

GEMP 1 - Watercourse Crossings

Construction of these structures presents potential risks to the environment. These include:

- interference with fish migration and spawning, mammal movement, rare plants and their habitats and with riparian and linear wildlife corridors;
- loss of aquatic and riparian habitat;
- alteration of the flow regime; and
- harmful discharges during construction and operation.

All watercourse crossings will require some level of authorisation under The Water Environmental (Controlled Activities) (Scotland) Regulations 2011 (CAR). The *Contractor* must submit outline drawings for each watercrossing prior to the start of works for the *Employers* acceptance allowing sufficient time for review and amendment.

The *Contractor* is required to comply with the following:

General:

- Plan all works in accordance with best practice;
- The *Contractor* will consult SEPA on proposals, if necessary;
- Seek to avoid watercourse engineering works wherever possible;
- Where this is not possible, seek to use existing crossings, upgrading as required;
- Only build new crossings where there is no other reasonable option;
- Ensure all necessary consents under the Controlled Activities Regulations (CAR) are in place;
- Ask the *Employer* environmental team for advice in planning water crossings and adhere to approved plans / crossing locations;
- All reasonable steps shall be taken to prevent the transport of sediments or other matter disturbed by the works;
- Where possible works should be undertaken during drier periods (subject to other ecological timing conditions) and avoid periods of high rainfall. The weather forecast should be consulted 3 days in advance of works commencing on the water crossing;
- Ensure all required pre-construction surveys have been completed before starting works (these will include, where appropriate, fresh water pearl mussel (FWPM), otter, and water vole);
- Vehicles should not work within the water unless no other reasonable options exist;
- All crossing locations should be reinstated to a condition that replicates the conditions prior to commencement of the works unless otherwise agreed with The *Employer*;
- Any temporary dams used should be designed to accommodate periods of high watercourse discharge and dried out sections of bed should be checked for stranded fish;
- Where pumps are also used, back up pumps should be available. Pumps should also be fitted with screens to prevent fish mortalities and ingress of debris;
- Where possible, flume pipes should be used for temporary works in areas where migratory fish are present;
- Vegetation removal should be minimised wherever possible.

Temporary watercourse crossings

- Must not impede fish passage through the system;
- Should have access constructed of suitable material and in a manner that will not give rise to rutting, ponding and silt run-off;
- Should have silt laden run-off directed to treatment facilities;
- Carefully store any disturbed materials;
- Comply with General Binding Rule (GBR) 6. This includes a requirement to reinstate the banks and bed of the watercourse to the condition prior to the commencement of the works.

Fording of watercourses

- Should be avoided if possible;
- If required, access should be restricted to one crossing point;
- If required, movements should be limited to the minimum required;
- Reinstatement will be required to a condition prior to the commencement of the works.
- Where fording of a watercourse is required the *Contractor* must agree the method statement with the *Employer* prior to the start of works; and
- The *Contractor* shall consult with SEPA to obtain the relevant agreement or authorisations (as required).

GEMP 2 – Working in or near surface waters

Construction activities in or near water have the potential to cause serious pollution or impact on the bed and banks of a watercourse and on the quality and quantity of the water. Most pollution incidents are avoidable. With careful planning the risk of site work causing pollution can be reduced. Many measures needed to prevent pollution are not expensive, especially if they are included at the planning stage of any activity.

Major causes of environmental harm associated with working in or near watercourses include:

- silt e.g. disturbance of river bed or bank, dewatering and pumping of excavations, run-off from exposed ground, plant washing, roads and river crossings;
- cement and concrete – which is very alkaline and corrosive and can cause serious pollution;
- chemicals and solvents – oil storage, refuelling, trade materials etc;
- bridge cleaning debris – e.g. dust, debris & wastewater;
- herbicides – aerial and non-aerial applications;
- waste materials (including special waste) e.g. oily wastes, spent acids and solvents.

Most activities with the potential for affecting watercourses or groundwater will require an authorisation under The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (CAR).

The *Contractor* is required to comply with the following:

General:

- Identify all activities that will be undertaken in or near watercourses (including all identifiable drainage paths);
- Plan all works in accordance with best practice;
- Avoid works within 10m of a watercourse unless no other practical options exist, and leave a vegetated buffer strip;
- Where works are undertaken within 10m of any watercourse or drain, ensure specific pollution prevention controls are in place;
- Communicate risks associated with working in or near watercourses to all personnel and include control measures in the site specific construction method statements;
- Seek to avoid or minimise watercourse engineering works wherever possible;
- Ensure all necessary consents under the Controlled Activities Regulations (CAR) are in place;
- Ask the environmental project manager for advice in planning works in and near watercourses;
- Vehicles should not work within the water unless no other reasonable options exist;
- All construction machinery operating in-stream should be mechanically sound to avoid leaks of oils, hydraulic fluid, etc;
- Machinery should be steam cleaned and checked prior to commencement of in-stream works;
- All reasonable steps shall be taken to prevent the transport of sediments or other matter disturbed by the works;

- Keep site tidy and do not store materials too close to watercourses or surface water features;
- Check if there are any timing restrictions to works because of protected species (e.g. spawning salmonids, otter, water vole etc) or landowner commitments;
- Ensure all required pre-construction surveys have been completed before starting works (these will include, where appropriate, FWPM, otter, water vole);
- Any temporary dams used should be designed to accommodate periods of high watercourse discharge and dried out sections of bed should be checked for stranded fish;
- Where pumps are also used, back up pumps should be available. Pumps should also be fitted with screens to prevent fish mortalities and ingress of debris, and the outfall to pumps be designed to prevent erosion of the receiving waters (i.e. by dissipating the flow);
- Care should also be taken to avoid pollution of watercourses with sediment and to ensure that any de-silting works would not interfere with the bank sides;
- Vegetation removal should be minimised wherever possible;
- Where stock has access to the works fencing may be necessary in order to allow the regeneration of native riparian and aquatic marginal vegetation;
- Ensure construction works minimise disturbance to the current run-off regimes.

