Cory Environmental Management Limited and
Wheelabrator Technologies Inc

Proposed Power & Recycling Centre, Willows Business
Park, King’s Lynn, Norfolk

Scoping Report - FINAL

December 2010
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Executive Summary

Currently Norfolk is heavily reliant on landfill for the disposal of its wastes with 482,000 tonnes of waste landfilled in 2008/09. This situation is no longer economically or environmentally sustainable. Councils across the UK have strict targets to reduce the amount of waste that is sent to landfill to minimise its impact on the environment. The costs of landfill are also increasing with landfill tax rising year on year.

Norfolk’s Revised Waste Core Strategy was published in October 2010. The Core Strategy encourages the consideration of alternative waste management options to landfill and, given the present lack of waste treatment infrastructure, identifies a clear need to establish a network of residual waste treatment facilities to serve Norfolk over the plan period to 2026 and beyond.

Energy from Waste (EfW) technology is a method of waste management that is capable of treating non-hazardous residual waste (waste that is leftover after recycling) and diverting waste away from landfill while not compromising Norfolk’s ability to continue its high levels of recycling and composting.

Norfolk County Council (NCC) has identified a requirement for a residual waste treatment facility capable of treating approximately 170,000 tonnes of non-hazardous municipal solid waste (MSW) per year over a 25-year contract period and is procuring a suitable facility through a Private Finance Initiative (PFI) tendering process.

Cory Environmental Management Limited (‘Cory’) and Wheelabrator Technologies Inc (‘Wheelabrator’) have recently been selected by NCC as the preferred bidder for the PFI contract and is using EfW technology as part of its solution because of its potential to offer good value for money, a strong environmental performance and the generation of energy.

A site within the boundaries of The Willows Business Park (the ‘Site), Saddlebow, King’s Lynn, is identified by Norfolk County Council (NCC) as being ‘potentially acceptable’ for a range of waste management options including EfW (see Site WAS 65).

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Cory and Wheelabrator is proposing to develop a power and recycling centre at this site. The proposals are referred to in this report as the **Willows Power & Recycling Centre**.

The proposed Willows Power & Recycling Centre will provide an EfW facility with an expected throughput of approximately 268,000 tonnes of waste per annum that will generate some 22MW (Gross) of electricity – enough to power the equivalent of around 36,000 homes - using residual non-hazardous municipal solid waste (MSW) from Norfolk and provision for some non hazardous Commercial and Industrial (C&I) waste arising from local businesses as a fuel.

An integrated recycling centre will recover metals from the Incinerator Bottom Ash (IBA) produced by the EfW process (around 5,000 tonnes per year) and also enable the remaining bottom ash (between 50,000 to 55,000 tonnes per year) to be recycled into a beneficial product for use in the construction industry.

Opportunities to enable waste heat and steam from the EfW process to be utilised through combined heat and power (CHP) will be maximised through the provision of suitable enabling infrastructure on site and the identification of a potential off site CHP connection route from the proposed Willows Power & Recycling Centre to a nearby local business, Palm Paper. Discussions with Palm Paper are in progress.

A planning permission and Environmental Permit will need to be obtained to build and operate the Willows Power & Recycling Centre. NCC, as the Waste Planning Authority, will determine the planning application while the Environment Agency (EA) will decide whether to issue a Permit.

An Environmental Impact Assessment (EIA) is to be carried out. The EIA will allow the environmental impacts of the proposed development to be fully assessed together with the consideration of appropriate mitigation measures where required to ensure local people and the environment are properly protected. The resulting Environmental Statement (ES) will be submitted to accompany the planning application currently being prepared by Cory and Wheelabrator and will also help inform the preparation of the Permit application submission.

