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Pollution Control Plan
Land North of M4, Junction
33 – Phase 3





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1 Introduction

1.1 Background

EcoVigour was instructed by Persimmon Homes Wales to develop a Pollution Control Plan for the construction of Phase 3 of the M4 Junction 33 residential development.

Persimmon are currently constructing Phases 1 and 2 of The Parish, Llanilltern development to the south of Llantrisant Road. For these works, access has been gained from Llantrisant Road with two new junctions constructed for the development. The total development will be completed in 7 phases over the next 10 – 15 years (depending on demand) as illustrated in Figure 1.

The development includes the construction of a new school, a Park and Ride connecting into Junction 33 and a bus only spine road connecting Llantrisant Road with Junction 33.

This Pollution Control Plan relates to the construction of Phase 3 as illustrated in Figures 1, 2 and 3 below.

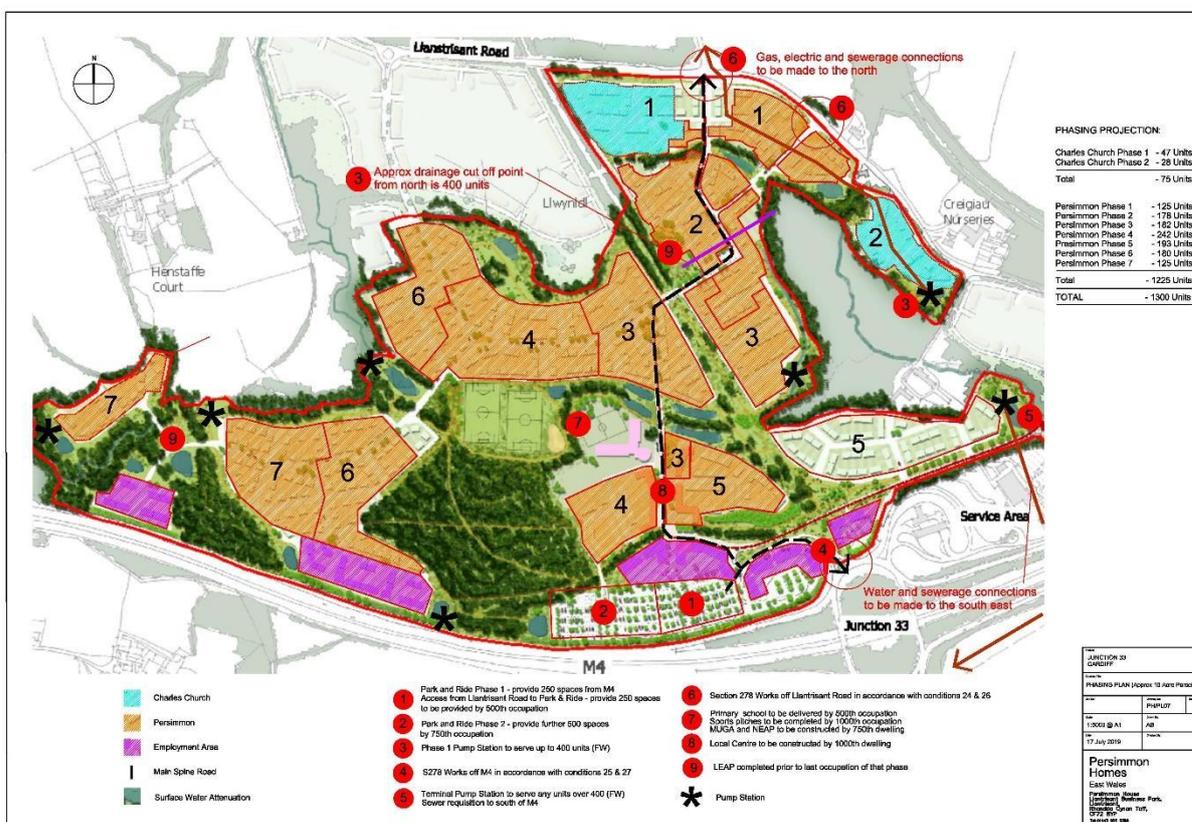


Figure 1: Site Layout with development phasing

Sections of the Phase 3 development are currently being used for offices and materials storage, with works due to commence here in summer 2022.



Figure 2: Phase 3 Area with Development Illustrated.



Figure 3: Phase 3 Extents (arrows illustrate runoff directions)



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Figure 4: Aerial Photograph of the Site prior to Development with Watercourses

There are two named watercourses crossing the site, the Nant y Glaswg and the Nant Henstaff. There are also several un-named ditches, which are dry for the majority of the year but flow during periods of sustained rainfall and discharge into either the Henstaff or Glaswg. These are illustrated on Figure 4 above.

Surface water drainage for the development has been designed to collect runoff, via highway gullies, channel drains and filter drains. Water is then fed to underground buried SDS attenuation tanks, swales and open detention basins across the development. Runoff is discharged via flow control chambers fitted with Hydrobrakes, which have been designed to limit discharges to greenfield flows. Once the hydrobrakes reach capacity, runoff will back up into the buried SDS attenuation tanks and detention ponds.

Surface runoff is discharged into the Nant y Glaswg to the east and into ditches which are tributaries of the Nant Henstaff to the west.

2. Control of Silt Contaminated Runoff.

2.1 Silt Pollution Risks.

Key Risks:

Runoff from earthworks areas either flowing directly into controlled waters or into land drainage or site drainage. This is worst in areas where earthworks are being undertaken and therefore soils are constantly being agitated. In areas of exposed ground there is an initial suspended solids loading when particles are removed from the surface of the site and this decreases with time, as larger soil / stone particles are left on the surface;



Runoff from haul roads, where soils are agitated by plant movements producing dust in dry weather, which is then mobilised by rainfall and turned into slurry in wet weather, which can flow overland to controlled waters;

Site material being deposited onto roads within the site, being washed into live drainage and discharged into controlled waters. Road brushing is underway but this leaves a residue of very fine particulates, which when it rains are taken into suspension and then washed into gullies and discharged into the watercourse. This is a particular issue on key access routes, where construction traffic and residential traffic share the same access;

Water pumped from excavations where soils within the excavation have been agitated, resulted in high suspended solids loadings in pumped water.

2.2 Key Principals for Silt Pollution Control at J33 – Phase 3

The following principals should be adopted to control runoff and remove suspended solids prior to discharge:

- Only vegetation / topsoil stripping areas immediately required for development, to minimise areas of exposed soils.
- Segregation of Construction and Residential Runoff - Runoff from construction areas and completed areas of the site should be segregated. This will reduce the volume of runoff to be treated i.e. if you halve the volume of runoff into a pond you double the residency time and increase efficiency by approximately 35%.
- Construction runoff should be contained, collected and discharged via attenuation and / or treatment measures designed for construction runoff only.
- From experience, the only thing which removes silt from runoff is attenuation. Holding water for a sufficient amount of time for the majority of the suspended solids to settle out. If the runoff contains fine particles, such as clay and the site area is large, with high surface water flows, it will not be possible to build a pond big enough to hold the water long enough for suspended solids to settle out (many times we have taken water samples on site and the bottle has sat on someone's desk for many hours and has still been cloudy). In this case, the only thing which will work is flocculants or coagulants. Use of chemical dosing requires an Environmental Permit from Natural Resources Wales. This process can take up to four months to complete but at their discretion, NRW can issue temporary consents for treatment system which they have previous experience with.
- Localised silt mitigation such as Siltfence, small sumps, bales and geotextile filters are good for reducing the force of runoff and hence reducing scour, directing runoff into further treatment or away from sensitive areas and removing larger particulates which could quickly silt up or clog ponds.

The primary mitigation will be collection and channelling / pumping to the attenuation ponds, with further mitigation in the form of flocculant / coagulant dosing and clarification.

2.3 Segregation of runoff from construction areas, completed areas of the site and offsite sources.

Locations where clean runoff from offsite sources enters the site, will be identified and this runoff will be directed away from the works. This will be done through the use of bunds, ditches and silt fencing buried into the ground. Where clean runoff crosses the site at low spots in the topography it may be required to pipe this across the site to prevent it becoming contaminated with suspended solids from the site.

