible for the implementation of appropriate control measures.

### **5.2 Procedural & management control measures**

The following procedural and management control measures shall be implemented as appropriate:

#### **5.2.1 Soil stockpiling**

- Utilise soil stockpiling procedures to ensure that the number and condition of stockpiles maintained on site are closely maintained and monitored in accordance with DEFRA guidance on best practice for topsoil storage during the construction phase.
- Locating stockpiles in designated areas as far as practicably feasible, away from sensitive water receptors, the southern and eastern site boundary and surface water drains.
- Seal stockpiles to prevent water ingress/runoff.
- Sediment collected via passive and active treatment measures will be stockpiled in designated locations for appropriate disposal or (if appropriate approval received) subsequent re-use on site under a U1 exemption.
- If required, silt fencing shall be installed around stockpile(s) to control run-off.
- If required or applicable, stockpiles can be seeded or covered with an appropriate covering to provide additional stability, prevent water ingress, and reduce the potential for sediment run-off and dust generation. However, this is only likely to be necessary if significant run off occurs and if stockpiles are to remain for significant periods of time.

### 5.2.2 Surface water management infrastructure

- Any pre-existing land drainage pipework, identified during the slab removal, grubbing out of below-ground infrastructure and construction activities, will be noted and sealed to prevent preferential flow pathways that bypass surface water protection measures.
- During the diversion of the underground sewer system and the connection to the existing outfall, measures will need to be put in place to seal the outfall before removal, to prevent any mobilised sediment being discharged. It is also critical that the installed diversion and headwall should be inspected with any residual sediment cleaned out prior to the outfall becoming live. Temporary inflatable bungs can be used on a short term basis. Water will need to be over pumped during the diversion of the assets, ideally with water transferred to the other storm water outfalls via temporary pipework.
- Installation of surface water management infrastructure, including temporary surface water attenuation basins, discharge points and road drainage infrastructure will be undertaken, as far as is practicable, as a priority when commencing activities in active construction areas.
- Installation and maintenance of physical mitigation and management control measures, as set out in Section 5.3.
- Installed surface water drainage infrastructure will be regularly inspected and appropriately cleaned, when required, to remove excess sediment and maintain surface water drainage rates/capacity.

### 5.2.3 Dewatering of excavations

- Where dewatering of excavations is required, water will either be pumped to a dewatering cell arrangement, comprising measures to remove any suspended sediments from the water, or directly to the active treatment system (where a suitable permitted system is established). Pump cell measures may include passing uplifted water through a silt sock or dewatering bag, situated on a bed of gravel and wooden pallet within an area of soft landscaping away and down-gradient of active construction areas. An area of POS is best suited for this. The proposed indicative location for a pump cell is situated within The Marl, to the north of the development site, as indicated on **Figure 3**.
- The dewatering cell will be surrounded by appropriate media; such as straw bales, silt fence wrapped gabion baskets or coir rolls, with an outer layer of silt fencing to capture any residual sediment as shown on **Figure 3**. This dewatering arrangement may need to be fenced with heras fencing if located within a POS.
- Should dewatering of excavations be required, where practicable, dewatering cells will be located in fully vegetated areas or areas where suitable erosions control measures have been deployed across the ground surface to prevent filtered water from remobilising any sediment.
- Dewatering activities will only be undertaken when appropriate supervision is available to confirm that, either water passing through the dewatering cell is clear and free of contaminants, or that the active treatment system is dosed appropriately for the waters being pumped. Therefore, an assessment can be made that no risk is posed to identified receptors.

- Dewatering activities will immediately cease in the event of significant sediment levels, which pose a risk to identified receptors are observed leaving the chemical treatment system or dewatering cell arrangements.

#### **5.2.4 Dewatering of service trench in possible Japanese Knotweed impacted area**

- Dewatering of the service trench, to enable the removal of potentially impacted soils for off-site disposal, should be done via a dedicated pipe to a dedicated silt bag within either the dewatering cell or placed directly on the bank of the river Taff, away from the knotweed stands and their exclusion zones.
- If the silt bag is to be placed on the bank, a means to secure it and remove the bag without damaging it should be setup prior to dewatering commencing.
- Dewatering of the trench should be undertaken by pumping through a pre-filter (gauze) to minimise the risk of extracting any rhizomes within the potentially impacted area.
- Once the trench is deemed clear of potentially impacted soils and protected with a membrane, this requirement can be removed.
- The dedicated silt bag and waste sediment should be disposed of off-site assuming that it contains soils impacted by Japanese Knotweed, via the correct waste stream.

#### **5.2.5 Site access roads, surfacing and vehicle movements**

- Early installation of suitably surfaced access roads to provide a clean running surface and reduce vehicle movements over bare/exposed ground (i.e. gravel cover).
- Install a suitable running surface along the site access haul road and any internal temporary access roads to reduce the likelihood of soft ground disturbance generating sediment run-off (i.e. gravel cover).
- Establish, maintain, and review vehicle movement routes across the development site.
- Minimise, as far as practicable, the movement of machinery on and off-site access roads to prevent tracking excess soil onto roads and highways.
- Prevent, as far as practicable, the movement of machinery on undisturbed ground, such as retained areas of vegetation.
- Utilisation of a road sweeper, or other suitable road cleaning equipment, on site roads, as they become completed, and surrounding public highways where necessary. Frequency of road cleaning to be continually assessed and updated as appropriate to address site conditions.
- Install a suitable surfacing in construction material storage areas, site offices and contractor car parking areas and key access points to each development phase (i.e. gravel cover).
- Utilisation of wheel washing is to be used, in line with the site Construction Environmental Management Plan (CEMP), ahead of the junction between the site access and the public highway, to remove mud from vehicle wheels before leaving the development site. In line with the CEMP, the location of the wheel wash will be reviewed throughout the site development, as works progress. However, waste water

***must not*** be allowed to enter the wider development or site surface water drains. The water must be diverted to areas where infiltration to ground is possible, such as exposed service trenches, soft ground or other temporary catchment/infiltration pit. The use of rumble strips to clear bulk sediment from vehicle wheels may need to be considered depending on the effectiveness of the wheel washing.

#### **5.2.6 Vegetation retention & growth**

- Landscaping of completed POS and tree pits shall be undertaken as soon as practicable following their installation.

#### **5.2.7 Site personnel and documentation**

The following measures are recommended for implementation to increase awareness and bring existing site documentation up to date:

- Include a detailed section relating to surface water and silt protection within the site induction folder for all phases of the work.
- Continued documented review by the site management team of the existing site conditions in relation to this SWMP and update the requirements on a routine basis.
- The technical team to undertake documented monthly or fortnightly site inspections and obtain support from the appointed Environmental Consultant if/when required. This will be supported by daily site inspections by the site management team, of key areas such as dewatering activities, silt mitigation measures and discharge point.
- Conduct a site pre-start meeting with all relevant parties to agree methods of working to control surface water and silt management.
- Undertake additional detailed site-based awareness training (Site Briefing / Toolbox Talk) on surface water and silt management and protection for all pertinent site staff including groundworkers. Clear guidance should be given to groundworkers on the mitigation measures discussed.
- Where utilised on site, ensure all relevant training is provided by the supplier/manufacture of the chemical treatment system, prior to commissioning. Retain contact information on site for the provider should any issues or questions arise during its operation.

Actions reported for project personnel include:

##### **Technical Team:**

- Ensure this SWMP is communicated to the site management team and updated as necessary.
- Ensure that the appropriate permits and watercourse consents are in place for each phase of works.
- As further phases of the wider development are commenced, ensure that the surface water management measures for adjoining development parcels meet the requirements of this surface water management plan, to protect the storm sewers, outfalls and River Taff, as detailed in this report.

- Regular progress meetings should be undertaken to ensure that appropriate measures are in place on adjoining development parcels. This should include parcel specific inspections on a frequent basis, to ensure that silt contaminated waters are not being allowed to leave the development parcel.
- Prior to connecting newly installed surface water drainage network, an inspection of water quality and site conditions should be undertaken by a suitably qualified Environmental Consultant.
- Undertake periodic (monthly or fortnightly depending on weather conditions) site inspections and regular reviews of daily site inspection documents, undertaken by the site manager, to identify potential areas where additional protection is required as the site develops. This should be communicated to both the site management team and to their appointed environmental advisor.
- Review contractor method statement for works in and around surface water features and obtain advice from the appointed Environmental Consultant.

**Site Team:**

- Undertake environmental monitoring of the offsite surface water features.
- Ensure that a hard copy of any permits obtained for the site are held in the site office and made available, when requested, by the regulatory authority.
- Where utilised on site, ensure the output from the chemical treatment system is monitored on a daily basis, ensuring that the output readings, either by manual measurement, automated telemetry or a combination of the two, are within acceptable limits and that the water is visibly clear of sediment.
- Ensure the measures presented within this SWMP are implemented by the site construction contractors. Site team to hold regular meetings to ensure that measures are in place.
- Brief sub-contractors and site operatives on effective water management and their responsibilities. Site team will review all contractor method statements.
- Undertake regular documented inspections and checks to ensure the effectiveness of the pollution prevention measures, especially before, during and after heavy rainfall events, adverse weather and during the wetter seasons (winter and spring).
- Keep clear records of all inspections, including photographs and laboratory test results (if applicable).
- Undertake regular monitoring inspections of the condition of the adjacent watercourse, downstream from the development, ensuring pollution events are not occurring and reporting any degradation in condition.
- Key monitoring points have been identified as:
  - i. Site entrances where the site access roads meet the existing highway.
  - ii. Final discharge points where surface waters are discharged to the watercourse.
  - iii. On site temporary surface water basins.

- iv. Fuel and chemical storage areas including mobile plant locations, temporary mixing stations and mortar silos.
- v. Site boundaries with existing sensitive receptors.
- Report any environmental incident (such as silt ingress to the stream/drain) to an appointed environmental advisor.

**Contractors:**

- Ensure that this SWMP is communicated to all relevant site teams and groundworkers.
- Ensure appropriate water management controls are included in relevant risk assessments and method statements as well as detailed arrangements regarding increased supervision and management during adverse weather or large scale earthworks.
- Report any damage, faults or breakdowns to silt mitigation features (e.g. silt fencing or treatment plant) as a result of plant movement or work and arrange for repairs to be made as soon as practicable.
- Follow and implement water management and pollution prevention controls as instructed by the site manager and identified in the risk assessment/method statements (RAMS).
- Immediately report to the site manager if pollution prevention measures are not in place, are damaged or ineffective, or if works results in a silt release to surface water or the storm water sewer system.

Report any environmental incident or near miss to the site manager immediately.

**5.2.8 Maintenance activities**

- Replacement / repair of storage equipment and site equipment/plant containing hazardous materials (e.g., fuel and oils) if damage or evidence of leaking is observed.
- Maintenance and repair, where required, of chemical treatment system. Daily checks of the de-sludge unit to ensure the treatment unit and clarifier are operating at optimum performance.
- Site plant will be inspected routinely for damage and wear by plant users.
- Any defects noted by site personnel will be reported to the site management team so repairs can be scheduled.
- All plant items and equipment will be serviced and maintained with due regard to the manufacturer's recommendations in order to minimise the risk of breakdown or leaks.

**5.2.9 Hazardous material storage**

- All hazardous materials, including fuel and oils will be stored in suitable containers within an appropriately bunded area and on impermeable ground.
- Mortar silos will be located in designated areas and securely bunded to prevent surface water run-off.



### 5.2.10 Spill control

- A supply of surface water protection and silt management equipment; including spill kits, silt mats, coir rolls and silt fence, will be maintained within the site compound / material storage for rapid deployment in the event of an emergency. If necessary, a supply of materials will also be maintained next to any temporary works being undertaken in sensitive areas, such as the pipeline diversion within close proximity to a surface water course or a location where surface water run-off has the potential to circumvent installed protection measures.

## 5.3 Physical control measures

To supplement the procedural and management controls listed in Section 5.2, the following physical control measures listed below shall be implemented by the site management team. The implementation of these measures will be made with due consideration to site activities, build programme and commensurate to the associated risk posed by site activities.

**Figures 3** visually depicts the indicative locations of large-scale long-term physical silt pollution controls on a site wide level.

Shorter duration temporary physical controls should be implemented as required during the construction process and their locations recorded on a site plan held within the site office for reference by the site management team and visitors.

### 5.3.1 Passive control measures

#### 5.3.1.1 Silt fencing

- To be installed as per the site wide mitigation plan contained within **Figure 3**. Silt fencing should be installed along the northern, southern and eastern site boundaries.
- Silt fencing is to comprise a semi-permeable membrane staked at regular intervals with typical installation details presented on **Figure 3**. Importantly, the base of the membrane on silt fencing should be buried to prevent surface water from passing beneath it. For longer term protection and to reduce maintenance requirements, the fence installation would benefit from stockproof wire mesh fencing to reduce wind damage to the membrane. Examples of the silt fence materials and installation are also presented within **Appendix C**

#### 5.3.1.2 Cut-off trenches

- Trenches will be installed along the southern and south-eastern boundaries, as set out on **Figure 3**. Cut-off trenches are designed to direct the water away from the boundary and towards the temporary detention basin for collection, settlement and subsequent infiltration or discharge.
- Aggregate check dams or silt/flocculant matting will be placed at regular intervals, within the base of the cut-off trenches to provide additional sediment capture capacity prior to run-off entering surface water detention basin. Silt mats are to be located up-gradient of the gravel check dams.



- Cut-off trenches will be required for the duration of the earthworks phase of the project, until much of the below-ground and ground level infrastructure is complete. Therefore consideration will be given to seeding or turfing the trench to encourage vegetation growth.

#### **5.3.1.3 Gully protection**

- Gully protection must be installed within all road gullies at the earliest possible opportunity following construction. The condition of the gully protection should be reviewed at regular intervals by the site management team to ensure they remain in good condition and replaced / cleaned when necessary. A layer of geotextile (terram) should also be placed over the top of the gully guard and secured immediately beneath the metal grate cover to prevent bulk ingress of sediment to the gully. This will also prolong the effectiveness of the gully guard itself.

#### **5.3.1.4 Road ramps**

- Upon completion of the new site access road, road ramps, or other suitable barrier feature, should be installed to direct surface water run-off from site road into site road gullies at key locations. This will help prevent run-off onto the existing adjacent highway.

### **5.3.2 Active treatment systems**

Due to the proximity to the River Taff and the shallow groundwater level, active treatment measures will likely be deployed (as required and under appropriate approval from Natural Resources Wales (NRW)) to supplement passive treatment systems. The use of active chemical treatment systems will assist with removing suspended sediment prior to discharge.

Where required, the active treatment measures will include either:

- In-line pipe reactors containing gel flocculant; or
- Liquid flocculant, coagulant and pH balancer pump and treat system.

Locations of active treatment measures will vary depending on the phase of works on site, during which the measures are wanting to be implemented. Given the space considerations at the site, it is likely that these will be positioned towards the north of the site, within The Marl.

#### **5.3.2.1 In-line pipe reactor system**

An in-line pipe reactor system may be utilised to either encourage sediment settlement within surface water detention basin by being utilised as a water recirculation system or as a part of a suitable pump and discharge treatment system discharging water via the designated outfall locations.

Gel flocculant will be placed within the in-line pipe reactor in volumes specified by the manufacturer and water passed through the in-line pipe reactor via a pump and either recirculated into the surface water detention basin for settlement and discharge or into a settlement tank; or series of settlement tanks, supported by additional passive treatment measures (if required) for discharge.

Gel Flocculant ranges to be used within an in-line pipe reactor system will be determined prior to use with suitable settlement tests and dosing trials undertaken. Further details on the use of flocculants are provided in Section 5.3.3 of this report.

Depending on site conditions, the pumps supporting the in-line pipe reactor system will operate on a float switch or manually.

#### **5.3.2.2 *Liquid flocculant, coagulant and pH balancer pump and treat system***

An active pump and treat system utilising liquid flocculant, coagulant and pH balancer shall comprise a pump passing water through a chemical pre-treatment system, which will dose incoming water with a flocculant, coagulant, and a pH balancer (if required). The dosing rate will be determined by the supplier prior to the commencement of treatment activities.

The dosed water will then pass into a settlement tank; or multiple tanks depending on discharge volumes, which will remove the particles from suspension by gravity and capture them within the individual settlement tank units.

The treated water will then be discharged from the treatment system and transferred via dedicated pipework or installed site drainage infrastructure to the designated discharge point.

The active pump and treat system will likely utilise Ferric Chloride as a coagulant and the anionic polymer AQ2084 (otherwise known as Aquatreat 2084) as the flocculant. If required, a pH balancer (sodium hydroxide) will be included into the treatment process to ensure that pH levels of water discharged from the treatment system do not fall below 6. The chemicals required for the treatment system will be determined prior to use with suitable settlement tests and dosing trials undertaken.

Depending on site conditions, the pumps supporting the liquid flocculant, coagulant and pH balancer pump and treat system will operate on a float switch or manually.

#### **5.3.2.3 *Maintenance of active treatment systems***

Where utilised on site, active treatment systems (including supporting pumps and pipework) will be monitored and maintained in accordance with the manufacturer's recommendations.

When operational, the active treatment systems will be visually inspected on a regular basis by the site management team or other appointed person.

Additional monitoring will be undertaken as required during periods of higher use, such as during periods of heavy rainfall.

Should any evidence of faults be identified the treatment and discharge will be suspended and suitable expertise from the supplier sought to address any issues or concerns prior to restarting the treatment process.

### **5.3.3 Use of flocculants, coagulants, and pH balancer**

The deployment and use of flocculants, coagulants, and pH balancers will be undertaken under appropriate approval from NRW.

Where employed, all flocculants, coagulants, and pH balancers present on the site will be deployed and utilised in accordance with the manufacturer's instructions.

Prior to their usage at the site, a settlement test / dosing trial will be conducted to confirm the appropriate dosing rates.

In the case of the liquid flocculant pump and treat system, the dosing trial will also confirm whether the additional of a pH balancer to the treatment system is required.

Given the constantly evolving nature of site activities, should any alteration in the effectiveness of the active treatment systems be identified, during monitoring, then the suppliers will be notified, and a new settlement test / dosing trial will be completed to confirm whether any amendments are required to the dosing rates.

#### **5.3.3.1 Use of flocculants in passive physical treatment measures**

To supplement the removal of sediment by passive treatment measures, gel flocculants may be deployed as necessary in passive treatment measures across the development site.

Positioning of flocculant containing passive treatment measures will be informed by manufacturer's recommendations and prevailing site conditions. Deployment locations will include:

- Surface water drainage chambers immediately up-gradient of headwalls into surface water detention basins.
- Cut-off trenches

Deployment locations for measures containing flocculants, coagulants and pH balancers shall be recorded on a site plan held within the site office for reference by the site management team and visitors.

#### **5.3.4 Installation of physical control measures**

The physical control measures discussed in Section 5.3 will be installed in a phased approach determined by activities being undertaken across the site and the associated levels of risk posed to identified sensitive receptors.

In areas of little to no construction activity, a baseline level commensurate with the associated risk will be installed, as set out on **Figure 3**. Remaining physical control measures will be installed as required prior to commencement of higher risk activities.

#### **5.3.5 Maintenance of physical control measures**

The physical control measures discussed in Section 5.3 shall be maintained in their position throughout the construction period and for the duration that a risk to the identified receptors remains.

Condition and efficacy of physical control measures will be monitored and those measures, such as silt fencing and curtains, shall be replaced as required to ensure continued efficiency.

### **5.3.6 Removal of physical control measures**

The site management team will undertake regular reviews of protection measures installed at the site and whether the level of protection remains commensurate to risks posed by site activities. If required, advice shall also be sought from a specialist Environmental Consultant.

Physical control measures will be removed in a phased approach determined by the residual risk posed to sensitive receptors.

Complete removal of physical control measures will only be undertaken when the risks posed to sensitive receptors from construction related activities is negligible.

## **6 SURFACE WATER DISCHARGE MONITORING AND RECORDING**

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### **6.1 Surface water monitoring**

The following monitoring procedures shall be carried out on a regular basis by the site management team to enable continuous review of site management practices.

A comprehensive record of the effectiveness of surface water management measures should then be maintained to enable further review by any parties attending site.

Any emissions to surface water identified will result in the implementation of the protocols detailed herein. Any complaints in relation to surface water emissions will be fully investigated as detailed in the following sections. The resultant actions will be recorded in site records.

#### **6.1.1 Meteorological conditions**

Meteorological forecasts and weather conditions (including precipitation) will be monitored to identify high rainfall events, which could result in elevated site water levels to be predicated and appropriate additional management measure implemented.

#### **6.1.2 Regular inspection and monitoring**

Due to the nature of the development, visual monitoring techniques will principally be used within the boundary of the site. These may be supplemented by the collection of water samples from each outfall location.

Regular visual inspections of surface water discharge quality as well as the overall condition of the wider site will be undertaken as part of general site walkovers completed by the site management team and site operatives during their daily tasks.

When operational, the chemical treatment system will be visually inspected on a daily basis by the site management team or other appointed person. Should any evidence of faults with the active treatment system be identified the treatment and discharge will be suspended and suitable expertise from the supplier sought, to address any issues or concerns prior to restarting the treatment process.

Additional monitoring beyond the site boundary, above the monitoring at the discharge points, will be completed in response to the identification of potential emissions to surface water from the site or upon receipt of complaints. All monitoring will be carried out in cognisance of the prevailing weather conditions and site activities.

In addition to this, weekly routine inspections of the site to monitor and record surface water run-off quality and other environmental issues will be undertaken by the site management team or other appointed person. Records of these inspections will be kept for the duration of the project.

Wates Group safety, health, and environment team will also undertake monthly inspections which will include the condition of internal roads, adjacent public highways and any immediate surface water receptors.

Regular inspection of implemented surface water management measures, including passive and active treatment measures, will also be undertaken, either by Wates Group or a nominated third party.

Inspection frequencies will be increased as required in response to prevailing meteorological conditions.

## 6.2 Water sample collection and testing

To supplement the regular visual inspections and monitoring of surface water discharges from the site, instantaneous (spot) samples of discharged water may be collected by the site management team (or nominated deputy) for analysis to confirm it adhere to emission limits presented in **Table 3**.

It is recommended that water samples will be inspected periodically and after storm events, particularly when chemical treatment systems are in use, from each of the discharge points. A test frequency will be agreed with NRW prior to using chemical treatment methodologies and the commencing of works.

Samples collected for laboratory analysis will be tested for the determinands and limits presented in **Table 4**.

**Table 4: Channel View Phase 1, - Discharge Point Monitoring Parameters and Limits**

Parameter	Limit (Including Unit)	Compliance Statistic
Total suspended solids	25 mg/l	Maximum
Total aluminium as Al	1,000 µg/l	Maximum
Total iron as Fe	5 mg/l	Maximum
Total dissolved iron as Fe	1 mg/l	Maximum
pH	6 to 9	Minimum and maximum

In addition to the above, visual inspection for oil and/or grease will be completed.

In addition to the live telemetry readings from the active treatment system, it is strongly recommended that field readings are undertaken at each watercourse discharge point or at the final storm water chamber, prior to discharge. This will comprise of measuring Total Suspended Solids (TSS) directly or recording turbidity (NTU) of discharged water using a suitable monitoring device, such as a portable turbidity meter. NTU reading will subsequently be converted to an approximate corresponding TSS value using a site-specific NTU/TSS calibration curve. A site specific NTU/TSS calibration curve will be provided once a settlement test has been completed for the site.

Additionally, a portable pH meter can be used to provide an on-site indication of the pH level of water being discharged from the site.

### **6.3 Site records**

In addition to regular site monitoring, the following significant events at the site will be recorded:

- Maintenance.
- Breakdowns.
- Emergencies.
- Site inspections.
- Despatch of records to Natural Resources Wales (NRW).
- Severe weather conditions.
- Complaints received.
- Visitors to the site.

The site management team or nominated person(s) will maintain a record of all the above information in the site log, on inspection forms, or as part of wider environmental management records, as appropriate. They are also responsible for ensuring that management measures are maintained and repaired, as required.

All records and copies of inspection forms will be maintained and will be made available for inspection at all reasonable times by any authorised officer of NRW.

## **7 EMERGENCY PROCEDURE AND COMPLAINTS HANDLING**

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### **7.1 Emergency Procedure**

Supplementary surface water protection measures, treatment capacity or off-site removal of surface water shall be deployed as necessary to provide additional surface water treatment/containment/management capacity.

Prior to commencing works at the site, it is recommended that the local foul drainage provider be contacted, to determine if an agreement to pump to foul can be agreed during peak rainfall conditions.

If required, advice should also be sought from specialist environmental advisors.

#### **7.1.1 Spillage emergency procedure**

In the event of a major liquid spillage/leak the following actions will be taken, where appropriate:

- Report the occurrence to the site management team immediately;
- Trained facility operatives to take immediate action to try and contain the spillage/leak where it is safe to do so using appropriate materials (such as spill kits);
- If it is safe to do so, the cause of the spill or leak will be isolated and/or moved to a bunded area;
- Inert material such as clay or sandbags are to be used to make a temporary containment bund to prevent pollution of any water or land;
- Drainage covers will be installed over any road gullies to prevent ingress into the site's drainage system.
- Access to the immediate area will be restricted until a disposal/clean up solution is implemented;
- If the spillage cannot be contained using approved methods, senior management will be contacted immediately, and specialist advice and help will be sought; and

Once the spillage has been contained the site management team will make necessary arrangements for the appropriate removal of the spillage from the site.

