

Bolney Green BESS

Construction Environmental Management Plan

Document prepared by Envams Ltd

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Contents

1	Introduction.....	1
1.1	Scope and Content	1
1.2	Proposed Works.....	1
1.3	Local Community Liaison	1
2	Environmental Clerk of Works	1
3	Site Induction	2
4	Working Hours	2
5	Construction Traffic	2
5.1	Construction Vehicle Types and Movements	2
5.2	Traffic Movements When Operational.....	1
5.3	Construction Access and Vehicle Routing	1
5.4	Delivery Management	1
5.5	Parking and Vehicle Manoeuvring	1
5.6	Loading and Unloading of Plant and Materials	2
5.7	Storage of Plant and Materials	2
5.8	Site Security and Hoarding	2
5.9	Wheel Washing and Protection of the Public Highway	2
5.10	Public Liaison and Complaints	3
5.11	Other Environmental Controls	3
6	Control of Lighting	3
7	Control of Noise and Vibration.....	4
8	Control of Water Pollution	4
8.1	Management of Runoff.....	5
8.2	Accidental Spillage.....	9
8.3	Storage and Use of Fuels and Chemicals.....	9
8.4	Use of Concrete	11
8.5	WORKS ADJACENT TO DRAINAGE FEATURES AND THE WATER ENVIRONMENT.....	12
8.6	Pollution Risk During Flooding	12
8.7	Management of Flood Risk During Dewatering	12
8.8	Management of contaminated groundwater and / or groundwater contamination during Dewatering	13
9	Control of Air Quality and Dust.....	13
10	Control of Waste	13

10.1	Welfare Facilities	14
10.2	Other General Refuse	14
10.3	Waste Chemicals, Fuels and Oils	14
10.4	Packaging	14
10.5	Waste Metals	14
11	Other Control Measures	15
11.1	Emergencies and Monitoring	15
11.2	Safety and Security	15

1 INTRODUCTION

1.1 SCOPE AND CONTENT

This Construction Environmental Management Plan (CEMP) has been prepared by Envams for Elements Green Ltd ('the Applicant') in support of a planning application for the Bolney Green BESS ('the Development'). The Development would be situated approximately 3.4 kilometres (km) southwest of Bolney, and approximately 3.9 km northeast of Henfield (the Site), centred on grid reference NGR 523718, 120649.

This CEMP provides information about the controls required during construction to avoid, minimise or mitigate any construction effects on the environment.

The CEMP will be a 'live' document and will be monitored regularly throughout the construction phase to ensure good practice is applied and the mitigation measures contained within it remain appropriate.

The methods set out in this CEMP are based on good practice.

1.2 PROPOSED WORKS

The Development will comprise of:

- 184 Battery Energy Storage System (BESS) containers
- 46 inverter containers
- 2 DNO rooms
- 2 operator rooms
- 2 transformers
- associated switch yards and BESS ancillary infrastructure

Access to the Site will be taken from the west of the Site from Wineham Lane at National Grid Reference (NGR) 523611, 120698.

SuDS provisions and ecological and landscape mitigation have been integrated into the design as well as proposals that will achieve significant biodiversity enhancement.

1.3 LOCAL COMMUNITY LIAISON

The Applicant or the appointed contractor will identify an individual to be the first point of contact for local residents. They will be available to liaise with members of the local community to ensure any concerns are addressed quickly and resolved efficiently.

2 ENVIRONMENTAL CLERK OF WORKS

An EnvCoW will be appointed prior to the enabling and construction phases and up to the end of the construction period.

The appointed EnvCoW should be accredited with the Association of Environmental and Ecological Clerk of Works (AEECoW) and should have relevant knowledge and experience to provide advice and monitor compliance with measures for the protection of water quality in relation to abstractions for water supply as well as ecological protection. For the avoidance of doubt, the use of the term EnvCoW, here, includes the more traditional role of the Ecological Clerk of Works (ECoW).

The Principal Contractor will work with the EnvCoW to ensure compliance with relevant legislation for protected species and habitats.

The EnvCoW scope of works is likely to include:

- Monitoring compliance with this CEMP;
- Providing advice on adequate protection of nature conservation interests on the Site;
- Providing contractors with tool-box talks about relevant legally protected species and their habitats;

- Ensuring any required protected species licensing is in place and providing advice and monitoring compliance with licence conditions; and
- Ensuring all measures relating to biodiversity and landscape planting are undertaken, monitored and remediated where necessary.

3 SITE INDUCTION

All visitors to Site during the construction phase will be required to undertake a site induction on arrival. The induction will be required for all deliveries, operatives, subcontractors and others visiting the Site during the construction period.

The induction will be undertaken by the Principal Contractor, and other parties, as required. The induction will include emergency procedures, assembly points, first aid, Site rules, location of welfare facilities, policies, contacts, environmental constraints and protection, details of any protected species licences and working methodologies at this time. This list is not exhaustive and is indicative of the elements that should be included within the Site induction.

All visitors to Site will be instructed to sign in and out at the Site access each day.

4 WORKING HOURS

Construction working hours will be from 07:00 to 19:00 Monday to Saturday.

Where on-site works are to be conducted outside the core working hours, i.e., in exceptional circumstances, these works will comply with the limits and controls detailed in this CEMP. Exceptional circumstances include where curtailment of works would increase risk to humans or wildlife, or where continuity of works is required over a longer period of time than allowed by the construction hours, such as the unloading of abnormal loads or commissioning works. These circumstances would be notified to the Council(s) and publicised via the community liaison in advance, where practicable.