As sections of Phase 3 are completed and cease to be used by construction traffic, drainage from these areas will be segregated and runoff from these areas will be discharged to permanent outfalls. This will only be done once it is certain that runoff from these areas will not be impacted by construction runoff.



Permanent drainage should not be made live and able to discharge runoff directly to a watercourse until all construction work in that area has been completed and it is certain that this water will not contain suspended solids or other pollutants.

2.4 Gully Bags / Green Rhino EnviroHorns

Gully bags and GreenRhino EnviroHorns, are effective at trapping larger particles within runoff. Larger particles become trapped but smaller particles are carried through by the water. As the volume of larger particles builds up, the capacity of the gully is reduced, until it eventually becomes blocked, preventing all runoff entering.

Gully bags and EnviroHorns will not remove fine suspended solids, which will stay in suspension for several hours.

Gully bags and EnviroHorns assist with removing larger suspended solids which could accumulate in drainage, causing blockage and reducing the volume of permanent drainage attenuation systems.

Gully bags or EnviroHorns should be installed in all gullies in areas where construction is ongoing or where construction vehicles are active.

2.5 Silt Fence

Silt fence is designed to capture runoff and filter it to remove suspended solids. It will also break the force of runoff flowing down slopes, reducing runoff velocity and reducing scour or site material, which could be carried into watercourses or other mitigation.

In reality, Siltfence's filtration is limited, with a small filtration effect initially but the pores in the geotextile, soon become binded. Siltfence does have the effect of forming small attenuation features.

Siltfence will predominantly be used to break the force of runoff and reduce scour and direct runoff into capture areas, where it is pumped into the attenuation ponds.

Siltfence should be used to slow the flow of runoff across the site, reducing scour of further suspended solids. It should also be used to direct runoff away from sensitive features and to provide small attenuation features, which are effective for removing larger suspended solids.

It is vital that siltfence is well buried into the ground and the soil compressed back around it, so that when water builds up against it, it does not pull out of the ground or get undercut by runoff. It also needs to be well staked, otherwise it will collapse under the weight of the water. Stakes should be placed on the downstream side of the siltfence so that the geotextile sits against the stake.

2.6 Sedimats

These are coir mats placed in watercourses and ditches downstream of locations where works are being undertaken. They work well at catching larger suspended solids but fine particles will stay in suspension and be carried downstream.

Sedimats should be used, where works within watercourses is required i.e. for the construction of outfalls. along ditches to aid the capture of silt. In these instances, sedimats would be used to capture sediments already within the watercourse and not new inputs of sediment, these should be controlled by the attenuation pond system.



Where necessary the wooden battens can be removed to allow them to be laid into ditches / watercourses. Sediments are biodegradable and can be left in place in ditches. If it is required to remove them, care should be taken to ensure that trapped silt is not released.

2.7 Bale and Geotextile Filters

Excavate holes through the bund with a small sump in front of the hole to capture silt, then construct a bale and geotextile filter in the gap, taking care to backfill tightly around the ends of the bales and to bury the front of the geotextile to ensure that runoff does not flow under or around the filter.

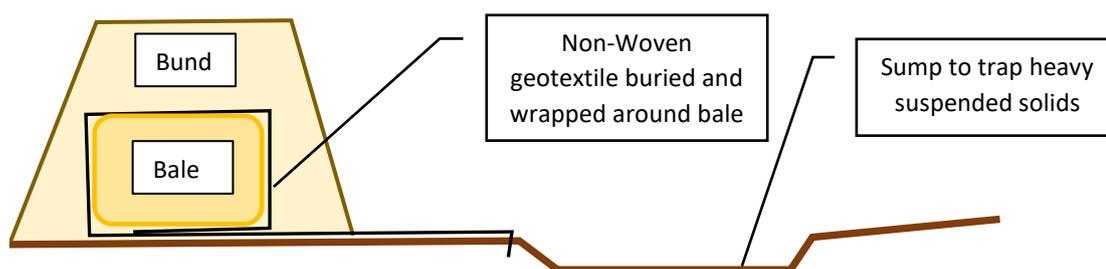


Figure 5 – Cross Section through bale and geotextile filter in bund

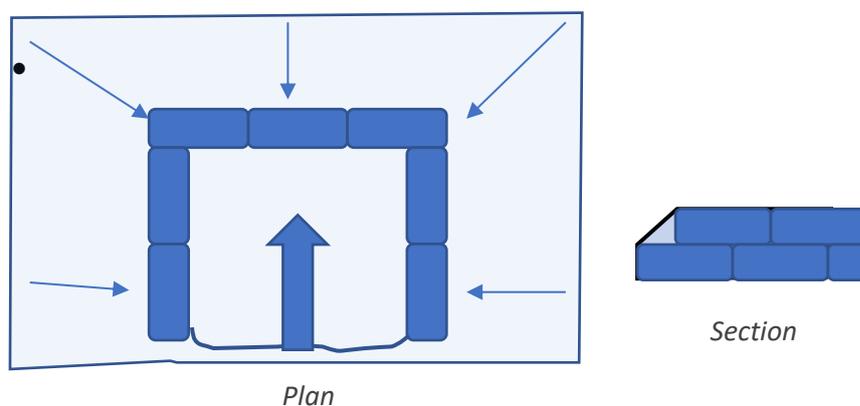


Figure 6 – Bale and geotextile filter

2.8 Central Attenuation / Balancing Ponds.

Three large attenuation ponds have been constructed in the Phase 4 area. Each pond has a stilling basin feeding into the main pond. These ponds give sufficient time for suspended solids to settle out prior to discharging the water to the watercourse.

Runoff from the Phase 3 area will be collected in perimeter drainage channels / bunds and channelled to central collection ponds, from where it will be pumped into the construction runoff attenuation ponds (CRAP). Please refer to Figure 5 for the location of runoff capture and attenuation ponds.



In the short term, the proposed permanent attenuation ponds, along the southern boundary of the phase, could be used for the collection and storage of runoff prior to it being pumped to the attenuation ponds. However as sections of the Phase 3 area are constructed, these ponds will be required for permanent drainage runoff.

No runoff will be allowed to leave the site, without first passing through the attenuation ponds. The discharge from the ponds is into the same watercourse as surface runoff from the Phase 3 area currently discharges, and although it is discharged as a point source, as opposed to a diffuse source, this should not have an impact on the watercourse.

