15 MITIGATION SUMMARY AND ENVIRONMENTAL MANAGEMENT

15.1 INTRODUCTION

In the course of undertaking the EIA a number of measures have been identified to mitigate and manage the predicted impacts of the Proposed Development. These measures are described in *Chapters 6* to *13* which cover the technical topics addressed in the EIA. The mitigation measures have been committed to by the Company and can be viewed as integral parts of the Proposed Development. This chapter summarises the mitigation and management measures and outlines how the measures will be delivered.

It should be noted that in the course of appointing a construction contractor such matters as detailed working methods and procedures will be developed which will in turn add more detail to the mitigation. It should be further noted that in the course of obtaining an Environmental Permit to operate the Proposed Development greater detail will be developed on such matters as mitigation, pollution control and monitoring for compliance.

At this stage however the mitigation and management measures committed to by the Company provide the basis for the EIA. The impacts predicted and significance of effects as assessed assume implementation of the measures described.

15.2 MITIGATION SUMMARY

Table 15.1 sets out a summary of mitigation measures that have been identified in the description of the project design and through the impact assessment process. For the full context of the mitigation the source chapters (i.e. *Chapters 6* to *13*) should be referred to.

15.3 MITIGATION DELIVERY

As noted above, the ES sets out the mitigation measures that the Company is committed to implementing. During construction, the Company will deliver on the commitments it has made in the ES with the help of a Construction Environmental Management Plan (CEMP) (an outline of which is presented in *Annex L*). The CEMP will be a living document and will continue to be developed as the Proposed Development proceeds through the detailed design and construction phases, to reflect the results of any discussions with the statutory consultees and others as well as to include details of the conditions imposed by DECC. The appointed construction contractor will also have input to development of the CEMP and all works will be required to comply with its provisions.

The Project will be operated in accordance with the provisions to be contained within the Environmental Permit to be obtained from the Environment Agency.

Table 15.1 Summary of Mitigation

Technical Topic	Key Potential Impacts	Mitigation	Mechanism for Delivery of Mitigation
Construction			
Land and Water	Compaction of soils	Movement of materials onto and within the construction site will be minimised. Materials will be re-used on site (where appropriate) to reduce the need to remove them from the site.	Proposed Development design; construction schedule; CEMP
	Contamination of soils, surface waters or groundwater	Any externally sourced fill material used during land raising activities will be validated prior to use and tracked from origin.	CEMP
		Disposal of waste, including any surplus spoil, will be managed so far as is reasonably practicable to maximise the environmental and development benefits from the use of surplus material and reduce any adverse environmental effects of disposal.	Site Waste Management Plan
	Contamination of groundwater	Piling works will be designed to minimise creation of potential contaminant pathways to underlying groundwater. Planning and preparing for piling works will follow a separate Foundation Works Risk Assessment. Works will be undertaken in accordance with relevant guidance.	Proposed Development design
	Contamination of soils, surface waters or groundwater	If contaminated areas are identified during construction works, activities that could disturb the area will be stopped at that location, a site investigation will be carried out and appropriate mitigation identified. Information on potential risks to personnel from contaminated materials will be communicated to the construction workforce. If remediation is required, a risk assessment and remediation strategy will be prepared covering the activity.	Soil Management Plan; Surface and Groundwater Management Plan
	Contamination of surface waters	All dewatering activities during excavation and foundation works will include monitoring of water discharges or sediment laden runoff. Where appropriate, discharges and runoff will be treated prior to discharge to nearby watercourses. Water with high fine particle content will transit through a sedimentation pond. A temporary drainage network will be established ahead of construction works, and will include foul drainage provisions. Regular monitoring of drainage water quality will be undertaken prior to discharge.	Surface and Groundwater Management Plan