Surface water control:

- Locate areas of high risk activities away from watercourses and drainage paths. Areas of high risk include:
 - fuel and chemical storage;
 - refueling areas;
 - material stockpiles;
 - vehicle and equipment washing areas;
 - site compounds / parking areas.
- Minimise the volume of contaminated run-off being created by:
 - Diverting clean surface water away from areas using cut-off drains, catch pits and bunds (where necessary these can be lined);
 - Do not allow water to drain down the length of a haul road. Roads should have adequate cambers to shed water quickly and if necessary cut-off drains installed across the road.
- Minimise erosion of exposed soils and working areas;
- Minimise the area of exposed working area through phased construction;
- Reinststate exposed soil as soon as practical;
- Roughen exposed surface;
- Prevent water from leaving site prior to treatment;
- Ensure adequate buffer zones are identified between working areas and surface waters;
- Diversion drains should be used to catch sediment laden run-off and direct it to treatment facilities (where necessary these can be lined);

- Catch dirty run-off and treat through silt fences, silt traps, bunds, settlement tanks / lagoons, straw bales and geotextile etc. (see CIRIA C648);
- Maintain all protective measures (e.g. change bales once sediment laden etc);
- Depending on the level of contamination, silty water can be pumped over land to filter through vegetation and infiltrate into the ground provided it is carried out in line with the CAR regulations. An appropriate buffer distance must be agreed with the *Employer* to allow sufficient distance for the vegetation to filter the silty water prior to reaching a watercourse.

Vegetation removal:

- Trees and shrubs should not be removed without agreement from the *Employer*;
- Avoid un-necessary vegetation removal;
- Where necessary leave a vegetated buffer distance of 10m between works and a watercourse;
- Only break the ground surface when works are required and initiate a phased approach;
- Comply with agreed buffer zones of vegetation as this will allow further treatment of surface water;
- Do not dispose of cleared vegetation into the watercourse and avoid debris from clearance;
- Vegetation removal can impact on bank stability and increase erosion. Ensure that all banks are restored to a condition prior to works commencing and assess what further protection may be required.

Other:

- Identify all field drains, drainage risks and ensure reinstatement is provided to the satisfaction of all interested parties;
- Ensure that all watercourses are routinely monitored for changes in water quality. If water quality deteriorates, immediately inform the site supervisor and a member of the SHE , identify the source of the problem and implement appropriate mitigation measures;
- Further information is available in:
 - SEPA Pollution Prevention Guidelines: PPG5 – Works and maintenance in or near water;
 - DETR (2000) Environmental handbook for building and civil engineering projects;
 - CIRIA (2005) Environmental Good Practice – site guide;
 - CIRIA (2006) Control of water pollution from linear construction projects – Technical Guidance – C648.

GEMP 3 – Private Water Supplies

Civil Engineering Works has the potential to disturb drainage patterns (horizontally or vertically) and / or the quality of water that would otherwise sustain a private water supply (PWS).

The *Contractor* is required to comply with the following in addition to any specific measures identified:

Planning:

- The *Contractor* shall undertake an assessment on all properties with a PWS that have the potential to be affected by the works. Should the results of this assessment indicate a risk to the PWS then mitigation shall be developed for inclusion in a site specific PWS protection plan;
- At the earliest stage the *Contractor* shall consult the *Employers* EPM about monitoring and communicating the implementation of mitigation measures to protect private water supplies;
- It will be necessary to undertake water quality testing of the private supply before any possible activity takes place that could affect the water supply, to establish a baseline of current water quality to act as a benchmark (at least two occasions). This will be need to be included in the CEMP;
- Prepare a contingency plan to deliver an alternative water supply (on a temporary or permanent basis) in the event of an unforeseen problem with the existing supply;
- Liaise in advance with the private water supply users regarding details of the proposed works, the contingency measures put in place to protect the supply and any diversion works that may be needed in relation to their water supply.

Operations:

- Each PWS will have specific mitigations developed. Mitigation may include some / all of the following:
 - fence off the private water supply intake (to avoid accidental damage and to deter animals) and identify relevant buffer distances;
 - survey and peg out the route of the distribution main in the vicinity of the overhead line works and avoid / minimise activity within this area.
- Put in place measures to protect the distribution main where it crosses beneath an roads / access tracks (having discussed these in advance during the planning stages). This might include:
 - setting the existing pipe work within mass concrete;
 - upgrading or rerouting the existing pipe work;
 - ensure there are adequate pollution control and emergency response measures in place to deal with any accidents that could affect a water supply (e.g. spill response, leak or discharge of oily waste, sediment control etc); and
 - provision of an alternative supply (temporary / permanent).
- Undertake regular health and safety briefings to construction staff. Include information on:
 - presence and importance of water supply intake and distribution main nearby;
 - need to protect these from accidental damage;

- need to act promptly if an accidental spill or pollution incident poses a threat.

What to do if Unknown Water Supplies are identified:

- It is possible that private water supplies may be found which have not as yet been identified;
- If this happens stop work in that location and inform the site supervisor and *Employers EPM*;
- Necessary protection measures will be identified in consultation with the PWS owner, specialists and relevant authorities and implemented before work can resume again in that location;
- Works should only resume within the vicinity of the PWS following written agreement with from the *Employers EPM*.