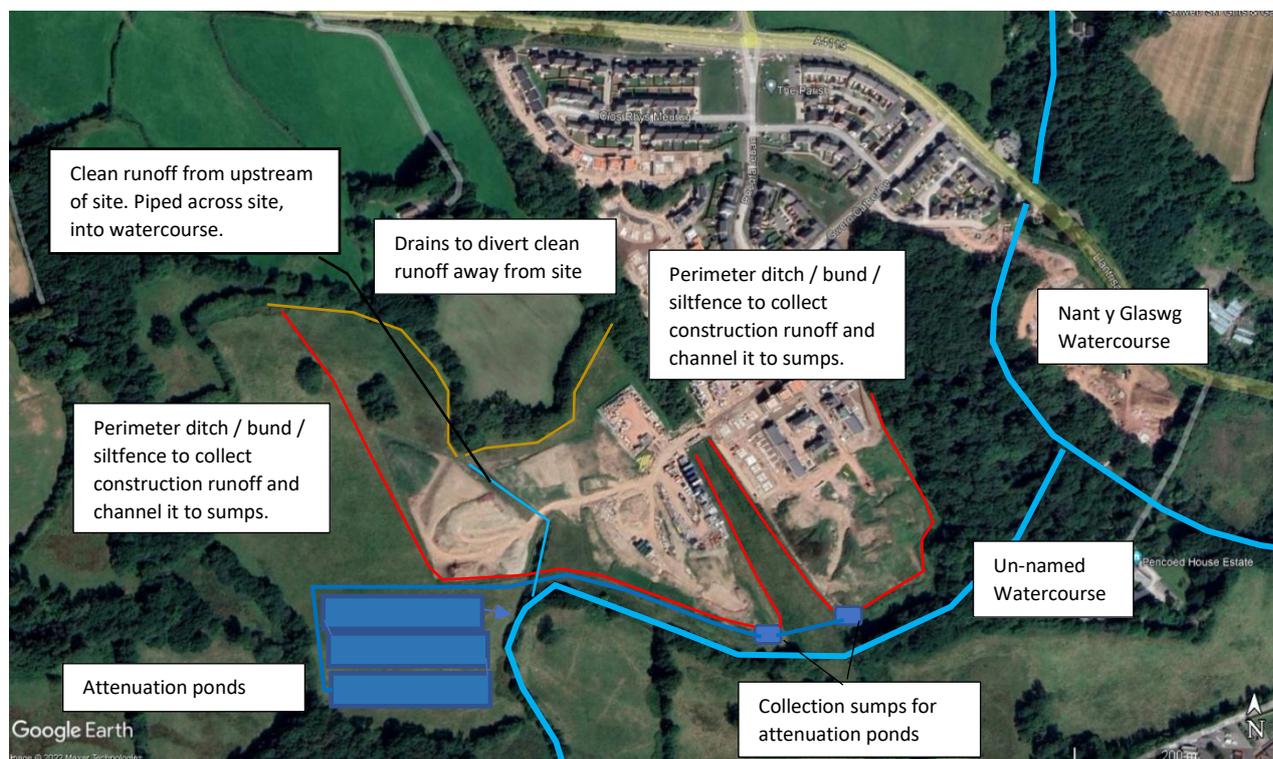


Figure 7 – Layout of Attenuation Ponds and siltfence / earth bunds to direct runoff to pumping sumps.

2.9 Attenuation Pond Design

From experience we know that the only thing which will remove suspended solids from site runoff is gravity settlement. This can be aided by dosing with coagulants and flocculants if required but if possible, gravity settlement alone should be used as the first option, as this does not require an Environmental Permit to Discharge. To this end Persimmon have constructed 3 attenuation ponds, within the Phase 4 area of the site. These ponds measure approximately 120m x 15m, each with its own stilling basin. Water is pumped into the end of Pond 1 and then flows through Pond 1, into Pond 2 and then into Pond 3. This means that suspended solids have got to travel a long way in suspension if they are going to discharge over the outlet weir. The ponds have been in operation for some time and have been found to be effective at removing suspended solids.

The design principles used for these ponds is described below:

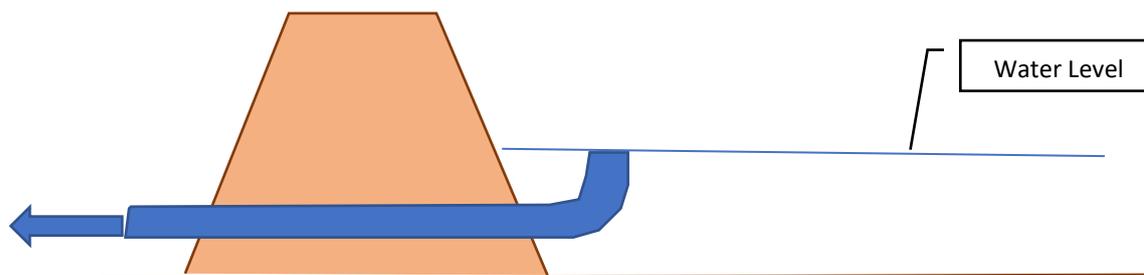
Attenuation ponds should be as large as possible, as settling efficiency is a function of surface area and not volume. However, the ponds should have sufficient volume to accommodate silt on the base of the pond, without blocking and so that if gravity settlement alone does not provide the required water quality to allow it to be discharged, the pond/s can be used as balancing ponds for a further treatment system.



The pond can be relatively shallow to be used as an attenuation pond, but we would suggest that it is made approximately 1 – 1.2m deep, so that it can be used as a balancing pond if required. The inflow should be at one end and the outfall at the other. Water should be discharged into the pond below the water level and if it is entering at high velocity should be baffled so that the inflow does not result in turbulence in the pond.

The outfall should be from the surface of the water, as this will always be the cleanest part of the water column.

Flow across the pond and at the outfall should be laminar (opposite to turbulent) to allow small particles the best chance to settle out.



Figure

Figure 8 – Outfall from pond

From particle size and settling data available for the site, we believe that during low flow summer months, gravity settlement within a suitably designed attenuation pond would be sufficient to remove suspended solids to allow runoff to be discharged. However during high flow winter months, it is unlikely that sufficient residence time within the pond/s will be possible to allow suspended solids to settle out and that chemical dosing will be required. Please refer to the study carried out by Siltbuster Ltd in 2020, in Appendix 1.

2.10 Flocculant / Coagulant Dosing System with Siltbuster Settlement:

If the required water quality cannot be achieved through gravity settlement i.e. flows are too high, particles are too small, it will be required to introduce a Flow Proportional Chemical Dosing System. This would use sensors to determine the flow and turbidity of the water and then accurately dose it with the right volume of pH adjustment and coagulant. The coagulant would then bind together all of the small particles into a larger particle, which would settle out as it has a larger mass.

This system would require a power source, storage for 2 IBC's of flocculant and coagulant, this will need to be secure and bunded, two mixing tanks, a minimum of 1 clarifier and facilities to de-sludge the system. It will also need attendances on this, i.e. daily checks by a member of the site team and regular servicing by Siltbuster.

These systems only work, with a throughput between certain parameters and hence a form of storage is required to store runoff during periods of heavy rain, which can then be pumped through the system during periods of dry weather. The volume of this storage needs to be determined based on the anticipated flow from construction areas. Reference should be made to information used within the drainage design.

This treatment process would also require an Environmental Permit to Discharge.



2.11 Installation of Siltfence

Silt Fence is buried in the ground up to the red / green line on the fence (some indicator lines are different, but the principle is the same). It is then mounted on wooden stakes attached using cable ties through the perforated section along the top or nails.

Silt Fence should be installed to follow the contour of the land to avoid low spots in the fencing, where water can gather and over run the fence. Sumps with bale and geotextile filters should be installed at low spots where silt fence could over top. Where installation following the contour of the land is not possible and runoff will flow along the fencing. Returns should be added from the rear of the fence, upslope to break the flow of runoff running along the fence.

Where water may pond behind the Silt Fence, provide extra support for the Silt Fence with tie backs from the Silt Fence to a central stable point on the upward side. Extra support can also be provided by stringing wire between support stakes and connecting the filter fabric to this wire.

2.12 Maintenance of Siltfence:

Inspect Silt Fences at least once a week and after each rainfall. Make any necessary repairs when bulges occur or when sediment accumulation reaches 50% of the fabric height.

Any areas of collapse, decomposition or ineffectiveness need to be immediately replaced.

Remove sediment deposits as necessary to allow for adequate sediment storage and reduce pressure on the Silt Fence. Ensure that the sediment is removed to a secure area where it cannot re-enter watercourses or attenuation systems

Do not remove Silt Fence materials and sediment deposition until the catchment area has been appropriately stabilised. Stabilise the area of the removed Silt Fence.

3. Environmental Permit to Discharge

Natural Resources Wales controls all activities which have potential to impact the environment, through Environmental Permitting. Treated site runoff is classed as Trade Effluent and therefore a Bespoke Environmental Permit to Discharge will be required. For this, there will be an application fee, a subsistence fee and a surrender fee for surrendering the permit at the end of the works. Costs are dependent on the number of outfalls being permitted.

Exact costs for Environmental Permit Applications will depend on whether the discharge is classed as Low Risk and if not is subject to the Operator Performance Risk Appraisal Scheme where past performance and current measures within the application are assessed.

Permits take up to three months to put in place and require the submission of an Environmental Management System and a Monitoring Strategy, which will require monitoring of water being discharged using handheld meters and taking samples and sending them to a UKAS / MCERTs accredited laboratory for analysis.



3.1 Monitoring:

Weekly / Daily Environmental Site Inspections are to be undertaken. These will be undertaken to a proforma, which will be drawn up by identifying potential risk areas and areas where environmental best practice should be provided.

These inspections should be completed by a competent person, who should receive additional training, if required (i.e. attendance at SEATS Course).