Any incidents or near misses should be reported as soon as possible so that the appropriate environmental advisor is notified as soon as possible. Where damaged or missing protection measures have been identified, the site manager should implement repairs or replacements as soon as possible.

Site staff should immediately report to the site manager if pollution prevention measures are not in place, are damaged or ineffective, or if works results in a silt release to surface water or the storm water sewer system.



## 7.2 Complaints process

Any complaints received at the site or via the regulatory bodies (including the Natural Resources Wales and Local Authority), will be recorded and investigated via a combination of visual inspection at the location of the complaint and collection of water samples for analysis to determine the source of the pollution to be identified.

Where possible, as much information and detail about the complaint will be recorded, whether this be from the relevant authority or complainant. This information will assist the investigation in determining the source of the surface water pollution.

Should a complaint be received, the following information will be gathered and recorded:

- Complaint details (including the address of the complainant where possible) and the location where surface water pollution is perceived;
- Weather conditions including rainfall levels;
- Results of the latest round of monitoring carried out by site personnel;
- Operational status of the site (noting any abnormal conditions that may have caused the complaint);
- Inspection of site conditions upon the receipt of a complaint (where feasible); and
- Details of the proposed corrective action, if required.

A subsequent follow up to the complainant shall be provided, detailing whether the corrective action, if required, was successful. If not, details shall be set out of any new strategy implemented, until the issue is resolved.

Records of complaints received will be kept for inspection and review by both internal and external personnel.

In the event that surface water discharges from the site are found to be causing a pollution incident – as determined by investigation into off site complaints or during routine monitoring, the following measures will be taken to confirm the source:

- Supplementary monitoring will be undertaken to identify the extent and potential cause of the event i.e., damage to perimeter protection measures or fault in treatment system;
- Examination of the operational activities at the site at the time of the complaint or event identification;
- Examination of the meteorological conditions at the time of the complaint or event identification;
- Examination of the process conditions via the plant operational records / telemetry (where recorded);
- A review of the operational procedure, process controls and the instigation of any control measures immediately following identification of the pollution; and
- Further visual monitoring will be carried out to ensure the issue has been addressed and to monitor the effectiveness of any control measures undertaken.

All complaints will be investigated however, direct calls to site from complainants will allow for an immediate response and investigation. However, it is the site management team's experience that complaints submitted to regulatory authorities can sometimes be made long after the occurrence of a surface water pollution event. This can result in a delayed notification to the site management team and commencement of investigation works. Due to the transient nature of surface water pollution and meteorological conditions, this may result in the pollution pathway being unidentifiable.

## FIGURES

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C01	14.03.24	First Issue	LS	TC	TC
Rev	Date	Amendment	Drawn	Chkd	Appd

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**RSK**  
**GEOSCIENCES**

The Old School  
Stillhouse Lane  
Bristol  
BS3 4EB

Tel: +44(0)1414 180471  
Email: [info@rsk.co.uk](mailto:info@rsk.co.uk)  
Web: [www.rsk.co.uk](http://www.rsk.co.uk)

Client

Wates Group Ltd

Project Name

Channel View, Phase 1

Description

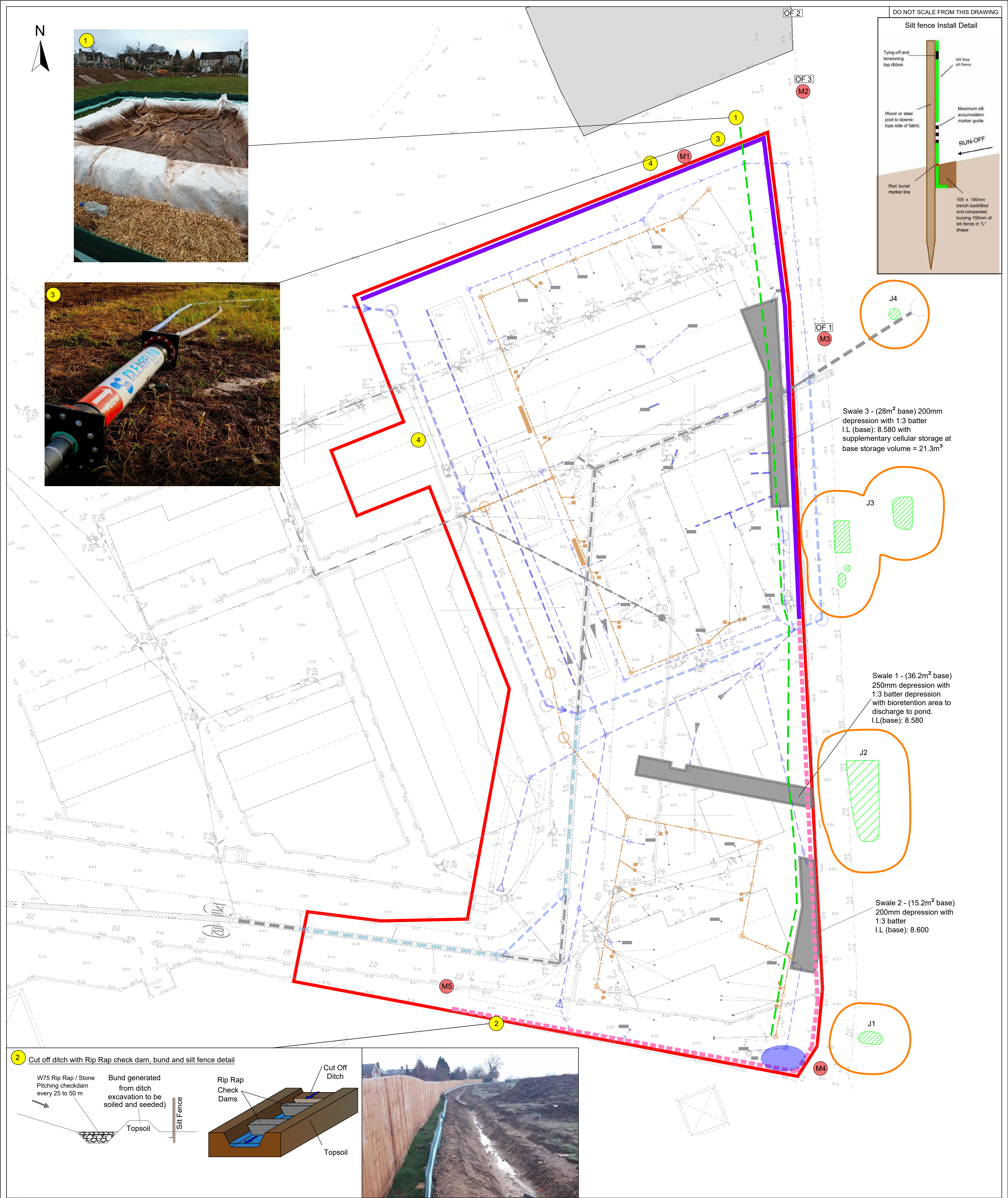
Site Location Plan

Dimension	Size	Scale	Geolocation	Project ID	Drawing no.	Rev	File name
m	A4	1:25,000	318078,173919	315486	11101	C01	315486-BL-111-SS-D-C-11101-C01











## APPENDIX A

### SERVICE CONSTRAINTS

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1. This report and the site investigation carried out in connection with the report (together the "Services") were compiled and carried out by RSK Environment Limited (RSK) for Wates Group Limited (the "Client") in accordance with the RSK terms of a contract [RSK Environment Standard Terms and Conditions] between RSK and the Client, dated 01 December 2023. The Services were performed by RSK with the reasonable skill and care ordinarily exercised by an environmental consultant at the time the Services were performed. Further, and in particular, the Services were performed by RSK taking into account the limits of the scope of works required by the client, the time scale involved and the resources, including financial and manpower resources, agreed between RSK and the Client.
2. Other than that, expressly contained in paragraph 1 above, RSK provides no other representation or warranty whether express or implied, in relation to the Services.
3. Unless otherwise agreed in writing, the Services were performed by RSK exclusively for the purposes of the Client. RSK is not aware of any interest of or reliance by any party other than the Client in or on the Services. Unless expressly provided in writing, RSK does not authorise, consent or condone any party other than the client relying upon the Services. Should this report or any part of this report, or otherwise details of the Services or any part of the Services be made known to any such party, and such party relies thereon that party does so wholly at its own and sole risk and RSK disclaims any liability to such parties. **Any such party would be well advised to seek independent advice from a competent environmental consultant and/or lawyer.**
4. It is RSK's understanding that this report is to be used for the purpose described in the introduction to the report. That purpose was a significant factor in determining the scope and level of the Services. Should the purpose for which the report is used, or the proposed use of the site change, this report may no longer be valid and any further use of or reliance upon the report in those circumstances by the client without RSK 's review and advice shall be at the client's sole and own risk. Should RSK be requested to review the report after the date of this report, RSK shall be entitled to additional payment at the then existing rates, or such other terms as agreed between RSK and the client.
5. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of RSK. In the absence of such written advice of RSK, reliance on the report in the future shall be at the Client's own and sole risk. Should RSK be requested to review the report in the future, RSK shall be entitled to additional payment at the then existing rate, or such other terms as may be agreed between RSK and the client.
6. The observations and conclusions described in this report are based solely upon the Services which were provided pursuant to the agreement between the Client and RSK. RSK has not performed any observations, investigations, studies or testing not specifically set out or required by the contract between the client and RSK. RSK is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the Services. For the avoidance of doubt, unless otherwise expressly referred to in the introduction to this report, RSK did not seek to evaluate the presence on or off site of asbestos, invasive plants, electromagnetic fields, lead paint, heavy metals, radon gas, persistent, bioaccumulative or toxic chemicals (including PFAS/ PFOS) or other radioactive or hazardous materials, unless specifically identified in the Services.
7. The Services are based upon RSK's observations of existing physical conditions at the Site gained from a visual inspection of the site together with RSK's interpretation of information, including documentation, obtained from third parties and from the Client on the history and usage of the site,

unless specifically identified in the Services or accreditation system (such as UKAS ISO 17020:2012 clause 7.1.6):

- a. The Services were based on information and/or analysis provided by independent testing and information services or laboratories upon which RSK was reasonably entitled to rely.
- b. The Services were limited by the accuracy of the information, including documentation, reviewed by RSK and the observations possible at the time of the visual inspection.
- c. The Services did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the Services.

RSK is not liable for any inaccurate information or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to RSK and including the doing of any independent investigation of the information provided to RSK save as otherwise provided in the terms of the contract between the Client and RSK.

8. The intrusive environmental site investigation aspects of the Services are a limited sampling of the site at pre-determined locations based on the known historic / operational configuration of the site. The conclusions given in this report are based on information gathered at the specific test locations and can only be extrapolated to an undefined limited area around those locations. The extent of the limited area depends on the properties of the materials adjacent and local conditions, together with the position of any current structures and underground utilities and facilities, and natural and other activities on site. In addition, chemical analysis was carried out for a limited number of parameters (as stipulated in the scope between the client and RSK, based on an understanding of the available operational and historical information) and it should not be inferred that other chemical species are not present.
9. Any site drawing(s) provided in this report is (are) not meant to be an accurate base plan but is (are) used to present the general relative locations of features on, and surrounding, the site. Features (intrusive and sample locations etc) annotated on site plans are not drawn to scale but are centred over the approximate location. Such features should not be used for setting out and should be considered indicative only.
10. The comments given in this report and the opinions expressed are based on the ground conditions encountered during the site work and on the results of tests made in the field and in the laboratory. However, there may be conditions pertaining to the site that have not been disclosed by the investigation and therefore could not be taken into account. In particular, it should be noted that there may be areas of made ground not detected due to the limited nature of the investigation or the thickness and quality of made ground across the site may be variable. In addition, groundwater levels and ground gas concentrations and flows, may vary from those reported due to seasonal, or other, effects and the limitations stated in the data should be recognised.
11. Asbestos is often observed to be present in soils in discrete areas. Whilst asbestos-containing materials may have been locally encountered during the fieldworks or supporting laboratory analysis, the history of brownfield and demolition sites indicates that asbestos fibres may be present more widely in soils and aggregates, which could be encountered during more extensive ground works.
12. Unless stated otherwise, only preliminary geotechnical recommendations are presented in this report and these should be verified in a Geotechnical Design Report, once proposed construction and structural design proposals are confirmed.



## **APPENDIX B**

## **DRAINAGE LAYOUT**

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SW DIVERSION MANHOLE SCHEDULE


MH REF.	COVER LEVEL	INVERT LEVEL	PROPOSED DEPTH TO SOFFIT (m)	PIPE DIA. IN/OUT (mm)	MANHOLE TYPE	MANHOLE DIAMETER	COVER GRADE	COORDINATES		NOTES
								EASTING	NORTHING	
SD1	8.650	6.475	1.575	600/600	TYPE 2	1500	D400	318075.288	173882.008	
SD2	8.730	6.370	1.760	600/600	TYPE 2	1500	D400	318083.338	173889.745	
SD3	8.850	6.270	1.980	600/600	TYPE 2	1500	D400	318084.995	173913.028	
S4	8.855	BD 7.039 5.972	2.283	150,225,600 /600	TYPE 2	1500	D400	318112.770	173923.709	
SD4 (HB)	8.830	5.935	2.295	600/600	TYPE 2	1500	D400	318116.254	173925.048	
SD5	8.870	5.610	2.660	600/600	TYPE 2	1500	D400	318114.674	173956.083	













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CONTRACTORS MUST CHECK ALL DIMENSIONS ON SITE. ONLY FIGURED DIMENSIONS ARE TO BE WORKED FROM. DISCREPANCIES MUST BE REPORTED IMMEDIATELY TO CAMBRIA CONSULTING LIMITED BEFORE PROCEEDING.

THE CONTRACTOR IS TO REFER TO THE SPECIFICATION, FULL SCHEDULE OF RESIDUAL RISKS IN THE CONTRACT DOCUMENTATION AND ALSO TO INFORMATION FROM OTHER DESIGNERS, IN PARTICULAR THE M&E CONSULTANT REGARDING EXISTING LIVE SERVICES.

 THIS SYMBOL IS USED TO HIGHLIGHT INSTANCES OF RISK WITHIN THE CONSTRUCTION PROCESS. ALWAYS CHECK FOR LATER REVISIONS OF THIS DRAWING.

KEY:	
	EXISTING SURFACE
	EXISTING COMBINED SEWER
	SW SEWER ABANDONED PHASE 1
	COMBINED SEWER ABANDONED PHASE 1
	PROPOSED SURFACE WATER SEWER DIVERSION
	PROPOSED COMBINED SEWER DIVERSION
	ABANDON FOUL WATER SEWER
	PROPOSED NEW DRAINAGE SEWER
	SITE BOUNDARY (PHASE 1)
	DCWW 6m EASEMENT

- NOTES:
- THE CONCEPT DRAINAGE STRATEGY IS SUBJECT TO APPROVAL BY THE SAB, WELSH WATER AND NRW.
  - THE STRATEGY IS SUBJECT TO FURTHER SURVEY WORKS (DRAINAGE CCTV SURVEYS).
  - S185 APPROVALS WILL BE REQUIRED FOR ALL SEWER DIVESTMENT AND DIVERSION PROPOSALS.

P08	PROPOSED DIVERSION AND RELATED ABANDONMENT SHOWN ONLY.	LW	BW	BW
				09/02/24
P07	AMENDMENTS TO DCWW FEEDBACK.	LW	BW	BW
				05/02/24
P06	MANHOLE SD4 HYDROBRAKE REFERENCE REMOVED. MANHOLE S4 ADDED TO S185 AGREEMENT.	DC	BW	BW
				26/01/24
P05	AMENDMENTS TO DCWW FEEDBACK.	DC	BW	BW
				26/01/24
P04	FOUL SEWER DIVERSION OMITTED.	PY	BW	WJ
				23/01/23
P03	AMENDED TO SUIT REVISED SITE LAYOUT.	PY	BW	WJ
				16/09/22
P02	ADDITIONAL LATERAL ABANDONED. ADDITIONAL STOREY ADDED. ISSUED FOR PLANNING.	AR	BW	WJ
				30/06/21
P01	FIRST ISSUE FOR COMMENT	BW	BW	WJ
				25/02/21
Rev.	Description	By	Chk	App



Project:

**CHANNEL VIEW, CARDIFF**

Drawing Title:

**PHASE 1  
S185 DRAINAGE  
DIVERSIONS**

Drawing No.

**CC2083 CAM ZZ 00 SK C 52 0020**

Project No. Org. Vol. Level Type Dis. Class No.

Suitability Status: Scale @A1: Rev.

S1 PRELIMINARY 1:250 P08

**CAMBRIA**  
Constructive Thinking

Civil & Structural Engineers  
Cambria House  
16 Plas St. Pol de Leon  
Penarth Marina  
Cardiff, CF64 1TR

T 029 2099 3333  
E admin@cambria.co.uk  
W www.cambria.co.uk  
@cambriauk  
uk.linkedin.com/in/cambriauk



## **APPENDIX C**

# **INSTALLATION EXAMPLES AND EXAMPLE MANUFACTURER PRODUCT SHEETS**

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## INSTALLATION EXAMPLES

Retention of a wide vegetated buffer adjacent to a surface watercourse



Placement of stone to the front of plots to create clean forklift access



## INSTALLATION EXAMPLES

---

Installation of silt fencing to control run-off from an unsurfaced area



Placement of silt matting to capture settled silt downgradient within a surface watercourse  
(image courtesy of Frog Environmental)





## INSTALLATION EXAMPLES

Silt matting installed along the base of an unsurfaced swale to capture settled suspended solids prior to discharge into a surface watercourse



Dewatering bag used to treat water pumped from excavations. Dewatering bag is placed upon a pallet for ease of movement, onto clean gravel to dissipate the flow and prevent scouring, in a vegetated area for infiltration.





## INSTALLATION EXAMPLES

---

Utilisation of flocculant treated silt matting (Floc Mat) to treat water pumped from excavations  
(image courtesy of Frog Environmental)



Silt Wattles utilised to separate clean and silty water within a watercourse  
(image courtesy of Frog Environmental)





## INSTALLATION EXAMPLES

Silt Wattles utilised to intercept silt laden run-off on a road  
(image courtesy of Frog Environmental)



Silt matting and Silt Wattles deployed within a surface watercourse. Silt Wattles create a check dam promoting settlement of suspended solids, which is captured by the silt matting.  
(image courtesy of Frog Environmental)





## INSTALLATION EXAMPLES

Coarse stone used to create periodic check dams (in conjunction with a geotextile) to reduce scouring within a swale until vegetation establishes.



Silt Wattles utilised to intercept silt laden run-off from an unsurfaced slope  
(image courtesy of Frog Environmental)

## INSTALLATION EXAMPLES



Silt fencing and straw bales installed across an inlet headwall within an attenuation basin, to promote settlement of silt within the concrete apron (where it can more easily be removed) prior to discharge into the attenuation basin. Coarse stone installed to dissipate flow and prevent scouring, and further promote settlement at the headwall.





## INSTALLATION EXAMPLES

---

Silt fencing and straw bales installed across an outlet headwall within an attenuation basin, to promote settlement of silt within the basin prior to discharge into the surface watercourse



Silt fencing installed across an outfall headwall, to promote settlement of silt within the concrete apron prior to discharge into the surface watercourse (in the event of breach of other control measures)



## EXAMPLE MANUFACTURERS AND PRODUCT SHEETS

Product:	Application	Manufacturer and product
<b>Gully Protection</b>	Prevent silt and construction debris entering the drainage system and blocking gully pots. Proprietary products often yield superior results to straw and terram and require less maintenance.	<ul style="list-style-type: none"> <li>• Forest Group – Gully Guard</li> <li>• Hy-Tex – Ultra drain guards</li> </ul>
<b>Silt Fencing</b>	Attenuate water on site to promote settlement of silt within overland run-off.	<ul style="list-style-type: none"> <li>• Frog Environmental – Silt Fence</li> <li>• Hy-Tex – Terrastop Silt Fence</li> <li>• Siltbuster – Silt Fence</li> </ul>
<b>Silt Matting</b>	Capture settled silt as it naturally falls from suspension within watercourses, swales, attenuation basins to prevent its resuspension.	<ul style="list-style-type: none"> <li>• Frog Environmental – Silt Mat</li> <li>• Hy-Tex – SediMat</li> </ul>
<b>Flocculant Treated Silt Matting</b>	Capture settled silt within watercourses, swales, attenuation basins to prevent its resuspension. The addition of flocculant treatment encourages silt to settle out of suspension more readily. The Environment Agency must be consulted prior to utilisation of flocculants, and an environmental permit gained where required.	<ul style="list-style-type: none"> <li>• Frog Environmental – Flocc Mat</li> </ul>
<b>Silt Wattle</b>	Used as check dams within watercourses / swales providing filtration and also slowing the flow of water to promote settlement of silt. Typically used in conjunction with silt matting (or flocculant coated silt matting) to capture sediment that was caused to settle. Can also be used to separate silty and clear water (i.e. within attenuation basins, or watercourses), on slopes to reduce erosion from overland run-off or to divert silty water to collection areas (i.e. on roads to divert silty run-off away from gullies).	<ul style="list-style-type: none"> <li>• Frog Environmental – Silt Wattle</li> <li>• Hy-Tex – Ultra Erosion Guard (suitable for use as a check dam to control erosion only, due to its different construction to the Frog Environmental Silt Wattle).</li> </ul>
<b>Filter socks</b>	Fitted to hose end during dewatering of excavations to collect sediment. Capable of dealing with smaller volumes and lower flow rates.	<ul style="list-style-type: none"> <li>• Hy-Tex – Pro-Tex Pipe Socks</li> <li>• Murlac – Silt Sock</li> <li>• Dirtbags UK – Utility Bag</li> </ul>
<b>Filter bags</b>	Fitted to hose end during dewatering of excavations to collect sediment. Capable of dealing with larger volumes and larger flow rate, typically up to a 6" pump. Note – * denotes those bags which are sized to be used within a roll on roll off skip for ease of disposal of capture silt.	<ul style="list-style-type: none"> <li>• Hy-Tex – Ultra Dewatering Bag</li> <li>• Siltbuster – Siltstoppa Dewatering Bag*</li> <li>• Murlac – Silt Bag</li> <li>• Dirtbags UK – Dirtbag / Titan Dirtbag*</li> </ul>
<b>Settlement Tanks</b>	<p>Settlement and capture of suspended solids during dewatering / over pumping works of a larger volume than suitable for a dewatering bag, or during extended periods of dewatering / over pumping.</p> <p>The unit required is dependent on the grain size of suspended particles, how quickly these settle from suspension, and the required flow rate. Liaison with the supplier is best undertaken to ensure a suitable product is selected. Can be used in conjunction with flocculants and coagulants to promote settlement, however the Environment Agency must be consulted prior to their utilisation, and an environmental permit gained where required.</p>	<ul style="list-style-type: none"> <li>• Siltbuster – wide range of settlement units available</li> <li>• Andrew Sykes Group – settlement tanks / Silt Away.</li> <li>• Dirtbags UK – Dirtbox</li> </ul>



## EXAMPLE MANUFACTURERS AND PRODUCT SHEETS

### GULLEY PROTECTION

#### The Gully Guard

##### Installation guide



1. Lever open gully grid. Gully Guard is designed to fit all size gullies.



2. Hold handles at top of the Gully Guard, work beads to top and insert base into water filled gully pot.



3. Lower the Gully Guard into the pot. The beads will fall freely into the void within the pot.



4. Tuck the holding handles to the side of the Gully Guard.



5. Close gully grid.

#### Forest Drainage Products Ltd

Stardens Works, Tewkesbury Road,  
Newent, Gloucestershire GL18 1LG

Tel: 01531 828960 Fax: 01531 828969

Email: [info@forestgroupuk.co.uk](mailto:info@forestgroupuk.co.uk)

[www.forestgroupuk.co.uk](http://www.forestgroupuk.co.uk)

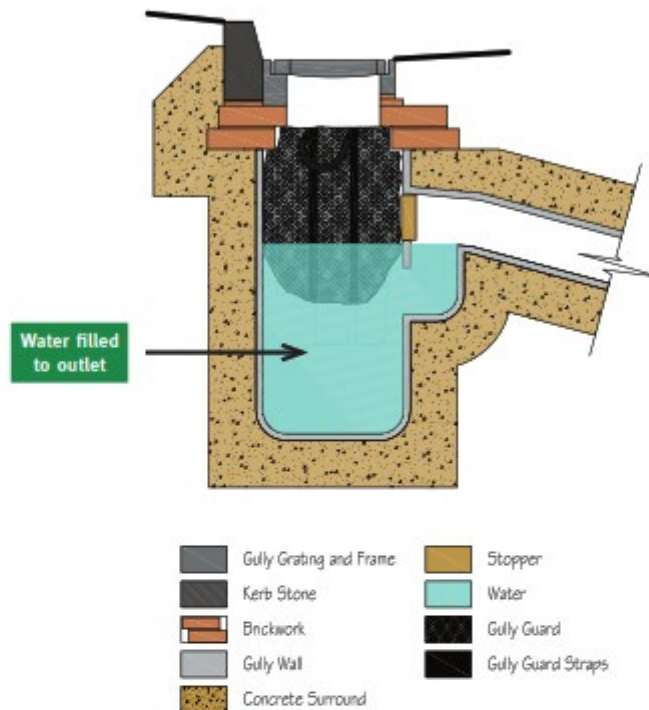
Patent no. 2472690

**fg The Forest Group**  
High performance, versatile solutions

## EXAMPLE MANUFACTURERS AND PRODUCT SHEETS

### The Gully Guard

#### Installation diagram



### Maintenance

The Company (Forest Drainage Products) would recommend that an inspection procedure be put in place for the product by the organisation on a 3–4 months basis depending on site conditions.