GEMP 4 - Soil removal, storage and reinstatement

Soil is a precious resource and can provide the following functions:

- support a diverse ecological systems and provide the growing medium for crops and timber;
- absorb rainfall, delaying its movement into watercourses;
- filters or transforms chemicals that pass through it, preventing them from ending up in water or air.

Any damage to soil quality affects the long-term functioning of the soils and has an impact not only on ecological diversity and the performance and visual quality of the vegetated areas but can have impacts off-site such as on flooding, aquifer recharge and water quality.

It is therefore essential that impacts to the resource are reduced to the minimum necessary for the works and that all work is undertaken in accordance with best practice. The methods of stripping, storage, reuse and disposal of soil can have significant impacts on both the soil resource and other environmental receptors.

The *Contractor* is required to comply with the following:

General principles

Soil Management Process

- Unless agreed otherwise with the *Employers* EPM and within agricultural fields, all stripping must follow the following process:
 - Turfs stripped to 300mm using large toothed bucket;
 - Turfs stored vegetation side up and watered if drying out;
 - Any remaining top soil and all subsoil layers to be removed and stored separately;
 - Subsoil, topsoil and turfs replaced in same order as removed;
 - Turfs reinstated vegetation side up;
 - The toothed bucket should not be used to smooth over the excavation as it results in greater initial damage and slower recovery of the vegetation;
 - The *Contractor* will adhere to industry best practice relating to biosecurity, including undertaking all reasonable precautions to minimise the risk of contamination and the spread of animal and plant diseases, pests, parasites and non-native species.

Stripping

- Plan soil stripping carefully in advance;
- Check all necessary pre-construction surveys have been completed prior to stripping;
- Follow all identified mitigation requirements for the location and method of stripping;
- Check whether the project archaeologist should be on site during the soil stripping; and
- Where possible, strip soil during drier periods. Do not strip soil during periods of very heavy rainfall.

Storage

- Topsoil should be stripped and stored within the pre-identified areas to ensure safe storage and swift and successful reinstatement;
- If space does not allow storage and the surplus is to be stored elsewhere on the site, consult the environmental project manager in advance to agree appropriate areas;

- Separate areas must be created for the different layers and topsoil must not be mixed with subsoil layers;
- Soil storage areas should be located away from watercourses (10m) protected from run-off from adjacent areas;
- Storage areas should be reinstated to the condition prior to use for storage;
- If soil storage is being carried out on sensitive habitats, consideration should be given to storage on top of a geotextile mat and storage duration should be minimised;
- Best practice would be adopted in order to minimise the amount of compaction or other disturbance of the general structure of the superficial deposits;
- Other site works should not impact on stored soil (e.g. Construction traffic must not track over stored soils);
- Record where all removed soils are stored including the different subsoil layers (this is important as subsoil layers will need to be reinstated in the order they are removed);
- If significant soil erosion is occurring from storage piles during periods of heavy rain consideration should be given to covering the stockpiles;
- If any stored soil is contaminated it should be disposed of in accordance with the contaminated land GEMP; and
- In periods of dry weather check the need for bowing to reduce dust and potential nuisance.

Reinstatement

- Stripped soil should be reinstated as close to where it was removed as possible. This will help to maintain a local seed base and the local geological/hydrological characteristics;
- Unless otherwise agreed, turfs should be reinstated following the works and orientated vegetation side up;
- Where turfs are not available, areas would be left to revegetate naturally unless circumstances require otherwise;
- Any soil found to be contaminated should not be used for reinstatement and dealt with in line with GEMP 5 relating to unexpected contaminated land;
- The reinstatement of the construction areas are to be undertaken to a high standard, using the existing soil and vegetation material wherever possible, in accordance with best practice.

GEMP 5 - Unexpected Contaminated Land

It is the *Contractor's* responsibility to investigate, excavate and dispose of any potentially contaminated areas in accordance with contaminated land, environmental and health and safety legislation. Known contaminated land areas are identified in the CEMPs.

Contamination could however be encountered in areas where it has not been expected and the *Contractor* must check for such areas to ensure that any risks to the environment are controlled.

The *Contractor* is required to comply with the following:

Planning the Works:

- Plan works taking account of recognised best practice and all relevant waste regulations.

Be on the look out for:

- Signs of contamination during boring, excavating, soil stripping and similar operations (these could include discoloured soil, unexpected odours, a fibrous texture to the soils (e.g. asbestos), presence of foreign objects (e.g. chemical/oil, containers/waste), evidence of previous soil workings, underground structures or waste pits, evidence of made ground, old drain runs and contamination within buildings).

If contamination is suspected:

- Stop work immediately;
- Report the discovery to the site manager and *Employers* EPM within 30 minutes who must seek expert advice and provide guidance on required measures / mitigation;
- Where an environmental incident is understood to have breached legislation the relevant authority shall be contacted within 24 hours;
- Seal off the area to contain spread of contaminants;
- Undertake risk assessment to minimise the risk to health and safety of site workers. This should identify acceptable working methods, PPE, contact, and other required procedures;
- Clear site to ensure there is nothing that could cause fire or explosion;
- Any unexpected contaminated land that has been disturbed by construction activities will need to be dealt with as hazardous waste and disposed of to a suitably licensed site in line with all relevant waste management regulations;
- Ensure that the suspected contamination is tested and characterised and agree changes to the existing site proposals and method statements;
- Inform landowner / occupier;
- Avoid causing or spreading contamination;
- Do not stockpile contaminated soil unless it cannot be avoided. If it is necessary stockpile only on an area of hard standing to prevent contamination of the underlying area;
- Cover the stockpile with plastic sheeting to prevent infiltration of precipitation and spread of soluble contaminants and to prevent potentially contaminated wind-blown dust;
- Control surface drainage from stockpiled area. Remember water draining from a stockpile may be contaminated and require controlled off-site disposal.