Reports should be supported by photos and should identify defects and rank them in terms of priority. Actions should be submitted to a member of the site team with sufficient authority and resource to ensure that they are promptly actioned.

4. Prevention of Silt Contamination During Pumping Operations:

As part of the planning of pumping operations consideration must be given to:

- The likely volume of water which will be required to be pumped – if this water can be maintained clean and be abstracted and pumped prior to it being contaminated, minimal silt mitigation will be required.
- The degree of siltation of the water, i.e., will it be ground water intercepted prior to it reaching an excavation or is it likely to be water which is continually being agitated through excavation activity. The choice of silt mitigation will then depend on the anticipated volume i.e., the size of pump, the distance from a sensitive receptor i.e., a watercourse or other water body and the duration of the pumping operation (small volumes of silt contaminated water pumped onto dry ground for a short duration will percolate into the ground, whereas larger volumes over a longer duration will not and will flow away.
- All water pumped from excavations shall be pumped via a pipe and gravel sump. In order to prevent silt being agitated from the base of the excavation and to provide rudimentary filtration to the water prior to abstraction.
- For low volume pumping (25mm pump), water will be pumped into a small attenuation lagoon / tank prior to being directed into the drainage system. Discharges will be continuously visually monitored and if silt contamination is identified, pumping shall cease, and additional mitigation will be implemented.
- For medium volume pumping (50-75mm pump) water shall be pumped via a small attenuation lagoon / bale and geotextile sump or an attenuation tank with a capacity of not less than five cubic meters, the outlet from this may be placed directly into site drainage provided water is free from silt. Drainage from the lagoon/tank will be in the form of a gravity system or a siphon. The quality of discharged water will be continuously visually monitored and if silt contamination is identified, pumping shall cease, and additional mitigation will be implemented.



Figure 9: Bale and Geotextile Sump

- For high volume pumping (100mm or above) water shall be pumped to an attenuation pond if available. If the required water quality cannot be achieved through this alone, water will be passed through an attenuation tank with a capacity of not less than eight cubic meters, the outlet from this may be placed directly into site drainage, provided water is free from silt contamination. The water in the tank will be regularly inspected / tested.
- In the case that the silt cannot be controlled by the above measures, lamella clarifiers such as those produced by Siltbuster will be brought to the site. All water will be pumped through these before being released to drainage.



Figure 10: Pumping silt contaminated water through Lamella Clarifiers

- If the required degree of settlement cannot be achieved by settlement alone flocculants may be used. Note: For the use of coagulants / flocculants an Environmental Permit to Discharge will be required. This can take up to 4 months to put in place. The flocculent dosing system should be a flow proportional system to ensure that there is no flocculent in the overflow from the settling pond / tank. A testing regime will be required to demonstrate that water is free from flocculants at the discharge point (through testing for iron)
- Discharges from pumping systems will be monitored continuously for the initial four hours and if there are works taking place which have potential to generate silt contamination. Discharges will be assessed visually on a



daily basis throughout the pumping operation. If the presence of other contamination is suspected, samples will be taken at a frequency determined by the Risk Assessment and Permit to Pump and will be analysed for a range of determinants based on the suspected contaminants.

5. Hydrocarbons and Chemicals and COSHH Materials:

Definitions:

- Double skinned tank – twin walled tank where there is a small gap between the inner skin and the outer skin. All equipment comply with The Water Resources (Control of Pollution) (Oil Storage) (Wales) Regulations 2016
- Secondary Bund – bunded area around an oil, fuel or chemical container which encompasses all of the ancillary equipment from the containers i.e., inlet/outlet pipes, sight glasses etc.
- Integrally Bunded Tanks – These are purpose-built storage units whereby the tank is situated within a liquid tight steel container. All gauges and ancillary equipment are also located within the container. The containers are lockable and are to remain locked at all times when not in use, to prevent tampering.

Risks:

- Leakage of fuels and oils from plant and machinery.
- Leakage/spillage of fuels, oils and chemicals from containers.
- Spillage of fuel during refuelling.
- Runoff from excessive use of shuttering oil.
- Hydrocarbons washed out from un-cured bituminous paints and sealants.
- Wind blowing of COSHH materials.

Pathway:

- Hydrocarbons and chemicals entering existing site drainage.
- Hydrocarbons and chemicals entering watercourses or groundwater.
- Hydrocarbons and chemicals entering drainage from site offices, canteen, storage units.
- Hydrocarbons and chemicals escaping to ground.
- Wind blowing of fine powders.

Controls:

- All fuels and COSHH materials will be stored in the site compound – see Figure 11. COSHH materials will be stored in a dedicated, bunded COSHH store.



Figure 11 – Site Compound and COSHH Store

- COSHH assessments will be undertaken for all materials bought to site. These assessments will include environmental exposure information and instructions for dealing with accidental release of the materials including environmental impact from the materials. COSHH assessments are to be maintained in the COSHH file in the site offices and with the COSHH material.
- Re-fuelling of plant and machinery shall not take place within 10m of a drainage channel or 50m of a borehole. Fuelling is only to be carried out by appropriately trained personnel, issued with appropriate PPE.
- The re-fuelling of static and small items of plant shall be carried out by a suitably trained, designated person using fuel cans with spouts which can be inserted into re-fuelling apertures of the plant being re-fuelled. If such fuel cans are not available a funnel will be used.
- If possible, bowsers used for the re-fuelling of plant shall not be left full overnight or at the end of the working shift. If bowsers are to be left full overnight they shall be stored in a secure bunded area and the bund shall have a capacity of 110% of the bowser.
- All bulk fuels will be stored in double skinned fuel cubes, with fuelling guns, which auto shut off once the fuel tank is full. Fuel cubes will be stored within the site compound, which will be secure, with security provided to prevent tampering or theft.
- Oils, will be stored in barrels within cabins within drip trays or plant nappies.
- Chemicals will be stored in the containers in which they were delivered, within a COSHH store in the site compound. COSHH containers will be stored within the site compound remote from surface water drainage.
- Liquid containers shall be stored in locations where they are not at risk of being struck by vehicles or plant.



Figure 12: Barrels Stored on Drip Tray

- All tanks shall be labelled to show their contents, volume, refill procedure and spill response procedure.
- Plant and vehicles should be inspected for oil and fuel leaks prior to the start of each shift.
- All static plant should be placed within a drip tray or Plant Nappy. Plant Nappies will be used in favour of drip trays as they do not accumulate rainwater. Drip trays should be fitted with integral oil traps to allow them to drain or provision should be made for the removal of water during wet weather.



Figure 13: Generator on Drip Tray with Integral Separator / 'Plant Nappy' under compressor

5.1 Re-fuelling Procedure:

Only trained designated personnel will undertake the re-fuelling of plant and equipment.

Training will be given on the following:

- Correct PPE – Personnel undertaking fuelling with wear hydrocarbon resistant overalls or apron, oil resistant boots, long oil resistant gloves and eye protection.
- Use of re-fuelling guns, i.e., guns will be placed into the fuelling aperture, if the aperture is not accessible a suitable funnel will be used, full attention is to be paid during re-fuelling to ensure the fuelling gun is shut down prior to the tank over-flowing.
- Plant nappies will be placed beneath the equipment being re-fuelled or beneath the fuelling aperture.
- Process for accessing fuelling apertures on items of plant.



- Funnels will be used for the refuelling of static plant.
- Fuel guns will be locked when left unattended and will be stored within bunded areas.
- Fuelling within the site compound will be undertaken on an impermeable surface draining via a hydrocarbon separator.
- Fuelling will not be undertaken within 50m of a borehole.

5.2 Monitoring of Fuel Storage and COSHH:

Fuel, oil and COSHH storage facilities will be inspected as part of Weekly Environmental Site Inspections.

Visual monitoring will be undertaken of site runoff during periods of wet weather. These will consider signs of hydrocarbon contamination including sheens on water and staining. This will inform requirements for further mitigation or maintenance of existing features.

6. Control of Concrete Contaminated Runoff:

Risks:

- Concrete delivery vehicles washing out at uncontrolled locations.
- Failure of shuttering during concrete pours.
- Excessive bleed from shuttering during concrete pours.
- Concrete contamination from jet washing / hydro cutting of green concrete.
- Direct spillage of concrete into watercourses.