One of the initial stages of the EIA process is the preparation of an EIA Scoping Report (this document) to review and consider the potential environmental impacts of the proposed development. The Scoping Report is prepared by Cory and Wheelabrator in support of a formal request for an EIA Scoping Opinion that is made to NCC.
The purpose of this Scoping Report is to provide sufficient information to NCC to enable them to consult with relevant statutory and non statutory consultees, and to establish the scope of and methodology for the EIA and to identify appropriate information, data and studies that may be of relevance to the assessment, to ensure that all potential environmental impacts are considered and where appropriate mitigated against.

The report sets out:

- Preliminary details of the proposed Willows Power & Recycling Centre
- Details of the Site and its surroundings
- Details of the proposed content of the EIA following initial consideration of the relevant potential environmental issues pertinent to the proposed development including:
  1. Need and Alternatives
  2. Traffic and Transportation
  3. Air & Climate (including Human Health Impact)
  4. Landscape and Visual Impact
  5. Ecology and Nature Conservation
  6. Hydrology and Flood Risk
  7. Hydrogeology and Ground Conditions
  8. Noise & Vibration
  9. Archaeology and Cultural Heritage
  10. Socio-Economic Impact
  11. Amenity
  12. In Combination and Cumulative Impacts
  13. Summary and
  14. Health Impact Assessment
1 Introduction

1.1.1 The Willows Power & Recycling Centre proposals are deemed to fall under category 10 of Schedule 1 of the Town and Country Planning (EIA) (England and Wales) Regulations 1999. This identifies “Waste disposal installations for the incineration or chemical treatment (as defined in Annex IIA to Council Directive 75/442/EEC under heading D9) of non-hazardous waste with a capacity exceeding 100 tonnes per day” as schedule 1 development. The regulations require EIA in every case for schedule 1 development.

1.1.2 An EIA will therefore be undertaken to allow the potential environmental impacts of the proposed development to be assessed and where appropriate mitigation measures to be outlined. The resulting ES will be submitted alongside the planning application for the proposals to develop the Willows Power & Recycling Centre.

1.1.3 Regulation 10(1) of the 1999 Regulations provides for a person who is minded to make an EIA application to ask the relevant planning authority to state in writing their opinion as to the information to be provided in the ES.

1.1.4 Although not a mandatory requirement of the Regulations, scoping is an important facet of EIA. This importance was highlighted in paragraph 2.2 of the Department of the Environment’s Good Practice Guide 24, which states:

“Defining the scope is one of the most critical parts of an EIA in that it sets the context for what follows. If the scope is defined too narrowly, some critical area of uncertainty or adverse effect may emerge late in the day. Decisions on the shape of the project may then be too far advanced to allow for any real change. On the other hand, if the scope of the work is too loosely defined, then much time, effort and cost may be spent on pursuing unnecessary detail.”
2 Description of Proposed Development

2.1 Proposals

2.1.1 NCC has identified a requirement for a residual waste treatment facility capable of treating approximately 170,000 tonnes of non-hazardous MSW per year over a 25-year contract period and is procuring a suitable facility through a PFI tendering process.

2.1.2 Cory and Wheelabrator have recently been selected by NCC as the preferred bidder for the PFI contract and is using EfW technology as part of its solution.

2.1.3 The Consortium has selected a site within the boundaries of The Willows Business Park, Saddlebow, King's Lynn, to develop the Willows Power & Recycling Centre in support of its PFI bid to provide residual waste treatment services to NCC. The ES will explain what other sites were also considered as part of this process.

2.1.4 The proposed development will meet the requirements of the Norfolk PFI as explained above and provide further sufficient capacity to treat some 98,000 tonnes per annum (tpa) of C&I waste arising from local businesses.

2.1.5 The chosen Site is situated approximately 3 km south of King's Lynn and forms part of the Saddlebow Industrial Area. The location is shown in Figure 1 and 2.