5 CONSTRUCTION TRAFFIC

5.1 CONSTRUCTION VEHICLE TYPES AND MOVEMENTS

Construction of the Development will generate vehicle movements associated with site personnel, the delivery of plant and materials, installation of BESS and electrical infrastructure, and the removal of waste.

Vehicles anticipated to access the Site during construction include:

- Cars, vans, pick-ups and other light vehicles used by construction personnel, visitors and for smaller deliveries;
- Rigid HGVs and tipper vehicles associated with earthworks and the delivery of aggregate, concrete and general construction materials;
- Articulated HGVs used to transport BESS units and other prefabricated equipment;
- Specialist vehicles associated with transformers and other electrical components;
- Mobile cranes and associated support vehicles; and
- Servicing vehicles, including fuel, water and waste collection vehicles.

The number and frequency of vehicle movements will vary throughout the construction programme, with higher levels of HGV activity anticipated during the main civil works and installation of BESS and electrical equipment. Prior to commencement of the relevant works, the Principal Contractor will prepare and maintain a delivery programme identifying the expected number, type and timing of significant construction deliveries. An indicative programme is detailed below in Table 1.

To provide a conservative allowance for variations in construction logistics and delivery requirements, the forecast construction vehicle movements presented in Table 1 include a 10% contingency above the currently anticipated traffic movements.

Table 1: Indicative Vehicle Movements

Activity	Month															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
BESS Containers									74	74	36					184
Inverter Containers							30	16								46
DNO Rooms, Operator Rooms & Transformers	4										2					6
Aggregate and concrete	20	20	20	20	40	50	60	70								300
Cable, misc. mechanical and electrical supplies								4	4	6	8	6	6	6		40
Fuel and drinking water delivery	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	30
Delivery of crane	1								1	1		1				4
HGV movements per month	30	25	25	25	47	58	102	102	90	92	53	10	9	9	3	680
Site personnel movements per month	33	33	33	33	55	55	55	55	77	77	77	77	44	44	44	792
Total vehicle movements per month	63	58	58	58	102	113	157	157	167	169	130	87	53	53	47	1472
Average HGVs per day	1.5	1.2	1.2	1.2	2.4	2.9	5.1	5.1	4.5	4.6	2.6	0.5	0.5	0.5	0.1	-
Average site personnel per day	1.6	1.6	1.6	1.6	2.8	2.8	2.8	2.8	3.9	3.9	3.9	3.9	2.2	2.2	2.2	-
Average total movements per day	3.1	2.9	2.9	2.9	5.1	5.7	7.8	7.8	8.3	8.4	6.5	4.3	2.6	2.6	2.4	-

Significant deliveries will be planned in advance and coordinated by the Site Manager or other nominated member of the construction team. A delivery schedule will be maintained to avoid unnecessary concentrations of HGV movements and, where practicable, deliveries will be timed to avoid the busiest periods on the local highway network.

5.2 TRAFFIC MOVEMENTS WHEN OPERATIONAL

Once operational the proposed development will generate infrequent vehicular trips, consisting of visits to the site by a light van or car one or two times a month, representing an insignificant increase in travel generation lower than that associated with a single residential dwelling. More frequent visits, potentially by vehicles as large as a standard HGV, may arise in the event of a requirement to replace equipment within the site, the majority of which is modular in nature.

5.3 CONSTRUCTION ACCESS AND VEHICLE ROUTING

Construction vehicles will access the Site from Wineham Lane via the Site access at NGR 523611, 120698.

A defined route between the Site and the appropriate strategic highway network will be established for construction HGVs. The agreed route will be communicated to contractors and suppliers before deliveries take place, and drivers will be instructed not to use unsuitable local roads as alternative routes or shortcuts.

Route information will be incorporated into relevant contractor and supplier documentation and provided to delivery drivers in advance where appropriate.

Where temporary traffic management measures are required to facilitate particular construction activities or deliveries, these will be agreed with the relevant Highway Authority prior to implementation. Any Temporary Traffic Regulation Order required in connection with the construction works will be secured prior to the activity to which it relates.

5.4 DELIVERY MANAGEMENT

The timing of significant deliveries will be coordinated with the construction programme and other activities taking place within the Site. Delivery planning will take account of the capacity of the Site to receive and unload vehicles, other scheduled deliveries and traffic conditions on the surrounding highway network.

Sufficient intervals will be provided between significant deliveries where necessary to avoid vehicles arriving simultaneously. Construction vehicles will not be permitted to wait or queue on the public highway. Where a delivery cannot immediately be accommodated within the Site, it will be rescheduled or directed to an appropriate off-highway holding location.

5.5 PARKING AND VEHICLE MANOEUVRING

Parking for construction personnel and visitors will be provided within the Site. Construction-related parking on Wineham Lane or other nearby public roads will not be permitted. Site personnel will be encouraged to share vehicles where reasonably practicable to reduce the number of construction-related journeys.

The internal construction layout will provide sufficient space for construction vehicles to manoeuvre safely. Wherever reasonably practicable, vehicles will enter and leave the Site in forward gear.

Reversing movements will be minimised. Where reversing or other restricted manoeuvring is unavoidable, a trained banksman or other competent person will assist the driver where necessary.

Appropriate speed restrictions will apply within the construction area and will be communicated through site induction and signage. Compliance will be monitored by the Site Manager.

5.6 LOADING AND UNLOADING OF PLANT AND MATERIALS

All routine loading and unloading associated with construction will take place within the Site and clear of the public highway.