Technical Topic	Key Potential Impacts	Mitigation	Mechanism for Delivery of Mitigation
	Contamination of surface waters	In the event of accidental spills involving hydrocarbons, any contaminated water will be isolated at the closest intermediate point of intervention and appropriately treated or discharged.	Surface and Groundwater Management Plan
	Contamination of soils, surface waters or groundwater.	Waste generation will be minimised, including through recycling and re-use of waste materials. Hazardous waste will be identified by a qualified environmental specialist, and appropriate management and disposal methods, including safety precautions, selected.	Waste Management Plan
	Loss of topsoils and degradation of soil quality	Topsoil where present will be removed and stored and maintained separately from other materials for use subsequently in reinstatement, landscaping etc.	Soil Management Plan
Ecology	Habitat: permanent loss of dense continuous and scattered scrub, amenity grassland and 4 *Sorbus sp*. trees. This habitat loss will affect breeding birds.	Landscape Masterplan will include screen planting which will provide new and additional scrub habitat suitable for breeding birds.	CEMP Landscape Masterplan
	Temporary loss of aquatic vegetation along drainage ditches.	Temporary and permanent habitat loss will be limited to the minimum needed for safe implementation of the works.	CEMP Landscape Masterplan
		All topsoil and subsoil will be stored separately and reinstated as soon as possible after completion of construction using best available practice (e.g. Defra. 2009. *Construction code of practice for the sustainable use of soils on construction sites)*. Where necessary seeding will be undertaken to aid restoration.	Soil Management Plan; Landscape Masterplan
	Breeding Birds, potential disturbance and displacement	Any lighting that is required for the construction and operation of the Proposed Development will be directed away from surrounding habitat to minimise light disturbance to fauna, subject to safety and security considerations	CEMP
	Qualifying and protected species	Good practices will be followed to minimise disturbance including specification of efficient well-maintained, quiet machinery with inbuilt noise attenuation. Perimeter fencing and screens will be used where necessary to minimise disturbance due to noise and activity.	CEMP

Technical Topic	Key Potential Impacts	Mitigation	Mechanism for Delivery of Mitigation
	Breeding birds, disturbance, displacement and potential for injury	Although impacts are predicted to be negligible there is a potential to commit offences without mitigation. The initial soil stripping and vegetation removal stage will be undertaken as far as possible outside of the bird breeding season (reasonably being regarded as 1st April-31st July given the northern location). Where this cannot be achieved all areas to be cleared will be assessed first by an Ecological Clerk of Works (ECoW) or suitably qualified ecologist, and any nest sites identified. Construction in and around any nesting sites will be prevented until such time as young have either left the area or are capable of strong flight.	CEMP Landscape Masterplan
	Water Vole, potential disturbance and displacement	In the March prior to construction, vegetation should be removed from both banks (1). All growth should be stripped to bare soil, and should include, where possible, the emergent fringe. Any subsequent re-growth should be removed up until construction works take place. A repeat survey of the drain for water vole signs should be undertaken two weeks prior to works starting. If water vole latrines or other water vole signs are found, a programme of trapping and removal should take place.	CEMP Landscape Masterplan
	Reptiles, potential injury and killing during site clearance of potential habitat.	All areas of potentially suitable reptile habitat to be cleared will be assessed first by an Ecological Clerk of Works (ECoW) or suitably qualified ecologist for reptile presence. If required a destructive search in the presence of the ECoW or suitably qualified ecologist will take place If reptiles are found to they will be released into suitable habitat.	CEMP Landscape Masterplan
Air Quality	Dust impacts on neighbouring properties and land uses	The control of construction dust will be carried out in accordance with methods recommended by the IAQM.	Dust Mitigation Plan CEMP

(1) Strachan R and Moorhouse T (2006) Water vole conservation handbook 2nd Edition. Wildlife Conservation Research Unit, Oxford1.

Technical Topic	Key Potential Impacts	Mitigation	Mechanism for Delivery of Mitigation
Noise	General construction noise effects on nearby receptors	Standard good practice measures will be used such as: • use of models of compressors, generators and pumps fitted with properly lined and sealed acoustic covers or enclosures, which will be kept closed whenever the machines are in use; • fitting of mufflers or silencers of the type recommended by manufacturers; • shutting down of machines in intermittent periods between work, or throttling down to a minimum; • housing of stationary noise emitting equipment which is required to run continuously in suitable acoustic enclosures; • maintenance of plant in good working condition to minimise extraneous noises arising from mechanical vibration; and • siting noisy plant and equipment as far away as possible from noise sensitive receptors, and use of barriers (e.g. site huts, acoustic sheds or partitions) to reduce the level of construction noise at receptors wherever possible.	CEMP
	Evening and night-time noise effects on nearby receptors	Timing restrictions will be placed on certain activities such as piling and other noisy constriction works.	Planning condition and CEMP
Archaeology	Impacts on buried remains of archaeological and/or palaeoenvironmental significance	Construction activity in this area will be preceded by archaeological fieldwork that could take the form of a palaeoenvironmental coring survey and/or trial trenching.	CEMP Archaeological Management Plan
		Should intrusive construction works for a new cooling water pipeline to the Trent be required, there would be a watching brief during its construction.	CEMP Archaeological Management Plan
		All archaeological fieldwork will be undertaken in accordance with the standards and guidance of the Chartered Institute for Archaeology.	CEMP Archaeological Management Plan
Traffic and transport	Disruption from increased traffic	The proposed shift patterns for the site ensure that staff will be travelling outside of the network peak hours, which will minimise any potential impacts on highway capacity.	CEMP Traffic Management Plan

