

Application for Integrated Pollution Prevention and Control Permit

Non-Technical Summary

January 2003

This document is a non-technical summary of the application by Grundon Waste Management Ltd for an I.P.P.C Permit to operate a Clinical Waste Incinerator to be constructed at Lakeside Road, Colnbrook.

The document has been extracted from the full I.P.P.C application

Non Technical Summary

Grundon Waste Management Ltd (Grundon) is seeking an Integrated Pollution Prevention & Control (IPPC) Permit under Part II of the Pollution Prevention and Control (England and Wales) Regulations 2000, to operate a new Clinical Waste Incinerator (CWI) at Lakeside Road Industrial Estate, Colnbrook, Berkshire, SL3 0EG.

Grundon currently operates a one tonne per hour clinical waste incinerator at this site for which IPC Authorisation was granted in 1993. The company also operates a waste reduction and materials recovery facility on the site. Against the background of an increasingly urgent local need, the Company now plans to develop the site to its full potential by replacing and extending its existing facilities. The new facility will include construction of an Energy from Waste (EfW) plant with an associated materials recovery facility (MRF) and a Visitor Centre as well as the replacement of the existing clinical waste incinerator with a new CWI plant with a capacity of 1.25 tonnes per hour of solid clinical waste, an increase over the current clinical waste incinerator of 0.25 tonnes per hour. The redesigned CWI will have the capability to use recovered liquid petroleum gas (LPG) within the combustion process in order to minimise the use of fossil fuels.

The existing clinical waste incinerator will be closed down before the new CWI commences burning waste.

This application for an IPPC Permit relates to the new CWI plant. It is intended that plant procurement will be through a turnkey contract awarded on a competitive basis to a major supplier of proven equipment. The contract will require guarantees of compliance with performance criteria to be set out in a Performance Specification. The Performance Specification will reflect the criteria set out in this application and the conditions of the IPPC Permit. Grundon has set up a separate company, Lakeside Energy from Waste Ltd (Lakeside) to own the facility and operate the EfW plant and the MRF. Grundon will lease the CWI from Lakeside and operate it.

A planning application for the new facility was submitted to Slough Borough Council in July 1999. As required by the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999, the planning application was also accompanied by an Environmental Statement (ES). The planning application was approved. The approval was ratified by the Government Office for the South East and the decision was issued on 27 June 2000.

The ES provided details on many aspects of the scheme, which are relevant to the IPPC process. A copy of the ES, and technical statements of the detailed impact assessment studies undertaken of air quality, water environment and noise and vibration are included with the IPPC application. The air quality assessment data used in the ES have been updated using latest modelling software. A Site Condition Report also forms part of the application.

The plant will have a design life of 25 years and will be so constructed as to enable the replacement and upgrading of key components in line with technological change.

Management Techniques

Lakeside will employ quality management systems and technically competent staff to ensure the operation of the plant is executed to the highest environmental standards and improved throughout the life of the installation. Grundon has ISO 14001 accreditation for its current CWI operation and the accreditation is expected to remain applicable. The application of an accredited environmental management system provides safeguards for legal compliance and demonstrates a commitment to continuous improvement in environmental performance, which fits well with IPPC.

Materials Inputs

The facility is designed to process 10,000 tonnes of solid waste per annum at an average calorific value of 17,400 kJ/kg. The following types of waste will be processed:

1. Clinical waste
2. Pharmaceutical waste
3. Controlled drugs
4. Radioactive wastes
5. Other 'hazardous wastes, exhibiting similar chemical and physical properties to the wastes listed in 1-4 above arising from medical, nursing, dental, veterinary, pharmaceutical, military, laboratory or similar practice, investigation, treatment, care, teaching or research
6. GMO waste
7. Other household, industrial and commercial wastes which are non hazardous but require incineration:
 8. by reason of their commercial value;
 9. for reasons of confidentiality or security; or
 10. by virtue of their chemical and physical properties.
11. Associated packagings

Recovered liquid petroleum gas (LPG) will also be injected into the primary combustion chamber as a support fuel. Natural gas will be used as the fuel for plant start up.