Japanese Knotweed:

- Is an extremely invasive and competitive plant.
- Since there are no natural pests in the UK, the highly invasive and competitive nature of the plant makes it a problem not only for native wildlife but also for the built environment and relating infrastructure. Once established Japanese Knotweed is difficult to control.
- It grows extremely densely and shades out native plants; provides poor habitats for insects, birds and mammals; devalues natural landscape; increases the risk of riverbank erosion when it dies back in the autumn; creates a potential flood hazard if dead stems fall into watercourses.

On-site management:

- Japanese Knotweed should not be stockpiled within 10m of a watercourse; any movement of contaminated soil and Japanese Knotweed for treatment within the site boundary, within a designated area, could involve the treatment of waste and may require a waste management license; the relevant local SEPA office should be contacted prior to any such movement and treatment of Knotweed material or associated contaminated soil.

GEMP 6 - Working with Concrete

Cement and concrete will be used during the construction. Water contaminated with cement and concrete can be highly alkaline and can be toxic to fish, plants and animals.

If cement or concrete is allowed to enter a watercourse in an uncontrolled manner it can have a devastating impact on wildlife. There is also a physical effect since cement particles can choke the gills of fish and also destroy their spawning grounds.

Due to the sensitive nature of the site concrete batching plants will not be allowed, and concrete must be brought to site by the *Contractor* as required.

The *Contractor* is required to comply with the following:

- Should the *Contractor* identify the requirement to use concrete and cement within 10m of a watercourse, this should be agreed with the *Employers* EPM in advance of the works;
- Areas which have been identified with important habitats or species should be avoided, where possible;
- Concrete washout should be removed from site at the time of delivery or collected in sealed containers for off-site disposal by a licensed waste disposal contractor.
- Concrete washout will only be permitted in designated areas. No concrete contaminated water should be discharged to the water environment (including groundwater);
- Ensure all staff are briefed on the risks of working with concrete;
- Store bulk and bagged cement and concrete additives at least 30 metres away from watercourses, gullies and drains in properly secured, covered and bunded areas;
- Ensure dust from storage areas is controlled;
- NOTIFY the site manager IMMEDIATELY if you see any concrete spillages or concrete washout likely to cause pollution;
- Immediately implement the identified emergency response procedures. These include:
 - Stop the action which is causing pollution immediately;
 - Take immediate remedial action – block spill, place booms and absorbent materials to help soak up the spill;
 - Inform the *Employers* EPM to identify more detailed required actions;
 - The *Employers* EPM to Inform SEPA and landowners / occupiers as relevant;
 - Monitor effects of spill; and
 - Learn from the experience and plan site works to avoid pollution happening again.

GEMP 7 - Oil Storage and Refuelling

Petrol, diesel and oils inappropriately used, stored or disposed of can give rise to pollution of the environment. Oil and fuel can be released into the environment through:

- spillages during delivery or use;
- spillages during refuelling operations;
- spillages from hose bursts;
- inadequate storage facilities;
- spillages during attempted theft or vandalism; and
- waste materials being poured directly to drains or gullies, or being burned.

Petrol, diesel and oil are all highly harmful to plant, animals and humans. If pollution is caused, prosecution may follow. The cost of clean up and legal proceedings following a spillage / pollution incident is likely to far exceed the cost of putting proper control measures in place.

The Water Environment (Oil Storage) (Scotland) Regulations 2006 apply to any kind of oil including petrol, diesel, mineral oil, heating oil, lubricating oil, waste oil, vegetable and plant oil (except uncut bitumen) stored above ground at premises such as construction sites. The relevant provisions of Waste Management Licensing Regulations 1994 also apply to handling and storage of waste oil.

The *Contractor* is required to comply with the following:

Protection Plan

General

- Compile a protocol for oil storage operations on site, including emergency response procedures;
- Personnel carrying out refuelling are aware of the protocol, trained in the use of spill kits and know what actions to take in an emergency; and
- Spill kits should be located and maintained at all oil storage and refuelling locations and all site vehicles.

Storage

- On-site storage of oil and fuels should be avoided if possible;
- Where on-site storage of oil and fuels is required, the volumes to be stored should be minimised as far as practical through efficient management of resource;
- Clearly defined areas for the storage of oil should be identified as part of the site establishment process. The following should be considered when identifying a sites for storage:
 - suitability of ground conditions e.g. can the area be protected against flood damage/inundation/subsidence;
 - proximity to sensitive environmental receptors such as surface waters, surface water drainage systems; (minimum of 30m from surface waters);
 - ease of access to proposed storage area for oil deliveries / refuelling;
 - ability to secure proposed oil storage areas (to prevent theft / vandalism);
 - Ensure no fuel stores are sited where they could be hit by moving vehicles and plant; and

- Ensure all site staff are aware of designated fuelling areas and also those areas where fuelling is not permitted

Storage areas should:

- have an impermeable base in areas of groundwater risk (where necessary, discuss with SEPA);
- have control measures in place and have adequate spill kits easily accessible;
- be secured against damage / theft / vandalism;
- spill kits should be located and maintained at all oil storage and refuelling locations.
- storage containers should:
 - comply with the requirements of the Water Environment (Oil Storage) (Scotland) Regulations 2006;
 - comply with the Pollution Prevention Guidelines (PPG) 2 – above ground oil storage tanks;
 - static oil storage tanks to be surrounded by an impervious bund with no surface water outlet. The bund to be capable of retaining at least 110% of the volume of the tanks;
 - valves and couplings connected to oil storage tanks to be located within the bund and delivery;
 - hoses to be fitted with trigger-type handles suspended back within the bund after use;
 - valves and trigger filler handles to be kept padlocked when not in use;
 - mobile fuel tanks (including those for generators) should be double skinned and locked when not in use;
 - be of appropriate type and capacity for the contents and in good condition;
 - be appropriately labelled identifying the contents.