2.1.6 In summary, the proposed Willows Power & Recycling Centre will comprise:

- An EfW plant with an expected throughput capacity of approximately 268,000 tpa and a stack of 85m in height above ground level;
- An integrated steam turbine-generator plant for power generation of approximately 22MW of electricity gross (net export of 20.4MW without CHP), grid connection cables, plant and equipment to enable electricity to be supplied to the public supply network and infrastructure to enable Combined Heat & Power (CHP) including the potential for the provision of a steam off take connection to an adjoining local business;
- An IBA Recycling Centre for the recovery of ferrous and non-ferrous metals from the bottom ash and in turn to recycle the remaining bottom ash into a product for use in the aggregates industry;
- A Visitor/Community Centre capable of accommodating up to 40 people to promote education and greater awareness relating to waste issues (waste minimisation, re-use, recycling etc), renewable energy (and the role of EfW) as well as being made available for community use;
- Offices, to accommodate the administration and management staff for the proposed Willows Power & Recycling Centre;
- Ancillary development including weighbridges, access and internal roads and parking facilities; and
- Landscape and biodiversity enhancement areas within the Site boundary to improve the overall appearance, biodiversity benefits and functionality of the Site.

2.1.7 With regard to the first bullet point listed above, the expected throughput of the plant is approximately 268,000 tpa. Nevertheless, to add further robustness, the EIA will test the proposals based on a higher throughput capacity of 275,000 tpa as an absolute ‘worst case’.

2.2 General Layout & Design

General Layout & Design

2.2.1 The Site at The Willows Business Park is split into two discrete parcels of land referred to in this Scoping Report as the North Land and South Land.

2.2.2 The two areas are physically separated by The Willows Business Park Spine Road (referred to as the ‘Spine Road’). Both areas comprise an open area of vacant land vegetated with closely mown grass. The topography of the Site is relatively consistent over both areas.

2.2.3 The North Land will accommodate the waste reception hall, an EfW energy recovery plant, turbine hall, air cool condenser, and admin/visitor centre, gatehouse, weighbridge, electricity sub-station and transformer, and associated access and access road, car parking, and landscaping. Details of the key elevations are provided at Figure 5.

2.2.4 Figure 4 shows the proposed Site layout for the proposed Willows Power & Recycling Centre. It shows that the North Land is accessed and egressed at two points along the Spine Road. The junction to the east provides access and egress to the visitor parking area
and through the visitor parking area to the staff parking area located at ground level underneath the waste reception hall element of the building.

2.2.5 The Site is designed with the main EfW building and associated structures and facilities taking up a central position in the North Land. Figure 4 also shows landscaping around the Site’s perimeter with an area of landscaping between the access road and the footprint of the main building. This area incorporates a swale.

2.2.6 The junction to the west provides access and egress for vehicles transporting waste to and from the Site and the internal access road is split into two lanes through the incorporation of a lay-by. This junction provides an access road around the main building and access to the waste reception hall at first floor level via a ramp along the north east elevation.

2.2.7 The Air Cool Condensers (ACC) are located to the north west of the internal access road. The Gatehouse and ‘In’ weighbridge are located along the access road adjacent to the ACC. The ‘Out’ weighbridge is located nearer to the junction to the west.

2.2.8 The South Land will accommodate the treatment and recovery and recycling of IBA comprising: an IBA processing building, recovery/recycling/sorting/storage areas (including bins and equipment,) gatehouse and weighbridge, associated in and out access and access road, car parking and landscaping.

2.2.9 Figure 4 shows that the South Land is rectangular in shape and is intersected by overhead power lines. The operational part of the IBA Recycling Centre extends to within 10m of the overhead line, beyond which a wildflower meadow is to be created with native planting along the Site’s boundary. The South Land is accessed by a junction to the east of the Site and egressed by a further junction to the west. The gatehouse and car parking area is shown along the Site’s eastern boundary. An area of aggregate storage is located centrally within the Site with access around it. The IBA Process Building is located to the south of the access road. To the east of the IBA Processing Building, IBA bins are to be located with a 2m deep lagoon to the west.