Designated areas will be provided for the receipt and unloading of construction materials. Where appropriate, plant and equipment may be unloaded immediately adjacent to its proposed installation location, provided this can be undertaken safely and without obstructing other construction traffic.

The timing and location of loading and unloading activities will be coordinated by the Site Manager. A banksman or other competent person will supervise movements involving large or restricted-visibility vehicles where required.

Appropriate task-specific risk assessments and method statements will be prepared for the unloading, lifting and installation of BESS units, transformers and other major electrical infrastructure.

5.7 STORAGE OF PLANT AND MATERIALS

Construction plant and materials will be stored within designated areas of the Site. Storage areas will be arranged so as not to obstruct construction access routes, vehicle turning areas or emergency access.

Materials will be stored safely and securely and, where necessary, covered or otherwise contained to prevent the generation of dust, wind-blown material or contaminated runoff. Storage areas will avoid drainage features and significant surface-water flow routes.

Fuels, oils and other potentially polluting materials will be stored and handled in accordance with the pollution prevention measures set out elsewhere within this CEMP.

5.8 SITE SECURITY AND HOARDING

The construction Site will be secured throughout the works using suitable temporary fencing, gates and, where necessary, hoarding.

Security measures will be regularly inspected by the Principal Contractor and repaired or replaced where necessary. Site access points will be secured when construction activities are not taking place.

Appropriate health and safety signage and contact information for the Site Manager will be displayed prominently at or close to the principal construction entrance.

Where acoustic hoarding is required to control noise from particular construction activities, this will be installed and maintained in accordance with the relevant noise mitigation requirements.

5.9 WHEEL WASHING AND PROTECTION OF THE PUBLIC HIGHWAY

Construction activities will be managed to minimise the transfer of mud, soil and other material from the Site onto the public highway.

Wheel-cleaning facilities will be provided where required and positioned so that vehicles can be cleaned before reaching the public highway. Facilities will be regularly inspected and maintained to ensure their continued effectiveness.

The Site access and adjoining highway will be monitored during construction for mud, debris or other material attributable to the works. Where deposits are identified, they will be removed promptly. Mechanical road sweeping will be employed where necessary.

Vehicles carrying loose waste or other materials with the potential to escape during transport will be appropriately covered.

The condition of the Site access and immediately adjoining public highway will also be monitored during construction. Where damage is demonstrably attributable to construction traffic associated with the Development, appropriate remedial measures will be agreed with the relevant Highway Authority.

5.10 PUBLIC LIAISON AND COMPLAINTS

The Applicant or Principal Contractor will nominate a Site Manager or other suitably responsible person to act as the principal point of contact for construction-related enquiries and complaints.

Prior to commencement of the main construction works, appropriate information will be provided to nearby residents and occupiers regarding the anticipated construction programme, normal working hours and the nature of activities likely to result in noticeable traffic, noise or dust.

Where construction activities are expected to result in an unusual short-term effect, such as a significant plant delivery or temporary traffic management, advance notification will be provided to potentially affected parties, where reasonably practicable.

Site contact details will be displayed prominently at the construction entrance and made available to the relevant planning authority.

Any complaints associated with construction activities will be recorded and investigated promptly. Where investigation identifies that additional mitigation or changes to working practices are reasonably required, these will be implemented as soon as practicable.

The current site manager can be contacted at the following email address: donna.cooper@lbsab.se Further details will be provided, as necessary, in an updated CEMP prior to the commencement of development.

5.11 OTHER ENVIRONMENTAL CONTROLS

Construction traffic and logistics activities will be undertaken in accordance with the wider environmental controls set out within this CEMP.

Measures for the control of construction noise and vibration will apply to vehicle movements, plant operation, loading and unloading and other associated activities. Temporary and security lighting associated with construction traffic and working areas will be positioned and operated to minimise unnecessary light spill and effects on nearby receptors.

Pollution incidents associated with vehicles, plant, fuels or materials will be managed in accordance with the pollution prevention and emergency response procedures set out within this CEMP.

Dust-generating activities associated with construction traffic, haul routes, earthworks and the handling or storage of materials will be managed in accordance with the dust and air quality control measures set out within this CEMP.

6 CONTROL OF LIGHTING

Depending on the time of year, some work lighting may be required for security and to facilitate construction during the hours set out in Section 4. There will be no continuous lighting at the Site.

The vast majority of construction activities will be undertaken during daylight hours. In winter, the short daylight hours may require some temporary lighting to be deployed during construction however this will be avoided as far as practicable, and limited to where it is required for safety.

All construction lighting will be deployed in accordance with the following recommendations to reduce or remove impacts on human and ecological receptors:

- The use of lighting will be minimised to that required for safe site operations;
- Lighting will utilise directional fittings to minimise outward light spill and glare, e.g., via the use of light hoods/cowls which direct light below the horizontal plane (preferably at an angle greater than 20° from horizontal);
- Lighting will be directed within the Site rather than towards the boundaries; and
- All site lighting (if required) will be directed to the area of works and light spill minimised.

Motion-sensors will be used to trigger security systems, including remotely monitored cameras and lighting. This security lighting will be used only in response to the motion sensors, and thus will generally not be lit.

Commented [CM1]: "details of public engagement both prior to and during construction works, including site contact details in case of complaints" - Is this a request to have contact details presented in this CEMP?