Refuelling

- Vehicles and plant should be refuelled, where possible, at designated refuelling bays;
- Where this is not possible for operational reasons, refuelling should not be undertaken within 30m of surface waters;
- Spill kits should be easily accessible for all re-fuelling operations and drip trays / plant nappies used during refuelling operations.

Construction plant

- Oil, oil powered pumps, generators etc. to be positioned on impervious drip trays surrounded by earth or sand bunds or plant nappies, and located at least 30m from any watercourse;
- Drip trays / plant nappies to be used to contain leakages from stationary plant equipment on site including generators, winches, compressors etc.;
- Drip trays / plant nappies to be used to contain leakages from stationary plant equipment on site including generators, winches, compressors etc. They should be regularly inspected.

Further information available from:

- CIRIA (2005) C650 - Environmental Good Practice – site guide;

- CIRIA (2006) C648 - Control of water pollution from linear construction sites – Technical Guidance;
- SEPA Pollution Prevention Guidelines – Above Ground Oil Storage Tanks: PPG2;
- The Water Environment (Oil Storage) (Scotland) Regulations 2006.

GEMP 8 - Dust Management

Dust arising from a site may frustrate local residents / landowners and can cause air pollution. At very high concentrations, dust may cause health problems. There is also the potential for legal action, which will have cost, programme and reputation implications.

Likely issues:

- Annoyance to neighbours and bad publicity for the site;
- Claims from farmers for dust damage to crops;
- Impact on project programme and budget (e.g. compliance with statutory notices relating to dust levels / abatement notices);
- Impacts on ecology (e.g. plant growth, watercourses);
- Under the Clean Air Act 1993 and Part 3 of the Environmental Protection Act 1990, local authorities can impose limits on dust generated from a site (see Section 9).

The *Contractor* is required to comply with the following:

Protection Plan

Likely sources of dust:

- Haul roads and access tracks;
- Soil storage areas;
- Construction corridor (exposed areas following stripping);
- Material transportation;
- Loading and unloading materials;
- Crushing/screening activities;
- Transport of mud onto the public highway;

Control methods:

- The site compound areas will be 'hardstanding';
- Inspect areas at risk daily, especially during dry weather;
- Vehicles carrying bulk materials should be sheeted if could give rise to dust;
- Keep all public roads well swept and bowse if required;
- Limit vehicle speeds along dusty haul roads;
- Do not use drills that are powered by compressed air unless appropriate control measures are in place;
- Mud should not be deposited on roads. Where applicable, have wheel cleaning facilities prior to vehicles leaving site;
- Suppress dust from soil stockpiles, haul roads, stripped working corridors and material storage areas, by bowsing with water, where required;
- Water used in dust suppression can be obtained from either a Scottish Water supply or abstracted in line with the CAR Regulations;
- Run-off from dust suppression activities shall be controlled in line with GEMP 2;
- Hand-sweeping and a road sweeper would be employed to clear up any deposited material to roads;

- Wind conditions should be monitored throughout the works, and backfill material would be dampened down when dust generation which could affect the public and road users is likely;
- Keep height of soil stockpiles to a minimum and gently grade the side slopes;
- Store materials away from the site boundary;
- Minimise the height of fall of materials;
- Reduce the height that materials are unloaded from;
- Planning activities to ensure that, as far as practical, particularly dusty activities are not carried out in unsuitable weather conditions (i.e. very dry / windy) unless suppression is in place;
- Identifying any nearby dust sensitive receptors and adopt appropriate measures;
- Communicating dust management procedures to all relevant personnel and training if required;
- Follow-up any complaints immediately and take action to avoid a repeat complaint;

Further information available in:

- BRE (2003) Control of dust from construction and demolition activities;
- DETR (2000) Environmental handbook for building and civil engineering projects;
- CIRIA (2005) Environmental Good Practice – site guide.

GEMP 9 - Waste Management

Waste is defined as “any substance or object which the holder discards, intends to discard or is required to discard”. This includes materials that other people want, or for which they can find a beneficial use i.e. material that is to be recovered / recycled. In any construction project, there may be a variety of different wastes, from office and canteen waste to construction materials, waste oils, asbestos and clinical waste that will require management.

The *Contractor* is required to compile a Site Waste Management Plan (SWMP) in accordance with the principles below:

Principles of waste management

Waste management priorities and practical actions that can be undertaken on site should follow the principles of the waste hierarchy as illustrated below:

Eliminate	*****	Design out waste
Reduce	*****	Minimise waste generation
Reuse	*****	Reuse materials on site if possible
Recycle	*****	Reprocess materials for off-site use
Recover	*****	Recovery of energy from waste sent off site
Dispose	****	Least desirable option – last resort

A SWMP will be compiled by the *Contractor* and agreed with The *Employer* 12 weeks prior to construction works starting. This plan should be based on the above principles and include the following minimum requirements:

- Waste minimisation;
- Allocate a waste champion – who is responsible for the SWMP;
- Record types and quantities of waste that will be produced during the project;
- Decide how waste arising will be managed in line with the waste hierarchy;
- Plan for efficient materials and waste handling and set reduction targets (KPIs);
- Measure quantities and types of waste produced and compare against targets;
- Monitor the implementation of the SWMP and update as necessary; and
- Compile a waste budget.