Management procedures for acceptance and documentation of waste deliveries will be implemented, which will ensure that only wastes prescribed by the IPPC permit will be delivered to the CWI, and the company's obligations under the Duty of Care are met.

The following raw materials will also be consumed by the emissions abatement equipment:

- Activated carbon
- Dry hydrated lime
- Hydrochloric acid
- Caustic soda
- Proprietary oxygen scavenger
- Tri-sodium phosphate

Grundon will adopt a systematic approach to the reduction of waste at source, by understanding and changing processes and activities to prevent and reduce waste. The objective will be to use raw materials efficiently and consequently to reduce gaseous, liquid and solid emissions. The systematic approach will involve staff at all levels in the ongoing identification and implementation of waste prevention opportunities, monitoring of the use of materials and checking against key performance measures. In order to minimise the use of mains water and to limit discharges to sewer to a minimum, process water will be recovered and reused.

The Clinical Waste Process

The plant will consist of one stream with a capacity to burn 1.25 tonnes of solid waste per hour, providing a throughput of 10,000 tonnes of solid waste per annum. The plant will also burn recovered LPG.

The plant will use the latest design of stepped hearth technology. The waste will pass from a feed conveyor and hopper into the primary (stepped hearth) combustion chamber. The combustion gases then pass into a secondary combustion chamber where they will be burnt in a temperature of at least 1100°C for not less than 2 seconds.

The hot gases pass into a waste heat recovery boiler where the heat in the gases will be used to produce saturated steam. Provision will be made for most of this heat to be exported to the EfW plant when it is in operation to increase its energy efficiency.

The gases then pass through a heat exchanger into the dry flue gas treatment system where activated carbon and lime are used to treat the gases.

The carbon will remove vaporous Heavy Metals (mainly mercury), volatile organic compounds and dioxins from the gas stream to a level below that required by the Waste Incineration Directive.

The reaction between the lime powder and flue gases leads to adsorption of the acid gases present in the gas stream (hydrogen chloride, sulphur dioxide, hydrogen fluoride) onto the lime. By this process the acid gases are reduced to below the levels required by the Waste Incineration Directive.

Control of Emissions to Air

Combustion of the clinical and related wastes will result in carefully controlled releases from the chimney. The abatement plant will be designed to ensure that the plant operates well within the emission limits prescribed in the Waste Incineration Directive.

Following cleaning, the combustion gases will be released to atmosphere via a flue within a 75 metre stack to ensure efficient plume dispersion. The plant will be designed so that there will be minimal or no visible plume for 95% of the time.

The expected worst-case emissions to atmosphere from the CWI plant have been studied in detail by AEA Technology, taking account of local background levels of pollutants in the vicinity of the site. Modelling has been carried out using computer software to predict the dispersion of pollutants from the stack. The results show that the contribution from the CWI to air pollution is not likely to be significant and is unlikely to result in increased risk to human health.

Control of Emissions to Surface Water and Sewer

The CWI process will not give rise to point source emissions to surface water. Process effluent will be directly recycled back to the process.

Effluent from the boiler water treatment plant will be neutralised and tankered to an approved safe disposal location until the sewer is constructed when it will be disposed of to sewer.

The operation of the CWI is not expected to result in any fugitive emissions to surface water, sewer or groundwater.

Odour

The main potential source of odour will be stored putrescible wastes. These will be at all times contained in plastic bags inside bins or in sealed containers. The storage of waste will be carefully managed and the storage area regularly cleaned.

In the event of a waste bag splitting, the affected storage bin will be thoroughly cleaned in a specially designed bin washer, which will wash both the inside and outside of the bin. The cleaning water will be injected into the Primary Combustion Chamber for cooling purposes.

Waste Handling

The incineration of clinical waste in conjunction with the abatement techniques to be applied, results in two waste streams, namely furnace bottom ash and air pollution control (APC) residue.

Bottom ash is classified as a non hazardous waste for landfill purposes. This material will be safely conveyed and landfilled. Grundon will remain alert to the opportunities for further processing and re-use of the bottom ash.