Maintenance would simply involve the removal of the Product and power hose off in a bund to contain and manage silt and any contaminants prior to reinsertion back into the gully pot.

Without prior knowledge of the type and concentration of the contaminants that each Gully Guard has been subjected to, the Company cannot advise on appropriate disposal. The Company advises that an environmental risk assessment is conducted on an individual case-by-case basis to fully evaluate the nature of contaminants. In order to determine the appropriate method of disposal the Company would recommend that you follow your organisation's environmental waste disposal policy.

Forest Drainage Products Limited (the "Company")

Forest Drainage Products Ltd, Stardens Works,  
Tewkesbury Road, Newent, Gloucestershire GL18 1LG  
Tel: 01531 828960 Email: [info@forestgroupuk.co.uk](mailto:info@forestgroupuk.co.uk)

[www.forestgroupuk.co.uk](http://www.forestgroupuk.co.uk)  

 **The Forest Group**  
High performance, versatile solutions



## EXAMPLE MANUFACTURERS AND PRODUCT SHEETS

wildlife	specialist	biodegradables	geotextiles	agrotexiles	accessories
----------	------------	----------------	-------------	-------------	-------------

### Hy-Tex Ultra Drain Guard for Drainage Gully Sediment Control



Ultra Drain Guards are designed to remove oil and sediment pollution from surface water running into gully drains from surrounding construction sites, farms, industrial estates, or other areas prone to storm water pollution or cleaning operations.

Ultra Drain Guards are made from a high permeability non-woven polypropylene geotextile that trap solids and oils but allow water to drain through and also incorporate bypass ports to further maintain flow into the drain.

They are designed to be easily placed directly into the drain gully pot to filter out materials as they flow into the drain without compromising drainage, and the Oil and Sediment model absorbs up to 3.29 litres of hydrocarbons as well as up to 18 kg of sediment, sand or debris.

#### Installation:

1. Remove catch basin grating
2. Clean dirt and debris from grating ledge
3. Insert Drain Guard.
4. Reinstall grate. To insure maximum effectiveness, Drain Guard skirt should be secured (pinched) between grating and ledge.
5. Cut the excess fabric off with a blade or knife if desired.

#### Maintenance and disposal:

6. The Ultra-Drain Guard filters are designed to be used for 3 to 6 months under normal conditions.
7. Where heavy contamination is present the unit will have a reduced life expectancy. When the unit has collected about 6 inches of sediment it is recommended that it be replaced. The unit should also be replaced if free oil can be seen floating and is not being absorbed. The Ultra-Drain Guards should be inspected on a regular basis.
8. Dispose of unit in accordance with applicable environmental laws and regulations. The user is solely responsible for compliance with maintenance and disposal laws and regulations. The manufacturer or seller assumes no responsibility for proper or improper maintenance or disposal.



Model	Code	Oil Capture	Sediment Capture	Collection Area	Flow Rate	Size
Oil & Sediment	9217	3.29 l (.87 gal)	18 kg (40 lbs)	25.4 x 45.7cm (10" x 18")	1893 l/min (500 gpm)	121.9 x 91.4 x 45.7cm (48" x 36" x 18")



All of this was removed from 50 Ultra Drain Guards after just two weeks in storm drains

Property	ASTM Test	Value
Material		Non-woven polypropylene geotextile
Grab Tensile Strength	D 4632	979 N (220 lb)
Elongation	D 4632	50%
Trapezoid Tear	D 4533	423 N (95 lb)
Puncture Resistance	D 4833	600 N (135 lbs)
Mullen Burst	D 3786	2,896 kpa (420 psi)
Permittivity	D 4491	1.4 sec <sup>-1</sup>
Pore Size	D 4751	180 micron (80 US sieve no)
UV Stability	D 4355	70% strength retained after 500hr
Weight	D 5261	272 g/m <sup>2</sup> (8 oz/yd <sup>2</sup> )
Flow Rate - Fabric	D 4491	3,660 l/min/m <sup>2</sup> (90 gal/min/ft <sup>2</sup> )
Flow Rate - Bypass Ports	D 4491	2,914 l/min

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Aldington Mill, Mill Lane,  
Aldington, ASHFORD, Kent TN25 7AJ  
[sales@hy-tex.co.uk](mailto:sales@hy-tex.co.uk) [www.hy-tex.co.uk](http://www.hy-tex.co.uk)



Tel: 01233 720097  
Fax: 01233 720098



Hy-Tex (UK) Limited

Committed to Quality, Value & Service

## EXAMPLE MANUFACTURERS AND PRODUCT SHEETS

### SILT FENCING



product information sheet  
**Silt Fence**  
temporary silt control barrier



Silt Fence is inexpensive to buy and install, but it must be correctly positioned and maintained for it to be an effective pollution control measure.

Each line of Silt Fence should be inspected on a regular basis, especially after rainfall.

If stakes are broken or gaps appear between the fence and the ground, then the fence should be re-trenched. Accumulated silt must be removed regularly from Silt Fence, typically when it reaches a third of the way up the fence.

Multiple smaller runs of silt fence are usually more effective at controlling pollution than longer lines.

#### Applications

- Silt Fence is deployed on construction sites to help prevent silt pollution in water bodies or from impacting public highways.
- Silt Fence provides a 'ponding' function; it allows silt laden water to collect behind it and for silt to drop out of suspension while the water slowly drains away or evaporates.
- Silt Fence is usually deployed in conjunction with other silt pollution control measures, especially on sites with clayey soils.

frog environmental Silt Fence is made from high specification geo-textile material and has medium porosity, making it suitable for use on most construction sites.

**Poorly installed Silt Fence can cause erosion underneath or around the edges of fencing. This can lead to an increased silt pollution risk.**



## EXAMPLE MANUFACTURERS AND PRODUCT SHEETS

### Technical information

### Silt Fence

**Dimensions:** 100 metres x 0.9 metres (single roll)

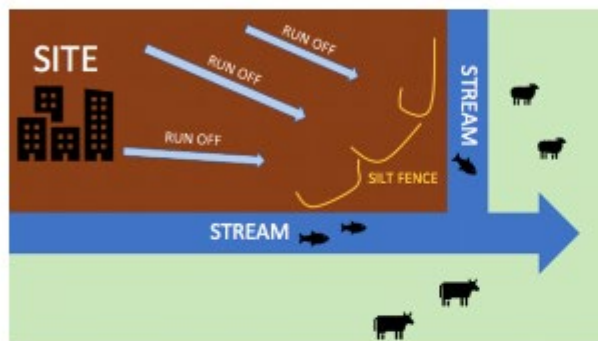
**Dry Weight p/m:** 110 g/m<sup>2</sup> (9.9 kg single roll)

**Permeability:** 7 (l/m<sup>2</sup> /sec)

**Material used:** tear resistant polypropylene geotextile, PFSC timber stakes (cable ties or staples/nails to fix)

**Function:** creates a temporary fence to provide a pooling function that allows silt to drop from suspension

**Disposal:** all materials fully reusable or recyclable



*Shorter J shaped runs of silt fence typically provide more effective pollution control than longer runs*



*Silt Fence can be used as a temporary measure to prevent muddy water escaping from construction sites*

#### 10 TIPS for successful Silt Fence deployments:

- Fence posts should be spaced a maximum of 1.5m apart
- Silt Fence should be trenched a minimum of 20cm into the ground and compacted
- Shorter 'J' shaped' installations of Silt Fence act like mini-retention areas and are typically more effective than longer runs (as shown in the diagram above)
- Longer runs of silt fence will concentrate water in the lowest point, where the fence can become weakened and water can undercut or overflow the fence avoid these where possible
- Water flowing around the edges of silt fence can cause erosion and add to the pollution loading from site
- The lower part of the end of each run of silt fence should ideally be above the top of the middle section of the run
- Removal of accumulated silt and regular inspection are key maintenance activity for silt fence. A named individual should be responsible for this action on site
- Silt fences are not designed to handle continuous high volume flows and will not be an effective stand-alone control in these circumstances
- Factors such as soil type, slope angle and slope length are key factors in determining how much silt fence is needed on site
- If ground conditions are clayey Silt Fence alone is unlikely to be an effective pollution control

for technical support and sales of  
Silt Fence contact frog environmental

0345 057 4040

info@frogenvironmental.co.uk

www.frogenvironmental.co.uk

@frogenv

Wales: Llanwrda, Dyfed SA19 8NA  
Midlands: The Byre, Blakenhall Park, Barton Under  
Needwood, Staffordshire, DE13 8AJ



## EXAMPLE MANUFACTURERS AND PRODUCT SHEETS

### SILT MATTING



frog  
environmental

product information sheet

**SiltMat**  
silt capture mat



**SiltMat is a fully biodegradable mat that captures and prevents sediment resuspension.**

The mats can be placed in natural or artificial channels, ditches or directly on land to trap suspended sediments.

SiltMat can be orientated sideways or lengthways and fits into all channel types.

SiltMats are used to manage sediment release to watercourses from construction sites and for capturing silts suspended by in channel or works on river banks.

#### Applications

- Silt control from construction sites
- Silt control from river or bank works
- Deployed in rivers, streams and ditches
- Deployed in Silt Capture Channels
- Used in forestry and agricultural applications

**SiltMat is proven in the field to reduce downstream levels of suspended solids**



## EXAMPLE MANUFACTURERS AND PRODUCT SHEETS

### Technical information

**Dimensions:** 2 x 1 x 0.12 metres

**Dry Weight:** 12kg per mat

**Material used:** coir (80%) jute (20%)

**Function:** Captures and prevents resuspension of silt



### SiltMat

**Performance:** Single mat captures up to 40kg of silt

**Disposal:** Fully biodegradable, with correct permissions used mats can be disposed ofland.

#### four step guide to using SiltMats

Use our reference table (below) to judge optimal placement. As a rule of thumb, SiltMat is best placed in areas where stream energy is reduced and natural deposition takes place.

SiltMat is unfolded and orientated to cover the width of the channel. The edges of silt mat can be overlaid without gaps. Mats are staked in place or weighted with local material.

SiltMat will trap large amounts of sediment. Stakes or weights are removed and the mats rolled up ready for disposal.

With correct permission SiltMat can be seeded and left on site, creating an environmental enhancement and avoiding disposal costs.

Reference table showing the distance that different particle sizes travel at differing water velocities

Particle Size	Water Speed (m/s)				
	0.2	0.4	0.6	0.8	1
Fine Gravel	20 cm	40 cm	60 cm	80 cm	1 m
Sand	70 cm	1.4 m	2.1 m	2.8 m	3.5 m
Fine Sand	8 m	17 m	25 m	33 m	40 m
Silt	228 m	456 m	683 m	911 m	1139 m

for technical support and sales of  
Silt Wattle contact frog environmental

0345 057 4040

info@frogenvironmental.co.uk

www.frogenvironmental.co.uk

@frogenv

Wales: Llanwrda, Dyfed SA19 8NA  
Midlands: The Byre, Blakenhall Park, Barton Under  
Needwood, Staffordshire, DE13 8AJ



## EXAMPLE MANUFACTURERS AND PRODUCT SHEETS

### FLOCCULANT TREATED SILT MATTING



product information sheet  
**Floc Mat™**  
water treatment mat



#### **Floc Mat™ is a versatile silt control device**

A mat created to treat and capture fine silts and suspended particles in construction site run off.

The main function of the mat is to flocculate very fine particles, making them easier to separate from water.

Floc Mats can be laid flat out in dispersion fields, used with Silt Wattles or silt fence and deployed in the frog environmental Silt Capture Channel as part of a versatile water treatment process to remove silt from construction site run off.

#### **Applications**

- In a Silt Capture Channel
- With Silt Wattles and SiltMats
- In site ditches and low flow channels
- In combination with silt fence
- On natural dispersion fields
- In combination with dewatering bags and silt socks

- **Floc Mat™ is a fully biodegradable water treatment and silt capture mat that treats muddy water and helps prevent silt pollution**
- **They are a cost effective way of treating water in ditches and channels, without the need for pumps – saving energy and CO<sub>2</sub>**



## EXAMPLE MANUFACTURERS AND PRODUCT SHEETS

### Technical information

### FlocMat™

**Dimensions:** 2x1 x 0.10m

**Variants:** FM1 (30g/m<sup>2</sup>), FM2 (100g/m<sup>2</sup>)  
FMO(untreated)

**Active ingredient:** Water Lynx™

**Dry Weight:** 12 kg per mat

**Material used:** coir fibres, coir netting, coir rope, anionic flocculant, water

**Function:** Water treatment – aids solid water separation. Can be used to segregate low flow channel to in bankside works.

**Performance:** Single mat captures up to 50kg of silt in live test

**Disposal:** Fully biodegradable, suitable for re-use on site (with correct permit).

Waste classification and disposal legislation must be followed at all times. Always liaise with the regulator before deploying a product containing flocculant. If in doubt contact frog environmental on 0345 0574040 for further information and advice.



*Close up FlocMat showing accretion of silt*



*Deployed in Silt Capture Channels with Silt Wattles*

100% sustainably sourced natural fibres are used to create Floc Mat, this ensures the mats are biodegradable and suitable for use as backfill material once used, reducing waste disposal costs. Floc Mat is available in treated and untreated forms. The fibres of the treated version of Floc Mat are coated with Water Lynx™, a non-hazardous, non-toxic, synthetic anionic polymer which contains no coagulants, cations or metals such as Al and Fe that are ecotoxic.

When deployed in a Silt Capture Channel the Floc Mat provides a safe, low carbon and easy solution to support the removal of suspended solids and associated pollutants from construction site run off.



*Deployed to treat muddy excavation water*

for technical support and sales of  
**Silt Wattle** contact frog environmental  
0345 057 4040  
info@frogenvironmental.co.uk  
www.frogenvironmental.co.uk  
@frogenv

Wales: Llanwrda, Dyfed SA19 8NA  
Midlands: The Byre, Blakenhall Park, Barton Under  
Needwood, Staffordshire, DE13 8AJ



## EXAMPLE MANUFACTURERS AND PRODUCT SHEETS

### SILT WATTLE



product information sheet

**Silt Wattle**  
silt control sausage



**Silt Wattles are a versatile silt control device.**

They are deployed on building sites to control movement of suspended silt and in ditches, channels and streams to slow the flow and naturally capture silt.

Silt Wattles are often deployed with frog environmental SiltMats and FlocMats as part of a silt pollution prevention strategy.

#### Applications

- Silt Wattles can be used to reduce silt release into watercourses from construction sites and deployed directly in channel to reduce movement of suspended silts.
- The tough exterior netting means they can be left for months on site with out degradation, whilst the biodegradable treated wood fibre continues to slow the flow and trap silt particles.
- Silt Wattles mould to the shape of the river bed or ground and can be joined end on end or pyramided to help clean dirty water.
- Wattles are highly versatile and can be weighted or staked in position depending on bed/ground conditions and flows.
- Silt Wattles can be joined end of end to create temp low flow channel and protect rivers from pollution arising from bank works.

**Silt Wattles are a versatile product suitable for use in a wide range of silt control applications on construction sites and in river works**



# EXAMPLE MANUFACTURERS AND PRODUCT SHEETS

## FILTER SOCKS

wildlife specialist biodegradables **geotextiles** agrotextiles accessories

### Hy-Tex Pro-Tex Dewatering Socks for Pumped Sediment Control

- ☑ Ideal for small dewatering jobs.
- ☑ Traps sediment and oil.



#### OIL DETECTION INDICATOR

A light blue paper oil detection strip is attached to each bag



If strip turns **DARK BLUE**  
**OIL PRESENT**

Stop pumping  
Contact your Environmental Manager

Pro-Tex Dewatering Socks control pollution caused when pumping dirty water from excavations, and offers an economical alternative to traditional dewatering bags or filtration products.

These easy to use and popular sediment filters bags are ideal for projects with small budgets and minor pollution problems to control of sediment and oil sheen from pumped water.

Designed to attach directly to the discharge pipe, they quickly filter water to help prevent unwanted sediment, silt, debris or pollutants leaving the site in run-off.

The socks have been designed to control pollution caused by pumping dirty water from excavations, trenches, lift shafts, bunds and the like, by filtering out sediment from contaminated water down to 90 micron, while the fabric the socks are constructed from has an inherent ability to absorb hydrocarbons too.

#### Advantages

The main advantage of using an Oil & Sediment filter is that it removes hydrocarbons and sediment from pumping activities.

It provides an alternative solution that delivers a considerable cost saving and is user friendly. Furthermore it reduces site time over existing methods such as hiring a vacuum tanker. If you wish to carry out street works with a minimal disruption to the public, this is the ideal solution.

Other benefits include:

- Simple set-up with built in tie
- Hydrocarbon detection strip to identify oil pollution
- Lightweight and compact
- Very easy to empty



Product: Pro-Tex Dewatering Sediment Bag. Premium Pipe Sock.

Application: Oil and Sediment Filter

Effective Pore Size: 90 micron

Sediment Capacity: Approx 18kg

Permeability: 72 litres/m<sup>2</sup>/sec

Tensile Strength: 19 kN/m

CBR Puncture Strength: 2,900N

Material: UV stabilised, continuous filament, non-woven, needle punched polypropylene fabric.

Bag Size: Approx 1.00 x 0.30m lay flat

Additional Features: Tying cord and hydrocarbon detection strip

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Aldington Mill, Mill Lane,  
Aldington, ASHFORD, Kent TN25 7AJ  
[sales@hy-tex.co.uk](mailto:sales@hy-tex.co.uk) [www.hy-tex.co.uk](http://www.hy-tex.co.uk)



Tel: 01233 720097  
Fax: 01233 720098



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# EXAMPLE MANUFACTURERS AND PRODUCT SHEETS

## FILTER BAGS

wildlife	specialist	biodegradables	geotextiles	agrotexiles	accessories
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### Hy-Tex Ultra Dewatering Bags for Pumped Sediment Control



Hy-Tex Ultra Dewatering Bags provide an effective way to collect harmful sediments from dirty water pumped out of excavation works (such as foundations, pipe line construction, water, sewer and utility trenches, waterways and lakes) that would otherwise pollute the surrounding environment.

It is a legal requirement to prevent silty water from leaving site untreated, and a finable offence if you do not take appropriate pollution control measures. The Environment Agency Pollution Prevention Guidelines PPG6 (See side panel), in summary, require that the majority of suspended solids (gravel, sand, and silt) must be removed from site water before it is discharged into a drain, sewer or watercourse.

Traditionally settlement methods (such as straw bale structures or settlement ponds/tanks) are often ineffective, rely on slow water movement, long settlement times, expensive and time consuming tank maintenance and large works areas.



Ultra Dewatering Bags are an efficient, practical, quick, simple and cost effective alternative solution to manage this ongoing environmental problem of removing suspended solid pollutants from pumped water on construction sites.

Sediment-laden water is simply pumped into the high quality filter bags, which trap the solids inside and allow filtered water to flow freely out through the geotextile fabric to disperse into the surrounding ground or another collection point.

Ultra Dewatering Bags can also be used for gravity feed applications such as outfall pipes from site drainage or lagoons.



The silt filter bags provide a passive non-mechanical solution, without the use of excessive or specialist machinery (other than possible lifting equipment when full), and do not require a large work area.

The sediment bags are also light, compact and easy to store, with minimal cleaning up required - when full just dispose of the bag and replace with another bag.

The Ultra Dewatering Bags detain both oil and sediment, offering a combination of benefits not available in alternative products. They can also be used to contain contaminated sediment whilst treatments are applied (such as flocculants or absorbents).

The standard 1.80 x 1.80m Ultra Dewatering bags has the capacity to trap near 1 tonne of silt and cope with flow rates up to 2,730 l/min, while the larger 3.05 x 4.55m bags can trap over 4 tonnes of silt and cope with flow rates up to 6,818 l/min.

**The Environment Agency**  
**"Working at construction and demolition sites: PPG6 Pollution Prevention Guidelines"**  
*"Poor management of silt and silty water is a major cause of serious pollution incidents from construction sites. Silt for these purposes is a fine inert sediment derived from soil and rocks. Silt pollution can: damage and kill aquatic life by smothering and suffocating; reduce water quality; cause flooding by blocking culverts and channels..."*  
*"You must not discharge any silty water to a drain or watercourse without prior treatment to settle or remove suspended solids. If you've identified that you will be generating silty water, identify suitable means to treat the water before discharge; examples include: lagoons, settlement tanks, silt traps grassy areas that slow water and allow solids to settle..."*  
*"You must have prior permission from the local sewerage provider if you intend to discharge settled water to the foul sewer because this will be regarded as a trade effluent. You must have prior permission from [the Environment Agency] if you need to discharge anything to a watercourse. In Scotland if you comply with certain conditions, a discharge will be covered by a General Binding Rule and you will not need to contact SEPA."*

Property	ASTM Test	Value
Material		Non-woven polypropylene geotextile
Grab Tensile Strength	D 4632	912 N (205 lb)
Elongation	D 4632	50%
Trapezoid Tear	D 4533	378 N (85 lb)
Puncture Resistance	D 4833	578 N (130 lbs)
Mullen Burst	D 3786	2,758 kpa (400 psi)
Permittivity	D 4491	1.4 sec <sup>-1</sup>
Pore Size	D 4751	180 micron (80 US sieve no)
UV Stability	D 4355	70% strength retained after 500hr
Weight	D 5261	272 g/m <sup>2</sup> (8 oz/yd <sup>2</sup> )
Flow Rate	D 4491	3,660 l/min/m <sup>2</sup> (90 gal/min/ft <sup>2</sup> )

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Aldington Mill, Mill Lane,  
Aldington, ASHFORD, Kent TN25 7AJ  
sales@hy-tex.co.uk www.hy-tex.co.uk



**Tel: 01233 720097**  
**Fax: 01233 720098**



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### Hy-Tex Ultra Dewatering Bags for Pumped Sediment Control



#### Usage Guidelines

Ideally position the Ultra Dewatering Bag on a slope, so incoming water flows downhill through the bag, and, as a precaution, install Terrastop Premium silt fence down slope of the bags to control any potential run-off pollution.

The bag is fitted with a collar which fits around delivery hoses or connectors. Strap the neck of the Ultra Dewatering Bag tightly to the discharge hose using the attached tying cord.

To increase filtration efficiency place the bag on an aggregate, or a layer of Hy-Pave tiles, to maximize water flow through the under surface of the bag.

Plan ahead for removal, if the filled bags are to be lifted for disposal then place suitable lifting straps under bag prior to pumping, alternatively you can roll the bags into a digger bucket.

Regularly check the bags. The Ultra Dewatering Bag is full when it no longer can efficiently filter sediment or pass water at a reasonable rate.

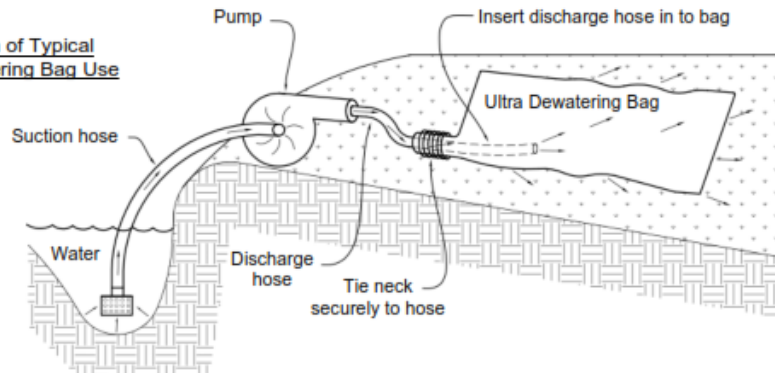
Flow rates will vary depending on the size of the Ultra Dewatering Bag, the type and amount of sediment discharged into the bag, the type of ground, rock or other substance under the bag and the degree of the slope on which the bag lies.

Under most circumstances Ultra Dewatering Bags will accommodate flow rates of up to 2,730 l/min for the 1.80 x 1.80m bags and 6,816 l/min for the 3.05 x 4.55m bags.

Use of excessive flow rates, or overfilling Ultra Dewatering Bags with sediment, may cause ruptures of the bags or failure of the hose attachment straps.

Dispose of the Ultra Dewatering Bag as directed by the site engineer. Normally allow the bags to dry in place then either cut open, spread and landscape on site or remove and dispose of the filled bags (Heavy lifting machinery may be required).

Illustration of Typical Ultra Dewatering Bag Use



Size	Code	Surface Area	Max Flow Rate	Max Pump Size	Sediment Capacity	Oil Capacity
1.80 x 1.80 m (6 x 6 ft)	9724	6.68 m <sup>2</sup> (72 ft <sup>2</sup> )	2,730 l/min (500 gal/min)	10 cm (4 inch)	0.51 m <sup>3</sup> / 980 kg (18 ft <sup>3</sup> / 2,160 lbs)	14 l (3.7 gal)
3.05 x 4.55 m (10 x 15 ft)	9725	27.87 m <sup>2</sup> (300 ft <sup>2</sup> )	6,816 l/min (1,500 gal/min)	15 cm (6 inch)	4.20 m <sup>3</sup> / 4,082 kg (150 ft <sup>3</sup> / 9,000 lbs)	57 l (15.1 gal)

#### Notes:

Flow/Dewatering rates will vary according to soil type (Sand typically dewateres at the fastest rate, while clay dewateres at the slowest). Clay may also blind over the fabric in some instances, significantly reducing flow.

