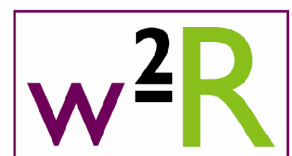


PSS Appendix 4

Site Waste Management Plan



A REPORT BY ENVIROS CONSULTING LIMITED: MAY 2008

STAFFORDSHIRE COUNTY COUNCIL

**SITE WASTE MANAGEMENT PLAN FOR PROPOSED EFW
AT FOUR ASHES**



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1. INTRODUCTION

All construction sites with a project cost in excess of £300,000 are required to have a site waste management plan, following the introduction of the Site Waste Management Plans Regulations 2008. The aim of a Site Waste Management Plan is to ensure that waste generation within the project is minimised, and where it cannot be minimised, the waste is recovered, recycled or if necessary disposed of in an environmentally sound manner.

The Site Waste Management Plan will remain under the control of the site manager, or their nominated deputy at all times. Any questions or issues arising relating to waste or sustainable building practices at the site will, as a first step, be directed to the site manager. The contents of the plan, including the selected recycling and recovery routes, will be reviewed periodically to ensure that no opportunities to minimise the environmental impact of the facility during the construction phase are missed.

This plan is a dynamic document and will change over the length of the project as it proceeds, particularly where any alterations to the design are made. It will also be altered or modified based upon the outcomes of other plans in place on other construction projects being carried out, to incorporate the best practice possible.

The proposed Energy from Waste (EfW) plant will be located at the site of a former inert waste landfill and silt lagoons.



2. LEGISLATIVE COMPLIANCE

Duty of Care

No wastes shall be removed from site, until a copy of the transporter's Certificate of Registration as a waste carrier has been checked and a copy retained for the site file. All movements will be accompanied by a Duty of Care note, or Hazardous Waste Consignment note, as appropriate and these documents will be stored at the site for the duration of the construction phase.

All waste sites utilised for off site recovery, recycling or disposal of waste, will be required to confirm in writing that they are permitted by the Environment Agency for the waste in question and supply a copy of their Environmental Permit for the site file.

Any waste operations on site, such as crushing, grading or screening, shall be done in accordance with the requirements of the Environmental Permitting Regulations 2008, and the appropriate permissions sought from the Environment Agency or Local Authority as appropriate. Any such permission granted will be available in a convenient location on site for staff to reference. In a similar way the site will be registered as a hazardous waste producer with the Environment Agency and the registration number displayed for contractors and subcontractors to use when arranging for waste removal from site. Copies of these documents will be retained on the site file.

All records relating to removal of waste from the site shall be made available for inspection by the Environment Agency as required.



3. AWARENESS RAISING

All staff on site will be expected to comply with the site waste management plan. Staff will receive training on the plan during their initial site induction and it will be raised during 'toolbox talks' to be held at regular intervals to highlight both the plan, and other relevant issues such as health and safety.

By training all staff in the aims of the site waste management plan it is hoped to both comply with the plan and help to make it a success, but also allow contribution of ideas and improvements towards reducing the impact of the site further.

Subcontractors

During the construction phase of this project, a number of subcontracting firms will be utilised, in addition to the main contractor's staff. For the purposes of the site waste management plan, subcontractors will be treated the same as contractors and expected to comply with the aims and terms of this plan.

All subcontractors will receive training related to the waste handling procedures on the site, as part of their first day induction. This will be in addition to health and safety and other relevant training received as part of this induction.

All subcontracting companies will be made aware in advance of this plan and will be contractually obliged to comply with the purchasing and waste minimisation requirements within it.



4. SITE PREPARATION PHASE

The site preparation phase covers the levelling and clearing of the site and the construction / excavation of any necessary footings or pilings. Ongoing survey work is being carried out to determine whether Great Crested Newts are present on the proposed site and adjoining land. The results of this survey will dictate whether agreement and licences will be sought from Natural England prior to any works on the site.

Site Levelling

The site requires a degree of levelling prior to the commencement of any construction works. Any raised areas that may require levelling are likely to be primarily composed of inert wastes from the former use of the site as an inert waste landfill. Disturbance to the bund running along the southern site boundary will be kept to a minimum to prevent disturbance to wildlife who may use this as a corridor to reach adjoining land.

There are flytipped wastes on the site currently. These will be removed to suitably permitted facilities for recycling depending upon their nature. The site will be made secure to prevent further flytipping incidents occurring.

Some areas of the site may also require excavation, in addition to works required for foundations, due to the presence of perched groundwater. This is likely to be caused by the presence of low permeability materials within the bulk of the deposited wastes.

The removal of materials from site will be minimised, where possible, with reuse of excavated material being utilised where possible. It is likely that foundations will comprise bored concrete piling and so in general, existing ground will remain in-situ. Some materials unsuitable for engineering purposes will be removed from below the structural foundations. Excavation will be necessary for construction of the refuse bunker, and for achieving required levels for building slab foundations, road construction, drainage and surface water ponds.