Pathways:

- Cement contaminated water entering existing surface drainage.
- Cement contaminated water flowing directly into watercourses or groundwater.
- Cement contaminated water flowing directly into highway drainage.

Controls:

- If required - A dedicated concrete washout pit will be installed where concrete is to be poured. This will consist of a bunded pit lined with 1200-gauge polythene. The pit will be cleared via excavator regularly as required. Concrete delivery drivers will be fully briefed on this & will use this facility at all times. Washouts will be signed, and site operatives will be instructed to guide vehicles to it. If insufficient space is available, products such as Concrete Washout Systems can be used. Refer to <http://www.siltbuster.com/construction/products/concrete-washwater/rcw.php>. Locations of washouts to be included within Method Statement and Environmental Risk Assessments.
- Shuttering to be checked by the temporary works coordinator/section engineer for integrity prior to pours and the rate of rise to be controlled during the pour.
- Water from the jet washing / hydro cutting of green concrete shall not be permitted to flow into surface water drainage but shall be retained on site to allow particulates to settle and pH to adjust.



6.1 Monitoring of Cement Storage and Use:

Weekly Environmental Site Inspections will be undertaken during which storage facilities will be inspected.

Visual monitoring will be undertaken of site runoff during periods of wet weather. These will consider signs of cementitious contamination including discolouration and residues. This will inform requirements for further mitigation or maintenance of existing features.

7. Flooding

Flood risk for the site is low. There is a risk of localised flooding in low areas of the site, along the ditches feeding into the Nant Henstaff.

There is also potential for water logging / shallow flooding in low lying areas of the site during prolonged periods of heavy rain.

It will be crucial that the passage of water across the site is not impeded during the works, to ensure flooding upstream is not exacerbated.

Key personnel will sign up to the NRW flood warning scheme.

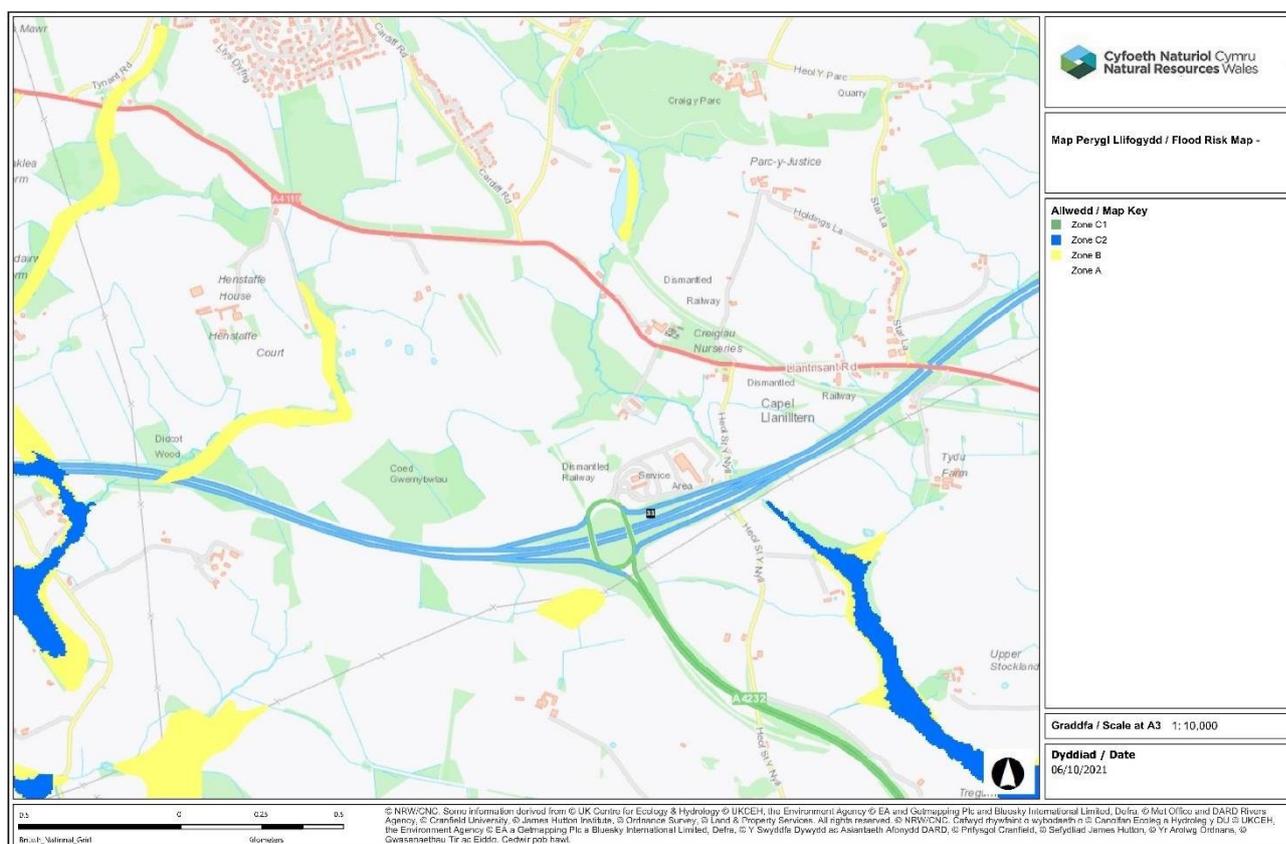


Figure 14 - NRW Flood Risk Map



8. Cleanliness of Highways and Haul Roads

The following measures will be employed to maintain the cleanliness of the surround highway network if required:

- As far as is reasonably practical, construction traffic will be segregated from other highway traffic
- Hard surfaced runoff areas, which are regularly cleared of site material.
- Hard surfaced site haul roads throughout the site.
- Ensuring staff vehicles do not have to pass through construction areas to access parking;
- Jet washing of vehicle wheels prior to leaving site – jet wash areas will be located at both the southern access onto Junction 33 and the northern access in the Llanilltern development and onto Llantrisant Road.
- Road brushing of the highway network adjacent to the site.

8.1 Manual Jet Washing:

Wheel washing in its simplest form could be an operative using a jet wash. Runoff from the jet washing should be collected and fed to construction runoff treatment facilities and should not be allowed to discharge directly into highway drainage. Jet washing stations should therefore be positioned in locations where it is possible to collect runoff and channel it to treatment / collection locations. Treatment will consist of a hydrocarbon trap to remove hydrocarbons and silt management. Silt management will be achieved through the diversion of runoff into the construction runoff capture system, which is then pumped to the attenuation ponds.

8.2 Automated, recirculating wheel wash:

At long term site accesses, consideration will be given to the installation of automated, recirculating wheel washes, which are self contained units, through which the vehicle drive. Runoff from these is captured and recirculated through a siltbuster system to remove hydrocarbons and suspended solids.

Pros:

- Once installed requires little input from site team;
- Quicker than jet washing;
- Built in water treatment and recirculation, reducing water usage.

Cons:

- Require a lot of space;
- Not as directable as jet washing to areas of the vehicle which require additional attenuation;
- Would require regular maintenance by service engineer;
- Requires a power supply for pumps;
- Some policing would be required to ensure vehicles leaving site pass through the wheelwash.



8.3 Monitoring of Cleanliness of Highways:

Visual inspections of highways surrounding the site will be undertaken by Works Manager daily with the results used to direct further mitigation in the form of wheel washing, highway cleansing, as required. The frequency of this will be increased during periods of wet weather but inspections will continue during dry weather.

9. Nuisance Effects of Neighbours

9.1 Sensitive Receptors Adjacent Site

The site is in a predominantly rural setting with the M4 motorway to the south and Cardiff West Services adjacent to the eastern section of the site.

Pencoed House lies to the north of the eastern section of the Spine Road. This is a residential property and hotel, which is also used as a venue for weddings. Hence this property would be considered to be noise sensitive. Construction of the eastern attenuation pond will be the closest activity to Pencoed House, which will be within 50m of the wedding venue section of the property and 90m of residential / accommodation buildings. The property is screened from the development by a woodland belt, which will mean the works are not visible and the perception of noise and other nuisance is reduced.