APC Residues will be classified and consigned as a 'special waste'. The residues will be stored on site in sealed Big Bags in the transport container and then removed in the transport container to a special waste disposal facility, such as Grundon's site at Bishops Cleeve, where they will be landfilled.

Energy

When the EfW plant becomes operational, the heat liberated from the clinical waste will be recovered and used to increase the energy efficiency of the EfW plant and will facilitate the increased electricity generation of that plant.

The plant will be built to a high specification. Careful attention will be paid to all normal energy efficiency design features. Unnecessary release of heat will be minimised in line with best operational practice. Grundon will remain alert to opportunities for improvements to energy efficiency.

Prevention of Accidents

The new plant will be designed to be safe to operate and maintain, and safe for visitors and employees. The safety of the plant will be maintained by safe operation and regular plant maintenance by trained and experienced personnel in accordance with documented procedures and quality standards.

The aim will be continuous improvement in all aspects of safety. Management actions will be implemented by Emergency Procedures setting out the actions to be taken in the event of any foreseeable accident or emergency event.

Noise and Vibration

An assessment has been undertaken to establish the likely impact of the development in terms of noise and vibration from operation of the whole Lakeside facility, including traffic movements. It concludes that there will be no significant problems created by noise or vibration from the whole facility. The contribution from the CWI will be a very small proportion of the noise generated from the facility.

Emissions Monitoring

Continuous monitoring of particulates, hydrogen chloride, carbon monoxide, oxygen, volatile organic compounds, nitrogen oxides and sulphur dioxide emissions to air will be undertaken in the stack. Other pollutants (hydrogen fluoride, dioxins and heavy metals) will be monitored by spot measurements at agreed intervals. The data will be recorded and operators will be immediately alerted should emissions to air approach authorised limits. Monitoring equipment and procedures will be agreed with the Environment Agency prior to operation and will be conducted in accordance with national and international standards.

Disposal of Substances to Land

Disposal of solid incineration residues to land will be carried out in full accordance with the Duty of Care. The characteristics of the residues will be determined on a regular basis by sampling and analysis of bottom ash and APC residues. All residues will be weighed before leaving the plant.

Releases to Water

Process effluent will be directly recycled back to the process. Boiler water effluent will be collected in an effluent sump. In the first instance this will be neutralised and tankered away to an approved safe disposal point. Once a sewer connection is available the effluent from the sump will be neutralised and pumped directly to sewer as an interim measure. Provision will be made for the surplus boiler water and water treatment plant regeneration effluent to be pumped to the EfW plant and recycled, once the EfW plant is commissioned.

De-Commissioning

An intrusive investigation has been undertaken of ground conditions and the water environment at the Lakeside Road site to establish base-line environmental conditions prior to the commencement of construction and operation of the CWI plant. The results of the investigation are presented in the Site Condition Report.

At the end of the operation period a detailed De-commissioning Plan will be implemented to ensure that the site is returned to a satisfactory state for on-going use.

Emissions standards

Air pollution abatement systems will ensure that the plant conforms to the emissions limits set out in the Waste Incineration Directive 2000/76/EC. In practice, the pollutant abatement technologies applied will limit the emission concentrations to levels below the limit values.