Duty of Care

All those who produce or handle waste legal responsibilities – a “Duty of Care” - for its safe keeping, transport and subsequent recovery or disposal.

Failure to comply is an offence as the “Duty of Care” is a legal requirement under Section 34 of the Environmental Protection Act 1990.

‘Duty of Care’ requires the producer to:

- ensure those transporting waste are registered with SEPA;
- Ensure the waste is being treated, re-used or disposed of at a suitably licensed site in line with current legislation;
- Keep a waste transfer slip for all waste being transported off site;
- Ensure that all waste on site is properly stored and secured;
- Take all reasonable steps to prevent unauthorised handling or disposal by others;
- If you are dealing with hazardous / special wastes, such as asbestos, chemicals, oils or contaminated soils, you have extra legal responsibilities and may be required to complete detailed special waste consignment notes; and
- Should there be uncertainty over whether a waste is hazardous / special advice should be sought from the *Employers EPM*.

Storage:

- All waste should be stored in designated storage areas;
- The site should be kept tidy and free from litter at all times;
- Waste storage areas should be appropriately secured to ensure to prevent pollution;
- Controls to prevent wind blow (e.g. covered skips);
- All wastes that could leach or be entrained in water run-off should be stored in a sealed container or on an impervious surface with barriers to lateral flow;
- Storage of liquid wastes should be stored in a sealed container on impermeable surfaces within a secondary containment system in a bund with 110% capacity of the container;
- Segregation of waste at the point of generation should be provided for site offices / welfare facilities and for construction activities by the use of designated storage areas / containers to ensure cross-contamination is reduced;
- All storage areas / containers should be clearly labelled to identify the waste type and properties;
- Keep the duration of storage to the minimum required.

Special waste storage:

- Weekly inspections should be undertaken for leaks, corrosion etc;
- Separate all waste streams at source. Incompatible wastes such as chemicals that, if mixed, may react together;
- Provide written instructions for storing and disposing of each type of waste; and
- Maintain an inventory of the special wastes stored on each site, quantities, and location.

Movement:

- All movement of waste should be undertaken in line with the relevant waste regulations;

- Any waste being transported off site should be done so by a registered waste carrier;
- A waste transfer note / special waste consignment note should be completed and retained prior to waste leaving the site;
- Before waste is allowed to leave site, the producer should ensure that the site it is being transported to is appropriately licensed; and
- Vehicles transporting waste should be suitably secured so as not to allow waste to escape.

Reuse, Treatment, Disposal:

- All re-use, treatment and disposal of waste must be undertaken in line with an appropriate waste management licence (WML) or an exemption to require a waste management licence (WMX);
- If it can be proven that the material is not waste, it will not fall within these requirements;
- The *Contractor* must apply for or register WML's and WMX with SEPA prior to undertaking the activity;
- No burning of waste is permitted on site;
- No fly-tipping is permitted.

Monitoring/Auditing:

- Regular audits should be undertaken to ensure that the SWMP is being fully implemented.

Zero Waste Scotland Regulations:

- The regulations aim to ensure that the minimum level of service on offer to households and businesses across Scotland is better than that of today and signal the end of landfilling biodegradable municipal waste in Scotland.
- The [Waste \(Scotland\) Regulations 2012](#) were passed by the Scottish Parliament on 9 May 2012. The following provisions relate to the construction industry.
 - Businesses to present metal, plastic, glass, paper and card for separate collection from 1 January 2014.
 - Waste contractors to provide collection and treatment services which deliver high quality recycling.
 - A ban on any metal, plastic, glass, paper, card and food collected separately for recycling from going to incineration or landfill from 1 January 2014.
- The *Contractor* must adhere to these regulations at all times.
- Resources relating to the implementation of the Zero Waste regulations in relation to the construction industry can be found at: <http://www.zerowastescotland.org.uk/category/sector/construction>

Some useful links on waste management are:

- www.zerowastescotland.org.uk/
- www.wrap.org.uk;
- www.bre.co.uk;
- www.smartwaste.co.uk;
- www.dti.gov.uk;
- www.ciria.org.uk;
- www.netregs.gov.uk;
- www.envirowise.gov.uk.

GEMP 10 - Working in Peat, Blanket Bog, Wet Heath and Dry Heath habitats

This section of the CEMD includes plans for specific on-site activities in peat. These guidance plans are generic and should be developed and further detailed before construction begins for each particular location where working in peat is a constraint.