As Phase 3 of the Llanilltern residential development are completed and become occupied, these will also be a receptor, particularly for the construction of the northern section of the spine road, where it will tie into the existing site infrastructure.

9.2 Noise and Vibration:

Risks:

- Disturbance to residents and businesses from construction noise and vibration.
- Disturbance to residents and businesses from dust and odours.
- Local authority enforcing a prohibition notice on the site or a particular activity due to excessive noise or vibration.
- Disturbance to the ecology of the surrounding area due to excessive noise, vibration, and dust.

The following construction activities have potential to generate excessive levels of noise:

- Piling.
- The movement of plant around the site, particularly excavators and dumpers.
- Dynamic compaction activities.
- Lifting activities.
- Excavation of materials across the site.
- Pumps and other static items of plant.



Controls:

Persimmon aims to ensure that the local population are affected as minimally as possible throughout the works. The following control measures will be put in place with the aim of achieving this:

9.3 Working Hours:

A key method of limiting nuisance is the restriction of working hours. The working hours are shown below.

Table 1: Working Hours for the Site

Day	Working Hours
Monday - Friday	08:00 – 18:00
Saturday	08:00 – 13:00
Sundays and Public Holidays	Generally no work undertaken.

It is unlikely that night working will be required as part of the works. If it is required to continue construction works during night working hours (8 pm to 6 am) i.e. due to traffic management requirements for tie ins onto the existing M4 junction, PH will consult with Cardiff West Services regarding potential disruption.

9.4 Mitigation Measures for Noise and Vibration:

The following shall be put in place to further mitigate the impact of noise and vibration:

- The works will adhere to BS 5228: parts 1 and 2, as well as BS 7385: parts 1 and 2.
- Power for the site compound will be from a mains supply, removing the need for a generator.
- All residents and businesses shall be provided with the name and contact number/email address of the Persimmon Community Liaison Officer, who will be the first point of contact for any issues raised.
- The Permit to Proceed system is to be used for any noisy works or works outside of normal working hours. This system will identify any nuisance or ecological issues. In some instances, works may not be permissible at during certain periods as species present are particularly sensitive to noise during those periods.
- All equipment will be turned off when not in use.
- All significant noise sources will be enclosed using localised screens and hoardings. If this is not possible, consideration will be given to protecting the receptor using localised screening. Pumps/generators etc must be at least 25m away from sensitive receptors.
- Where possible loading and unloading shall be carried out away from noise sensitive areas and shall be limited to working hours.
- Acoustic covers to engines shall be kept closed at all times during operation.
- Materials shall be lowered where possible and not dropped. The surfaces onto which the materials are being moved shall be covered by resilient material.
- Plant known to emit noise strongly in one direction shall be orientated so that the noise is directed away from noise sensitive receptors.



- It will be ensured that all plant is regularly maintained to ensure sound reduction is still effective.
- Where reasonably practicable, plant and/or methods of work causing significant levels of vibration at sensitive premises, shall be replaced by other less intrusive plant and/or methods of working.
- All audible warning systems and alarms shall be designed, where reasonably practicable, to minimise noise, non-audible warning systems shall be utilised in preference.
- The use of vibrating compaction equipment shall be restricted in the vicinity of dwellings and other buildings. The exact exclusion distance will be dependent on the equipment to be used, the geomorphology and topography of the area.
- Toolbox talks (TBTs) will be undertaken to advise all operatives of the potential issues of the generation of noise and vibration, as well as the mitigation measures outlined in this document. Records of these talks will be kept in the site office.

9.5 Monitoring of Noise and Vibration:

Monitoring will be carried out during activities which are anticipated to have impacts on identified receptors, or as a result of a complaint verified by the LA Environmental Health Team. This will ensure that noise outputs from the site fall within the agreed acceptable limits as per BS4142 and BS5228 methodologies.

Noise measurements if required will be undertaken in accordance with BS 7445: 1991 – Description and Measurement of Environmental Noise.

Monitoring shall be carried out using a minimum of a Type II noise meter complying with IEC 61672-1:2003. The meter used will have been serviced and calibrated by the manufacturer within the last 12 months. As a preference, the meter will have the capability to be downloaded remotely.

The meter will be set up at the receptor deemed most at risk during the activity being undertaken at the time. Key identified receptors will be:

- Properties within the existing sections of the Persimmon development;
- Occupied buildings on the Pencoed House Estate;
- The Travel Lodge at the Junction 33 Service Station.

Noise monitoring will be planned as part of the Method Statement process, for activities which are likely to generate elevated levels of environmental noise i.e. breaking out of concrete, piling, the use of excavators very close to properties. Due to the nature and location of the development, the potential for disturbance due to noise emissions is predicted to be low.

Noise meter set up typically involves positioning the meter on a stand of approximately 1.2m in height near the receptor. The meter is placed at least 2m from any reflective surface (such as a wall or fence) in order to prevent inaccurate readings from sound reflection. Noise measurements will be undertaken as 15 minute LA_{eq5}s. These will then be used to calculate 1hr and 8hr day and 16hr night time LA_{eqs}.

The following parameters shall be reported:

- LA_{eq} (dB)
- Peak (dB)
- LA_{Max} (dB)
- LA₀₁ (dB)
- LA₉₀ (dB)

If noise levels are perceived as being unreasonable or if there are complaints regarding noise works will cease and alternative methods of works will be agreed with the LPA and the Project Manager before recommencing works. To



ensure there is compliance with this, a permit to proceed shall be issued for all night working/ works that are likely to generate elevated noise levels.

Vibration

Due to the distances from potential receptors, it has been assessed that impacts due to ground borne vibration are low. If it is required to undertake activities which may cause ground borne vibration in proximity to properties i.e. piling, breaking out of rock or concrete, use of heavy plant, travelling of dumpers, vibration monitoring will be undertaken. This will be undertaken as a combination of baseline monitoring and activity specific monitoring. Neither device interferes with the other, so results for both are uninfluenced by their proximity.

Vibration levels will likely be measured using the following equipment:

- AVA M80 Seismograph, with real time monitoring via the web-service.
- Tri-axial orthogonal geophone pack.

As with the noise meter, the vibration meter used will have been serviced and calibrated by the manufacturer within the last 12 months.

Installation requires the weighing down of the geophone pack using a weight such as a sandbag, ensuring that the pressure pads are all in contact with the ground below. The instrument should be installed against the ground slab of the building / feature, if possible.

The vibration meter will be set up and then left for an agreed duration. Vibration will be reported as Peak Particle Velocity in mm/s.

9.6 Site Lighting:

Due to its potentially damaging effects, Persimmon Homes are committed to prevent or reduce all forms of light pollution where possible.

It is unlikely that night works will be required as part of the works. If it is required to continue construction works during night working hours (8 pm to 6 am), Cardiff Council will be contacted in advance.

The following measures will be implemented for site lighting:

- Safety lighting within pedestrian areas at site compounds – Low level, full cut-off lighting fixtures will be used. These will be PIR controlled and hence will only operate during periods when the site is operational.
- Task lighting at work sites (low level task lighting) – This will be localised and will be directed so that it is focused onto works areas, with minimal light spill:
- Vehicle Headlights – Vehicle use will be minimised after dark.

9.7 Visual Intrusion:

The site is overlooked from many vantage points and hence there is little which can be done regarding visual intrusion. Site compounds will be located remote from residential properties and will be hoarded using Persimmon branded hoarding:

- Where appropriate, fencing will be utilised to screen the works from the general public.
- If required, dust control will be implemented, particularly during periods of prolonged dry weather.
- Machinery shall be parked away from residential and commercial properties overnight.
- The site shall be kept litter free; all waste will be returned to the site compound for re-use or disposal and materials shall be stored in a well-ordered manner.



- Roads will be kept clear of mud and other site material. This will be carried out manually with brushes. A road sweeper will be brought in as required.

10. Control of Emissions to Air:

10.1 Dust and Particulates:

Dust emitted from site can cause severe nuisance to surrounding residents, businesses, and facilities. In its simplest form it can cause additional cleaning work and reduce resident's quality of life but in its most severe form it can have acute effects on people's health especially those suffering with respiratory conditions such as asthma. Dust can also carry contaminants which have great impacts on health.