Commented [ES1R2]: Yes please include details such as name and email and ideally a phone number - it is required by the condition

Commented [DC1R3]: Can add my info as the PM, but not sure who will be the site manager at this point. Use my email address donna.cooper@lbsab.se. Would prefer not to add my number at this stage unless absolutely critical

7 CONTROL OF NOISE AND VIBRATION

Materials would be delivered to the construction compound during the working hours set out in Section 4, above.

The Contractor shall adopt Best Practicable Means (BPM) during the construction works to minimise and control noise and vibration at source (e.g. the selection of inherently quiet plant and low vibration equipment) and at nearby noise sensitive receptors and shall adhere to the requirements set out in British Standard BS 5228 (Part 1 Noise and Part 2 Vibration).

The Contractor shall ensure that all appropriate processes, procedures and measures are in place to minimise noise before works begin and throughout the construction programme. This includes review of the construction programme and methodology to consider quieter methods, consideration of the location of equipment on-site and control of working hours.

Noise and vibration reduction and minimisation may be achieved through the use of certain construction methods, careful timing of noisy works, control of working hours and use of inherently quiet plant and low vibration equipment. The Community Liaison Officer will contact the occupiers of sensitive receptors that may be adversely affected by construction noise and vibration prior to works commencing. All communications will contain contact details of the relevant person to whom any questions or complaints relating to noise should be directed.

Mitigation measures to be implemented by all staff and subcontractors include:

- Use of modern and well maintained plant which complies with applicable UK noise emission requirements
- Regular and effective maintenance of plant and equipment by trained personnel
- All construction plant and equipment is silenced where appropriate and operated in a way which prevents excessive noise
- Switching off plant when not in use
- Always using plant in accordance with manufacturers' instructions
- Heavy ground works (i.e., noise generating activities such as excavation and piling) will not take place within 30 m of residential properties before 08:00 or after 18:00 on any weekday, or within 50 m of residential properties before 08:00 or after 13:00 on a Saturday. Stationary plant that may need to be operated outside of these reduced working hours (such as pumps or generators) will be located sufficiently far away from residential properties so as not to cause disturbance.
- Starting up, plant and vehicles sequentially rather than all together
- Avoiding unnecessary revving of engines
- Minimising the drop height of materials
- Using off-site pre-fabrication where practicable
- Use of hydraulic techniques for ground breaking in preference to percussive techniques where reasonably practicable
- Use of local screening around plant and activities which produce significant noise
- All vehicles used on-site shall incorporate reversing warning devices rather than typical tonal reversing alarms

Care will be taken to site equipment away from noise-sensitive areas. Loading and unloading of vehicles, dismantling of site equipment or moving equipment or materials around the Order limits by all staff and subcontractor is to be conducted in such a manner as to minimise noise generation, as far as reasonably practicable.

8 CONTROL OF WATER POLLUTION

The management of construction site runoff and spillages to surface water features will be carefully managed to avoid adverse environmental impacts by preventing pollution.

Any measures implemented will be monitored and maintained appropriately to ensure they remain effective runoff.

The permanent surface water drainage arrangements for the Development are detailed within the Bolney Green BESS Surface Water Drainage Strategy (the "SWDS").

The permanent drainage strategy will capture surface water runoff generated by the Development and convey it via a series of manholes and a pipe network to three swales and

a detention basin. Discharge from the detention basin will be controlled by a HydroBrake, or similar flow control device, to the greenfield runoff rate of 16.7 l/s, before discharging to the existing private surface water sewer located south of the Site.

The permanent drainage system has been designed to accommodate the 1 in 100-year rainfall event plus a 45% allowance for climate change. In the event that the design storm is exceeded, flows will follow the natural topography of the Site towards the existing land drainage network.

8.1 MANAGEMENT OF RUNOFF

The following measures will be implemented:

- Prior to the commencement of works in any part of the site, the Contractor(s) will prepare a temporary works drainage strategy in response to the timing and location of the works. The temporary works drainage strategy will define the drainage measures, as set out in this CEMP, which are proposed to be used to intercept runoff and ensure that discharge and runoff rates are controlled in quality and volume causing no degradation to water quality. This may include specific measures to be used in high-risk areas (for example topographic low points where water may collect, wetter ground during the winter months and working areas closer to watercourses such as watercourse crossings). The temporary works drainage strategy will take account of the permanent drainage arrangements set out within the SWDS and will ensure that temporary construction drainage does not prejudice the construction, operation or effectiveness of the permanent drainage system.
- Topsoil stripping shall be undertaken outside of the winter period (October to March inclusive) where practical during which wetter weather is more likely.
- Topsoil and subsoil will be stored a minimum of 20 m from the watercourse, with additional mitigation such as silt fences installed if there is a risk of sediment entering the watercourse. No topsoil or subsoil will be stored within a fluvial or surface water flood zone (flood zone 2 and 3) unless supported by a risk assessment (i.e., consideration of weather forecast and duration of storage) and additional mitigation (i.e., drainage bypass channel for overland flow). Where site constraints mean that it is not possible to maintain a 20 metre buffer from a water body, additional mitigation measures will be implemented to provide an adequate barrier between the potential source of contaminated runoff and the receptor.
- Short term periods of wet weather will be avoided when undertaking earth moving works, if possible, to minimise the risk of generating runoff contaminated with fine particulates.
- Vegetation clearance and topsoil strip shall be limited as much as practicable. Where possible, vegetation clearance across the Development will be phased to minimise the areas of exposed ground and reduce the potential risk for runoff.
- Depending on ground conditions and weather conditions a geotextile membrane and stone surface and/or bog-mats may be used in selected areas. The geotextile will need to be regularly monitored and any excessive build-up of fine sediment will need to be removed.