2.2.10 The ‘off site’ electrical grid and steam/hot water off take connections will involve some third party land. These connection routes will be assessed as part of the planning and EIA work for robustness.
Design Rationale

2.2.11 Race Cottam Architects has been commissioned to develop the design for the Site.

2.2.12 The immediate surrounding area is largely industrial and the main developments to inform Race Cottam’s design are the Palm Paper Mill and Centrica Power Station. There are several recognised approaches to waste treatment and power generation facilities (e.g. all encompassing, fragmented, expressed roof form, visible process, landscaped, etc), Race Cottam’s strategy is to create a set of buildings with a clean and industrial character consistent with its role, its location and context. The proposed Willows Power & Recycling Centre seeks to offer architectural character through the use of visually strong forms, textures and materials.

2.2.13 Some of the design parameters considered by Race Cottam are as follows:

- Providing opportunities for conserving and enhancing local context, character, biodiversity and communities;
- Establishing focal points, reinforcing legibility and entry points to the plant;
- Displaying and demonstrating the true function of the plant and process by visually exposing the equipment and technology;
- Segregating waste and visitors/ staff traffic to create a safe, legible and accessible environment;
- Locating the noisiest elements (access ramp, ACC) adjacent to the Centrica Power Station and Palm Paper Mill away from the closest residential receptors;
- Minimising the demand for water and improving energy efficiency;
- Ensuring natural lighting will be utilised where possible; and
- Using practical, durable, sustainable construction materials and methods.

2.2.14 The main EfW building will have a maximum height of 51 m in height. Key EfW building heights are shown in Table 1.
Table 1: EfW Building Heights (above base level set at 2.54m AOD)

<table>
<thead>
<tr>
<th>Building Height (m)</th>
<th>Reception Hall</th>
<th>Boiler Hall/FGT</th>
<th>Turbine Hall</th>
<th>ACC</th>
<th>Emissions Stack</th>
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<td>Key Building Height</td>
<td>28.32m (top of slope)</td>
<td>50.89m (highest)</td>
<td>23.10m</td>
<td>24.27m (top of duct)</td>
<td>85m</td>
</tr>
<tr>
<td></td>
<td>23.10m (eaves)</td>
<td>41.59m (lowest)</td>
<td></td>
<td>21.09m (top of cladding)</td>
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2.2.15 For context, the highest point of the adjoining Centrica Power Station's highest building elevation is approximately 40m and its existing and consented (as yet unbuilt) stacks are 60m and 80m in height respectively (LPA ref:08/01544/S36). Palm Paper Mill's highest building elevation is approximately 30m with an existing stack height of 60m. Palm also has consent for an additional, as yet unbuilt, CHP stack of 70m.

2.2.16 Artificial lighting will be used at the Willows Power & Recycling Centre to meet health and safety requirements and maintain a degree of visibility of the built form after dark. However any potential light pollution will be assessed and where required appropriate mitigation will be outlined in the ES.

EfW Treatment Technology

2.2.17 The Willows Power & Recycling Centre will use proven and reliable moving grate EfW technology based on a single process line. The line will consist of a combustion zone, heat recovery zone and flue gas treatment before the cleaned gases are released to atmosphere via the emissions stack.

2.2.18 The EfW facility will operate under the Waste Incineration Framework Directive to recover energy in the form of electrical power to be exported to the National Grid or direct to other potential electricity off takers within the immediate vicinity and to have the potential under CHP to provide steam or hot water to both industrial and domestic consumers. It will also meet the criterion specified for a waste recovery facility under the Waste Framework Directive.

2.2.19 The process will be subject to regulation by the EA under the Integrated Pollution Prevention and Control Directive implemented in the UK by the Environmental Permitting Regulations 2010, as amended. These Regulations require that regulated facilities are
designed and operated using the best available techniques for the prevention and control of pollution at source. A process flow diagram is shown in Figure 6.

**Waste Reception and Handling**

2.2.20 Waste vehicles will access the proposed development from the main entrance located on the Spine Road. Egress from the Site will be via the same access point.

