14.0 CONSTRUCTION IMPACTS

14.1 Introduction

14.1.1 This section of the ES describes the construction phase of the Brigg REP development and the potential environmental effects associated with this stage of the project.

14.1.2 The specific potential effects of construction have been identified for the following topic areas:

- traffic;
- hydrology;
- noise and vibration; and
- air quality.

14.1.3 The full assessments of construction effects are contained within the relevant technical chapters of the ES. The effects upon ecology/nature conservation, landscape and archaeological/heritage interest are considered to relate to the Brigg REP development as a whole, as opposed to simply the construction phase. As such these impacts are not specifically identified within the relevant technical assessment chapters.

14.1.4 All construction compounds, storage areas, staffing facilities and car parking would be located on land either within, or adjacent and contiguous with, the Brigg REP planning application boundary. As such, there is no requirement for planning permission for these elements, as they would be permitted development by virtue of the Town and Country Planning (General Permitted Development) Order 1995, Part 4, Temporary Buildings and Uses within Class A. Consequently, the construction related infrastructure has not been included within the planning application boundary.

14.2 Management of Construction

14.2.1 The precise nature of construction operations can only be fully determined following detailed design. However, they would involve a standard range of building and engineering activities which have been summarised below.

14.2.2 Subject to obtaining the necessary planning permission, permits and licenses, it is currently anticipated that construction work would commence in the third quarter of 2009 and last around 30 months (i.e. until start of 2012). However, enabling works may start slightly earlier and similarly commissioning may extend beyond this period.

14.2.3 Construction hours are proposed to be 07:00 to 18:00 weekdays and 08:00 to 13:00 on Saturdays. No work is planned on Sundays or Bank Holidays. However, there may be occasions, as is often the case with major engineering contracts, that work would need to be undertaken outside of these hours.

14.2.4 Construction work would be undertaken in a phased manner with various storage/working areas moving around the site as individual buildings are erected.

14.2.5 Eco2 recognise that it is essential that any disturbance to neighbours and the local community be minimised during the construction period. To this end it is proposed that a Construction Management Plan is prepared (under the control of a planning condition), to ensure that the best available techniques necessary to minimise/mitigate adverse effects would be adopted. The Construction Management Plan could encompass:

- agreed operating hours;
- agreed delivery hours;
- construction noise management;
- construction dust management;
- surface water management;
- vehicle parking;
- vehicle routeing;
- storage of materials;
- waste management;

- construction lighting.

14.3 Main Construction Phases

14.3.1 Construction of the Brigg REP project would take place in five main phases as follows:

- enabling works;
- site establishment;
- structural works;
- process/equipment installation;
- commissioning.

Each is described in more detail below.

Enabling Works

14.3.2 Prior to site establishment, an enabling works contract would be carried out. This would include:

- the erection of temporary security fencing around the whole of the construction site;
- demolition and removal of contaminated material;
- the removal and/or diversion of all services pipes and cables within the Brigg REP site;
- the installation of temporary services to serve the construction site accommodation;
- the re-grading of the site and creation of a development platform at circa 4.0m AOD, together with the flood compensatory storage basins;
- the installation of temporary drainage infrastructure (ditches, grips and settling lagoons) across the REP construction area.

14.3.3 This phase is likely to involve a wide range of construction plant and machinery including:

- dumper trucks;
- excavators;

- telehandlers;
- all terrain forklifts;
- mechanical diggers;
- power floats;
- generators and compressors;
- crawler cranes;
- tower cranes;
- construction lighting; and
- numerous items of small hand held equipment.

Site Establishment

14.3.4 This phase would include:

- construction of roads and temporary car parks;
- installation of construction offices;
- materials deliveries;
- foundation construction (potentially involving piling);

14.3.5 This phase is likely to involve the same range of construction plant and machinery listed in paragraph 14.2.3, with the possible addition of:

- piling rigs; and
- concrete wagons and pumps.