Good practice will be followed prior to placement of silt traps adjacent to watercourses and land drains. Silt matting may be placed at the outfall of settlement lagoons to filter sediment during times of heavy rainfall. Semi-permeable structures may be placed in drainage channels to intercept silt.

Silt traps may be utilised to trap and filter sediment-laden runoff from excavation works at the Development, including foundations and access roads.

Figure 1 shows an example of silt matting.

Figure 1: Typical silt mat to be placed at lagoon outfalls



The effectiveness of fine sediment control measures must be continually monitored, managed and adapted to the Site-specific needs at any given time (e.g., build-up of silt in temporary construction SuDS or against fabric silt fences, or the decomposition of straw bales).

Appropriately sized runoff storage areas for the settlement of excessive fine particulates in runoff will be provided. The Contractor(s) will need to monitor the build-up of fine sediment in temporary construction SuDS and either remove sediment or provide replacement measures when the storage areas become ineffective.

Settlement lagoons will be implemented where appropriate. These would typically be located around foundations and hardstanding areas. Settlement lagoons will be actively managed to control water levels and ensure that any runoff is contained, especially during times of rainfall. Further measures may be implemented to achieve the necessary quality of the runoff. This could be achieved via the use of flocculent to facilitate the settlement of suspended solids.

Figure 2 shows an example of a typical settlement lagoon and flocculent station.

Figure 2: Settlement lagoon and flocculent station



The sides of lagoons will be lined to reduce the potential for erosion and collapse.

Settlement lagoon outflow will be inspected regularly, and discharge may be pumped, when required, for maintenance purposes. Pumping activities will be supervised and authorised by the Contractor's Project Manager.

Treated water will be discharged onto vegetated surfaces and directed away from surface watercourses. Within all catchments, irrigation techniques, which may include the use of perforated discharge hoses, or similar, will be employed to rapidly distribute discharge across a vegetated area.

'Siltbusters' will be used to treat pumped/surplus water from lagoons during periods of heavy or persistent rainfall. Figure 3 shows a settlement lagoon and 'Siltbuster'.

Figure 3: Typical 'Siltbuster' and settlement lagoon



Silt mats may be used at the outfalls of settlement lagoons to further aid the settlement from earthworks drainage.

Discharges from settlement lagoons will be sampled and monitored during wet weather to limit the potential for suspended solids to be transferred to the wider hydrological environment.

Mud deposits will be controlled at entry and exits to the Site using wheel washing facilities and / or road sweepers operating during earthworks or other times as considered necessary. The wash down of construction vehicles and equipment shall take place in designated washdown areas within construction compounds.

Should debris be spread on to the site access or public road adjacent to the Development, then road sweepers will be quickly utilised to clean affected areas. Loose debris will also be periodically removed from site tracks. Regular inspection and maintenance of wheel wash facilities will be carried out to ensure effective operation.

Wheel wash facilities will be located within a designated area of hardstanding at least 50 m from the nearest watercourse or 20 m from the nearest surface water drain. No direct discharge of wheel wash water to surface water drains or waterbodies will be permitted.

Waste wash water shall be prevented from passing untreated into watercourses or groundwater. Appropriate measures will include use of sediment traps to allow suspended solids to settle before reuse or disposal.

Tools and heavy plant to be washed down and cleaned in designated areas on Site only. At all wash down locations, the wash down water will be collected for treatment before discharge to surface water drainage under appropriate consent and/ or agreement with Environment Agency or otherwise removed from Site for appropriate disposal at a licenced waste facility.

Debris and other material will be prevented from entering temporary surface water drainage, through maintenance of a clean and tidy Site, provision of clearly labelled waste receptacles, grid covers and the presence of Site security fencing.

Any material imported to site, such as for supporting foundations, will be natural quarried stone or, if recycled, the material will undergo chemical testing. The suite of contaminants and site use criteria will be agreed with regulatory authorities, in order to demonstrate that the material is suitable for use on site and does not pose a risk to construction workers or the environment.

Works will be stopped immediately and reviewed if silt plumes are identified within the watercourse/ water body as a result of operations involved with the works.

Soil stockpiles will be no nearer than 20 m from any watercourse and will be either covered, fenced or seeded with grass to prevent wind whipping or runoff from them becoming contaminated with excess fine sediment. Earthworks and exposed areas / soil stockpile shall be re-vegetated as soon as practicable to stabilise the surface.

If necessary, temporary trackways (e.g., track matting) may be used to reduce the risk of rutting in areas without permanent tracks that could lead to soil erosion and runoff, particularly during wet weather. Generally, vehicles that would undertake construction activities off permanent tracks would result in similar impacts to those caused by agricultural vehicles in the existing arable baseline.

If heavily trafficked areas of the site without permanent tracks are at risk of rutting within 10 m of a watercourse, then temporary track matting will be deployed in that area to prevent rutting. An example of track matting is provided in Figure 4.

Figure 4: Typical Track Matting



8.2 ACCIDENTAL SPILLAGE

Spill kits will be available on the Development Site in watertight containers at key locations (such as at compounds, especially next to oil storage or refuelling locations) and locations where there is a risk to a water feature) and carried on all mobile plant.

The Construction Management Team is responsible for ensuring that spill kits are checked regularly and kept fully stocked and in good repair. Appropriate training will be given to all construction workers in their use, and they shall be sized appropriately for the task being undertaken.