Max flow rate is a cautious figure based on a significantly de-rating of the clean fabric flow rate of approx 3,660 l/min/m<sup>2</sup> (90 gal/min/ft<sup>2</sup>) to allow for pump pressure build up due to silt accumulation.

Sediment capacity is calculated using wet sand weight of approx 1,920kg/m<sup>3</sup> (120 lbs/ft<sup>3</sup>) and a bag fill height of approx 150mm

Oil capacity is estimated at low flow conditions with approx 2.09 l/m<sup>2</sup> (0.5 gal/ft<sup>2</sup>) absorption capacity

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Aldington Mill, Mill Lane,  
Aldington, ASHFORD, Kent TN25 7AJ  
sales@hy-tex.co.uk www.hy-tex.co.uk



Tel: 01233 720097  
Fax: 01233 720098



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## EXAMPLE MANUFACTURERS AND PRODUCT SHEETS



### Siltbuster Siltstoppa Bags

Siltstoppa Bags provide a low cost solution for the dewatering of sludges and slurry.

Pre-conditioned (floculated) slurry is pumped into the Siltstoppa Bag and allowed to dewater. The water released from the sludge bleeds through the geotextile fabric whilst the trapped solids remain in the bag.

Siltstoppa De-watering Bags are available individually, to sit on a suitable slab or drainage area or can be supplied as a complete treatment solution including as required sludge conditioning unit, and roll-on/roll-off (RORO) container.

When the bag is full and the trapped solids have dewatered, the Siltstoppa bag can either be split open on-site and the dewatered solids removed by means of an excavator (or similar equipment), or the full RORO container can be transported for off-site disposal.

#### Siltbuster Siltstoppa Bags Specs

Separation Method	Geotextile Membrane
Height	Expands until full
Length	6.5m
Width	2.1m
Dry Weight	Size Dependent
Materials	Sludges and Slurries
Material Colour	Black
Bag Capacity	6m <sup>3</sup>
Operating Range	Material Dependent

### Siltbuster Siltstoppa Skip

Siltstoppa De-Watering Bags have been conveniently sized to fit an industry standard roll on roll off (RORO) Siltstoppa skip. The RORO dewatering skip provides a secure and environmentally acceptable means of bunding a Siltbuster Siltstoppa Dewatering Bag.

When the skip is full with either single or multiple bags (stacked up on top of each other), the skip and its contents can be transported to a Waste Management Facility for disposal of the dewatered sludge/slurry contained within the Siltstoppa Bags.

The Siltstoppa Skip comes complete with an integral sump, allowing easy removal of the water which escapes from the dewatering sludge/slurry.

#### Siltbuster Siltstoppa Skip Specs

Separation Method	Geotextile Membrane
Height	1.2m
Length	6.1m
Width	2.6m
Dry Weight	2.0 tonne
Material	Floculated Particles
Operating Capacity	1 Bag
Lifting Method	RORO Hooklift
Operating Range	Material Dependent





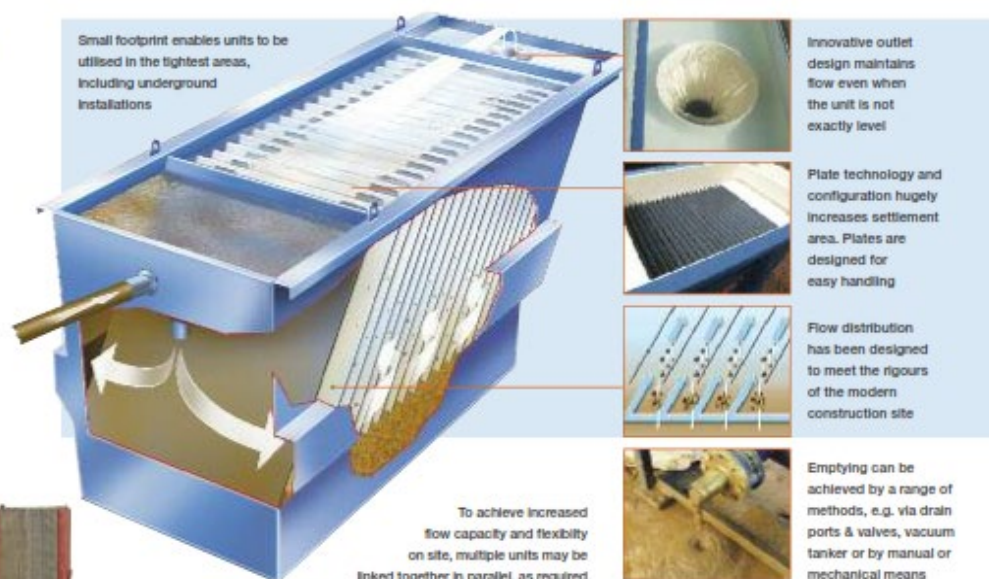
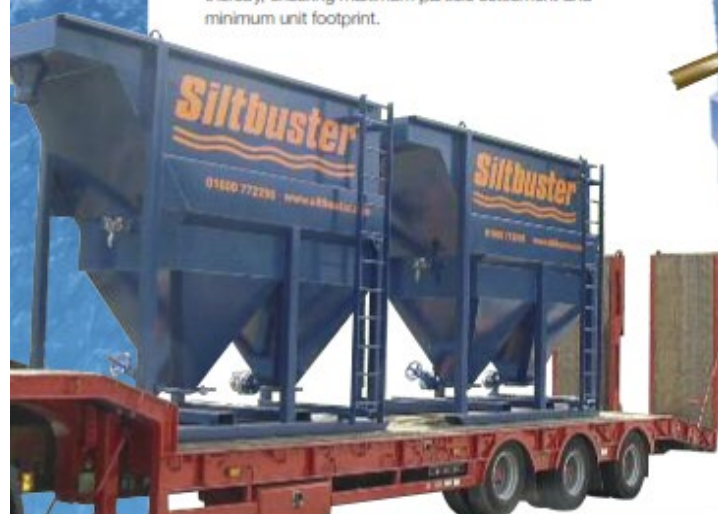
## SETTLEMENT TANKS



### Gravity Settlement ► Siltbuster Settlement Units & Water Clarifiers

Siltbuster is the UK's leading provider of mobile settlement units and Lamella Clarifiers. Each unit in the extensive range is specifically designed to remove suspended solids and settleable matter from silt and solids laden surface run-off and groundwater.

Effective gravity based solid/liquid separation requires the largest possible settlement area and optimum hydraulic flow. Siltbuster Clarifiers utilise lamella plate technology to maintain ideal settlement conditions within each unit, thereby, ensuring maximum particle settlement and minimum unit footprint.



Siltbuster mobile clarifiers are robust; skid-mounted; compact and lightweight, making them simple to transport, install and operate. They are ideal for sites with limited access, restricted spaces and temporary projects. Hopper bottomed units can be fitted (on request) with an automatic sludge removal system making their operation virtually maintenance-free.

### Typical applications

#### Construction

- Pumping & de-watering
- Groundwater treatment
- Site run-off treatment
- Drilling, piling & coffer dams
- In-river & near-river works
- De-silting & dredging
- Roads, pipelines & other linear projects
- Plant, vehicle & wheel washing
- Site water management

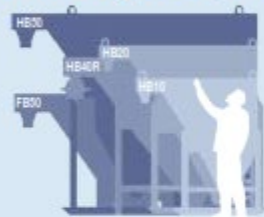
## Silt Management

[www.siltbuster.com](http://www.siltbuster.com)

### The Siltbuster Mobile Range

Siltbuster offers a range of various sized units to provide customers with flexibility and the opportunity to hire or purchase a tailored, yet off the shelf, solution.

### The Mobile Range, Size Comparison



FB50	HB10	HB20	HB40R	HB50
Flat-bottomed, skid-mounted unit. The Construction Industry's favourite	Hopper-bottomed, skid-mounted unit	Enlarged version of HB10. Increased flow rate and sludge storage. Batch or continuous sludge draw-off	Hopper-bottomed, skid-mounted unit	Performance of the FB50 but with twin hoppers for larger capacity, primary thickening applications and batch or continuous sludge draw-off
Height: 1.9m	Height: 2.1m	Height: 2.6m	Height: 3.1m	Height: 3.1m
Length: 3.7m	Length: 1.9m	Length: 2.5m	Length: 3m	Length: 3.7m
Width: 1.45m	Width: 0.9m	Width: 1.2m	Width: 2.2m	Width: 1.7m
Effective Settlement Area: 50m <sup>2</sup>	Effective Settlement Area: 10m <sup>2</sup>	Effective Settlement Area: 20m <sup>2</sup>	Effective Settlement Area: 40m <sup>2</sup>	Effective Settlement Area: 50m <sup>2</sup>
Dry Weight: 1,900kg	Dry Weight: 510kg	Dry Weight: 1,120kg	Dry Weight: 2,480kg	Dry Weight: 2,370kg
Inlet: 4" bauer	Inlet: 2" bauer	Inlet: 3" bauer	Inlet: 4" bauer	Inlet: 4" bauer
Outlet: 6" bauer	Outlet: 3" bauer	Outlet: 4" bauer	Outlet: 6" bauer	Outlet: 6" bauer
Typical Operating Capacity: 1-50m <sup>3</sup> /hr	Typical Operating Capacity: 1-10m <sup>3</sup> /hr	Typical Operating Capacity: 1-20m <sup>3</sup> /hr	Typical Operating Capacity: 1-40m <sup>3</sup> /hr	Typical Operating Capacity: 1-50m <sup>3</sup> /hr

### The benefits

- ▶ Readily transportable, fast and simple to setup, easy to operate.
- ▶ Small footprint units with large settlement area
- ▶ Unique design enables rapid particle settlement and water clarification
- ▶ Up to 20 times more efficient than conventional settlement tanks and lagoons of the same plan area
- ▶ Choice of unit sizes and capabilities to suit most applications
- ▶ Units can be used individually or linked to accommodate a wide range of flows, pump sizes and particle characteristics



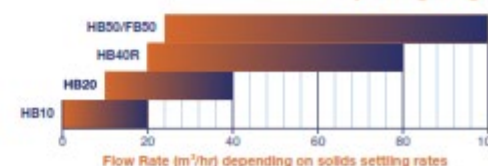
### Options & Process Add-ons

#### Total Water Treatment Solutions

Siltbuster Clarifiers can be configured as single or multiple units for basic gravity separation and discharge-to-sewer applications. They can also be supplied as part of a complete, tailored, packaged treatment solution – including ancillary equipment, such as:

- ▶ Lids, covers, walkways & access platforms
- ▶ Flow splitter valves, flow meters & flanged ports
- ▶ Automatic, flow proportional, single or multi-stage chemical pre-treatment
- ▶ Fully containerised dosing systems
- ▶ Flash mixers
- ▶ Pipe flocculators or mixing/aging tanks
- ▶ Automatic desludging systems
- ▶ Sludge pumps & sludge storage tanks
- ▶ De-watering systems

#### Siltbuster Mobile Clarifier Operating Range



For hire, sales or more details call Siltbuster on 01600 772256





## Process Add-ons

Siltbuster believes that, wherever possible, the use of chemicals to treat excess site water should be avoided. However, there are some types of waste water, contaminants and effluent which still require the use of chemicals to increase the particle settlement rate, so as to enable their removal. This can be due to either the presence of very fine particles; clay; colloidal matter; colour or simply the soil's own interparticle electrical bonds which need to be interrupted in order for settlement to occur.

In such cases, chemical dosing is unavoidable. Consequently, Siltbuster has developed an extensive range of chemical dosing systems to complement its award-winning settlement units.



## Silt Management

[www.siltbuster.com](http://www.siltbuster.com)

## Chemical Dosing, Pre-treatment & Reaction Systems

### Treatment Systems

#### Flocculant Blocks

Basically, a flocculant in a solid form. When immersed in water the solid dissolves, releasing the chemicals, causing a reaction.

#### Single-Stage & Multi-Stage Dosing Systems

Siltbuster's Single-Stage dosing systems range from a single dosing pump linked to a drum of coagulant or acid/alkali for pH adjustment, through to an IBC based flocculant batch makeup system and associated pumped dosing. The dosing rate is fully controllable and can be linked to flow rate and chemicals can be added to mixing/reaction tanks, in-line or via pipefloculators. For more complex dosing regimes requiring similar levels of accuracy, Siltbuster offers Multi-stage dosing systems, including staged coagulant and flocculant dosing, often with an intermediate stage for pH adjustment.

### Chemical Reaction Systems

The reaction rate of treatment chemicals, dictates the system required.

#### Mixing Tanks

Siltbuster can supply mixing tanks, ranging from 1m<sup>3</sup> to 30m<sup>3</sup> capacity.

#### Pipefloculators

For faster reacting chemicals, various pipefloculators are available.



### Containerised Integrated Dosing Units

Siltbuster can provide secure, self-contained, in-line dosing units which enable the controlled, flow-proportional, multi-stage addition of treatment chemicals. For flows up to 150 m<sup>3</sup>/hr, the 'plug & play' systems come pre-installed in a 10ft (3m), 20ft (6m) or 40ft (12m) shipping container, as required.

Options include:

- ▶ Bunded chemical storage
- ▶ Flow-proportional dosing systems
- ▶ Reaction/aging tanks and pipefloculators
- ▶ Control panels and datalogging
- ▶ Insulation, lighting and heating
- ▶ Integrated Lamella or DAF Units (subject to model and size).
- ▶ Automatic monitoring of feed and discharge water



### Full Treatment Packages

Siltbuster's in-house laboratory can test a wide range of chemicals to identify the treatment regime most suited to your needs. A sample of the untreated water, your flowrate and the required discharge limits are all that is needed.

## **APPENDIX D**

# **INSPECTION CHECKLIST EXAMPLES**

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**GULLEY INSPECTION CHECKLIST**  
**SITE:**

[illegible]

## SITE INSPECTION CHECKLIST

**SITE: Garlick's Arch, Burntcommon, Surrey**

---

Name of person undertaking inspection: .....

Date: .....

Current weather conditions: .....

Description	Comments	Action	Initial
1) What is the current condition of the gully protection measures within the active areas of the site?  <i>Note any gullies requiring maintenance measures</i>			
2) Are site roads clean and relatively free of mud? Is the frequency of visits by the road sweeper adequate?  <i>Consider whether additional visits should be scheduled.</i>			
3) Are there currently unsurfaced areas being trafficked which may be causing silt to enter the site drainage?  <i>Note if additional measures are required to reduce the run-off from these unsurfaced areas.</i>			
5) Are control measures in place to prevent silt run-off from unsurfaced areas and soil stockpiles?  <i>Note if the control measures are adequate and whether the increased runoff requires an increase in the frequency of inspection of any control measures.</i>			

<p>6) What is the current condition of water within the two on-site surface watercourses?</p> <p><i>Note any discolouration of the water or obvious sign of sediment within the water.</i></p>			
<p>7) What is the current water condition of the attenuation basin and swale?</p> <p><i>Note any discolouration of the water or obvious sign of sediment within the water.</i></p>			
<p>8) Is any off-site run-off occurring?</p> <p><i>Note whether any run-off is occurring – considered most likely to occur at the southern and western boundaries.</i></p> <p><i>Note any control measures in place.</i></p>			
<p>9) Is there any dewatering of excavations taking place on site?</p> <p><i>Note what activities are taking part and their location.</i></p> <p><i>Note any control measures in place.</i></p>			

Notes and actions to be taken:

Completed by	Name	Signature	Date
Site Manager			



**MONITORING POINT INSPECTION RECORD**  
**SITE: Garlick's Arch, Burntcommon, Surrey**

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Name of person undertaking inspection: .....

Date: .....

Current weather conditions: .....

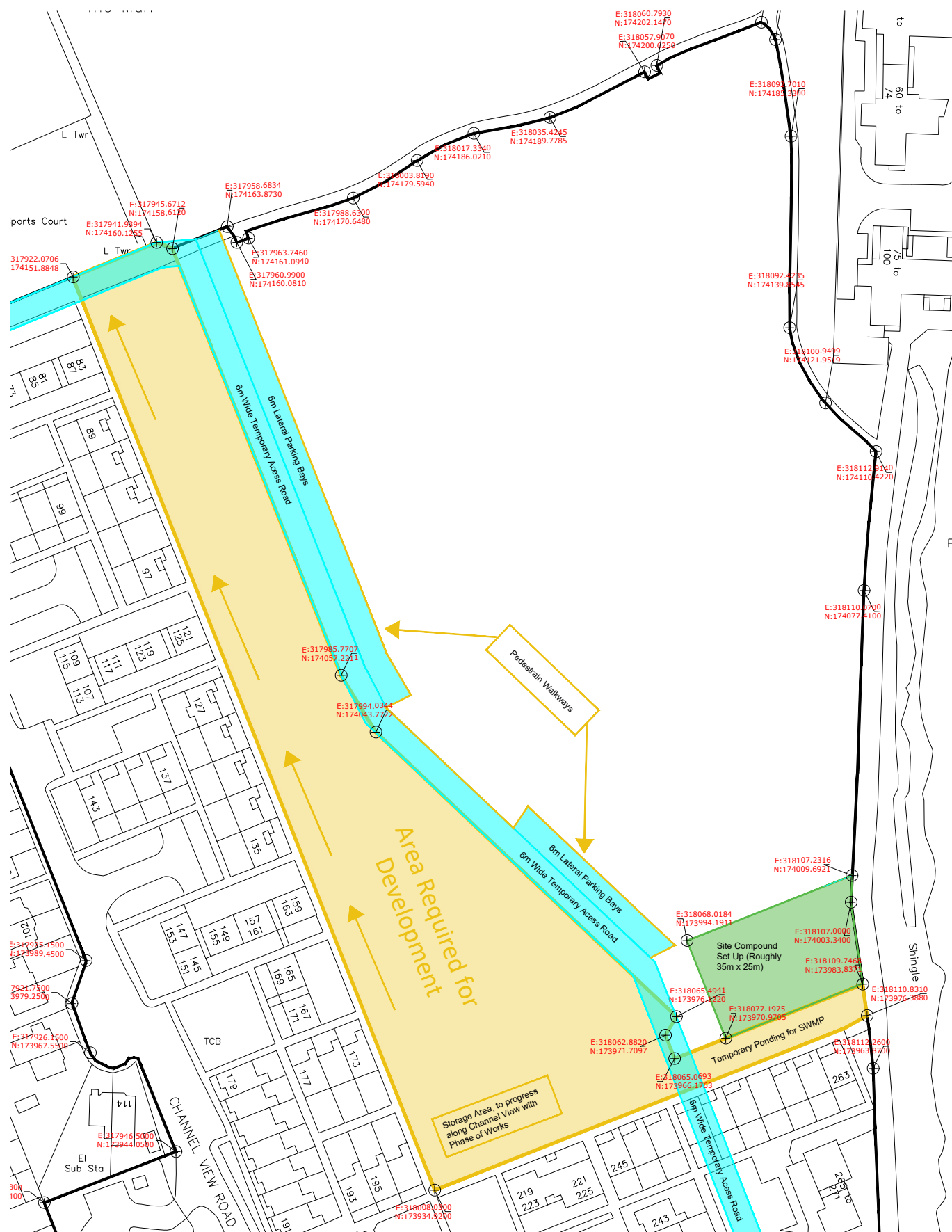
Monitoring Location	Monitoring Location Rationale	Inspection Record	Action required	Initial
Monitoring of the following primary monitoring locations (as shown on Figure 3 – depicted by purple monitoring symbols) on a <b>daily basis during periods of rainfall</b> , and at a suitable frequency during periods of dry weather				
<b>Monitoring Location MP1:</b>	Monitor the water quality and sediment-contamination of the drainage (retention) basins.			
<b>Monitoring Location MP2:</b>	Monitor the water quality and sediment-contamination of the surface watercourse.			
<b>Monitoring Location MP3:</b>	Monitor surface water and sediment run-off / deposition across the site's infrastructure (roads, drainage, gulleys etc).			

Completed by	Name	Signature	Date
Site Manager			

## **APPENDIX B**

# **CONSTRUCTION MANAGEMENT PLAN**

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# Channel View

## Enabling / Block B

### Construction Environmental Management Plan (CEMP)

Date: 4th April 24

Revision: C









## **Introduction**

This Construction Environmental Management Plan (CEMP) has been produced by Wates to satisfy Condition No. 12 of the Pre-Commencement Planning Conditions for the Channel View (Enabling & Block B) development.

The CEMP will detail how Wates will protect interests in highway safety, environmental & public amenity during the duration of the Channel View (Enabling & Block B) development, in the following areas:

Publicly Accessible Areas / Construction Traffic Management / Storage / Welfare / Segregation / Dust & Dirt Control / Logistics / Delivery Times / Waste Management / Construction Drainage Scheme / Site Contacts / Temporary Highway Measures.



## **Proposed Development**

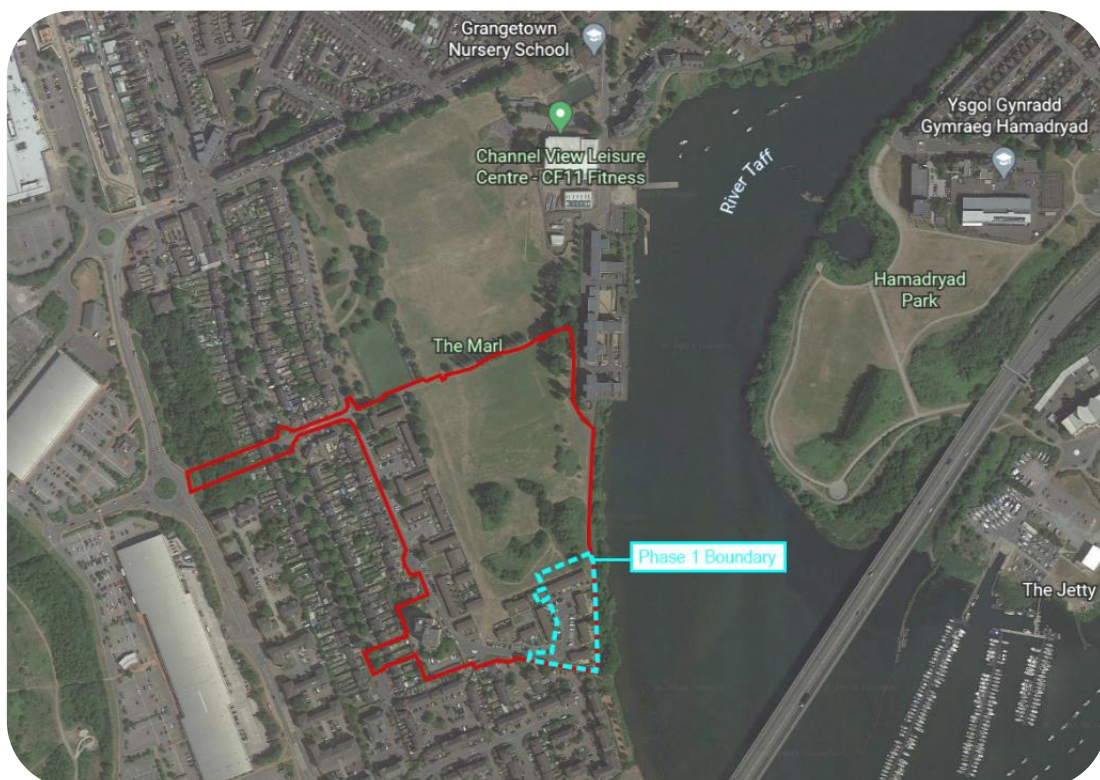
Channel View Estate is located South-West of Cardiff, within Grangetown.

The Channel View Estate & adjoining Marl Park are located within the heart of Grangetown to the west. Channel View Road & South Clive Street were constructed in the middle of the 20th century, with Channel View Estate being developed in the 1970's.

To the North of the site lies part of the Marl Park. The East of the site is characterised by the close relationship to the River Taff, with the Taff trail path running parallel between the river & the development edge. To South of the site are the relatively new developments of Windsor Quay & Prospect Place. The West of the site is characterised by the existing properties on Channel View Road & South Clive Street.

Block B will comprise 24 apartments (1 & 2 bed) for independent living residents (over 55's).

### *Development Boundary*



## **(i) An Implementation Programme For The Construction Of The Roads, Footpaths & Other Publicly Accessible Areas**

At present the only footpaths that are affected by the Channel View Enabling & Block B works are located to the north of Block B (adjacent to the proposed Wates Enabling & Block B welfare) & to the south of Block B (adjacent to Seager Drive). Both these footpaths are accessed via the Cardiff Bay Trail.

The Enabling works will comprise elements of drainage (foul & storm) that will need to be diverted & newly installed, through the Cardiff Bay Trail. Thus a cycle path diversion will be required (see proposed route can be viewed on page 15).