Technical Topic	Key Potential Impacts	Mitigation	Mechanism for Delivery of Mitigation
		A Construction Traffic Management Plan (CTMP) will be provided for the site at the appropriate time. This will include measures such as: • agreed traffic routing – all HGVs to use A18 entrance, from the west only. All staff to use A18 and not B1392; • traffic management on Chapel Lane, which will include traffic signals to control vehicles at the crossroad junction between the lane and the access road. Priority will be given to vehicles on Chapel Lane if it is safe to do so; • staff parking arrangements; • hours of operation, including restriction to deliveries; • wheel washing and dust control; • provision of advisory / advanced signage to direct construction vehicles from M180; • information to contractors about routing, with potential for disciplinary process for contractors ignoring information; • membership of any contractors scheme, such as “Considerate Constructors”; • contact details at SSE for residents to report problems.	CEMP Traffic Management Plan
		A potential reduction in speed limit from National Speed Limit to 40mph in vicinity of A18 site entrance, during construction, to improve safety for contractors and passing vehicles.	Agreement with Highways Authority CEMP Traffic Management Plan
		Abnormal loads movement applications will be made to the Highway Agency as appropriate. Temporary road closures will need to be put in place on local roads along the haulage route, and SSE’s public relations team will ensure that local residents are kept informed about these closures and movements. Street furniture, such as lighting columns or telegraph poles, may need to be removed temporarily, and alterations to kerblines may be required to accommodate the swept paths of the required oversized vehicles.	Agreement with Highways Authority CEMP Traffic Management Plan
Socio-economic	Economic and employment effects	SSE will implement Open4Business to enhance accessibility to SSE contracts for suppliers within the local and wider areas of influence.	Procurement procedures
		SSE will seek to facilitate apprenticeship, TST and graduate opportunities associated with the Proposed Development. This will contribute to development of engineering skills and promoting employment.	Procurement procedures

Technical Topic	Key Potential Impacts	Mitigation	Mechanism for Delivery of Mitigation
	Disruption to Local Communities	A CEMP and Traffic Management Plan will be produced for the Project, including traffic management, noise and air quality procedures. This will reduce disruption to the local community. It will also detail the communications plan and complaints mechanism.	CEMP; Traffic Management Plan
	Safety	Appropriate emergency access routes and site security, including fencing, will be installed on site during construction and decommissioning. Construction and decommissioning activities will be managed in accordance with the regulations and guidelines in force at the time. During operation, SSE will develop a site safety plan to regulate site activities to achieve a high safety standard. This will include regular training and safety inspections.	CEMP
Landscape and visual	Impacts on the visual character	Mitigation measures will include: • limiting land clearance and occupation to the minimum necessary for the works; • restricting construction site lighting outside normal working hours as far as practicable to the minimum required for safety and security; and • maintenance of tidy and contained site compounds.	CEMP; Landscape Masterplan
Operation			
Land and water	Contamination of land and soils	Operational effluents including oil-contaminated, chemically-contaminated, fuel, oil and cooling-water effluents will be discharged, via an intercept pit where necessary, and waste water treatment plant (using existing Keadby Power station facilities), before being monitored and discharged via the existing SSE's Power Station system.	Surface and Ground Water Management Plan
		A completely new separate surface water management system will also be introduced to manage surface water (rain water) runoff after development.	Surface and Ground Water Management Plan
		Discharges will be monitored by SSE and incorporated in to the current permitting system on the existing Power Station site. The exact quantities and nature of effluent discharge will be communicated and agreed with the Environment Agency prior to operation.	Surface and Ground Water Management Plan
		Surface water runoff, processing and waste water discharges to adjacent water bodies will be treated to the acceptable standards. Data from the continuous and regular monitoring of water discharges will be integrated into the Proposed Development's data control system (DCS) or incorporated within the existing Keadby Power Station system, with relevant control-room alarms. Operational staff will have access to environmental information and be trained to ensure compliance with regulatory limits.	Surface and Ground Water Management Plan