In the event of an accidental release of fuel, oil, coolant or other potentially polluting substance, measures will be taken immediately to prevent the release entering the Site drainage system or wider water environment. Where available, drainage isolation measures will be used to contain potentially contaminated liquids pending appropriate recovery, treatment and/or disposal.

8.3 STORAGE AND USE OF FUELS AND CHEMICALS

Storage of fuel / chemicals will be in accordance with The Control of Pollution (Oil Storage) (England) Regulations 2001 & Guidance for Pollution Prevention (GPP) 8: Safe storage and disposal of used oils. Environment Agency guidance on oil storage regulations for business and preventing groundwater pollution from underground fuel storage tanks will be complied with. Within the construction compounds specific areas will be designated for the storage of chemicals, waste oils and fuel and refuelling activities and will be placed on secondary containment e.g., double walled tanks or bunded areas with a capacity of 110% of the maximum stored volume.

Storage and Handling: Oil/ diesel storage (including fixed tanks, IBCs, mobile bowsters and generators) will be placed at least 20 m from any watercourse (including drains) and 50 m from any borehole/ well (nominal minimum 50 m provided around all licensed abstractions). Drip trays will be checked and emptied daily and will retain at least 10% of the volume being handled. Daily inspections will be undertaken of plant using hydraulic oils. Storage containers will be correctly labelled. Storage areas will be kept secure to prevent acts of vandalism which may result in leaks/ spills. Appropriate measures will be implemented to ensure that any spillage cannot drain to a nearby water body directly or indirectly.

Where practicable, plant is to be filled with biodegradable oil, in line with the plant manufacturer's instruction, to reduce the potential for pollution to watercourses in the event of a hydraulic oil pipe failure.

All plant will have thorough plant examination certificates. Trained and designated refuelling personnel will be appointed for the Project. Refuelling will be observed by a banksman, and with a drip tray or plant nappy placed under the refuelling connections. Vehicles and plant will not be left unattended during refuelling. Refuelling will be undertaken in line with Project specific procedures. Fuel delivery vehicles servicing the site will only be allowed as far as the construction compounds. The construction compounds will include a bunded refuelling area, and operations will only be permitted where they comply with the Contractor's method statements.

All chemicals are to be stored in lockable containers which are double bunded. A designated COSHH co-ordinator will be appointed for the project. A COSHH risk assessment register will be completed before any COSHH is used on Site.

Only construction equipment and vehicles free of oil / fuel leaks which could cause material contamination will be permitted on Site. Drip trays will be placed below static mechanical plant. Any plant, machinery or vehicles will be regularly inspected and maintained to ensure they are in good working order and clean for use in a sensitive environment. This maintenance is to take place off site if possible or only at designated areas in the compounds. All maintenance will be conducted over drip trays or suitably absorbent spill pads to minimise the potential for groundwater and surface water pollution. All machinery will be equipped with drip pans to contain minor fuel spillage or equipment leakages. Figure 5 show examples of drip trays.

Figure 5: Drip trays and pads to limit uncontained chemical spillages



Construction waste / debris is to be prevented from entering any surface water drainage or water body.

Loose materials will be removed / stored correctly from within the work areas to prevent them being thrown into the watercourse.

All wash down of vehicles (including wheel washing) and equipment will take place in designated areas, and wash water will be prevented from passing untreated into watercourses (directly or indirectly via drains) and groundwater. It will be adequately contained, prevented from entering any drain, and disposed of off-site at a suitably licenced

waste facility using an accredited waste disposal company. It may also be disposed of to the foul sewer only with prior, written consent from the local sewerage undertaker.

Where practicable, utility supplies will be taken from main supply utility connections, however where this is not possible, utilities will be provided from temporary facilities such as water bowzers, local wastewater storage and transport of waste and wastewater to an approved off-site disposal point. Provision of potable water, emptying of effluent and the removal of any waste would be undertaken by a registered contractor on a regular basis.

Adequately protect the Site area from vandalism, theft and fly-tipping by fencing and locking access gates to discourage unauthorised access. Any occurrence of fly-tipping on the site will be reported to the site management who will then inform the local environmental authority and the police if necessary.

No plant will be left within the work areas unless within a secure locked steel container and / or it is fitted with an isolator switch that is lockable.

Any plant stored at a works location with risk of flooding will be stored at the highest point possible close to the works area.

In addition to the construction-phase controls above, elements of the Development which require the use of coolant or lubricants will be provided with concrete or lined earth embankments/containment walls with a capacity of 110% of the volume being contained, in accordance with the SWDS. The bunds will incorporate a penstock to ensure that, in the event of non-fugitive leaks, liquids can be contained and isolated from the surface water drainage system.

8.4 USE OF CONCRETE

When mixing grout on Site, this must be done on an impervious surface and a suitable barrier must be constructed around the mixing areas, supply lines and around working areas to prevent its escape.

Trucks, hoppers, mixers and concrete pumps that have contained concrete must be washed out in a contained area and sited away from any watercourses or drainage channels to prevent accidental escapes of liquid or slurries to the water environment (at least 20 m).

Wash down water arising from the washing of equipment that has come into contact with concrete must be collected in an impervious container and, if possible, treated to enable recycling/re-use within the wash down area or concrete batching process.

If possible, wash water shall be allowed to dry out leaving solid concrete residue that can either be removed for re-used as general fill or treated as waste and disposed-off accordingly. Where there is too much wash water or when it is unlikely to dry out naturally, the wash water shall be sent off-site to a licenced facility for appropriate treatment and/or disposal. If disposal to one of the watercourses on site is proposed this will require additional treatment (e.g. pH correction) and a Water Activity Permit from the Environment Agency.