14.3.6 The key elements of the construction facilities are described below.

Car Parking

14.3.7 It is proposed to provide an on-site temporary car park facility that would cater for all construction personnel and visitors engaged on the project, thereby removing the need for consideration for off-site parking at remote locations and “bussing in”. The sizing of the car park is not an issue, and there is more than sufficient space within the site to accommodate all constructors’ vehicles.

Main Site Access Road and Internal Construction Haul Roads

14.3.8 The access into the construction site would be via the existing Glanford Brigg Power Station and Former British Sugar Site access road, off the B1206.

Office and Messing Accommodation

14.3.9 The main construction offices and messing facilities would be located either within the site or adjacent to the site in accordance with the provisions set out in paragraph 14.1.4. The operatives' welfare/canteen accommodation would be located within the same area. This would be an integrated complex, including toilet and wash facilities, drying rooms and canteen/mess room and would be capable of accommodating all operatives.

Stores and Storage Areas

14.3.10 It is proposed that a covered storage area would accommodate the dry storage requirements for mechanical and electrical equipment and plant, together with a smaller covered storage area for civils and building.

14.3.11 Within the confines of the site various dedicated storage areas can be made available. In addition there would be temporary lay down areas afforded within the building/plant foot print prior to the perspective construction taking place. The ratio of lay down acreage to building footprint area (circa 1:3) would be more than adequate and therefore removes the need to seek additional storage space off site.

14.3.12 A concrete batching plant area would be included to serve the heavy reinforced concrete elements of construction..

Structural Works

14.3.13 The structural works phase would involve constructing the sub-structures (foundation constructions etc) and the super-structures (i.e. the above ground buildings). Activities would include:

- erection of structural steel work;

- formation of concrete structures;
- installation of floors / ceilings;
- installation of building cladding systems;
- surfacing for permanent roads / hardstandings;

Process / Equipment Installation

14.3.14 Following completion of the buildings, process equipment would be connected together and the mechanical and electrical 'fit out' undertaken. By this stage of the construction period most activities would be taking place internally.

Commissioning

14.3.15 On completion of the process/equipment 'fit out' the main construction contracts would be complete. There would then be a commissioning phase where the REP processing facilities would be tested. This would involve operating all or parts of the facility on a stop/start basis under closely monitored conditions, the purpose being to check the plant is performing to the requisite operational levels. No commissioning activity could take place until all of the regulatory permits and licenses are in place.

14.4 Environmental Effects & Mitigation

Construction Traffic

14.4.1 Traffic associated with the construction of the Brigg REP project would be managed via the implementation of the Construction Traffic Management Plan which would be agreed following consultation with local planning and highway authority officers and the Highways Agency.

14.4.2 Peak construction traffic demand is anticipated to take place from 2010 through to the final year of completion. Due to the nature of the proposed buildings to be constructed on site (mainly steel framed traditional large industrial units), the limited requirement for construction of heavy masonary / concrete construction and the fact that the site is already predominately cleared and ready for development (thus limiting demolition traffic) it is not anticipated that the construction of the site would generate substantial levels

of HGV traffic over the local highway network. Certainly it is not anticipated that construction traffic demand would regularly exceed those predicted traffic movements associated with the typical day to day operation of the REP site.

Geology and Hydrogeology

14.4.3 The potential effects on site personnel, geology and groundwater have been predicted to occur predominantly during the construction phase and, specifically, in relation to the potential creation of pathways during the preparatory groundworks exercise, piling operations, excavations for new foundations or the provision of services.

14.4.4 It will be necessary to undertake further ground inspection and site investigations following the demolition of buildings and removal of hardstandings, but prior to construction, to provide adequate overall coverage of the site. Investigations should be phased, targeted and efficient and based upon current UK guidance and best practises, such as BS10175, BS5930 and CLEA guidance etc.

14.4.5 As detailed in Chapter 9, there is a limited amount of contamination on site due to its historical use. An outline remedial strategy has been submitted to the Environment Agency. The remedial criteria and outline strategy would be refined and formatted as a detailed specification for the works following inspections and further monitoring immediately post-demolition. Adopting this approach would ensure that the environmental risks presented to ground and groundwater resources are brought within acceptable and sustainable levels, resulting in no significant residual adverse effects.