Dust can have an impact on the ecology of the area, blanketing vegetation, preventing it from transpiring and reducing food sources for animals and invertebrates.

Risks:

- Dust emitted from earthworks operations.
- Dust emitted from vehicle movements.
- Dust emitted from cutting operations.
- Dust emitted from materials handling.
- Particulates emitted from vehicles and plant exhaust systems.

Control measures for these risks are discussed below.

10.2 Material Handling

- Fine, dry materials shall be stored within buildings or with adequate protection from the wind and dampened, shrouded, or screened in dry weather.
- Stockpiles shall be positioned as far as is reasonably practicable away from residential areas, places of public access or other sensitive receptors.
- Stockpiles shall be maintained with shallow slopes to prevent slippages and shall be seeded where appropriate to prevent windblown dust.
- In handling areas, bowsers, sprinklers, spray mist systems and screens, shall be used to prevent dust.
- The location of temporary storage mounds must be agreed with the ECoW.

10.3 Vehicles & Plant Movement

- Working area shall be dampened down in dry weather conditions, using water from grey sources where possible. Dampening down water should be applied using a spray bar attached to the tanker as opposed to a nozzle. Nozzles over apply water mobilising suspended solids and generating silt contaminated run off. Nozzles



also use much more water than spray bars meaning smaller areas can be treated between re-fills of the bowser and hence damping down efficiency is reduced.

- General site traffic shall be restricted to watered or paved roads.
- All vehicles and plant on site shall be fully serviced and maintained, so that they do not emit smoke and particulates. If vehicles produce black smoke they will be removed from operation and sent for service.
- No machinery shall be left running when not in use.
- Site speed limits shall be enforced and speeds limits within site boundaries shall be reduced in dry weather to reduce dust generation.

10.4 Control of Site Operations:

- Equipment likely to generate excessive quantities of dust shall be enclosed, shielded, fitted with dust extractors, filters, and scrubbers.
- Sheeting of vehicles: all HGVs carrying loose material capable of spillage or which has the potential to give rise to dusty emissions from the vehicles during transit shall be sheeted. This requirement shall be enforced by the Contractor and any transgressions shall be recorded in a logbook by the Contractor with details of measures to be taken to prevent further occurrences. The logbook shall be available for inspection by the Project Manager and local authority at any time during working hours.
- Drop heights shall be kept to a minimum during the movement of materials.
- Where necessary, dust suppression will be utilised. This will take the form of a towed water bowser fitted with a spray nozzle which will be driven around the site. Care will be taken to ensure the damping down will cover the haul roads and any area where earthworks are in operation.
- Prevention of wind-blown dust arising from storage mounds: storage mounds shall be profiled to reduce erosion where the nature of the material could lead to it being rain washed or windblown. Mound surfaces shall be kept sufficiently damp to prevent windblow unless and until the surface is spray sealed or stabilised by means of vegetation. Materials that have the potential to give rise to dust emissions shall be stored as far away from the boundaries of the site as is reasonably practicable. Long-term stockpiles shall be seeded or sealed as appropriate.
- If equipment which produces excessive dust (concrete cutting and scabbling) does not have suppression equipment fitted, a water mist shall be used to damp down dust (handheld plant sprayers can be used for this purpose).
- Spraying of paints and chemicals shall only be carried out in wind free conditions.
- Visual monitoring for dust shall be undertaken daily during periods of dry weather, observations made shall be actioned immediately.
- A 'dry' wheel wash will be installed as minimum.

10.5 Monitoring of Emissions to Air:

Visual inspections shall be undertaken for airborne dust during dry periods.

A logbook shall be kept available for inspection by the local authorities, in order to record the following matters:

- Any complaint relating to emissions alleged to be due to construction activity received from a local resident or business including date and nature of the complaint and any measures taken as a result of that complaint.



- The date and vehicle registration number of any construction vehicle that is observed carrying material that has the potential to release dust during transit and is not covered. Details of measures taken to prevent further occurrence shall be included.

If it is deemed that there is a risk to health or of nuisance to surrounding residents, monitoring shall be carried out using dust deposition gauges situated on the downwind site boundary. If further data is required portable or static PM10 monitors can be employed which will be downloaded daily or in severe cases hourly.

11. Protection of Ecology

Please refer to the Teraqua Construction Ecological Management Plan.

11.1 Tree Protection Fencing:

Tree protection fencing will be installed as detailed within the Arboricultural Method Statement. There is a drawing of this in Appendix EDP 6. Where it is not possible to comply with this drawing, heras panels should be used with the feet staked into the ground and secured using either a single 3m stake in the centre of the panel or using rakers from the panel clips.

The areas for Root Protection Zones are shown within the Plan EDP 1: Tree Constraints Plan Drawings.

11.2 Vegetation Clearance:

The majority of the site is agricultural grassland, but development of the site will require the removal of areas of scrub, hedgerows and mature trees.

Areas for vegetation clearance will be set out with consideration to areas required for temporary works. Care will be taken to retain as much vegetation as possible.

Vegetation clearance will be phased to ensure that the minimum amount of soil is exposed at any time.

Vegetation clearance works should be undertaken outside the bird breeding season. If this is not possible, then areas of vegetation requiring clearance will be checked by a suitably qualified ecologist a maximum of 24 hours prior to works for the presence of active nests.

If the vegetation is deemed too dense for checks prior to removal, the works must be supervised by a suitably trained ecologist. Other ecological requirements set out within this document must be considered during vegetation clearance.

Trees which have been identified as having moderate or low potential to support roosting bats, will be climbed by a bat licensed tree climber and a detailed assessment of all potential bat features will be undertaken. If it is not possible to climb trees a MEWP will be used to access elevated areas of the tree. If this is not possible, the tree should be subject to the appropriate number of Activity Surveys during suitable weather conditions.



12. Equipment Maintenance:

- Daily checks will be undertaken by plant operators prior to using the equipment. This includes checks for fuel and oil leaks, fuel and coolant levels, hydraulics, and safety equipment. These checks will include a written check list which will be kept on file in the site office.
- All plant and equipment will be serviced as per the manufacturer's instructions, but at minimum annually. Service documentation will be kept on file in the site office.
- Any equipment brought into site will be inspected by an appropriately qualified operator prior to its arrival to ensure that it is in good working order and that there are no leaks or damage to fuel / hydraulic lines or fuel storage.
- A designated maintenance area will be set up and utilised for any work that needs to be undertaken on plant. This area will be equipped with spill kits and plant nappies to prevent ground and surface water contamination.

13. Emergency Preparedness and Response

13.1 Emergency Contacts:

Incident Manager:	TBC
Works Manager:	TBC
Natural Resources Wales:	0800 80 70 60 (to be informed in the event of oil/chemical spill or fire).
Emergency Services:	999 (Request service required)

13.2 Environmental Incident:

Table 5: Environmental Incident Types and Examples

Incident/Issue Type	Example
An inappropriately controlled emission to land, sea, air or water (e.g., spillage, fumes, dust, vibration, noise, disposal) that has potential to cause environmental harm if not controlled properly.	Release of silt contaminated water to the protected adjacent sites. Dust emissions to neighbouring properties or onto agricultural land and areas of ecological significance.
A substantiated complaint from a third party affected by the project	Noise complaint from local resident. Statutory intervention from Cardiff Council / NRW.
An event causing major quantifiable environmental harm	Damage to a site or archaeological significance. Injury or death to a European Protected Species.
A breach of a consent licence that may lead to statutory intervention	Breach of discharge limits agreed with NRW. Breach of Planning Conditions



Incident/Issue Type	Example
A breach of Environmental Legislation	Failure to ensure the Duty of Care for waste has been complied with.
Issue of a statutory enforcement notice, Local Authority, Natural Resources Wales	NRW prosecution or warning letter. Local authority abatement notice.

Other Examples:

- The discovery of contaminated land, where no contamination indicators were found in the SI or historical site documents.
- Discovery of protected species where there were no indicators.
- Flooding from events outside the 1 in 100 year probability.

13.3 Responsibilities:

In all cases responsibility for immediate action lies with the person discovering the incident. They should take whatever actions they can, without creating new risks or hazards, to immediately stop the source and contain the pollution.