Provisional dates & durations (as of Tue 23<sup>rd</sup> Jan 24) are below:

Enabling:

- Start On Site: Mon 5<sup>th</sup> Feb 24
- Completion: Fri 27<sup>th</sup> Sep 24
- Duration: 34 Calendar Weeks

Cardiff Bay Trail Diversion:

- Start On Site: Mon 18<sup>th</sup> May 24
- Completion: Fri 29<sup>th</sup> Apr 24
- Duration: 6 Calendar Weeks

Block B:

- Start On Site: Mon 30<sup>th</sup> Sep 24
- Completion: 29<sup>th</sup> May 26
- Duration: 87 Calendar Weeks



## **(ii) Construction Traffic Management**

### **Identification Of The Routes That Construction Vehicles Would Take & Measures To Regulate The Routing Of Construction Traffic**

All material & plant deliveries will be via the Channel View Road new access & egress, located to the southwest of Block B.

These deliveries will be via Ferry Road & then either South Clive Street &/or Channel View Road, with Beecher Avenue (linking South Clive Street & Channel View Road) also being utilised if required. It is noted that South Clive Street has on street parking & trees to either footpath. It is also noted that Channel View Road also has on street parking & traffic calming. These observations will be relayed to the Wates supply chain when scheduling deliveries.

During the development Wates will employ a Plant & Vehicle Marshall (PVM) to assist mobile plant & delivery drivers to safely maneuver & reverse their vehicles & stop operations if there is a risk of injury.

In addition to the above Plant & Vehicle Marshall a Wates Project Team member will be appointed as the Plant, Vehicle, Pedestrian Co-Ordinator (PVPC) to identify & manage risks associated with plant, vehicle & people interface. The PVPC will hold, as a minimum, the CITB Site Management Safety Training Scheme (SMSTS).

All logistical procedures will be fully briefed to the Wates supply chain during commercial pre – let meetings, prior to any orders being placed.

### **Times Within Which Traffic Can Enter & Leave The Site**

To comply with Condition No. 27 of the Pre-Commencement Planning Conditions the arrival, departure, loading & unloading of delivery vehicles will only be complete within the below hours:

- Monday - Sunday: 7am – 8pm

However, to mitigate the impact upon the existing residents & amenities the Wates working ours upon the development will be below:

- Monday - Friday: 8am – 6pm
- Saturday: 8am – 1pm\*

\*Note: Wates have noted that Saturdays are extremely active due to the close proximity of the Marl & both the Cardiff City Stadium & Principality Stadium.

### **Times Of Deliveries**

All arrival, departure, loading & unloading of delivery vehicles will only be complete as detailed within the above section.

However, Wates have noted the various bus stop routes via South Clive Street, Channel View Road & Beecher Avenue. Thus, where practicable Wates will tailor the supply chain deliveries around the bus route peak times, to mitigate traffic congestion.

## **Site Access**

All material & plant deliveries will be via the Channel View Road new access & egress, located to the southwest of Block B.

Pedestrian access & egress will also be via the Channel View Road new access & egress, located to the southwest of Block B. However, this we will through a secured digilock single gate.

## **Loading & Unloading Of Plant & Materials**

All loading & unloading of delivery vehicles will only be conducted within the within the Wates Construction Zone.

A potential holding zone has been identified on the redundant parking spaces of previous houses.

## **Access Within The Site Including Measures To Ensure Safe & Convenient Pedestrian, Cycle & Vehicular Access Through Those Areas Not Under Construction Or Where Construction Is Complete**

No unauthorised personnel will be permitted within any of the Wates yellow zones &/or construction zones.

All authorised personnel requiring access into the Wates construction zone, will require a specific site induction & where required an escorted visit by a qualified Wates manager.

Access & egress into the Wates construction zone will be via the Biosite turnstile facility, operated by a thumb print scanner that is authorised during the specific site induction.

## **Wheel Washing Facilities**

During the Delivery phase upon the development dust & dirt control will be minimised, suppressed & monitored to reduce the impact on adjacent residents by:

- Wheel Washers Facilities At The Access & Egress.
- Road Sweeper (Weekly & As Required).
- Spraying, Jet Washing Of Vehicles, Vehicle Routes.

The location of the above control measures will be at the Channel View Road new access & egress.

All dust suppression, air monitoring, offsite road washing (contingency) & emissions monitoring to be managed by the nominated Wates Project Lead (procedure & contact details will be visible on all Wates branding & signage).

## **Parking For Contractors Vehicles, Site Operatives & Visitors**

Wates personnel, supply chain, visitor parking to be within the Wates Yellow Zone adjacent to the Wates welfare facilities. A safe walkway will then be provided to access the Wates welfare facilities.

All on street parking to South Clive Street, Channel View Road & Beecher Avenue will be discouraged by Wates & fully communicated to all Wates personnel, supply chain, visitors prior to arrival. However potential redundant parking spaces from the previous vacant properties is an option if needed.

Proposed Wates Visual Standards & Logistics Plan can be viewed overleaf.



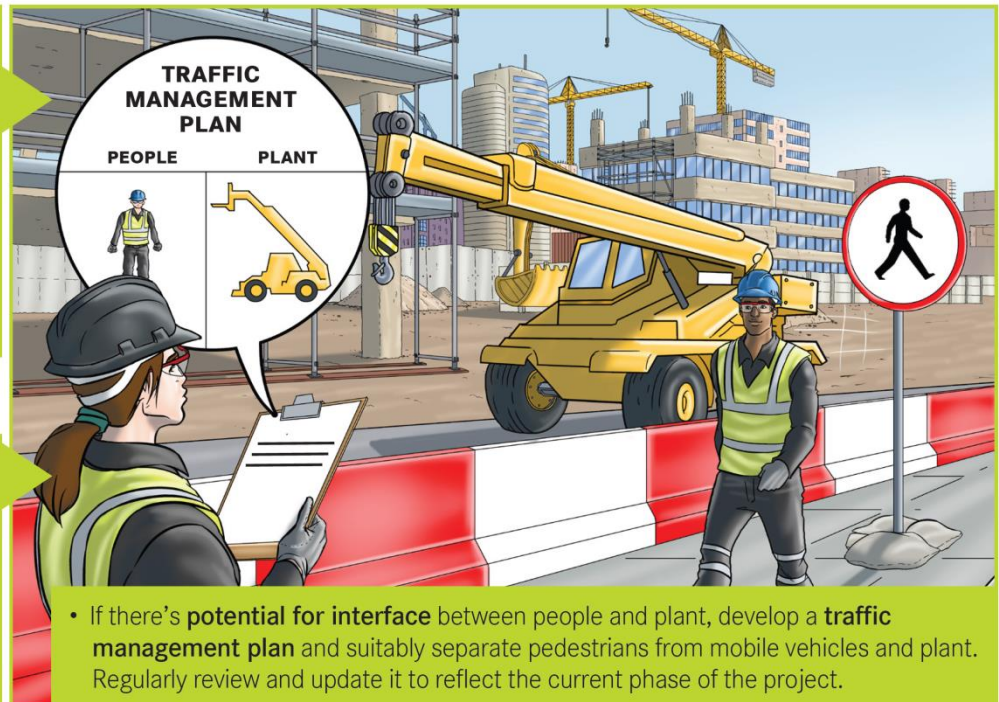
## PLANT, VEHICLE AND PEDESTRIAN CO-ORDINATOR (PVPC)

### KEY CONTROLS:

The Project Lead must appoint a member of the Wates Project Team who has sufficient knowledge and experience to **identify** and **manage** the **risks** associated with the plant and people interface. They must hold, as a minimum, the **CITB Site Management Safety Training Scheme (SMSTS)** and have a level of seniority which allows them to carry out their role without compromise.

- The PVPC must ensure a **safe system of work** is developed in accordance with the risks associated with vehicle, plant and equipment use and that it is **communicated** in the management plan.

- The Project Lead or PVPC must **review and approve** any supply chain's safe systems of work for the use of vehicles, plant and equipment.



- Enter all plant on site in the **Plant Register**. Keep the register **up-to-date** on a weekly basis with new, replacement and off-hired equipment.

- Plant operators must follow the appropriate **isolation procedures** when their plant is not in use to prevent unauthorised operation. This must also be **recorded in risk assessments**.

- Perform **plant maintenance** according to the manufacturer's instructions.

- Ensure we **minimise environmental risk** (i.e. noise and emissions) through regular servicing, and the use of drip trays or plant nappies.

### WATES PROJECT STANDARD:

- All vehicles, plant and equipment must be **controlled** and **operated** by **competent operators** who have a valid Fit-for-Work Medical.
- Project Leads or PVPC's must ensure that **inexperienced operatives** (less than 2 years' experience with a RED CPCS Competency Card) are interviewed and have **direct supervision**.
- Persons **younger than 18 years old may not use vehicles, plant and equipment**, with the exception of powered hand tools while under direct supervision.





# VISUAL STANDARD

## PLANT AND VEHICLE MARSHALS (PVM)



### KEY CONTROLS:

All Plant and Vehicle Marshals (PVM) **must**:

#### BE FIT AND ABLE:

Complete the **CPCS Plant and Vehicle Marshal Training Course (A73)** or **NPORS Plant and Machinery Marshal (N133)** or **(403)**.



Be **over** the age of **18**.



Be subject to a **'fitness for work'** health assessment undertaken by an Occupational Health Service Provider (OHSP) or a GP who has expertise in Occupational Health.



#### WEAR PPE:



**White safety helmet**, with a chinstrap if necessary.

**Helmet lamps** showing red at the back and white at the front (when low light levels are prevalent).



**Orange high-visibility jacket or vest** (Class 3) labelled "Plant and Vehicle Marshal".



Orange high-visibility **gloves**.



Orange high-visibility **trousers**.



### WATES PROJECT STANDARD:

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## VISUAL STANDARD

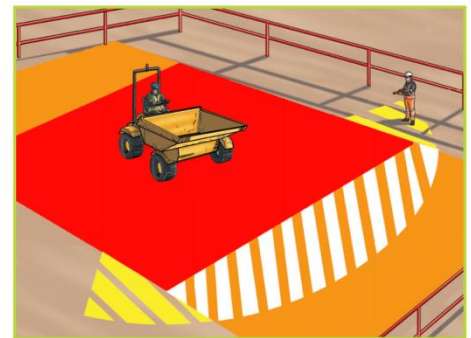
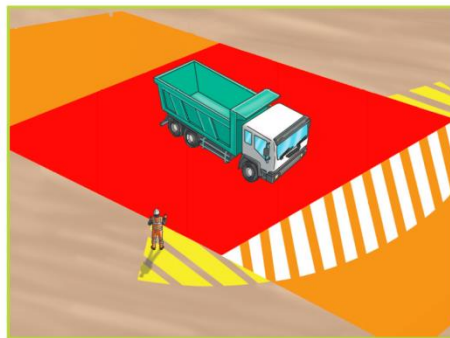
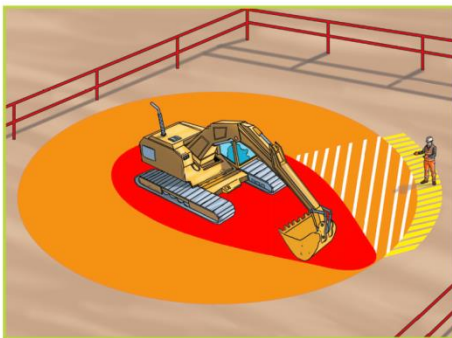
# PLANT, VEHICLE AND PEDESTRIAN INTERFACE – FATAL AND EXCLUSION ZONES



### KEY CONTROLS:

Establish exclusion zones using **physical barriers** around operational mobile plant and vehicles. Exclusion zones will **depend on the specific plant** and the surrounding buildings or temporary structures in the area.

- Identify specified zones in **RAMS** and **Start Rights**.
- Brief all work teams on the use of exclusion zones and the safe system of work required to enter them.



#### Fatal zone:

**Entry prohibited.** Only enter this zone if:

1. The machine is completely **isolated**.
2. The machine's slew arm or hydraulics or **bucket is grounded**.
3. The engine is **switched off** and isolated.



#### Exclusion zone:

**Entry prohibited.**

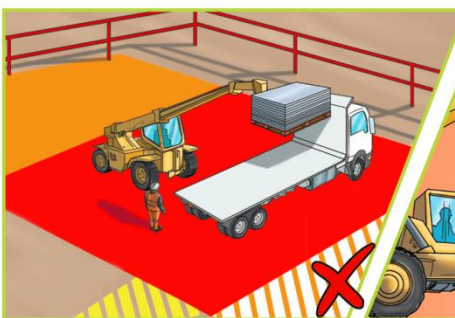
To enter this zone you must:

1. **Make eye contact** with the operator.
2. Wait until the machine's slew arm, hydraulics or **bucket is grounded and immobilised**.



#### Plant Vehicle Marshall zone (PVM):

If involved with plant operation, stay in this zone to **keep eye contact** with the plant operator. **Only authorised personnel** within zone.



### WATES' PROJECT STANDARD:

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## Channel View

Enabling  
Logistics  
Overview

### Key

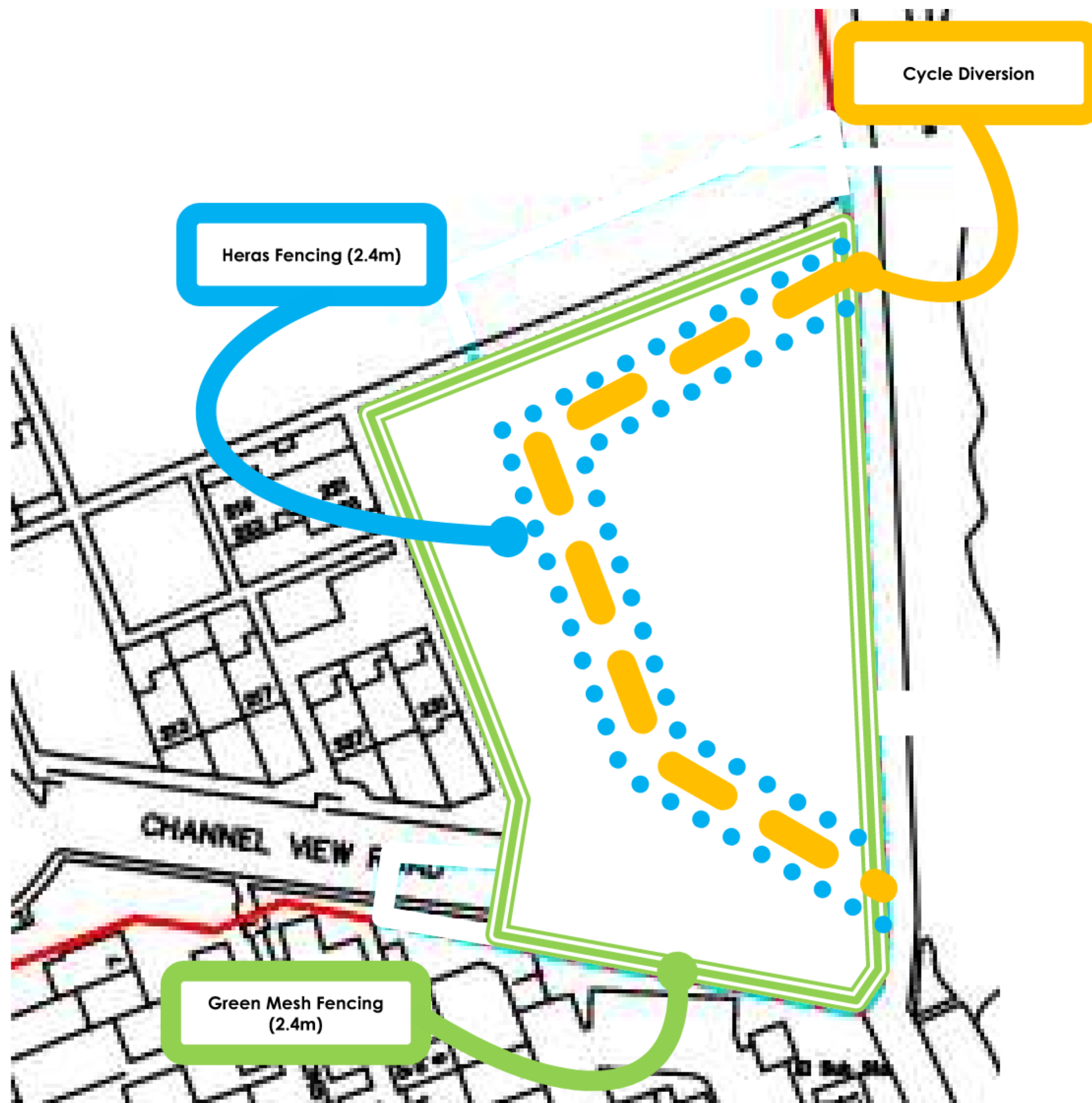
-  Wates Construction Zone
-  Wates Yellow Zone
-  Material / Plant Routes
-  Green Mesh Fencing (2.4m)

### Revisions

Rev	Date	Description	By
...	23 <sup>rd</sup> Jan 24	Enabling / Log	OM







Cycle Diversion

Heras Fencing (2.4m)

Green Mesh Fencing (2.4m)

## Channel View

Enabling  
Segregation  
Cardiff Bay Trail Diversion

### Key

	Cycle Path Diversion
	Heras Fencing (2.4m)
	Green Mesh Fencing (2.4m)

### Revisions

Rev	Date	Description	By
...	23 <sup>rd</sup> Jan 24	Enabling / CBTD	OM



Channel View

Block B

Logistics

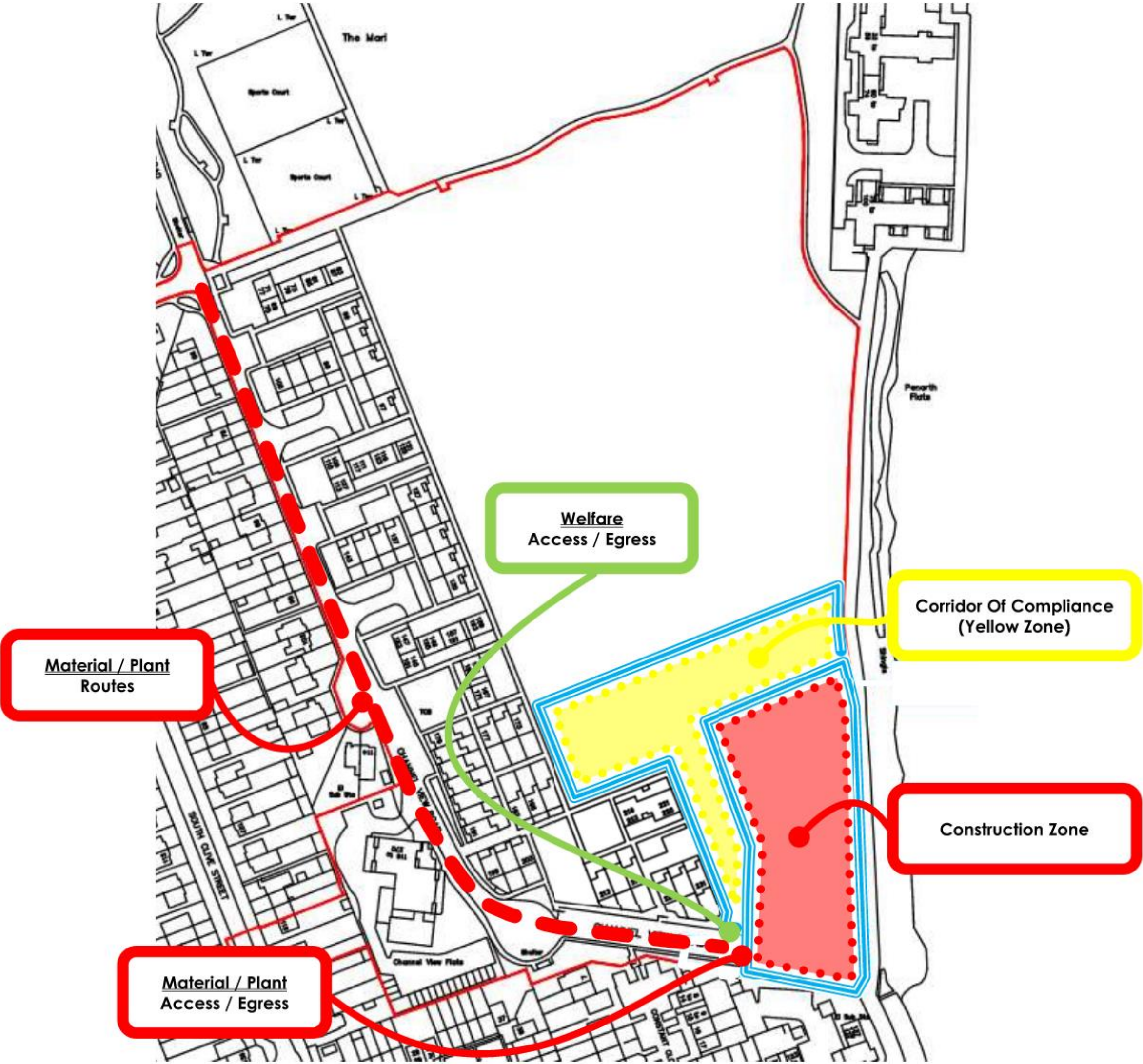
Overview

Key

- Wates Construction Zone
- Wates Yellow Zone
- Material / Plant Routes
- Timber Hoarding (2.4m)

Revisions

Rev	Date	Description	By
...	23 <sup>rd</sup> Jan 24	Block B / Seg	OM



### **(iii) Details Of The Storage Of Plant & Materials, Construction Compounds, Any Temporary Facilities For Construction / Sales Staff**

During the Enabling works the Wates welfare facilities shall be located to the north of Block B, within the existing council owned properties (Plots 221 & 225). These will be occupied until the Block B main welfare is live.

During Block B works the Wates welfare facilities shall be located to the north of Block B, within the southern portion of the Marl.

Wates, visitor access, egress to the welfare facilities will be via the Channel View Road new access & egress. Once within the Wates welfare area, the Wates Corridor Of Compliance (Yellow Zone) will be active (see Wates Visual Standard overleaf) from this point forward for any personnel requiring access to the Wates Construction Zone.

The Wates welfare facilities will be reduced towards the closing stages of the programme duration to account for the reduction in tasks & resources.

The Wates welfare facilities will comprise a Canteen, Drying Room, Men's WC, Women's WC, Office, Meeting Room, Smoking Shelter as a minimum.

Storage shall be located within the Wates Construction Zone around the footprint of Block B, with smaller items potentially being stored within the Wates welfare & parking areas.

Proposed Wates Visual Standards & Welfare Plan can be viewed overleaf.

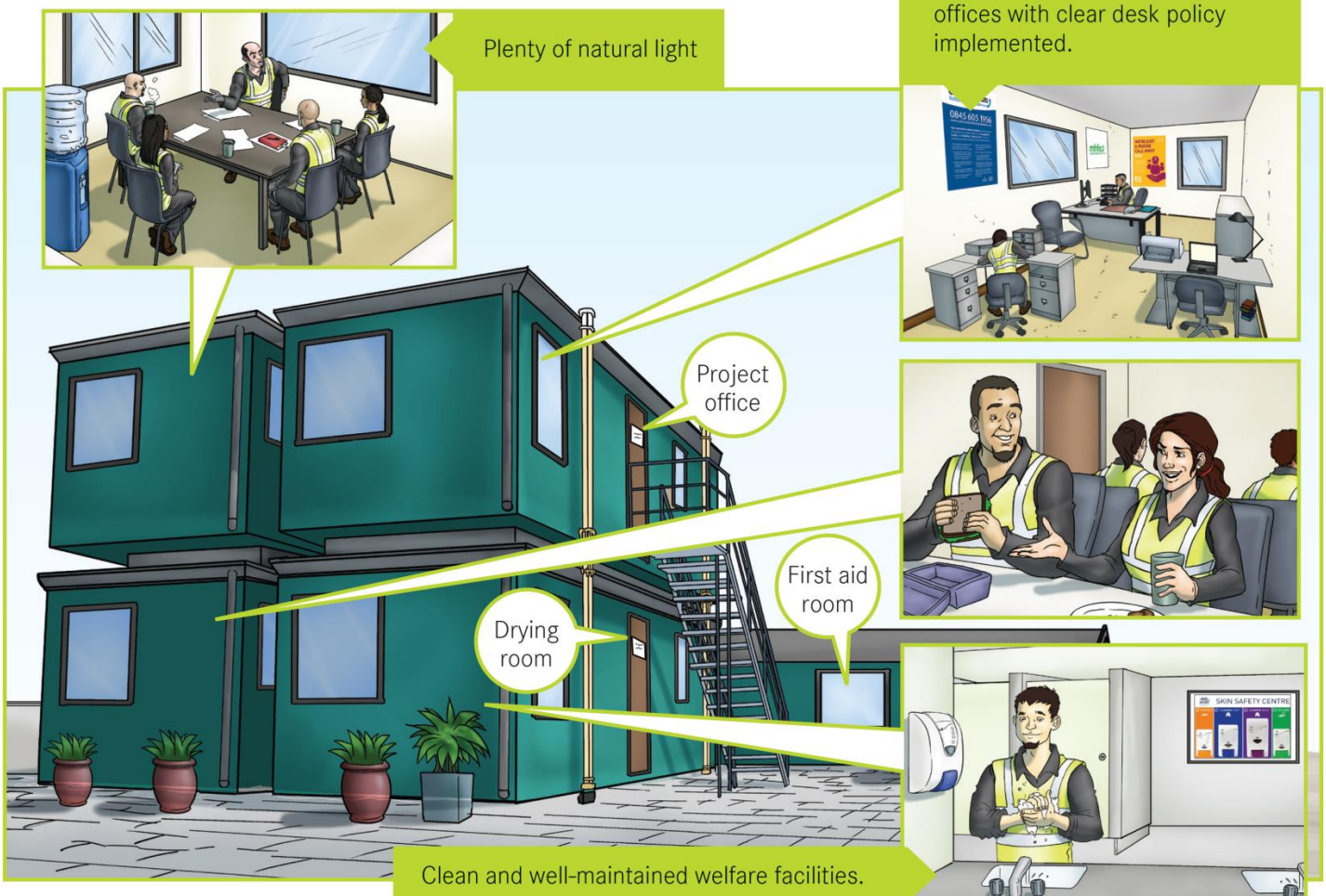


## WELFARE PROVISION

Providing welfare facilities is fundamental in safeguarding the health and wellbeing of workers. The provision of toilets, a supply of hot and cold water for washing, showers, changing facilities, drinking water, a multi-faith room and a place to heat and eat food and rest are basic expectations. We must aim to provide the best facilities we can from the beginning to the completion of the project.