2.2.21 Waste vehicles will proceed directly to the incoming weighbridge, where they will be weighed and checked and driven to the waste reception hall via the ramp where they will be emptied into the waste bunker. Odour will be managed by drawing air through the waste reception hall into the combustion process to ensure that the hall remains under a negative pressure to control the emissions of odours. In addition, the access/egress point in the hall will be equipped with fast action roller shutter doors.

2.2.22 Vehicles will exit the building via a fast acting door in the north wall and return along the same route, exiting the site via a second weighbridge.

2.2.23 The incoming weighbridge will be located at an adequate distance from the gated entrance to allow on site queuing of lorries or Refuse Collection Vehicles (RCVs) to prevent the likelihood of vehicles queuing on the Spine Road.

2.2.24 The waste bunker will be enclosed within the main building and is designed, if required, to provide additional storage capacity for NCC’s municipal solid waste.

**Heat Recovery Process**

2.2.25 The main features of the Heat Recovery (incinerator and boiler) plant are shown in Figure 6 below.

2.2.26 The boiler will be designed to optimise heat recovery from the waste stream for maximum efficiency and energy production. Waste is fed via a waste feed hopper (1) and a set of feed rams (2) onto the grate which incorporates a drying zone (3), followed by combustion and burn-out zones.

2.2.27 The combustion system is equipped with an ignition burner. The walls of the combustion chamber are water cooled and refractory lined. The ash from the combustion process falls
off the end of the grate directly into a water bath (7) equipped with a mechanical ash discharge conveyor.

2.2.28 The gases from the combustion of the waste pass into a refractory lined secondary combustion chamber (12 and 13) which is equipped with a secondary air injection system (11) and is designed to achieve good mixing of the air with the products of combustion from the primary chamber. The secondary chamber is sized so that the products of combustion, after the injection of secondary air, remain at a temperature of at least 850°C for (normally) a minimum of two seconds in compliance with the requirements of the Waste Incineration Directive. Primarily this is to ensure efficient destruction of organic compounds and carbon monoxide. The support burners (8 and 9) are used to maintain this temperature during periods when the temperature arising from the combustion of the waste on its own is not sufficient.

Figure 6 - Incinerator and Heat Recovery Boiler Plant

2.2.29 The combustion process also generates oxides of nitrogen (NOx). In order not to exceed the strict emission limit for these substances, the secondary combustion chamber is equipped with a NOx reduction system incorporating an ammonia injection system (14). As the reaction is sensitive to temperature, the injection nozzles are installed at several levels
within the combustion chamber to enable the injection to be adjusted to the temperature conditions within the chamber. This process (known as selective non catalytic reduction [SNCR]) is optimised at temperatures of between 850°C and 1,000°C.

2.2.30 Steam is generated within the evaporator sections (15 and 17) of the natural circulation boiler, as well as the water tube walls of the secondary combustion chambers (12 and 13). The saturated steam is further heated in the superheaters (16). The economiser sections of the boiler (18) reduce the gas exit temperature to the optimum values required for the flue gas treatment process.

**Power Generation Process**

2.2.31 The high pressure superheated steam from the boiler will be fed into the steam turbine for power generation. The steam turbine is a machine capable of converting the heat energy in the steam to mechanical energy by rotating the turbine blades. The steam turbine is directly coupled to an electrical generator. The generator produces an electrical output sufficient to supply the parasitic load of the EfW plant (i.e. the power required to operate the plant itself) with surplus power exported into the National Grid. The plant will have a gross power generation capability of around 22MW (net export of 20.4MW without CHP).

2.2.32 The plant will incorporate a finned-tube air-cooled condenser in order to condense the exhaust steam from the steam turbine. The steam is condensed under vacuum so as to extract the maximum practical mechanical energy from the expansion of the steam turbine. This is considered typical for this type of plant. It will be possible to operate the incineration process completely independently of the power island, in the event of a turbine outage, due to the provision of full steam bypass.

2.2.33 The facility is designed to include provision for steam extraction for future Combined Heat and Power (CHP) applications.