The *Contractor* is required to comply with the following:

General

- Peat stripping and removal should be kept to an absolute minimum;
- The access track routes and tower locations have been selected to avoid, wherever possible, areas of deep peat;
- Maintain local hydrological conditions necessary for peat formation, maintenance and regeneration whilst taking into account sensitive habitats adjacent to works area;
- Ensure that large loads do not compress peat and create a barrier to water movements which could cause pooling at one side of corridor and drying out at the other, or cause peat slump by displacement;
- Consider how site will be restored/reinstated on completion of the works;
- Define a water management strategy for working peatland areas in consultation with the EPM;
- Vehicle movements on untracked ground should be limited to reduce the impact of construction on soil compaction and surface vegetation loss;
- Access to the site must be done as efficiently as possible avoiding unnecessary movements back and forth. The use of multiple parallel access track-ways should be avoided where possible as this will cause damage over a wide area leading to possible damage to sensitive areas;
- For transportation across peat areas, use temporary matting (E.g. Terrafirma Dura-Base or Eve Trakway), geotextile membranes, timber log mats or bog mats unless agreed otherwise with The *Employer*;
- Access to peatland habitats is restricted to low ground pressure vehicles / plant at all times;
- Always seek advice from the project *Employers* EPM on working methods within peat areas;
- Areas where rain water has been flowing over the surface should be identified in advance. Post-installation inspections should be made to identify whether any of the pre-construction areas show signs of soil erosion where water is flowing over large tracks of the trenches. Locally designed drainage channels or pipe systems to conduct water across cable trenches should be constructed to minimise post-construction damage and to allow better opportunities for re-vegetation.

Access track construction

- A tracked excavator should proceed the trenching works and remove turfs to a depth of 300mm using as large a toothed bucket as is practical;
- Turfs and soil should be stored to the side of the excavation. Where this is on good quality blanket bog storage should be on top of a geotextile membrane;
- Turfs should be stored root side down and should remain in the storage location until required for reinstatement (this is to avoid multiple handling and reduce the potential for turfs becoming unstable);
- Turfs, peat and subsoil should be stored separately;
- Stored peat should be regularly checked for signs of drying out. If drying out is occurring the storage areas should be sprayed with water to maintain moisture content;
- Subsoil layers and peat layers should be reinstated in the order they were removed and the turfs should be reinstated root side down;
- Design of works should avoid the potential for concentrated discharges of water onto the hill slopes;
- In particularly susceptible areas, the use of drainage ditches may be necessary upstream of the construction corridor. These should only be installed following advice from hydrological specialists and The *Employer's* EPM;
- Working in areas of peatland should be avoided, as far as practicable during times of the year with the highest rainfall, and stripping of peat/reinstatement should stop during periods of sustained heavy rainfall.

GEMP 11 - Bad Weather

It is important to consider the implications of poor weather conditions and associated environmental risks. Bad weather, particularly heavy rain, can cause significant environmental impacts during construction (for example, on sensitive habitats and increased risk of sediment laden run-off into surface waters).

The *Contractor* is required to comply with the following:

- Identify an action plan before construction starts with a protocol of measures to implement in times of bad weather. This should include heavy rain, high winds, snow and frost;
- The weather forecast should be checked on a daily basis and thought should be given to possible sudden changes;
- Ground conditions should be checked regularly and assessment made as to whether they are suitable for the proposed site activities;
- Check whether plant is causing unacceptably high damage on site because of poor ground conditions (involve the *Employers* EPM);
- Consider whether plant could be at risk if used in areas which are too wet;
- Plan for high run-off in advance and Identify protection measures (silt traps, straw bales and booms etc);
- Check for any materials stored close to watercourses during construction activities which could be washed into the water in times of storm;
- During times of excessive rainfall and ground saturation, stripping and reinstatement works should not be undertaken.
- Emergency response plans should take account of bad weather.

GEMP 12 - Restoration

In order to undertake restoration to an acceptable standard (ensuring that the previous habitat and vegetation is reinstated to as near the original condition as possible), it is important to plan the works in such way as reinstatement is achievable. The way in which stripping, storage and replacement of soils / turfs is undertaken can significantly increase the successfulness of any reinstatement. The following guidance should form a basis of the restoration plan for the project.

A site restoration plan should be included with the CEMP. It is noted that the *Contractor* is to assume that unless authorised by the Local Planning Authority all access is to be restored to original condition. It is recommended that the *Contractor* assume a pro-active approach to restoration i.e. use of temporary access materials such as Trackway panels and appropriate low pressure construction vehicles particularly in areas of wet ground is encouraged. The *Contractor* is to assume that all decommissioned tower foundations will be removed to 1.5 m below grade.

Planning Construction Works

In planning the detailed construction works seek to avoid intrusive work wherever possible. There will be less restoration required once construction is finished.

Seek to:

- avoid major earthworks wherever possible;
- retain natural features such as rocky outcrops wherever possible to aid in successful restoration;
- avoid loss of mature trees wherever possible; for example, remove young regenerating birch in preference to mature trees which may have biodiversity and landscape value and will give structure to the finished works;
- site tracks and micro-site route around groups of trees where possible to leave natural features rather than dissecting groups/copses which again will reduce the necessary restoration works;
- when crossing hedges or walls plan to use gaps to avoid reinstatement works;
- where possible plan to push trees over which require to be removed and leave on site (unless not considered appropriate by the environmental representative) which will help naturalise the area which is disturbed and promote biodiversity;
- take account of archaeological resources and seek to avoid;
- design any permanent drainage ditches to be as natural as possible (not too straight and engineered but with varied banks and alignments etc);
- design drainage measures carefully to avoid unnecessary long term effects on adjacent habitats which could be difficult to restore; and
- plan all site activities to reduce the need for vehicle movements. This will help in final restoration by minimising compression etc.

Planning Restoration:

- Restoration at the end of the works will always be more successful if planned in advance.