No washing out of delivery vehicles to take place on site without suitable provision for the washing out water and provision of a suitable location that is lined with a geotextile to prevent infiltration to ground. Such washing would not be allowed to flow into any drain, watercourse or other water feature.

Wash water would be adequately contained, prevented from entering any drain/watercourse, and removed from site for appropriate disposal at a suitably licenced waste facility or otherwise treated and discharge under any required consent from the Environment Agency.

It is important that all concrete pours are planned, and that specific procedures are adopted where there may be a risk of surface water or groundwater contamination. These procedures may include, but not be limited to:

- Ensuring that all excavations are sufficiently dewatered before concrete pours begin and that dewatering continues while the concrete cures, noting that fresh concrete will be isolated from the dewatering system;
- Using blinding concrete layer to ensure a quick curing process;

- Using an impermeable geotextile wrapping layer around the foundation - i.e. line the shuttering with the geotextile layer, therefore limiting the contact between groundwater / near-surface water and the foundation;
- Treating the outer concrete with a protective layer;
- Choosing the right concrete composition to make it as impermeable as possible; and
- Ensuring that covers are available for freshly placed concrete to avoid the surface of the concrete washing away during heavy precipitation.

8.5 WORKS ADJACENT TO DRAINAGE FEATURES AND THE WATER ENVIRONMENT

The permanent surface water drainage system will discharge to the existing private surface water sewer located south of the Site. The Contractor(s) will ensure that construction activities do not result in uncontrolled discharge of sediment-laden or contaminated runoff to either the permanent drainage system or the surrounding water environment.

Where construction works are undertaken close to drainage features, water bodies or areas of concentrated surface water flow, appropriate pollution prevention measures will be implemented to prevent sediment, chemicals, fuels, concrete or other potentially polluting materials entering the water environment.

Where temporary management, diversion or pumping of water is required, an appropriate method statement will be prepared prior to commencement of those works. Measures will be selected to avoid erosion, sediment mobilisation, increased flood risk or adverse effects on downstream receptors, and any necessary permits, consents or approvals will be obtained from the relevant regulatory authority.

Plant, equipment and materials will not be left within drainage features or areas at risk of flooding when works are not being undertaken. Any temporary disturbance to drainage features will be reinstated and stabilised as soon as practicable following completion of the relevant works.

8.6 POLLUTION RISK DURING FLOODING

Earth moving works and excavations shall, where possible, be undertaken during the drier months of the year (typically spring to early autumn).

Areas of vegetation clearance and top-soil strip shall be limited as much as practicable. Where possible, vegetation clearance across the Site will be phased to minimise the areas of exposed ground and reduce the potential risk for runoff.

The location of earth or other material stockpiles or other potentially higher risk activities (e.g., compounds etc.) are to be located in as low a flood risk area as is possible by the site and works constraints.

Where there are shallow excavations for compounds and above ground infrastructure, and more widespread site clearance, these shall be constructed during the drier months of the year where practical and seeded with grass as soon as possible to bind soil and reduce risk of erosion during a flood event.

The permanent SuDS system has been designed to accommodate the 1 in 100-year rainfall event plus a 45% allowance for climate change. Where rainfall exceeds the design event, exceedance flows are anticipated to follow the natural topography of the Site towards the existing land drainage network and ultimately the watercourse east of the Site. The Contractor(s) will ensure that temporary construction compounds, stockpiles, plant and materials do not unnecessarily obstruct these overland flow routes or create new preferential pathways for potentially contaminated runoff.

8.7 MANAGEMENT OF FLOOD RISK DURING DEWATERING

Dewatering will not take place during heavy rainfall and/ or high flows and will cease until heavy rainfall has stopped.

All dewatering activities will only occur once the appropriate permissions have been obtained from the Environment Agency.

8.8 MANAGEMENT OF CONTAMINATED GROUNDWATER AND / OR GROUNDWATER CONTAMINATION DURING DEWATERING

Dewatering of excavations may be required during construction where groundwater or surface water ingress occurs. Where water accumulates within excavations, it will be managed in a manner that avoids pollution of groundwater or surface water and does not result in erosion or sediment mobilisation.

Where dewatering is required, an appropriate dewatering methodology will be developed prior to works commencing and, where necessary, agreed with the Environment Agency and other relevant stakeholders. Any such assessment will consider the effects of any draw down or impacts on nearby abstractions or resources.

Furthermore, good practice guidance and pollution prevention measures will be implemented across all excavation sites to ensure groundwater is not contaminated by any dewatering activities.

9 CONTROL OF AIR QUALITY AND DUST

The following mitigation measures will be applied to minimise impacts to air quality from vehicles, machinery and plant during construction:

- All vehicles, plant and machinery are to be well maintained. If any emissions of dark smoke occur then the relevant machinery will stop immediately and any problems rectified; and
- Engines will be turned off when not in use.

Good practice measures will be adopted during construction to control the generation and dispersion of dust such that significant impacts on neighbouring habitats or receptors will not occur. The hierarchy for mitigation will be prevention, suppression then containment.