### KEY CONTROLS:

- **Clean and maintain** washing, changing and toilet facilities regularly.
- **Secure lockers/baskets** to store work wear and PPE.
- Ensure serviced canteens have a **hygiene certificate**.
- Install **Hard Hat TV**.
- Have an **agenda item** in the operative forum/H&S meetings.
- **Consider** the need for squatting pan toilets.
- Ensure **adequate drinking water** is available throughout the project.



### WATES PROJECT STANDARD:

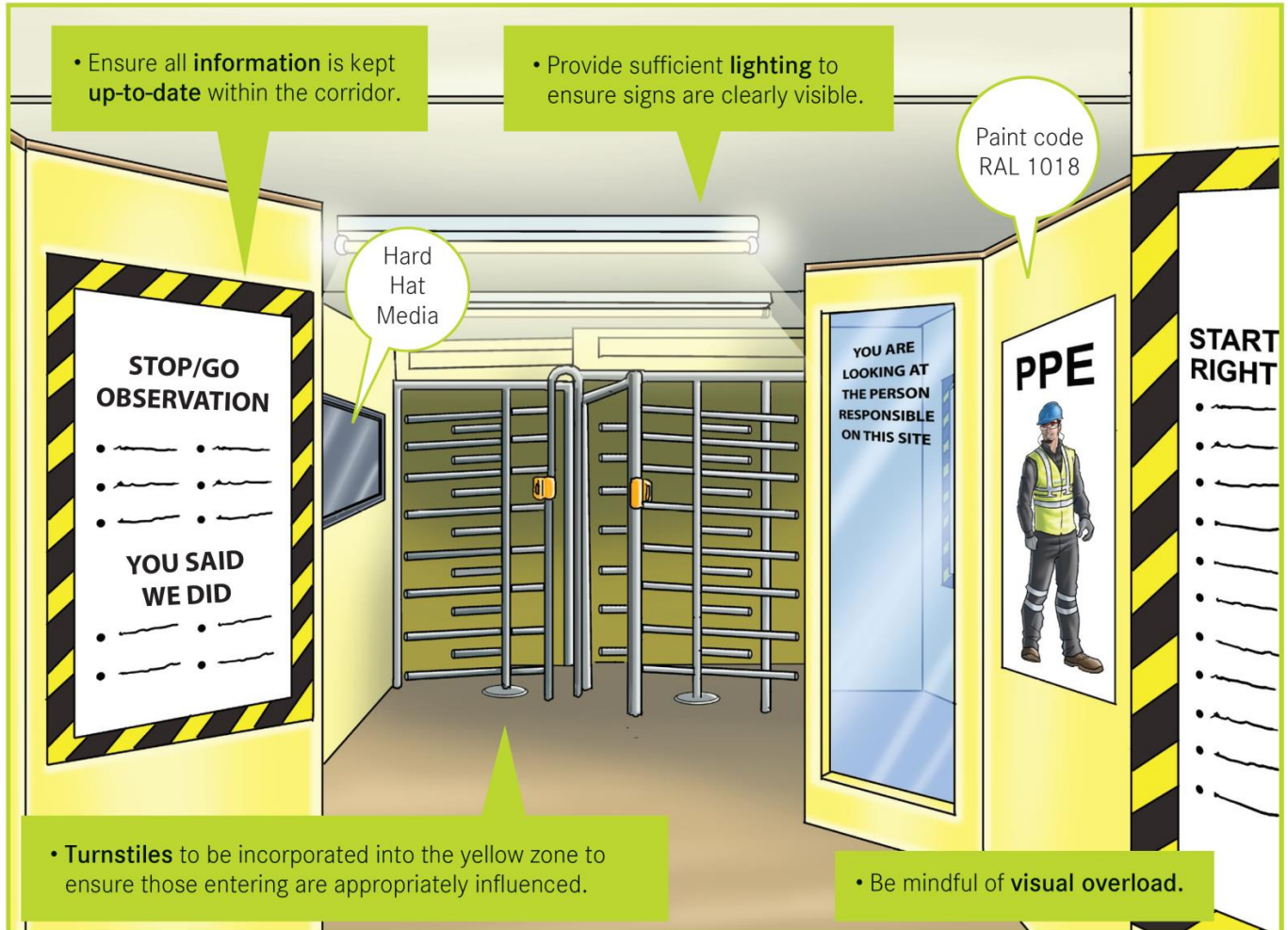
The above items are representative of the minimum standards that are required by Wates in the performance of its duties in meeting its obligations whilst on site. They are the minimum standards of care for the activity or trade identified in the title of this page that are necessary to seek to protect against damage or injury to people and property. They are not intended as an exhaustive list, nor are they intended to define maximum limits of performance.



## CORRIDOR OF COMPLIANCE (YELLOW ZONE)

### KEY CONTROLS:

The corridor of compliance is a **transition zone** to positively influence everyone when entering the project.



### Recommended signs:

- |                           |                   |   |                                 |
|---------------------------|-------------------|---|---------------------------------|
| 1. You are now entering   | 3. The Wates team | 5. Incident-free days                     | 7. PPE – have you got it right? |
| 2. Do not pass this point | 4. Start Right    | 6. Zero Harm reporting - you said, we did | 8. End of Shift                 |

### WATES PROJECT STANDARD:

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## Channel View

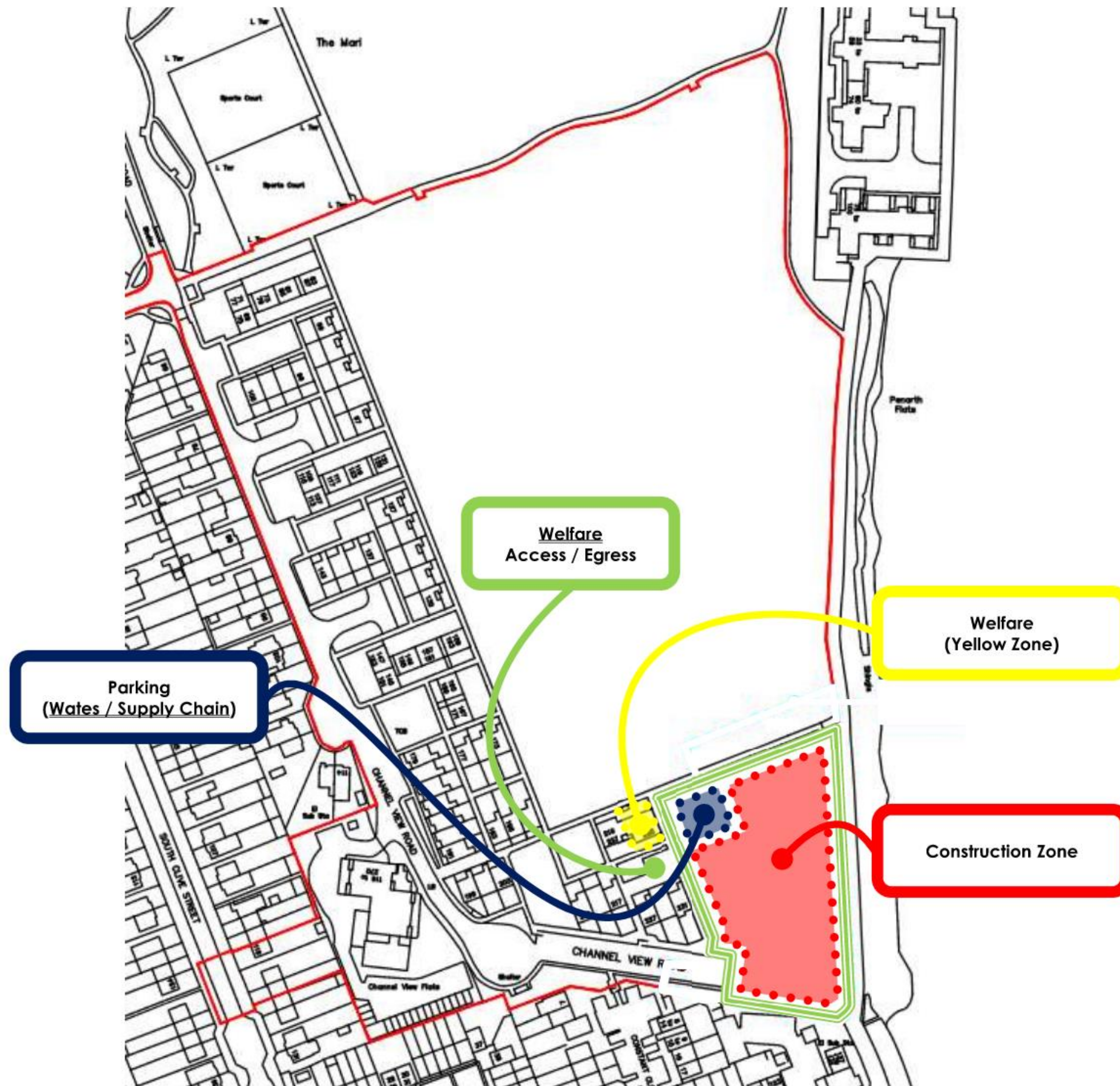
Enabling  
Welfare  
Overview

### Key

	Wates Construction Zone
	Welfare (Yellow Zone)
	Parking (Wates / Supply Chain)
	Green Mesh Fencing (2.4m)

### Revisions

Rev	Date	Description	By
...	23 <sup>rd</sup> Jan 24	Enabling / Wel	OM









## Channel View

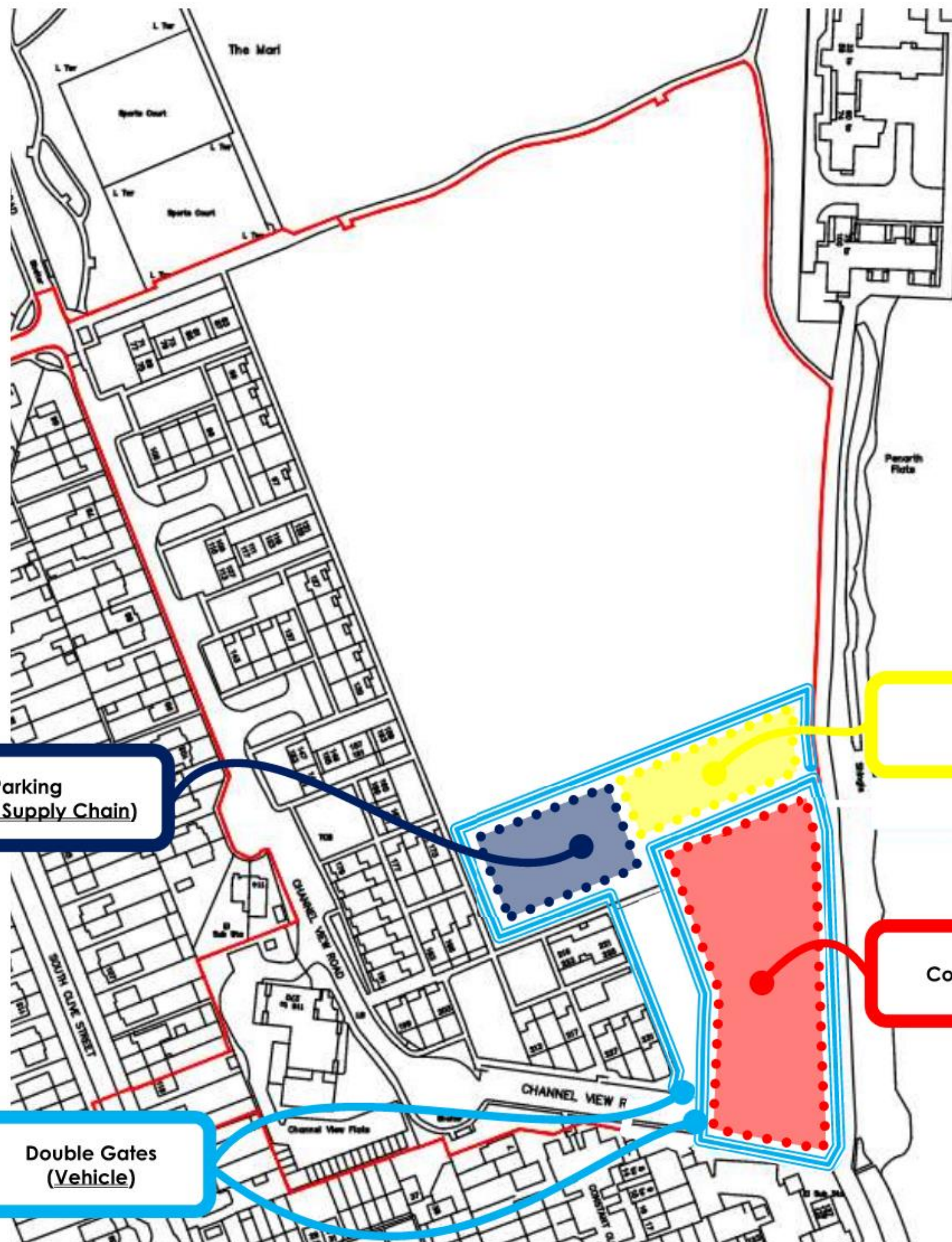
Enabling  
Welfare  
Overview

### Key

-  Wates Construction Zone
-  Welfare (Yellow Zone)
-  Parking (Wates / Supply Chain)
-  Timber Hoarding (2.4m)

### Revisions

Rev	Date	Description	By
...	23 <sup>rd</sup> Jan 24	Enabling / Wel	OM



Parking  
(Wates / Supply Chain)

Double Gates  
(Vehicle)

Welfare  
(Wates)

Construction Zone

#### **(iv) Details Of Site Hoardings (Including The Erection, Maintenance, Security & Any Decorative Displays)**

All boundaries of the development that are public facing shall be timber hoarding (2.4m), complete with appropriate marketing branding as agreed with Cardiff Council (Client) & Wates.

All boundaries of the development that are non-public facing shall be heras fencing (2.4m).

Wates, visitor access & egress to the welfare facilities will be via the Channel View new access & egress, located to the south of the development. The area entered here will be Wates' Corridor Of Compliance, a safe zone prior to entering the exclusion zones.

As various phases are completed & occupied, heras fencing (2.4m) shall be used to clearly identify Wates construction zones & safe zones for ongoing phases.

Proposed Wates Visual Standards & Segregation Plan & can be viewed overleaf.



## VISUAL STANDARD

# PROVISION OF SAFE ACCESS, WALKWAYS AND STAIRS (SAFE ROUTES)



### KEY CONTROLS:

- On all projects there must be **clear, unobstructed, designated and well-lit access to all principal areas of work.** These must be formed from hard-standing materials externally and clearly demarcated internally.

- Safe, clearly signed and segregated pedestrian walkways** must be in place.
- Crossing points** must be added to allow pedestrians to safely cross vehicle routes.



#### Safe Routes must:

- Be detailed in the **Project Logistics Plan.**
- Be **well defined, well lit and sign-posted** (including appropriate emergency signage).
- Be **clear and free of materials** and trip or slip hazards (including ice, mud and trailing leads).
- Have **full-width ramps or stairs** when there's a **change in level.**
- Ensure temporary stairs have **anti-slip coatings** on treads, and nosing with **handrails** (preferably on both sides).
- Have any **manholes** and open apertures suitably **protected with fixed covers**, highlighted and regularly inspected.



### WATES PROJECT STANDARD:

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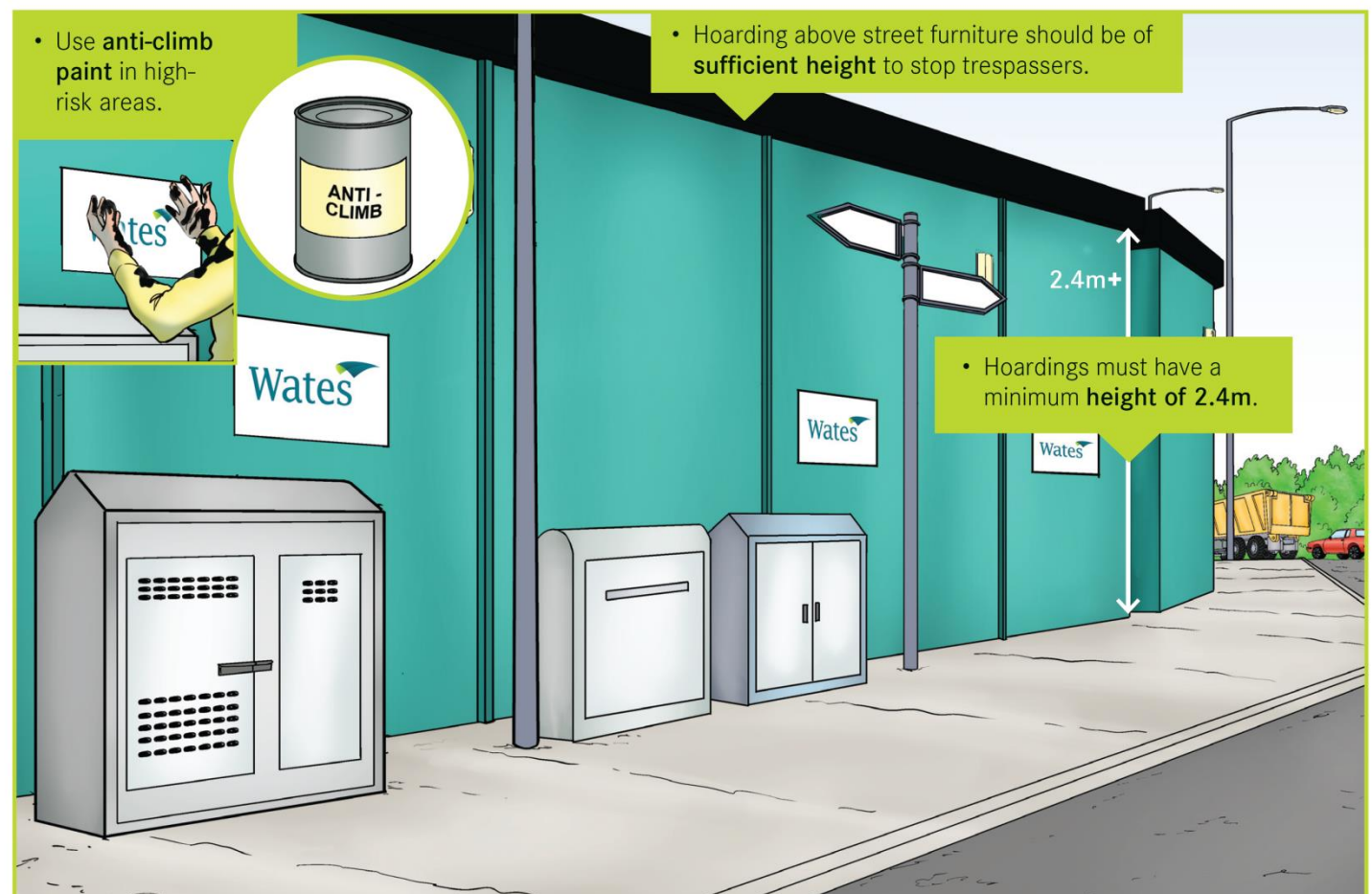
## PROJECT SECURITY

Project teams must consider total security solutions and preventive controls that perform the function to “Deter, Detect, Delay and Deny” unauthorised access and urban explorers.

### KEY CONTROLS:

Project teams **must**:

- Use synchro and BIM models at pre-construction to **identify weak points** where people can gain unauthorised access.
- Complete a **perimeter security risk assessment** – consider adjacent properties; location and surrounding areas.
- Ensure **effective deterrents** are in place to deter unauthorised access.
- Use innovative security controls such as **anti-climb** paint to deter urban explorers.
- Ensure **end of shift inspections** are undertaken – access doors and hatches locked, with plant suitably isolated.

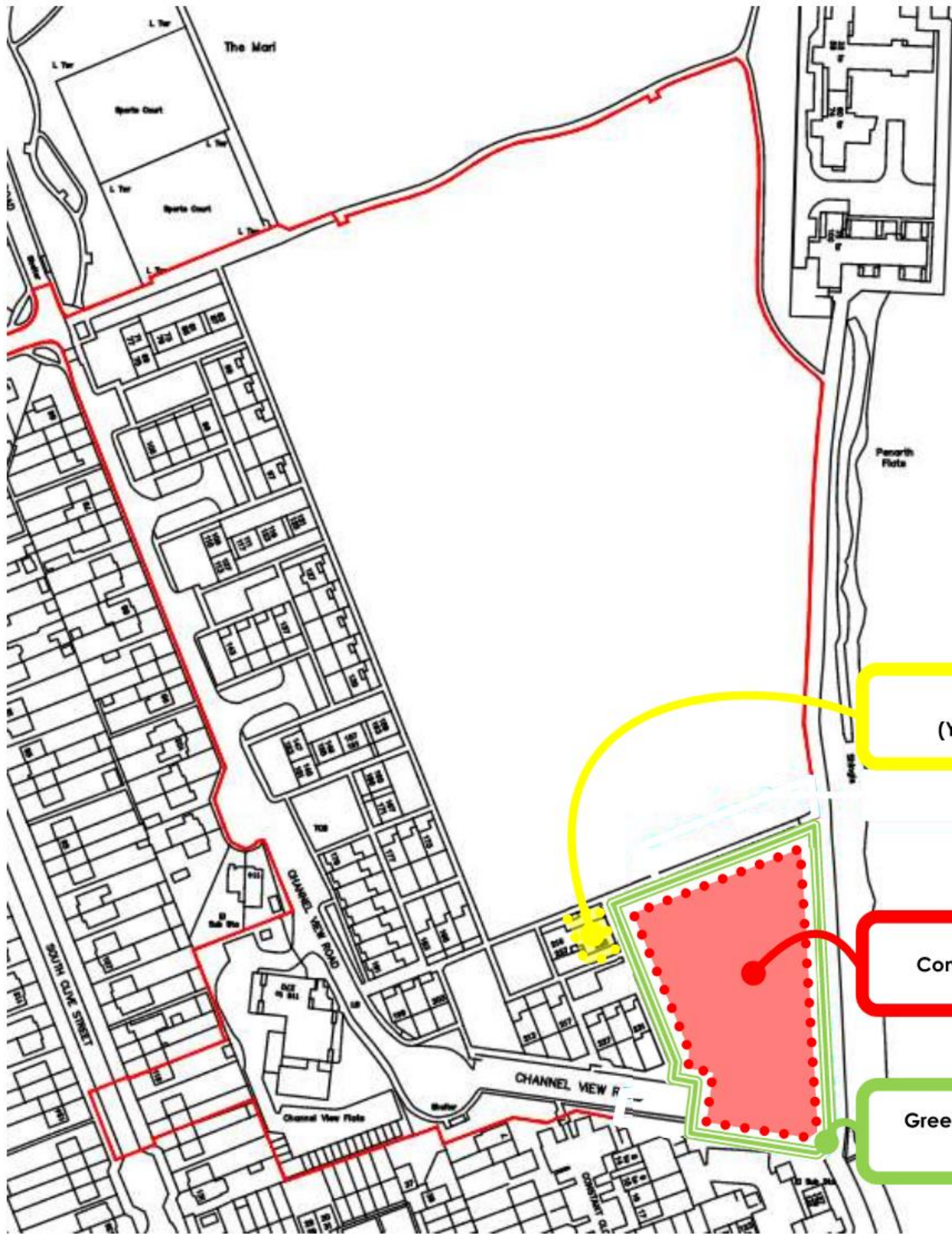


### WATES PROJECT STANDARD:

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Channel View

Enabling  
Segregation  
Overview

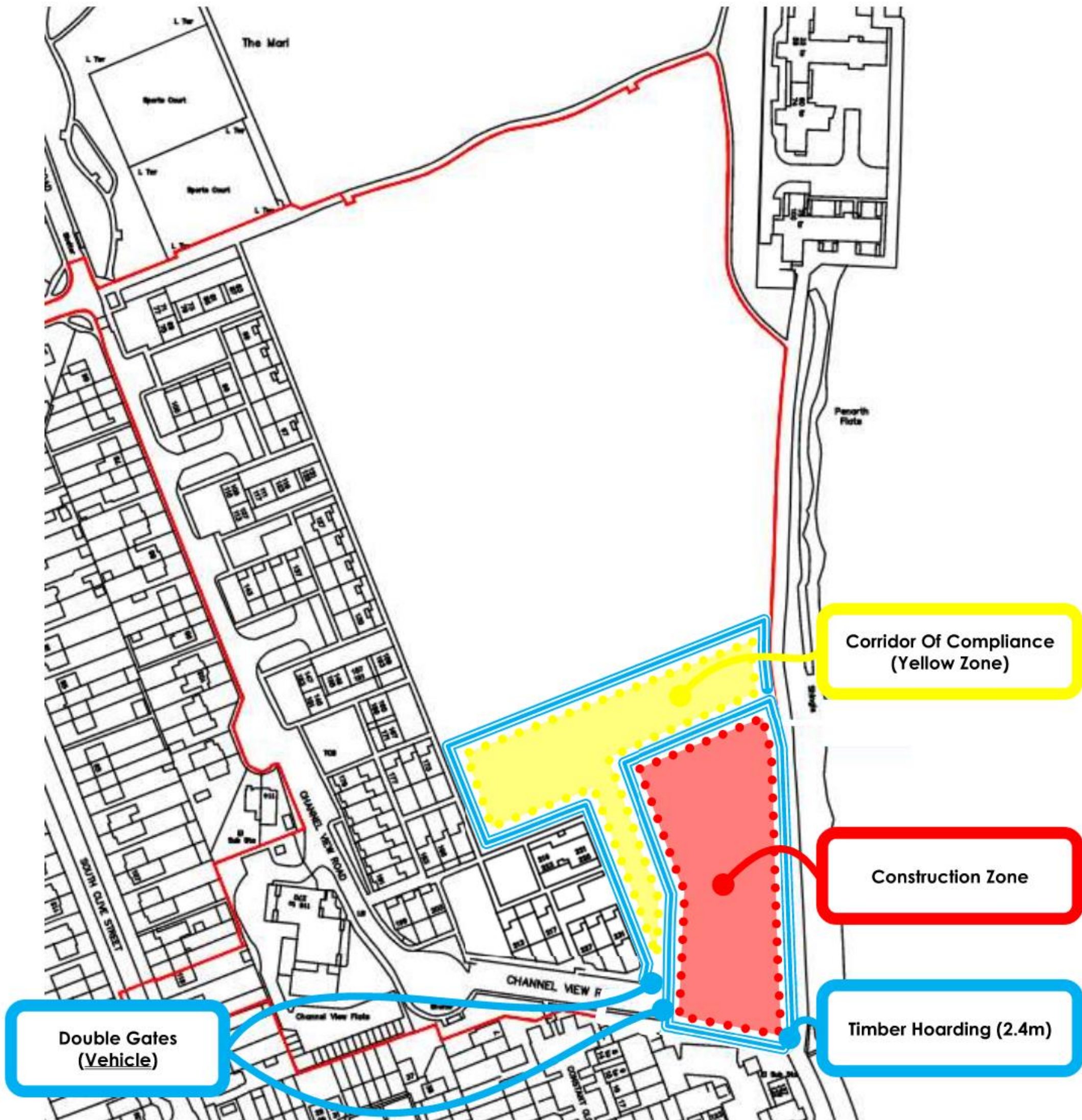
Key

-  Wates Construction Zone
-  Wates Yellow Zone
-  Green Mesh Fencing (2.4m)