Always:

- ensure that detailed restoration plans take account of specific habitat types and locations;

- plan restoration in advance of working on-site - this will save time and money at a later stage and will ensure that opportunities are not lost and a more successful outcome is achieved;
- identify where soils and peat and turfs will be stored with input from the site environmental representative(s);
- discuss restoration proposals with the environmental representative(s);
- take account of all agreements included in this CEMD and commitments register;
- take account of all environmental interests, for example, seek to enhance local biodiversity but not by planting on sensitive archaeological or geological sites;
- If any seeding is required this will need to be agreed with the *Employers* EPM and SNH. Remember different seed mixes will give different colour in the final design- seek to avoid creating 'stripes';
- plan how monitoring of restoration will be undertaken and by whom and when;
- consider how deer pressures (grazing and wallowing) may affect the success of planting and plan restoration works accordingly; and
- plan restoration taking account of run-off erosion risks on steep slopes in poor conditions; be aware of the potential for sediment rich run-off to smother sensitive or newly established communities in poor weather conditions and seek to curtail this.

Early Works:

Some early works will help in achieving more successful final restoration. These include the following:

- always take photographs of the site before works start to guide later restoration including of any drainage that will be disturbed;
- strip turfs and vegetation carefully and use in temporary works to prevent erosion;
- turfs can be stored successfully in cut-off ditches in some locations which can aid attenuation and prevent turfs / vegetation from drying out;
- store top soil and subsoil separately according to best practice;
- store stripped materials in immediate location or as close as feasible for future re-use in site restoration as close as possible to the location from which they were removed from;
- keep a record of where all soils and turfs are stored;
- remove large boulders (rather than cover) to replace in restoration works;
- remove noxious weeds in accordance with best practice. Do not allow unnecessary spread or this will compromise the success of final restoration works;
- seek to avoid compression of soils as much as possible on restoration. Drainage may be impeded and may result in extensive rush areas being created; and
- during construction seek to avoid creating eroded areas which can be difficult to restore successfully.

Final Restoration

At the end of construction in any area the site must be restored carefully and sympathetically taking account of all required mitigation and of the conditions. The following principles should also be adopted where appropriate:

General

- undertake restoration works in suitable weather conditions - wet ground conditions can be difficult as can hot dry and windy spells;
- restoration should ensure the successful integration of the site with surrounding land uses and habitats;
- all field, roadside or other boundaries disturbed during construction operations would be reinstated using the original materials (in the case of stone dykes, this having been carefully set aside for re-use) or to the original specification and to at least the pre-existing condition, or better;
- natural regeneration of habitats should be promoted in all appropriate areas;
- where hedgerow field boundaries are removed they are to be replanted with the same species and at the same spacing intervals;
- any required replanting and / or reseedling should be undertaken at appropriate times of the year and with the agreement of landowners / occupiers (and SNH if within designated sites);
- identify the most appropriate machinery to use for restoration in any area (small digger or large machine etc) according to the sensitivity of the habitats and the extent of areas to be restored (take advice from the site ecologist);
- undertake small sections of the site for restoration and monitor success with input from the site environmental representative(s) before restoring large areas;

GEMP 13 - Forestry

The *Employer* requires that best practice is implemented at all times by the Contractor. The following is provided as a guide to the standards that will be expected during forestry works:

- All tree works should comply with BS 5837 (2012) – Trees in Relation to Design, Demolition and Construction.
- Vegetation should be left well balanced with natural crown shapes.
- Pruning must also take into account the vegetation re-growth expected in the interval between cuts. This will vary widely between plant species and sites.
- Avoid all recognised injurious practices such as:
 - Topping or lopping to an arbitrary height or branch length.
 - Flush cuts.
 - Unbalancing a tree crown by excessive one-sided pruning.
 - Inappropriate use of flailing.
- Climbing damage - Care shall be taken to avoid injuring thin and weak barked species by inappropriate use of rope access techniques on trees (such as use of climbing irons) on trees to be retained.
- Access damage - Vehicle access and treatment of arisings shall avoid injury to low branches, stems, root buttresses and feeder roots.
- Spreading Disease - Appropriate regard shall be given to avoiding spreading fungal diseases. Forestry Commission Biosecurity Guidance should be followed. Consideration should be given to landowners' requirements for treating stumps.
- If the only pruning option is to severely reduce or unbalance a tree, then coppicing, or felling and replacement planting are often better options and shall be agreed with the landowner.
- Presentation of produce should be in neat, safely stacked piles ready for forwarder/tractor pick-up, where required.
- Cut and present material as agreed with the Environmental Project Manger and defined in the scope of works.
- Sites shall be left tidy, with brash and stumps cut low and neatly with any hinge or jagged spikes removed, to prevent them becoming a trip hazard or an obstacle to vehicles. Remove all litter from site.
- Utilise brash to assist with the access requirements for felling and construction machinery and give consideration to rights of way by transient wildlife. Small piles of brash and timber may be left on site at specific, identified locations in the interest of increasing biodiversity.
- Leave watercourses, culverts and ditches undamaged and clear of arisings. No felling into watercourses is allowed. The Forestry Commission publication 'Forest and Water Guidelines' (Ver 4) should be followed.
- Local drainage systems to be maintained and not damaged or interrupted by the felling works.
- Avoid damaging those standing trees which are to be retained.
- No fires should be lit on site.
- A root protection zone should be identified around all trees to remain on site that are within close proximity to the works area to ensure that no accidental damage is caused to the tree roots.
- No material arising from access works or another site works must be stored within the root protection zone or stacked against trees

Mulching should be used where there is a need to clear the site of tree residue or where trees or areas are too small to fell commercially (typically, a minimum top diameter of 7cm will be commercially recovered). The resultant mulch is to be partially incorporated with the vegetation layer.