**Residues - IBA Recycling**

2.2.34 After the waste has been combusted on the grate, the remaining product is a recyclable, non-hazardous commodity, IBA, which consists largely of ferrous and non-ferrous metals, glass, and other non-combustible materials.

2.2.35 The IBA will be transferred directly by vehicular means from the North Land to the South Land for processing into aggregate and onward sale to the construction industry. Co-
locating this facility with the EfW plant avoids the need to send the IBA elsewhere for processing.

2.2.36 The IBA recycling area comprises a reception area, a processing building and a storage area.

2.2.37 The process is designed to largely remove any need to landfill and to:

- Maximise production of usable aggregate product from the raw IBA;
- Create aggregates, which have high specifications and are of maximum value in the construction market; and
- To recover and recycle as much metal from the raw IBA as possible.

2.2.38 The IBA process involves initial storage and maturation of the IBA, followed by processing into an aggregate. Initially the material is stored for 2-4 weeks in the raw bottom ash storage area, this is for two reasons:

- Initially the IBA is wet (humidity between 20 and 25 %), the material has to drain to release water; and
- During this period of drainage the material stabilizes and several chemical reactions take place. These reactions, carbonation and hydration, form part of the maturing of the material.

2.2.39 The IBA recycling area is surfaced with a concrete hard standing to collect all water (both rainwater and leachate) before feeding into a collection pit. The collection pit is equipped with a sand/silt trap, before the water overflows into a lagoon. This lagoon is to buffer water (as an example in case of heavy rain or dry periods). From this lagoon the water is either disposed of to the sewer or used as a dust suppression medium.

2.2.40 After maturation the material is taken to be processed within a steel framed building, where staff are protected from the weather and are able to inspect the different stages of the processing stage.

2.2.41 The processing stage consists of a number of distinct elements:

- A hopper and variable speed vibrating conveyor (feeder) to provide a regulated flow of material to the process plant;
Willows Power & Recycling Centre Scoping Report

- Screening of oversized material (typical size 150 mm) which would damage the processing plant;
- Magnetic separation of ferrous materials; and
- Eddy-current separation of non-ferrous metals.

2.2.42 The finished aggregate, ferrous and non-ferrous recyclates are then moved to a product stockpile.

2.2.43 The IBA facility will have a weighbridge to weigh the incoming IBA from the EfW facility situated on the North Land and inspect loads of recovered metals and recycled IBA leaving the Site.

2.2.44 The maximum content of unburned combustible matter will be 2% by weight based on dry matter in the raw bottom ash. Unburned waste will be passed back into the combustion process.

2.2.45 The total IBA is anticipated to be approximately 60,000 tpa of which approximately 5,000 tpa of metals will be recovered and between 50,000 to 55,000 tpa of aggregates produced.

Residues - Air Pollution Control (APC) Residue Treatment and Disposal

2.2.46 During the combustion process gases are generated and withdrawn from the furnace. The transportation of these flue gases through the boiler produces ash, referred to as APC residues or fly ash.

2.2.47 The fly ash is extracted from the flue gas steam through ash hoppers. In the flue gas treatment process, lignite coke (activated carbon) and hydrated lime are injected into the flue gas. Metallic particles and acid gases within the flue gas are then adsorbed or reacted with the injected material and are subsequently removed by a fabric filter as solid material referred to as APC residues which are extracted onto a moving bed conveyor underneath the fabric filter into a purpose built sealed container.

2.2.48 APC residues are alkaline and as a result are classified as a hazardous waste by the EA and have to be disposed of via sealed containers to a suitably licensed disposal facility in accordance with established handling guidance.

2.2.49 APC residues will be collected at a rate of roughly one load per day.
Water Usage, Treatment and Disposal

2.2.50 Control measures for mitigating water emissions have been considered in the design of the facility. Design features include collecting storm water from certain contact areas of the plant for re-use at the Site and controlling runoff from other areas such as the roof and parking areas by passing the storm water through a retention pond prior to discharge to adjacent surface waters. This will allow sediment to settle prior to being discharged to the surface water.