Revisions

Rev	Date	Description	By
...	23 <sup>rd</sup> Jan 24	Enabling / Seg	OM








## Channel View

Block B  
Segregation  
[Overview](#)

### Key

-  Wates Construction Zone
-  Wates Yellow Zone
-  Timber Hoarding (2.4m)

### Revisions

Rev	Date	Description	By
...	23 <sup>rd</sup> Jan 24	Block B / Seg	OM



## **(v) Measures To Control The Emission Of Dust & Dirt During Construction**

During the construction phase of the development the emission of dust & dirt will be minimised, suppressed, monitored and controlled to reduce the impact on the local residents, community, wildlife and the environment by adopting the following measures. At each stage of the works; early, enabling and main the team will carry out a Dust Risk Assessment utilising the guidance provided by the IQAM and the identified appropriate sections :

- Wheel wash facilities at the site entrance to clean off wheels to all site traffic/vehicles leaving the site and before entering the public highway. This will be in the form of a portable/mobile jet washer operated and managed by our permanent gateman who will be posted at our site entrance gates. If any further wheel or highway washing facilities are required then this will be reviewed by the site team.
- During the groundworks phase a road sweeper will be deployed daily to keep the public highway clean and dust free during, thereafter it will operate as required for the duration of the project.
- Any masonry or concrete cutting/grinding, whether it be with the use of hand held or bench type machinery or equipment will all have proprietary dust suppression units attached to suppress any escape of particles into the atmosphere.
- For internal fit-out works, any cutting of plasterboard, timber, plywood and MDF will be controlled by the use of the most up to date equipment which collects particles at the source of cutting and deposits it within the extraction unit rather than to air.

The location of the above control measures will be at the Channel View Road new access & egress.

All dust suppression, air monitoring, offsite road washing (contingency) & emissions

monitoring to be managed by the nominated Wates Project Lead (procedure & contact details will be visible on all Wates branding & signage).

Proposed Wates Visual Standards & Wheel Wash Plan & can be viewed overleaf.

# VISUAL STANDARD

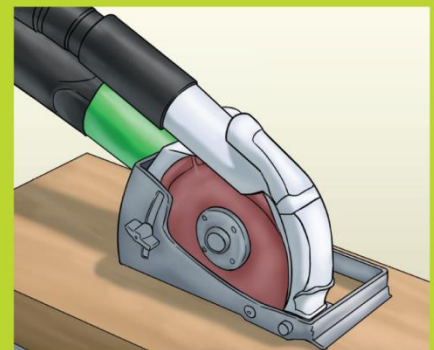
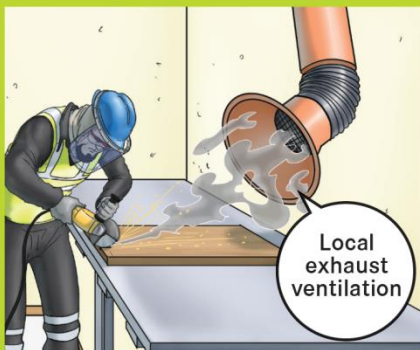
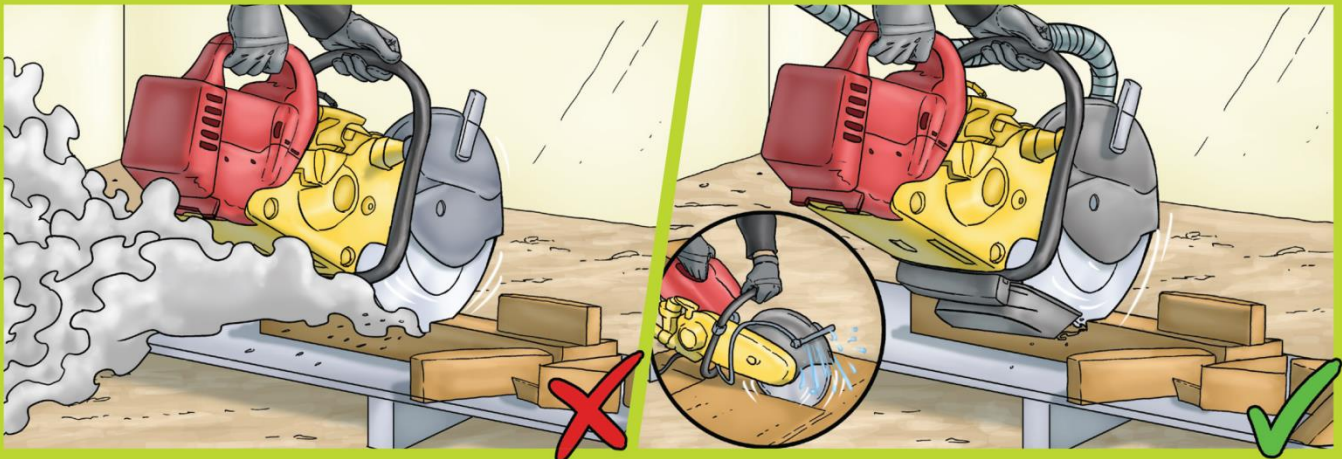
## MANAGING DUST

Dust builds up in the lungs and while the effects may not immediately be obvious, over a prolonged period of time, exposure to high levels of dust can lead to permanent damage to the lungs and airways. The UK Construction sector has the largest number of reported cases of lung disease. These include chronic obstructive pulmonary disease (COPD), asthma, lung cancer and silicosis.

### KEY CONTROLS:

#### Sub-contractors must:

- Consider **off-site** cutting or manufacture.
- **Identify and risk assess** residual dust-producing activities.
- Provide and maintain **local exhaust ventilation** with a minimum of **M-class filtration**.
- Control dust at the source through the use of **on-tool extraction**, cutting cabinets and water suppression.
- In addition to the above, **RPE** will still be required.

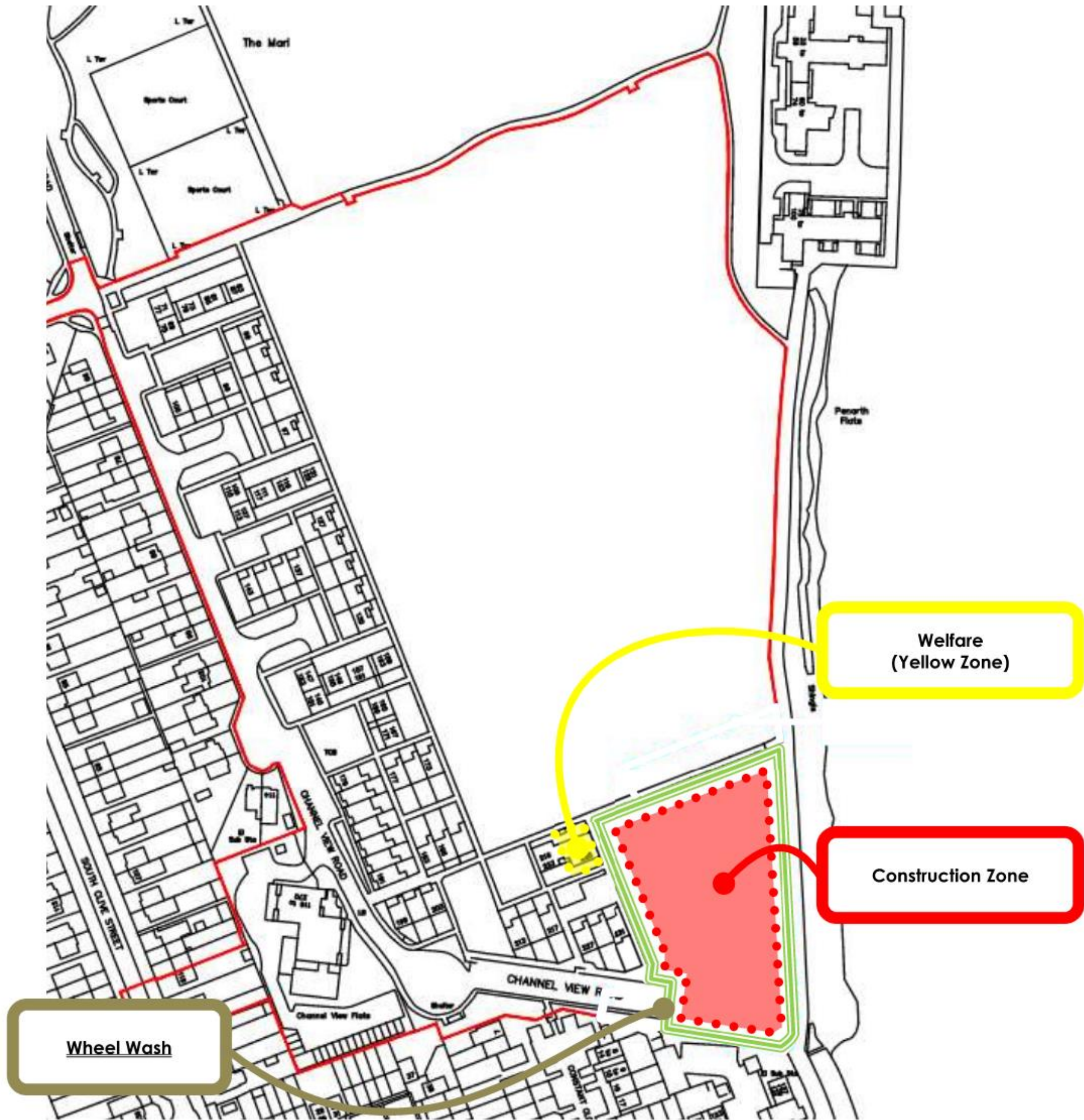


### SUB-CONTRACTOR PROFESSIONAL STANDARD:

The above items are representative of the minimum that are required by Wates from sub-contractors in the performance of its duties in meeting its obligations under the Sub-Contract while on site. They are a minimum standard of care for the activity or trade identified in the title of this page that are necessary to seek to protect against damage or injury to people and property. They are not intended as an exhaustive list, nor are they intended to define maximum limits of performance.







Channel View

Enabling  
Wheel Wash  
Overview

Key

-  Wates Construction Zone
-  Wates Yellow Zone
-  Green Mesh Fencing (2.4m)

Revisions




Rev	Date	Description	By
...	23 <sup>rd</sup> Jan 24	Enabling / WW	OM



Channel View

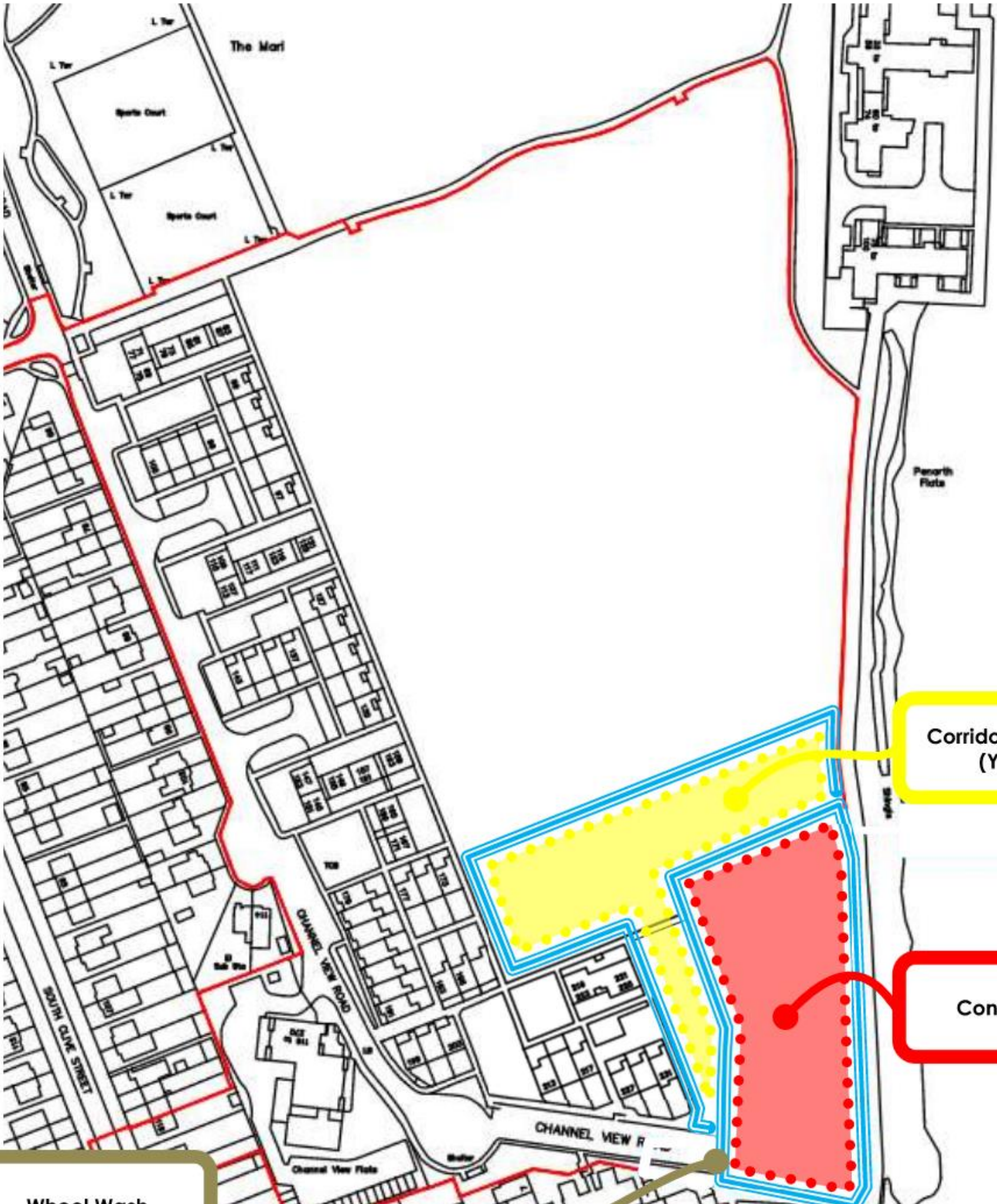
Enabling  
Wheel Wash  
Overview

Key

-  Wates Construction Zone
-  Wates Yellow Zone
-  Timber Hoarding (2.4m)

Revisions

Rev	Date	Description	By
...	23 <sup>rd</sup> Jan 24	Enabling / WW	OM



Corridor Of Compliance  
(Yellow Zone)

Construction Zone

Wheel Wash

## **(vi) Site Waste Management For The Recycling &/Or Disposal Of All Waste Resulting From Demolition & Construction Works**

The Wates project team will ensure the below waste management strategy is employed during the Channel View Enabling & Block B delivery works:

- Waste Management Strategy Developed
- Site Waste Management Plan Created & Updated Monthly
- All Waste To Be Stored Correctly & Adequately Contained
- Sufficient Bins & Skips For Appropriate Waste Provided
- Ensuring All Waste Is Delivered To Authorised Disposal Sites
- Supply Chain Completion Of Appropriate Duty Of Care Documents
- Segregation Of Hazardous Waste
- Waste Transfer Notes Completed (Inc. Written Description Of All Waste)
- Records Of Transfers To Be Kept Of 3 Years





## MANAGEMENT OF WASTE

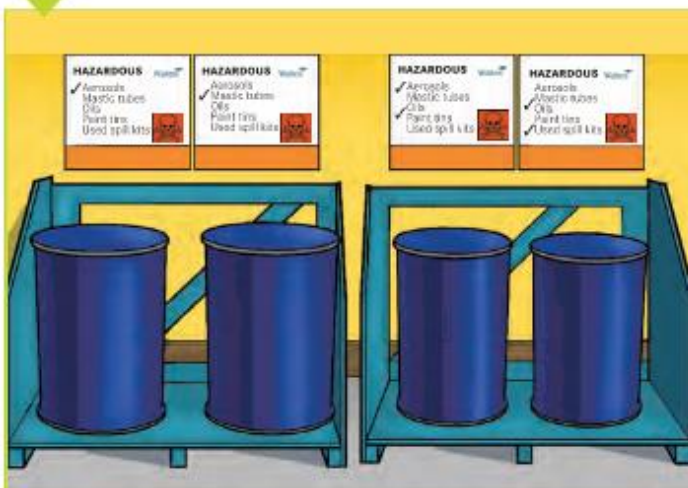
### KEY CONTROLS:

Project teams **must**:

- Ensure a **waste management strategy** is developed.
- Ensure a **site waste management plan** is in place and reviewed monthly.
- Ensure waste is **stored correctly** and **properly contained**.
- Ensure there are **sufficient bins** and skips for all waste produced.



- Ensure waste is only taken to a **authorised disposal site**.
- **Complete** or **obtain** from the supply chain the appropriate **duty of care documents** for the waste stream.
- Always **segregate hazardous waste**.



- Ensure **waste transfer notes** are completed, including written description for all waste that leaves sites.
- Ensure **records of transfers** are kept for three years.

### WATES PROJECT STANDARD:

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**(vii) Construction Drainage Scheme Indicating How Surface Water & Land Drainage Flows Will Be Controlled To Prevent Contamination, Nuisance, Subsidence Or Flooding To Land, Buildings, Watercourses Or Highways Within That Phase (Or Part Thereof) Or Adjacent Land, Buildings, Watercourses & Highways During The Construction Period**

**Fuel / Oil / Chemical Storage**

All fuel, oil & chemical storage will comply with the Control of Pollution (Oil Storage) Regulations 2001, with control measures detailed below:

- Adequate Number Of Spill Kits To Deal With The Worst Possible Spill.
- All Spill Kits To Be The Correct Type For Oils & Chemicals, Located Adjacent To Oil & Chemical Storage (E.g. Refuelling Stations) & Close To Sensitive Areas (E.g. Watercourse, Rivers, Etc).
- Spill Kits May Contain Absorbent Granules, Mats & Socks, Plant Nappies, Drain Covers, Drain Bungs & Floating Booms.
- Used Spill Kits To Be Stored Safely After Use, Prior To Offsite Disposal.
- Re-ordering Spill Kits To Ensure Constant Availability.

**Fuel Storage / Refuelling**

All refuelling MUST be carried out within the designated fuel storage area. All fuel storage areas will be:

- Protected From Rain.
- Segregated From Welfare & Working Areas.
- Located Away From Drains, Rivers & Streams.
- Secured When Not In Use.
- Highlighted In Grab Packs & Fire Plan.
- Supplied With Spill Kits.
- Supplied With Adequate Fire Fighting Provision.
- Signed To Show Storage Capacity & Type Of Liquid Stored.
- Bunded With Adequate Ventilation & Capacity Of 110% Of The Liquid Stored.

## **Hazardous Substances / COSHH**

Wates' preference will be to design out any hazardous substances for less hazardous & more environmentally-friendly substances (i.e. water based as opposed to solvent based. However, the below control measures will be implemented if needed:

- Identify, Assess & Store All Materials In Compliance With COSHH Regulation.
- COSHH Assessment MUST include storage, emergency spill & post spill disposal information.
- Become Familiar With The Manufacturers Safety Data Sheet To Clarify Waste Guidance.

## **Concrete Washout & Socks**

Wates supply chain will ensure that all concrete wash outs will be completed at the batching plant where practicable. However where on site concrete wash out is required the below control measures will be adhered to:

- When Skips Are Used They Must Be Fully Lined & Disposed Of Regularly.
- Ensure A Proprietary Washout Platform Or Scaffold Platform For Skips.
- All Wash Out Areas To Be Located Away From Drains & Watercourses.
- Concrete Vehicles Must Have Socks Fitted To The Concrete Chute When Exiting The Site, To Avoid Spills On Public Roads.

## **Early Works**

### **Slab removal / Drainage grubbing out**

Consideration will be given to the procedure within the groundworks contractors methodology for reducing the risk of creating a pathway through to the storm sewer. Grubbing out of the, soon to be redundant, surface water pipes that feed into the storm sewer could create a pathway during the demolition from made ground / silts both during the demolition and once the demolition is completed. These pipes will be sealed to prevent a pathway through to the existing sewer line.



## Enabling Works

### S185 Taff Trail works

The diversion of the storm sewer will be controlled and managed under a Surface Water Management Plan (SWMP). The new pipe run will be connected to the existing pipe which leads into the existing outfall headwall during dry weather, when the drainage line is dry. However, if this cannot be the case, due to timescales, damming/ bunging of the pipeworks will be necessary. This will require over pumping of waters under a controlled manner to an outfall or area of soft landscaping, prior to entering the waterway. Each pipe run will need to be cleaned prior to becoming live to ensure that no residual silt from the construction / connection works remain. The works will be carried out in line with the SWMP as produced and monitored by our consultant RSK. The new drainage layout drawing clearly shows the extend of the works and the connection into the existing pipework. (No new headwall)



### **Existing Gullies**

All existing gullies which currently discharge directly into the river, will be protected by the procedures noted above and additionally, we will use proprietary 'witches hat' drain guards in the gullies.

### **Emergency Procedures**

The Construction Phase Health & Safety Plan will identify all emergency contact numbers and procedures, including NRW.

# VISUAL STANDARD

## ENVIRONMENTAL RULES



Sub-contractors must comply with the following:

### Environmental Assessment Standards

- Assist Wates in achieving any **environmental assessment scheme rating** required by the Main Contract.
- Provide any documentary evidence in a timely manner, if requested, to **ensure the awarding of credits against specific criteria**. Assessment schemes may include **BREEAM, LEED, Ska Rating, DREAM and SHIFT**.