The following mitigation measures will be applied to ensure there are no impacts to air quality should dust be generated during construction:

- Use of enclosed chutes, conveyors and covered skips;
- Shielding of dust-generating activities;
- Covering vehicles carrying dry spoil and other wastes to prevent escape of materials;
- Provision of wheel washing and wet suppression during loading of wagons/vehicles;
- Daily visual inspections will be undertaken to assess the condition of any in-use junctions of the site tracks with public roads.
- Excavation and earthworks areas will be stripped as required in order to minimise exposed areas;
- During excavation works, drop heights from buckets will be minimised to control the fall of materials reducing dust escape;
- Completed earthworks and other exposed areas will be covered with topsoil and re-vegetated as soon as it is practical in order to stabilise surfaces;
- During stockpiling of loose materials, stockpiles shall exist for the shortest possible time;
- Material stockpiles will be low mounds without steep sides or sharp changes in shape;
- Material stockpiles will be located away from the site boundary, sensitive receptors, watercourses and surface drains;
- Material stockpiles will be sited to account for the predominant wind direction and the location of sensitive receptors;
- Water bowsers will be available on site and utilised for dust suppression during roadworks/ vehicle movements when and where required; and
- Daily visual inspections will be undertaken to assess need for use of water bowsers, with increased frequency when activities with high potential to generate dust are carried out during prolonged dry or windy conditions.

10 CONTROL OF WASTE

During the construction phase, measures will be implemented to minimise the generation of waste and maximise the reuse and recycling of materials where reasonably practicable.

The principal waste streams anticipated during construction include:

- Waste arising from welfare and domestic facilities;
- Waste chemicals, fuels and oils;
- Packaging and other general construction waste; and
- Surplus construction materials.

Waste will be managed in accordance with the waste hierarchy, with priority given to prevention and reduction, followed by reuse and recycling wherever practicable.

Suitable facilities will be provided for the segregation and temporary storage of waste generated during construction. Waste storage areas and containers will be appropriately located, clearly identified and, where necessary, covered or otherwise protected to prevent the escape of waste or contamination of the surrounding environment.

Measures to minimise the generation of construction waste will include:

- Seeking to minimise unnecessary packaging associated with material deliveries;
- Appropriate handling and storage of materials to avoid damage and wastage;
- Reuse of suitable materials on Site where practicable;
- Segregation of recyclable materials from general waste; and
- Appropriate management of material orders to minimise surplus materials.

Waste that cannot practicably be reused or recycled will be removed from the Site by appropriately authorised waste carriers and transferred to suitably licensed or permitted waste management facilities. Appropriate waste transfer documentation will be retained in accordance with applicable legislative requirements.

10.1 WELFARE FACILITIES

During the construction phase, 'Porta-loo' type facilities, or equivalent, will be used and emptied by a waste contractor.

10.2 OTHER GENERAL REFUSE

Collection facilities for refuse will be provided to segregate waste. These facilities will be clearly marked, positioned in appropriate locations and protected from the weather and animals.

10.3 WASTE CHEMICALS, FUELS AND OILS

All fuel and oil will be stored within an area contained by a small bund lined with an impermeable membrane in order to prevent any contamination of the surrounding soils, vegetation and water table. Any contaminated run-off within the bund will be disposed of at an appropriate waste management facility.

Any used (contaminated) spill kits, absorbent granules, sheets or fibres must be disposed of in accordance with the Control of Substances Hazardous to Health (COSHH) regulations and in accordance with a Spill Management Plan.

10.4 PACKAGING

Construction waste generated is expected to be restricted to general construction waste, such as, wire, cleaning cloths, paper, etc. which will be sorted and either recycled or disposed of off-site to an appropriately licenced landfill by the Principal Contractor.

Packaging will be separated at the source of generation on site, where practical. This approach uses the Waste Hierarchy by encouraging reuse and recycling of materials, such as plastic, wood and paper.

10.5 WASTE METALS

Waste metals would be separated for recycling.

11 OTHER CONTROL MEASURES

11.1 EMERGENCIES AND MONITORING

The contractor will prepare a plan for a general response to any emergency situations arising during construction and commissioning. The emergency contact details will be clearly displayed at all times on Site.

A separate Fire Safety Management Plan will be prepared prior to the commissioning of the site to encompass the operational phase of the development.

The contractor will prepare a list of all nearby stakeholders and receptors including residential properties, watercourses and other sensitive receptors that could be impacted by an environmental incident.

To reduce the likelihood of an emergency incident arising, daily inspections will be carried out on Site. The daily inspection will report any non-compliance with the mitigation measures detailed in the CEMP and remedial action undertaken, where required.

The emergency response arrangements will include procedures for responding to any release of fuel, oil, coolant or other potentially polluting substance that could enter the Site drainage system or wider water environment. Where relevant, drainage isolation measures, including penstocks associated with banded infrastructure, will be used to contain potentially contaminated liquids and prevent their discharge from the Site. Any contained contaminated water or other liquids will subsequently be appropriately recovered, treated and/or disposed of in accordance with the relevant pollution prevention and waste management requirements.

11.2 SAFETY AND SECURITY

The contractor will have responsibility for applying all Health and Safety measures required on Site. This would include, but not be restricted to, ensuring all personnel visiting or working on the Site are wearing the appropriate Personal Protective Equipment (PPE), ensuring Site sign-in procedures are complied with and sharing any updates relating to Health and Safety.

The contractor shall have responsibility for undertaking and identifying utilities within and near to the Site. Appropriate measures will be put in place to safeguard these features, where appropriate.

Security fencing will be installed around the site during the construction period. During the operational phase, security fencing will be installed around the perimeter of the Site and CCTV cameras and motion-triggered lighting will also be positioned around the Site, facing into the Site for security purposes.