Excavated materials will be used on site as engineering fill and in landscaping where practicable. However, to avoid increasing the height profile of the building the opportunities for use of excavated materials as engineering fill are limited. Consequently it is anticipated that a cut/fill balance may not be achieved and a net export of excavated soil will be required in the order of 52,000m³. This exported material will be transferred off site for sorting and reuse as engineering fill and aggregate.

The quantity of raw materials imported to the site as fill and as aggregates for road and concrete construction will be kept low by reuse of recycled aggregates, where practicable and economic to do so.

Green Waste

During the removal of stockpiled wastes, it may be necessary to remove established plants or shrubs. Where these will be suitable for reuse during the landscaping of the facility, they will be carefully removed and stored off-site pending return when the landscaping is undertaken.

Other green wastes generated on site during site preparation, will be removed to a suitable authorised composting facility. Compost generated from the same



facility will be utilised, where possible, in the landscaping of the EfW. Any larger woody wastes will be shredded prior to removal from site.

Top and Sub Soils

The site investigation report into the site, has identified areas with elevated levels of organic contamination, from PAH's in particular. Where necessary these materials will be remediated on site, to minimise the risk to human health and the aquatic environment. These materials are present as contaminants within the deposited wastes and as such difficult to identify prior to commencing works.

Fragments of asbestos sheet were noted on the surface of the site during the site investigation. No fibres were detected in soils samples obtained however. The site has previously been used as an inert landfill site and flytipping has occurred at the site. Either of these activities could be the source of the asbestos fragments. Care will be taken during both site clearance and invasive works to identify any areas of potential or actual asbestos contamination. Those areas identified will be removed from site to a suitably permitted landfill site to minimise the risk to workers on the site. No screening or grading of such materials will take place.

The materials deposited at the site during its use as a landfill site will require any excavated materials to be screened and graded prior to stockpiling on or off site for reuse. During the site investigation materials such as wood have been observed at depth. These biodegradable materials will be removed from site for recovery.

Removed sub soils will be screened and stockpiled pending reuse on the site. These reuse options may include: use during site levelling, where the material has suitable engineering properties; construction of screening bunds, as required by the proposal and planning permission, where engineering properties dictate; and replacement of unsuitable soils within the facility footprint. Topsoils will be retained for site landscaping.

Any reuse of excavated materials on the site, will be in line with the requirements of the Environmental Permitting Regulations 2008, or subsequent amendments, and the facility's planning permission.

Any surplus sub and top soils that require removal from site will be utilised where possible in other construction or land reclamation projects. It is intended that no material will be removed for disposal to landfill, although elevated levels of copper and zinc in some parts of the site, may make this option necessary. All materials removed in this manner will be sent to suitably permitted landfill, for the class of waste involved.

Aggregates

During the screening of the material stored on site, and any excavated materials, the larger oversized fraction will be separated. Where necessary, this material will be crushed, prior to its reuse as recycled aggregate within the site construction.

Where it is necessary to bring in aggregates for the construction of the facility, these will, wherever possible, be derived from recycled or recovered materials. Likely sources of such material include demolition sites, other waste management facilities and suitable industrial by-products including such



SITE WASTE MANAGEMENT PLAN

materials as incinerator bottom ash, blast furnace and other slags and tyre crumb. The use of virgin aggregate will be avoided as far as is possible.

5. STRUCTURES

The construction of the facility, including the main EfW building, other associated buildings and site infrastructure, will be programmed in such a way as to minimise the production of waste from the process. This will be achieved by using a combination of methods, including the effective specification of materials, good storage practice and careful ordering.

Good programming of the construction process will help to ensure that all raw materials likely to be used on site are considered in advance of ordering and delivery to the site. This will enable the identification of areas where wastes can be avoided or minimised, and allow consideration of the environmental impact of the raw materials chosen. Areas that are the responsibility of sub-contractors can be highlighted to ensure that they are aware of both the contents of this plan and help to minimise their generation of waste.

It is anticipated that the following main materials (set out in Table 1) will be used during the construction of the EfW facility at Four Ashes. Note that quantities are indicative at this stage and would be finalised at during detailed design following selection of a preferred bidder.

Table 1. Indicative Construction Materials (excludes plant)

Construction Materials	Anticipated Approximate Tonnage / Volume
Drainage	
Drainage pipework	330m
Channel Grids	150m
Concrete side channels	180m
Foul sewer pipework	190m
Road Materials	
Sub-base	1500m ³
Base course	1500m ³
Asphalt surface	350m ³
Kerb barriers	1300m
Structural Concrete	
Ground slabs	15000m ³
Bunker walls	6000m ³
Bunker base	2500m ³
Foundations (concrete bored piles)	300m ³
Fire walls	2000m ³
Ramp	1000m ³
Reinforcement Steelwork	8040t
Masonry and Brickwork	14000m ²
Building Cladding	12000m ²
Glass	4000m ²
Imported topsoil	6000m ²



Ordering of Materials

The avoidance of waste when constructing the facility can be assisted by the careful specification of materials. This specification takes the form of both: ordering only the required quantity, without an element of over supply; and ensuring that the items ordered are the correct dimensions needed, eliminating wastage due to having to alter dimensions on site.