Technical Topic	Key Potential Impacts	Mitigation	Mechanism for Delivery of Mitigation
		The exact quantities of abstracted water required will be negotiated and agreed under licence with the Environment Agency and the Canal & River Trust prior to operation. A regular flow monitoring system will be in place to record any adverse changes in water quality and quantity so as not to affect other local users (agricultural, domestic and industrial users).	Surface and Ground Water Management Plan
		The Proposed Development will be designed to control surface water runoff on site. The drainage system will discharge to the River Trent using the same route as the Keadby I discharge pipeline, following any appropriate treatment measures and monitoring, and subject to review of the existing discharge consent.	Surface and Ground Water Management Plan
		All areas where potentially polluting substances will be stored and used will be designed with appropriate bunding to industry standards. Bunds will provide 110% of stored liquid volumes and be constructed of impermeable materials. In the rare event of an oil or fuel spill into the bund system, the oil would be pumped out for re-use if possible, or disposed of in an environmentally acceptable manner.	Surface and Ground Water Management Plan
		Management procedures for waste transport on to /off the Proposed Development will be in place, and regularly audited.	Site Waste Management Plan
		Emergency and contingency plans will be developed to safeguard operational activity, Site users and quality of surface water.	Emergency and contingency plans
		The Proposed Development will be operated in accordance with best working practices and measures to protect the land and water environment and will be in accordance with those set out in relevant Environment Agency Pollution Prevention Advice and Guidance (PPG) notes.	Environmental Permit
Ecology	Eels: potentially, eels can get caught up in intake flows and screens at any stage of their life. Similar considerations apply to lamprey.	Best practice measures will be implemented according to The Environment Agency guidance (1). Screens can be placed diagonally to the flow to effectively reduce entrapment of eels. Screens should be properly maintained and cleaned to retain effectiveness. Strobe lights and/ or acoustic infrasound may also provide an additional deterrent. Further information is provided in the sub-sections below.	Detailed design

(1) The Environment Agency. *Screening at intakes and outfalls: measure to protect eel*. The Environment Agency. Bristol.

Technical Topic	Key Potential Impacts	Mitigation	Mechanism for Delivery of Mitigation
	Air quality impacts on the Keadby Warping Drain LWS, Keadby Wet Grassland LWS, Keadby Wetland LWS, Keadby Soak Drain LWS, Stainforth and Keadby Canal Corridor LWS, Three Rivers LWS and Three Rivers Marsh SNCI.	Supporting management of the LWSs and SNCI through working with GLNP to manage and monitor sites.	Consultation and agreement with Lincolnshire Wildlife Trust and North Lincolnshire Council
Air quality	Air quality impacts (mainly from nitrogen oxide emissions) with potential effects on people, flora and fauna.	Meeting of emission limits by design and monitoring in accordance with Environmental Permit requirements	Design and Operational Monitoring Plan
Noise	Noise levels at nearby receptors	Mitigation will be largely achieved through design and procurement of suitable equipment, together with equipment housing and cladding to attenuate noise. Particular attention will be paid to cooling tower design in regard to such matters as low noise fans, motor attenuation, baffling of inlets, pump enclosures, together with or operational controls such as reducing fan speed when station loading allows.	Design and Operational Monitoring Plan
Landscape and Visual Impact	Visual impact of the Proposed Development	Perimeter planting to help screen the lower aspects of the Proposed Development and generally soften views.	Landscape masterplan
Decommissioning			
Land and soil	Contamination of land and soils	Minimisation of materials moved on site through careful design of the Site and the decommissioning schedule.	Decommissioning Plan
		Fill material used during land raising activities will be used on site wherever possible if it is to be removed.	Decommissioning Plan
		The disposal of waste will be managed so far as is reasonably practicable to maximise the environmental and development benefits from the use of surplus material and reduce any adverse environmental effects of disposal.	Decommissioning Plan
		Minimising the potential to create pathways for contaminants to travel to underlying groundwater through appropriate decommissioning of pilings.	Decommissioning Plan
		Site investigations will be undertaken before decommissioning to assess the potential for contamination from the operational phase. If the potential for contamination exists, no material will be moved until the risks of that contamination have been assessed and can be appropriately managed.	Decommissioning Plan
		The Waste Management Plan will include decommissioning activities and an audit programme to demonstrate compliance with statutory requirements.	Site Waste Management Plan

Technical Topic	Key Potential Impacts	Mitigation	Mechanism for Delivery of Mitigation
		Provision will be made for a suitable environmental specialist to identify any ’Hazardous Waste ‘ as defined in The Hazardous Waste (England and Wales) Regulations 2005 so that it can be suitably managed and disposed of during works.	Site Waste Management Plan