14.4.6 All excavations would be carried out in accordance with current UK best practice so as to prevent the spread or mobilisation of any contaminated excavated material and cause surface water pollution. These practices would extend to the reuse or disposal of excavation residues as appropriate. If construction processes encounter suspected contaminated material, the nature and extent of the contamination would be assessed by a suitably qualified environmental scientist and the material dealt with as part of the remedial strategy.

14.4.7 All piling or deep excavations would be designed and carried out in accordance with current UK best practice guidelines with regard to the presence of a major aquifer and Source Protection Zone underlying the site. The advice of the Environment Agency would be sought and a foundation risk assessment would be undertaken, in line with EA guidance, prior to the commencement of excavation works to ensure that no significant residual effects occur.

14.4.8 Construction workers would be provided with appropriate personal protective equipment following a site-specific risk assessment, resulting in no significant residual effects.

Ground and Surface Waters

14.4.9 The potential effect on surface water quality which should be considered during construction is the possibility that large quantities of suspended solids enter the off-site drainage system.

14.4.10 Suspended solids exist in all surface water runoff, to some extent or another. However, during the earthworks phase of a construction project this situation can be exacerbated beyond acceptable limits, without appropriate precautionary measures being implemented.

14.4.11 The sources of these potential pollutants are invariably:

i) run-off from exposed earthworks formations gathering soil particles, prior to entering the off-site land drainage systems;
ii) earthmoving equipment and lorries transporting mud from the construction site onto the existing access roads.

14.4.12 Both of the above situations can be effectively managed through good working practices employed by the appointed contractor.

14.4.13 In the case of item i) above, peripheral grips cut around the earthworks operations would intercept contaminated run-off which could, in turn, be diverted to temporary settlement lagoons. Designed with appropriate retention

periods, these lagoons would allow suspended solids to settle out from the run-off, prior to discharge into any off-site drainage systems.

Noise and Vibration

14.4.14 The extent of construction equipment operating on site would vary from day to day and may be in use at different stages of the proposed development for relatively short durations. The noisiest activities are expected to be generated during soil movement and piling work during the initial stages of the development when excavators, piling rigs or similar may be in use. Possible noise levels that might be experienced by receptors have been presented in Chapter 11 of this Environmental Statement.

14.4.15 For construction noise, in accordance with appropriate standards, best practical means would be employed to control the noise generation (e.g. using equipment that is regularly maintained, where practicable use equipment fitted with silencers or acoustic hoods). Other measures proposed include restriction on operating hours, types of plant and sensible routing of equipment to site.

Air Quality

14.4.16 During construction of the proposed facilities, there is the potential for short-term effects to occur, mainly in the form of dust emissions generated by earthmoving activities associated with the following construction operations:

- movement of vehicles and plant on exposed surfaces; and
- regrading and landscaping activity.

14.4.17 Given that the proposed site is located approximately 400 metres from the nearest residential property, and it is considered to be a small to medium-sized construction project, no material impacts associated with dust would occur.

14.4.18 Notwithstanding the above, measures that could be implemented to prevent the occurrence of dust problems are relatively straightforward and practical. As a consequence, the following would be incorporated into the Construction Management Plan:

- design of working methods to minimise dust generation;
- identification of all potentially dusty activities prior to starting work and incorporation of mitigation;
- misting/watering of all dusty areas on a regular basis during dry periods to reduce dust suspension;
- deployment of street washing /sweeping units to clean deposits from the highway;
- sheeting/covering of all lorry loads of exported/imported/transferred material;
- location of temporary stockpiles of material away from properties and designed to minimise wind blown dust emissions;
- limitations of vehicle speeds on unmade haul roads to <20 km h-1; and
- maintenance of engines on all plant and equipment to minimise exhaust emissions.

14.5 Conclusion

14.5.1 This Chapter has summarised the construction phases and their impact. Full assessments of the effects of construction are reviewed as and when relevant in the individual chapters of this ES.