The programming of raw material deliveries to stockpiling on site for long periods, which may lead to weathering or physical damage, will also be practiced. Careful programming should also help to minimise the number of vehicle movements required.

Where possible, recycled or recovered raw materials will be specified. Materials that are suitable for recovery or recycling after use, or which have a low environmental impact will be used where they meet the requirements of the plant.

Transportation of Materials

The delivery of materials to the site is a significant source of waste (e.g. packaging) within a normal construction project. By minimising the number of deliveries, packaging waste can be minimised. Through a combination of specifying quantities to reduce the number of packages needed and specifying the use of reusable packing for delivery of wastes; the disposal of packaging wastes will be minimised.

Where the generation of packaging wastes cannot be eliminated, options will be sought for the recovery and recycling of the packaging materials off site. This will involve, as a first step, on site segregation of materials.

Storage of Materials

There is an element of wastage on many sites associated with poor storage of materials. The storage of materials on site, prior to their use, will be carried out in such a way as to minimise any spoilage of materials or damage where possible. Good storage practices will include effective stocktaking to ensure that additional materials are not ordered where sufficient materials are already on site.

The materials shall be stored, wherever possible, on hard standing and undercover. This should prevent weather damage from UV radiation and damp, and minimise erosion, run-off and material losses into unmade surfaces.

Liquids, particularly fuels for use on site will be stored in double skinned tanks. All fuel tanks shall be protected from damage by vehicle collisions, and filling nozzles locked off when not in use. The tanks shall be situated on hardstanding or impermeable paving where available to reduce any potential impacts from spillages during normal use. All tank filling will be supervised to prevent overfilling.

Return of Materials

Where materials are ordered and delivered to site but prove surplus to requirements these materials will either be removed to another construction site, or returned to the supplier. No such surplus materials will be disposed of.



6. WASTE HANDLING ON SITE

It is unavoidable that some wastes will be generated during the construction of the site. Such wastes will include construction materials, soils, and domestic type wastes generated by staff on site.

Recovery of Wastes Generated

Where possible all wastes generated will be recovered for use either on or off-site. This will include the reuse of materials as aggregates on the site where they have the correct engineering properties.

Where suitable, materials that cannot be recovered either directly or following treatment will be segregated for recycling off-site. Only in cases where the recycling of waste is not possible will materials be disposed of.

Waste Storage

All containers utilised for waste storage on site, irrespective of the fate of the waste, will be labelled with waste type and destination / treatment method (where applicable). The labels shall be attached to individual containers and the containers located in a signed area clearly identifying the wastes to be stored there. Where possible, these containers will be colour coded for recovery / recycling or disposal.

All wastes generated will be stored in a secure manner to prevent their escape and to minimise the risk of vermin interfering with the waste. The majority of the wastes likely to be generated are unlikely to attract vermin. However, domestic type wastes will contain food wastes that may attract vermin. These wastes will be removed from site frequently to prevent any build up. All other wastes will be stored in covered containers to prevent windblown litter or dust issues. A build up of waste materials on the site will be avoided as far as practicable. All waste containers will be stored on hardstanding or impermeable paving where available, for ease of handling and safety.

Disposal of Liquid Wastes

Where possible any liquid wastes generated on site will be disposed of to foul sewer, for treatment at the nearby waste water treatment works. This will be following discussions with the local sewerage undertaker and will be made in full compliance with any requirements they place on the discharge. This includes waste from site portaloos and other staff facilities.

Oily waters, including wash waters, and those waters that are unsuitable for disposal to foul sewer will be stored in double skinned tanks or banded drum storage, prior to off-site recovery or disposal at a suitably permitted facility.



7. MONITORING

The contents of the site waste management plan will be monitored on a monthly basis, including waste arisings, waste storage and any waste related issues brought to the site manager's attention. Trends relating to waste generation will be monitored to ensure that the plan is followed over the lifetime of the project. On a regular basis, the plan will be reviewed to ensure that the chosen waste recovery or recycling facilities are still the best available and if any additional residual wastes can be recovered.

Any issues that arise as part of the ongoing monitoring of the plan will be highlighted to the relevant staff for implementation as soon as is practicable. The outputs of the monitoring will be reported to staff during the regular 'toolbox talks' held on site. This reporting will be in terms of tonnages of waste diverted from landfill and associated cost savings. Monitoring of the plan will be reported on a quarterly basis to the client.

Final Report

A final report detailing the outcome of the site waste management plan will be prepared. This will cover issues including the volumes and types of recovered or recycled materials used within the project, the quantities of waste sent for recovery or recycling off-site, the quantity of waste avoided based on waste arisings from similar projects and the savings thus obtained.

As part of this final report, lessons learned will be identified for taking forward into future projects.