In all cases the incident shall be immediately reported to the general foreman who shall report it immediately to the site manager who will act as the incident controller. The Incident Controller shall coordinate resources to put the containment and mitigation plan in place. The Environmental Coordinator and Health and Safety Manager shall be informed immediately and shall assist in the supervision of the containment and mitigation plan as necessary.

The Environmental Coordinator (ECO) shall assist in post incident training, incident reporting / monitoring and documentation.

13.4 Specific Pollution Incidents:

Fuel or Oil entering a watercourse or drainage:

The response will depend on the amount of hydrocarbon spilt and the flow of the stream. As a general rule the following steps should be taken.

- Stop release of fuel by removing the source or by using plastic sheeting and bunding.
- Deploy an oil absorbent boom across the watercourse to contain the spill.
- Place oil absorbent mats on the water surface to absorb the oil. N.B. once used these are to be stored and disposed of as special waste. Impermeable gloves and boots and disposable overalls are to be worn.
- The above items can be found in the oil spill kit, these are located with foremen, environmental coordinator, store man and in the environmental emergency area in main stores.
- Contaminated water can also be pumped from the watercourse into a sealed container for disposal by a registered waste handler.
- Natural Resources Wales to be contacted: 0300 065 3000.



Fuel or Oil spillage on land:

- Stop release of fuel by removing the source or by using plastic sheeting and bunding.
- Excavate oil contaminated soil and place in an oil tight container. This must be disposed of by a specialist waste handler as hazardous waste.
- If spillage is onto a hard surface, all drains and gullies must be sealed immediately. Absorbent materials such as sand, sawdust, straw or oil absorbent granules/mats are to be placed over the contaminated area to soak up the spill. These should then be removed and stored and disposed of as special waste. Impermeable gloves and boots and disposable overalls are to be worn.
- The above items can be found in the oil spill kit, these are located with foremen, environmental coordinator, store man and in the environmental emergency area in main stores.
- Natural Resources Wales to be contacted: 0300 065 3000.

Spillage of chemicals:

- Where possible remove source of pollution.
- Obtain as much information on the chemical spilled as possible to evaluate the potential harm it could cause to staff and the environment.
- If it can be ascertained that there is no significant health and safety risk the chemicals should be dealt with as oil, above.
- If a potential health and safety risk is identified the area should be evacuated and the emergency services contacted.
- Natural Resources Wales to be contacted: 0300 065 3000)
- Silt entering a watercourse:
- Remove the source of the contamination by stopping silt contaminated water entering watercourses, ceasing works in or near watercourses or removing contaminating material from watercourses.

13.5 Other Environmental Incidents:

Discovery of protected plants or wildlife, e.g., badgers, otters, newts, birds etc:

- Cease work in area and contact Site Manager or ECoW. A mitigation strategy will be developed.

Discovery of archaeological remains:

- Cease work in area and contact Site Manager.

13.6 Environmental Response Equipment:

Spill kits are available from foremen's vehicles, Environmental Response Crews, site cabins, environmental coordinator, and the stores. Sandbags, straw bales, plastic sheeting, etc are available from the Environmental response area in the stores.

Environmental Response store inventory:

- Sandbags filled.



- Sandbags empty
- Straw bales
- Rolls of silt fence
- Roll of Terram.
- Roll of plastic sheeting.
- Wooden stakes
- Oil spill kits
- Pairs, plastic gloves

13.7 Incident Reporting:

All environmental incidents shall be reported to the Incident Controller immediately, they will then take the necessary action to ensure that the incident is dealt with and the responsible agencies (NRW, CADW, ENV Health, etc) are informed. The ECO and Project Manager must be informed so that they can take any measures required. The incident shall then be reported on form GEN/IR/001 Environmental Incident Report within 24 hours of the incident. The report shall include an explanation of the cause, the actions taken to mitigate the incident and proposals to prevent reoccurrence of the incident. Incidents shall be ranked in terms of their severity:

- Category A – Major incident i.e., release of polluting substance resulting in fish kill or serious environmental harm. Death of a protected species. Intervention of statutory authorities required. Incident to be notified to statutory authorities i.e., NRW 0300 065 3000.
- Category B – Spillage of 5l or more of polluting substance, silt contamination of a watercourse, extending past the site boundary. Incident to be notified to statutory authorities i.e., NRW 0300 065 3000.
- Category C – Minor incident – spillage of less than 5l of polluting substance, silt contamination of a watercourse which can be controlled by the time it reaches the site boundary. No requirement to notify NRW.
- Assessment of incident severity is subjective, and the discretion of the Incident Controller and ECO will be applied.

The Environmental Incident Report Form shall include the following information:

- Time, date, and location of the incident
- The root causes of the incident
- Actions taken to remedy the incident.
- Personnel involved.
- Third parties and statutory bodies involved.
- Procedures put in place to ensure there is no re-occurrence.

13.8 Reporting of Hazards:

A hazard is a situation of occurrence which has potential to cause environmental damage. For example – pumps not in drip trays, waste left on site, full concrete washouts, retained vegetation or archaeological remains not fenced or signed.

Hazards shall be reported to the section foreman or site agent immediately and corrective action shall be taken immediately. The Section Foreman / Site Agent shall complete form GENV/HR/001 Hazard Removed Report which shall be returned to the Environmental Clerk of Works. This form records the name of the person reporting the



hazard, the nature of the hazard and the corrective action taken. This is then signed off as complete by the ECoW or Project Manager. All hazard removed reports are entered into a quarterly prize draw where the person reporting the hazard has the opportunity to win a prize.

13.9 Near Miss Reporting:

A near miss is an occurrence or situation where there has been a breach of environmental procedures resulting in loss but there has not been a major environmental impact. For example – a concrete wagon has washed out at a location outside a concrete washout point but the contaminated water has not entered drainage or surface water; oil has leaked from plant or equipment but has not entered controlled waters.

Near misses shall be reported to the section foreman or site agent immediately and corrective action shall be taken immediately. The Section Foreman / Site Agent shall complete form GENV/NM/001 Near Miss Report which shall be returned to the Environmental Clerk of Works. This form records the name of the person reporting the hazard, the nature of the hazard and the corrective action taken. This is then signed off as complete by the ECoW or Project Manager. All near miss reports are entered into a quarterly prize draw where the person reporting the hazard has the opportunity to win a prize.

14. Training

All staff involved with the project shall be trained to a level to ensure that they are more than capable of carrying out their duties with minimal environmental impact. Training will be undertaken in the following forms:

14.1 Site Induction:

ALL personnel on the project shall undergo a site induction. This induction will include information on the environmental aspects of the works. The PCP / CEMP shall be completed by the ECoW immediately following award of contract and prior to works commencing on site. Using this document as a reference the ECoW shall prepare an induction package which addresses all of the aspects identified in this document. This training package shall include a presentation which transmits this information in an easy to digest format and which does not exceed 35 minutes in length.

Site Induction will include a briefing on the importance of the environmental / ecological features of the site, including the possible presence of great crested newts, reptiles, and mammals.

14.2 Formal Training:

Key personnel have Site Environmental Awareness Training (SEATS) certification.

14.3 Toolbox Talks:



Environmental Risk Assessments shall be carried out as part of the Method Statement process. The outcome of these risk assessments will be included within the Method Statement Toolbox Talk. These toolbox talks will include the actions required for working within and near designated sites and legally protected priority species.

Further Toolbox Talks shall be developed from the outcomes of site observations and Company Wide Environmental Bulletins. Toolbox talks from site observations shall be prepared by and delivered by the ECoW whilst Environmental Bulletins shall be prepared by Persimmon Environmental Manager and distributed to all site for delivery by the ECoW or the Site Agent.

15. Environmental Site Inspections:

Weekly Environmental site inspections shall be carried out by a designated individual who has the required level of competency and time to undertake these inspections. These will involve a site walk through, with a proforma of environmental risk points and other items which require inspection.

The findings of site inspections shall be recorded, with actions prioritised and actioned promptly. These inspection may be increased to daily during periods of wet weather, when there is an increased risk of silt pollution.

Quarterly Site Inspections will be carried out by an external Environmental Auditor.