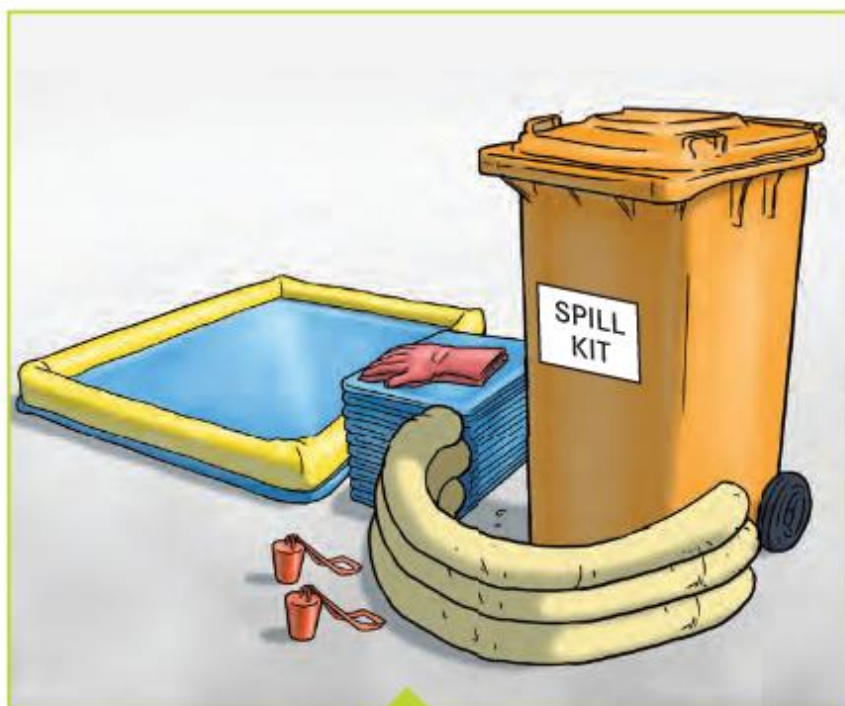
### Environmental Incidents & Observation Reporting (Stop/Go)

- All on-site **environmental incidents, complaints or enforcement notices** must be **reported immediately** to the site management team.
- If an incident must be reported to an enforcing authority (Environment Agency), **first report it to the Wates Project Team**, who will make the necessary notifications.

- **Co-operate with site management** during the investigation of environmental incidents, and when implementing remedial action.



- Help **identify risks to the environment** and opportunities to improve on-site environmental performance and notify the Wates' site team using **Say What You See (STOP/GO) cards**.



### Safety, Health & Environmental (SHE) Induction, Training, and Competency

- Ensure supervisors have a **SEATS (Site Environmental Awareness Training Scheme) qualification** and are able to prove it before starting on-site work.

### Fuel, Oil and Chemical Storage

- Comply with the **Control of Pollution (Oil Storage) (England) Regulations 2001**.
- **Supply enough spill kits** to deal with the worst possible spill, and ensure that they are:
  - The **correct type** for the types of oils and chemicals used on site.
  - **Located where oils and chemicals are stored and used** e.g. refuelling areas.
  - **Close to sensitive areas** e.g. watercourses.
- **Safely store used spill kits** before off-site disposal.
- Re-order spill kits to **ensure constant availability**.

Spill kits may include absorbent granules, mats and socks, plant nappies, drain covers, drain bungs and floating booms.



## Hazardous Substances/COSHH

- Preferably use less hazardous and **more environmentally-friendly substances** on Wates' sites i.e. water-based rather than solvent-based.
- **Identify, assess and store all materials** in compliance with the **COSHH Regulation**, where applicable.
- Ensure the COSHH assessment includes **information on how and where to store substances** on site, what to do in an emergency or spill, and what its disposal procedure is.
- Use the **manufacturer's safety data sheet to classify waste**, identify its hazardous properties and give clear guidance on disposal arrangements. Refer to Technical Guidance WM3 for further details.



## Site Environmental Monitoring

- **Correct any non-compliance** on site after the Wates site team has completed a monthly Site Environmental Checklist or an activity has been monitored through the Integrated Monitoring System (iMS).

## Supply Chain Sustainability School (SCSS)

- Consider becoming a **member of the Supply Chain Sustainability School**, which is a free virtual learning centre that holds workshops and monitors performance. ([www.supplychainschool.co.uk](http://www.supplychainschool.co.uk)).



## FUEL STORAGE AND REFUELLING

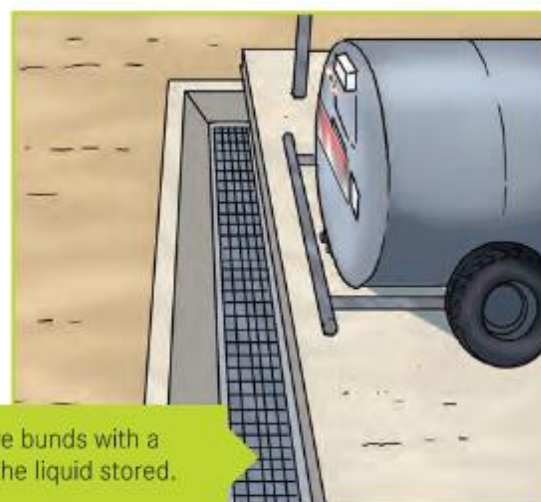
### KEY CONTROLS:



- Refuelling must be carried out at a **designated fuel storage area**.
- Ensure fuel storage areas are:
  - **Protected from rain to reduce water build-up in sump.**
  - **Segregated** from welfare/working areas.
  - Located **away** from **drains, rivers** and **streams**.
  - **Locked** when not in use.
- Highlighted in the gate **grab pack/fire plan**.
- **Identified** in induction.
- Have **spill kits at hand** and trained operatives on site to use them.
- **Fire-fighting provision** must be in close proximity.
- **Signage** must show the capacity of the storage and types of liquid stored.



• Ensure enclosed bunds have good levels of ventilation.



• Ensure fuel storage areas have bunds with a capacity of at least 110% of the liquid stored.

### SUB-CONTRACTOR PROFESSIONAL STANDARD:

The above items are representative of the minimum that are required by Wates from sub-contractors in the performance of its duties in meeting its obligations under the Sub-Contract while on site. They are a minimum standard of care for the activity or trade identified in the title of this page that are necessary to seek to protect against damage or injury to people and property. They are not intended as an exhaustive list, nor are they intended to define maximum limits of performance.



## VISUAL STANDARD



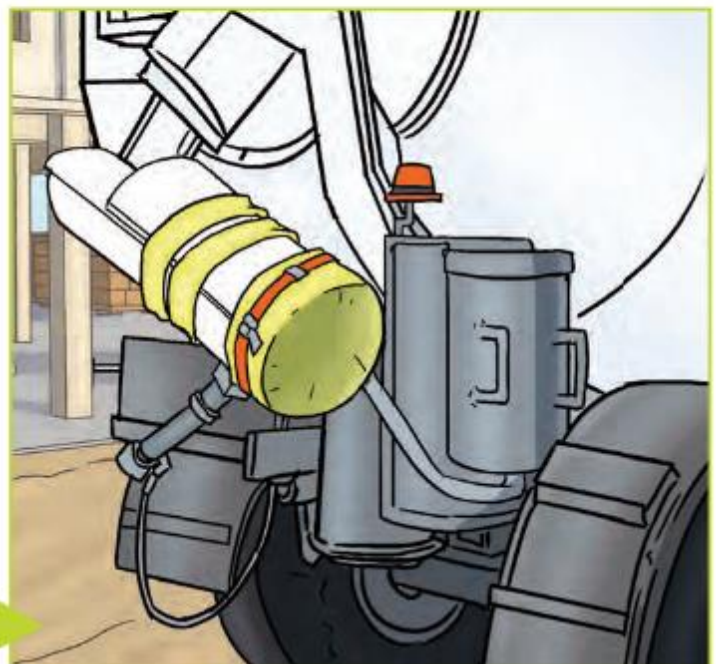
# CONCRETE WASHOUT AND SOCKS

### KEY CONTROLS:

- Sub-contractors must ensure that wash out is undertaken at the **batching plant** when possible.
- Where wash out takes place on site, use a **fully-lined skip**.
- The concrete wash out area must be **located away** from drains and watercourses.
- Ensure the wash out skip is emptied regularly to **avoid overspill**.



- Ensure a **proprietary washout platform** or scaffold platform is in place for crane concrete skips.
- All concrete vehicles leaving site must have **socks** fitted to the concrete chute to avoid spills on public roads.



## SUB-CONTRACTOR PROFESSIONAL STANDARD

The above items are representative of the minimum that are required by Wates from sub-contractors in the performance of its duties in meeting its obligations under the Sub-Contract while on site. They are a minimum standard of care for the activity or trade identified in the title of this page that are necessary to seek to protect against damage or injury to people and property. They are not intended as an exhaustive list, nor are they intended to define maximum limits of performance.



## **(viii) List Of On-Site Contacts & Their Responsibilities**

The site team for the Channel View Enabling & Block B works is detailed below:

- Christopher Parks (Construction Manager)
- Matthew Lewis (Project Manager)
- Peter Evans (Site Manager)

Charlie Hargreaves, Nicole Barnes &/or Sophie Patterson of Wates will be the Community Investment Managers.

Charlie's, Nicole's &/or Sophie's responsibilities will include:

- The Sole Contact For All Liaisons With The General Public
- Initiate All Communication Within The Local Community
- Receiving, Logging, Actioning & Monitoring All Complaints

The Wates site team will aid Charlie, Nicole &/or Sophie with fostering a good community spirit amongst local residents & businesses, by adhering to the Considerate Constructors Scheme protocol.

During the Delivery Phase all local residents & schools will be notified in advance of any forthcoming disruption by:

- Development News Letter (Incl. Wates Contact Details)
- Cardiff Living Website (Incl. 24 Hours Emergency Hotline)
- Social Media.
- Hoarding Signage (Incl. Information Boards With Wates Contact Details)
- Working Group Events

## **(ix) Temporary Highway Measures To Ensure The Bus Service Keeps Operating During The Construction Phases**

To mitigate the impact upon the existing residents & amenities the Wates working hours upon the development will be below:

- Monday - Friday: 8am – 6pm
- Saturday: 8am – 1pm\*

\*Note: Wates have noted that Saturdays are extremely active due to the close proximity of the Marl & both the Cardiff City Stadium & Principality Stadium.

All arrival, departure, loading & unloading of delivery vehicles will only be complete within the above allocated times. However, Wates have noted the various bus stop routes via South Clive Street, Channel View Road & Beecher Avenue. Thus, where practicable Wates will tailor the supply chain deliveries around the bus route peak times, to mitigate traffic congestion.

Wates personnel, supply chain, visitor parking will be within the Wates Yellow Zone adjacent to the Wates welfare facilities. All on street parking to South Clive Street, Channel View Road & Beecher Avenue will be discouraged by & fully communicated to all Wates personnel, supply chain, visitors prior to arrival.

In addition to a Plant & Vehicle Marshall a Wates Project Team member will be appointed as the Plant, Vehicle, Pedestrian Co-Ordinator (PVPC) to identify & manage risks associated with plant, vehicle & people interface. The PVPC will hold, as a minimum, the CITB Site Management Safety Training Scheme (SMSTS).

All logistical procedures will be fully briefed to the Wates supply chain during commercial pre – let meetings, prior to any orders being placed.



# **APPENDIX C**

## **NATURAL RESOURCES WALES**

### **CORRESPONDENCE**

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# Pre-application for an environmental permit: Request pre-application advice for an environmental permit activity

## About your pre-application request

Who can we talk to about your request?

This can be someone acting as a consultant or 'agent' for you. We will co-ordinate our service through this person

<b>Title</b>	Mr
<b>First name</b>	Tim
<b>Last name</b>	Crowe
<b>Address</b>	The Old School, Stillhouse Lane
<b>Town or city</b>	Bristol
<b>Postcode</b>	BS3 4EB
<b>Telephone - mobile</b>	-
<b>Telephone - office</b>	-
<b>Email address</b>	tcrowe@rsk.co.uk

Who can we talk to about your invoice?

Same as above

Tick the relevant box to tell us what you need help to do, then complete the relevant sections

If you're not sure about the type of help you need, look at the general guidance on our website to help you

Apply for a completely new activity (permit)

## Help with a new permit (activities)

Tell us about where you plan to do the new activity. If you do not have a specific address yet, please tell us the town or city as a minimum.

We need this information to process your request.

<b>Site name</b>	Channel View (Phase 1)
<b>Address</b>	Channel View Road
<b>Town or city</b>	Cardiff
<b>County</b>	-
<b>Postcode</b>	CF11 7HZ
<b>National grid reference (if no postcode)</b>	-

If you have a site plan, showing the area where you want to do the activity, or emission point locations, please provide this here:

- File: 315486-BL-276-SS-D-C-27601-C01.pdf - [Download](#)

Type of activity you want to carry out

You can find more information on the types of environmental permit activities in the general environmental permitting guidance and fees and charges scheme pages, on our website.

Tick one only. If you want advice on another activity, please fill in an additional pre-application advice request form.

Water discharge activity

#### Details of the proposed new activities

RSK area preparing a surface water and silt management plan for our client's development at Channel View. Discharge of surface water from the site, from surface water runoff and dewatering of foundation excavations will require a bespoke permit. The site is located immediately adjacent to the river Taff. The Marl to the north is a former landfill site. Initially, the proposed management plan incorporates the discharge of sediment free water, via gravity lead management means, supported by gravity based chemical treatment to the marl and ultimately discharging to the river Taff. The plan is supported by the proposal to use a liquid flocculant based active treatment system in emergencies, if climatic conditions, during wetter months, force this to be the only solution to dewater. A fourth option is being explored whereby, in emergencies, water can be discharged to the foul network. RSK are in consultation with Welsh Water. In summary, the site will follow the following management hierarchy, increasing measures where permitted and only when conditions require:

- 1: Gravity lead management and mitigation measures only,
- 2: Gel flocculant gravity lead management measures (use of flocculant laced mats/gel flocculant)
- 3: Liquid flocculant active treatment system,
- 4: pump to foul (Emergency backup only, if permissions allow)

The purpose of the pre-application request is to discuss this methodology and establish limits and monitoring level expectations and to discuss the known contamination levels within the adjacent Marl.

## Requesting a meeting with us



Would you like to request a meeting with us?

No

## Data Protection Act 2018 and General Data Protection Regulations

Please check the button to confirm you understand the above:

I understand

## National security and confidentiality

Please check the button to confirm you understand the above:

I understand

## Declaration

I declare that I have read and understood the terms and conditions related to this service and that the information in this application is true to the best of my knowledge and belief.

I understand that Natural Resources Wales decision to accept my request for pre-application help will be based on the information provided.

I declare that the information in this application is true to the best of my knowledge. I understand that this application may be refused, or approval withdrawn if I give false or incomplete information.

Please type your name and date this form to confirm that the information you have provided is correct.

<b>Title</b>	Mr
<b>First name</b>	Tim
<b>Last name</b>	Crowe
<b>On behalf of (if relevant)</b>	Wates Residential

Today's date

\* 13/05/2024

If you would like a copy of your submitted form please enter your preferred email address here:

tcrowe@rsk.co.uk

## Tim Crowe

---

**From:** Permit Receipt <permitreceiptcentre@cyfoethnaturiolcymru.gov.uk>  
**Sent:** 14 May 2024 07:58  
**To:** Tim Crowe  
**Subject:** Acknowledgement Letter [Filed 14 May 2024 09:39]  
**Categories:** Filed by Mail Manager

**CAUTION:** This email originated from outside the Organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Mr Tim Crowe

**Our ref: WPCC14394**  
**Your ref: PPN-01258**

**Date: 14<sup>th</sup> May 2024**

Dear Mr Crowe

**Operator: Mr Tim Crowe**  
**Facility: Channel View (Phase 1)**

Thank you for your pre-application received 13<sup>th</sup> May 2024.

We have forwarded your request onto the area team [CardiffVale@cyfoethnaturiolcymru.gov.uk](mailto:CardiffVale@cyfoethnaturiolcymru.gov.uk) who will contact you directly.

If you would like any information relating to your pre-application request or would like to know the progress of your request, please e-mail the suggested mailbox mentioned above.

Yours sincerely

**Tim O'Hara on behalf of the Permitting Team**

**Aelod Tim** / Team Member  
**Cynghorydd Derbyn Trwyddedau** / Permit Receipt Advisor  
**Gwaesanaeth Caniatau** / Permitting Service  
**Croesewir gohebiaeth yn Gymraeg a byddwn yn ymateb yn Gymraeg, heb i hynny arwain at oedi.**

Correspondence in Welsh is welcomed, and we will respond in Welsh without it leading to a delay.



**Cyfoeth  
Naturiol**  
Cymru  
**Natural  
Resources**  
Wales

Byd natur a phobl  
yn ffynnu gyda'n gilydd

Nature and people  
thriving together



[cyfoethnaturiol.cymru](http://cyfoethnaturiol.cymru)  
[naturalresources.wales](http://naturalresources.wales)



## Tim Crowe

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**From:** Gulliford, Terry <Terry.Gulliford@cyfoethnaturiolcymru.gov.uk>  
**Sent:** 16 May 2024 08:46  
**To:** Tim Crowe  
**Cc:** Cardiff & Vale Consultations; Walters, Dai; Grabham, Alex  
**Subject:** Pre-application PPN-01258 Channel View  
**Attachments:** 244413299.pdf

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

**CAUTION:** This email originated from outside the Organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Tim,

Thank you for our request for pre-application advice. Unfortunately the water quality permitting team are not allowed to provide advice on proposed permit limits as this would be considered pre determination of any permit application. Limits can only be set following assessment of a completed permit application and our determination process that includes consultation with other expert teams in NRW and externally. What I can do is point you in the direction of readily available information that will direct your assessment and the information required as part of your application.

I understand from the location that the dewatering has the potential to be contaminated and as such you must carry out a full investigation and provide evidence. Guidance on how to do this can be found on the following webpages

[Surface water pollution risk assessment for your environmental permit - GOV.UK \(www.gov.uk\)](https://www.gov.uk/guidance/surface-water-pollution-risk-assessment-for-your-environmental-permit) You will need to assess against the freshwater EQSs for the R Taff and Cardiff Bay and also where different those for estuaries and coastal waters when considering the Severn Estuary (which is a classified as a SAC).

You will also need to supply a H1 screening report, and where the concentrations of effluent may be higher than the EQS you will also need to supply a dispersal model for Cardiff Bay. There is an H1 screening tool available to help you complete and submit your water quality assessment. [Risk assessments for specific activities: environmental permits - GOV.UK \(www.gov.uk\)](https://www.gov.uk/guidance/risk-assessments-for-specific-activities-environmental-permits) [H1 Tool](#) | [ADMLC](#)

The application should be submitted through our webpage [Natural Resources Wales / Apply for a permit to discharge trade or mixed effluent](#) The cost of the application will depend on the maximum daily volume and evidence must be provided how this was calculated including any rainfall dependent elements. We can only confirm whether there are any additional charges following initial assessment of your application as to whether it will require the habitats regulations assessment to go to appropriate assessment and or requires further assessment of the elements in your H1 assessment.

In your request there is a suggestion connection to the foul sewer is being investigated with DCWW and if not possible the reasons must be documented in any application, as connection to foul sewer would be our preferred option.

Until an application is submitted please direct any further requests for information to our local environment team who lead on preapplications. [CardiffVale@cyfoethnaturiolcymru.gov.uk](mailto:CardiffVale@cyfoethnaturiolcymru.gov.uk)

I hope this helps.

**Terry Gulliford**

**Swyddog Arbenigol Arweiniol, Trwyddedu Ansawdd Dŵr** / Lead Specialist Officer, Water Quality Permitting

**Department Tystiolaeth, Polisi a Thrwyddedu** / Department Evidence, Policy and Permitting

**Croesewir gohebiaeth yn Gymraeg a byddwn yn ymateb yn Gymraeg, heb i hynny arwain at oedi.**

Correspondence in Welsh is welcomed, and we will respond in Welsh without it leading to a delay.



**Cyfoeth  
Naturiol  
Cymru  
Natural  
Resources  
Wales**

**Byd natur a phobl  
yn ffynnu gyda'n gilydd**

**Nature and people  
thriving together**



**cyfoethnaturiol.cymru  
naturalresources.wales**

**From:** noreply@cyfoethnaturiolcymru.gov.uk via SmartSurvey <member@smartsurveyuser.com>

**Sent:** Monday, May 13, 2024 4:30 PM

**To:** Permit Receipt <permitreceiptcentre@cyfoethnaturiolcymru.gov.uk>

**Subject:** Pre-application form submitted

**Rhybudd:** Deilliodd yr e-bost hwn o'r tu allan i'r sefydliad. Peidiwch â chlicio dolenni, atodiadau agored nac sganio codau QR oni bai eich bod yn cydnabod yr anfonwr ac yn gwybod bod y cynnwys yn ddiogel.

**Caution:** This email originated from outside of the organisation. Do not click links, open attachments or scan QR Codes unless you recognise the sender and know the content is safe.

Hello,

You are receiving this email as someone has just completed an online form.

Attached is the customers information in a PDF format.

If you have any problems or receive any feedback regarding the form - please contact the [digital team](#).

Thanks,

The Digital Team.

Helo,

Rydych yn derbyn y neges e-bost hon gan eich bod newydd lenwi ffurflen ar-lein.

Rydym yn atodi manylion y cwsmer fel PDF.

Os cewch unrhyw broblemau neu'n os byddwch yn derbyn unrhyw adborth ynglŷn â'r ffurflen – cysylltwch â'r [tîm digidol](#).

Diolch,

Y Tîm Digidol.

## **APPENDIX D**

### **ISO CERTIFICATION**

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# CERTIFICATE OF REGISTRATION

This is to certify that

## Wates Group Limited

Wates House  
Station Approach  
Leatherhead  
KT22 7SW

has been audited and found to meet the requirements of standard  
**ISO 14001:2015 Environmental Management System**

### Scope of certification

The design, management, construction, maintenance and refurbishment of buildings including civil & structural engineering works, the provision of facilities and asset management and their associated services.

**Vicki Howlett**

General Manager - Certification UK

**Issuing Office:** Warringtonfire Testing and Certification Limited t/a BM TRADA Chiltern House, Stocking Lane, High Wycombe, Buckinghamshire, HP14 4ND, UK  
**Registered Office:** Warringtonfire Testing and Certification Limited, 3rd Floor, Davidson Building, 5 Southampton Street, London, WC2E 7HA, UK  
Reg No. 11371436.

This certificate remains the property of BM TRADA. This certificate and all copies or reproductions of the certificate shall be returned to BM TRADA or destroyed if requested. Further clarification regarding the scope of this certificate and verification of the certificate is available through BM TRADA or at the above address or at [www.bmtrada.com/certified-companies/check-a-certificate](https://www.bmtrada.com/certified-companies/check-a-certificate)

The use of the UKAS accreditation mark indicates accreditation in respect of those activities covered by the accreditation certification number 012. For further information on bmtrada activities covered by UKAS accreditation please go to: <https://www.ukas.com/search-accredited-organisations>

**Certificate number: 1494**

Issue number: 2024-01

Certificate effective date: 21 March 2024

Certificate expiry date: 1 April 2027

Date of initial certification: 16 October 2002

## Appendix A

The network of participating sites shown below is included in the scope of certification shown on certificate number (1494)

Branch	Address
--------	---------

This certification covers the procedures implemented across the following Wates Group businesses:

- Wates Construction Limited
- Wates Residential Limited including Wates Residential Construction Limited, and Wates Residential Development Limited
- Wates Property Services Limited including Wates Living Space, and Wates FM
- Wates Smartspace Limited
- Wates Maintenance Services Limited
- Wates Group Limited
- Wates Group Services Limited

Offices:

- Wates House, Station Approach, Leatherhead, KT22 7SW
- Interchange Place, Edmund Street, Birmingham, B3 2TA
- Blenheim House, Cambridge Innovation Park, Denny End Road, Waterbeach, Cambridge, CB25 9QE
- Vision House, Oak Tree Court, Mulberry Drive, Cardiff Gate Business Park, Cardiff, CF23 8RS
- Unit 2a, Donington Court, Pegasus Business Park, Castle Donington, DE74 2UZ
- Shannon House, Mandale Business Park, Belmont, Durham, DH1 1TH
- Paradigm, 1st Floor, 3175 Century Way, Thorpe Park, Leeds, LS15 8ZB
- Unit 10, Empire Court, Prospect Hill, Redditch, West Midlands, B97 4DA
- 1st Floor, 184 - 192 Drummond Street, London, NW1 3HP
- 1st Floor, Mulberry House, Parkland Square, 750 Capability Green, Luton, LU1 3LU
- Ground Floor, Building 3.1, Caldecotte Lake Business Park, Milton Keynes, MK7 8JT
- Think Park, Building Three, 2nd Floor, Mosley Road, Trafford Park, Manchester, M17 1FQ
- 4 The Sector, Newbury Business Park, London Road, Newbury, RG14 2PZ
- Building 1, Clearwater, Lingley Mere Business Park Warrington, WA5 3UZ

## APPENDIX E

# WATES CONSTRUCTION LIMITED - COMPANIES HOUSE OFFICER DETAILS

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In accordance with the request, please find below confirmation of the active officers for Wates Construction Limited listed on Companies House.

Name of Officer	Role
WAINWRIGHT, Philip Michael	Secretary
BATTLE, Steffan	Director
BEECHEY, Stephen James	Director
BUNCH, Helen Patricia	Director
CHANDLER, Paul	Director
GRIFFIN, Paul Christopher	Director
MORGAN, David Keir Ewart	Director
POTTER, Simon James	Director
ROWAN, Paul Campbell	Director
TATE, Emily	Director
WAINWRIGHT, Philip Michael	Director

Note: Information Accessed from <https://find-and-update.company-information.service.gov.uk/company/00397634/officers> on 14<sup>th</sup> May 2024