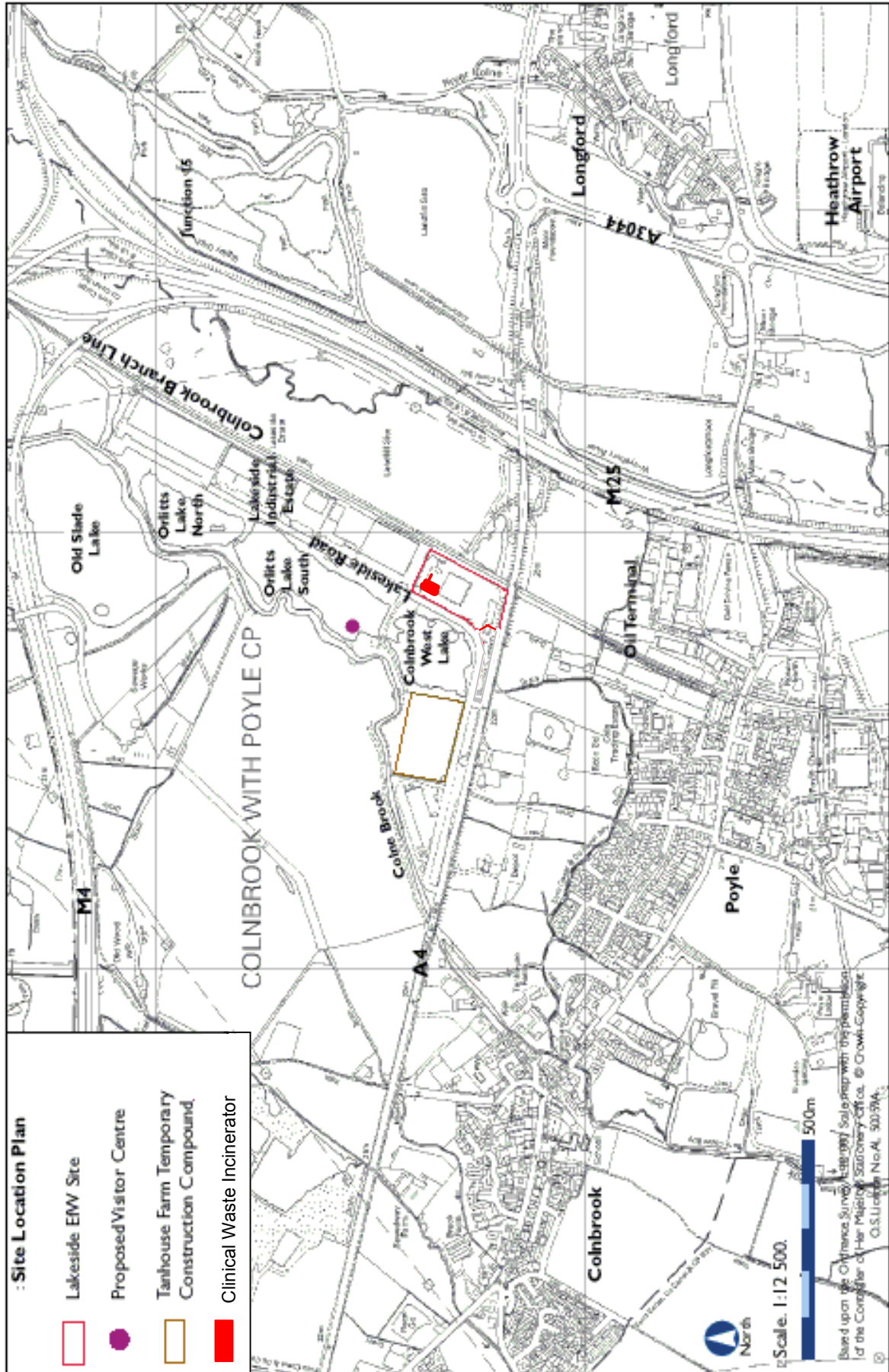
Assessment of Environmental Impacts

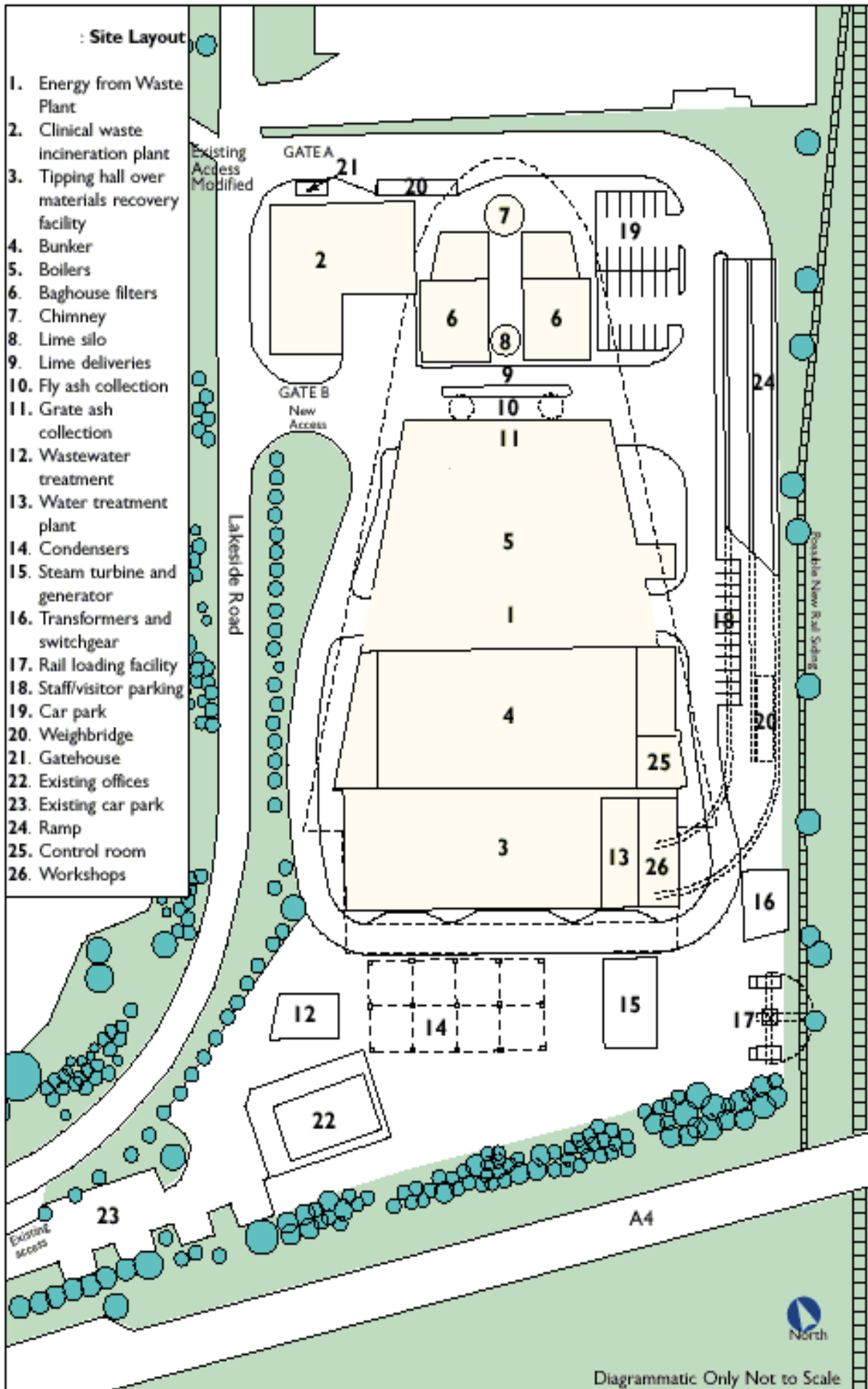
A Best Available Techniques (BAT) Assessment has also been carried out having regard for the requirements of the EA's new H1 Guidance Note. This new assessment compares the relative environmental and economic performance of different process and abatement options to demonstrate that the selected technology represents BAT.

An assessment has also been undertaken to establish whether the CWI plant is likely to have an effect on any European nature conservation sites as defined under the Conservation (Natural Habitats etc.) Regulations 1994. Windsor Great Park is a site on the 10km boundary. The effects of the development are expected to be insignificant.

Two nationally important Sites of Scientific Interest (SSSI) have been identified within a 5km radius of the Facility. The Ecology Report covers the investigation and assessment of the potential effects of both construction and operation noise and the effect of emissions. The Report concludes that the potential impact is considered insignificant.

Overall the waste management activities on site will be carried out in a manner that ensures that the waste is recovered or disposed of without endangering human health and without using processes or methods that could harm the environment.







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