Emissions Control & Monitoring

2.2.51 Modern EfWs are more strictly regulated, by European and UK law, than almost any other major industrial operation. In order to operate they have to have an Environmental Permit from the EA which is an independent body also responsible for monitoring and enforcing emissions limits.

2.2.52 As a result a facility like the EfW plant at the Willows Power & Recycling Centre, with its advanced air filtration systems, will make only a very low contribution to emissions.

2.2.53 To obtain a Permit, the Consortium will need to demonstrate to the satisfaction of the EA how the proposed EfW plant will meet the high control standards set by the Waste Incineration Directive and other EA requirements/guidance. The air filtration systems have also been designed to meet higher control standards than might potentially apply in the future.

2.2.54 As a minimum, full compliance with regulatory monitoring standards required by the Environmental Permit will be employed and all applicable monitoring will be performed to MCERTS standards (the EA’s Monitoring Certification Scheme). All continuous monitoring methods will be subject to a measurement quality assurance programme in compliance with BS EN 14181 (Stationary Source Emissions. Quality Assurance of Automated Measuring Systems).

2.2.55 The facility includes a number of monitoring systems to control operations. These monitoring systems collect and report facility operational data back to the control room where the data is used by a combination of automated and manual controls to adjust such parameters as waste feed rates, air flow, emission control reagent feed rates, etc. to keep the facility within established operating limits.
2.2.56 All emissions data from the facility will be inspected and checked by the EA. It will also be regularly published and made available for public inspection.

Operational Hours

2.2.57 The EfW plant will operate on a 24 hour basis, 7 days per week throughout the year. The Willows Power & Recycling Centre will be open to receive waste and export metals, treated aggregates and residues during the hours detailed below:

- Monday to Friday  07:00 – 21:00
- Saturday          07:00 – 17:00
- Sunday & Public Holidays  09:00 – 17:00

2.2.58 It may occasionally be necessary for waste deliveries to be made out of these core hours.

2.2.59 Typically, the Visitor and Education Centre Opening hours will be as follows:

- 09:00 – 17:00 Monday to Saturday (excluding Bank Holidays).

2.2.60 The Centre will also be available for local community use and other events outside of these standard hours to maximise its beneficial use.

2.2.61 Full details of the Site layout, circulation, likely staff numbers and overall predicted vehicle numbers will be detailed within the Transportation Assessment.

2.2.62 There is no set parking standard guidance relating to these proposals and the parking provision for a facility is usually agreed with the local authority based on the location, number of employees and operator’s experience. An appropriate allowance for disabled and cycle parking will be provided.

Staff

2.2.63 The Willows Power & Recycling Centre will require approximately 40 employees (including IBA operations), the majority of whom will be operational staff working a 12 hour shift pattern. Of these 40 employees, approximately 10 will be working normal office hours of 09:00 – 17:00 and will, therefore, result in 20 movements during the morning and evening peak hours (07:30-08:30 and 16:45-17:45). The shift work will be for 12 hours a day; with three separate shifts operating with 10 employees for each shift (one shift would be resting).
The shift periods are likely to be between 07:00-19:00 and 19:00-07:00 and as such no traffic movements are likely to be generated during the peak periods (assuming a 07:30-08:30 and 16:45-17:45 peak period).

Proposed Traffic Generation

2.2.64 It is common practice to undertake estimates of trip generation for waste sites using first principles based upon annual import and export tonnages, HGV payloads and working days and times. Details of the expected Site operations and resultant trip generation are provided below. Full details of the waste flow model assumptions and calculations will be set out within the Transportation Assessment.

2.2.65 The number of HGVs associated with the transportation of waste to and from the facility, process materials deliveries, recycling and bottom ash treatment will be confirmed in the ES but is likely to be up to 82 HGV movements per day (based on 275,00 tpa which is a worst case scenario being used for added robustness in the ES). Staff and visitors are estimated to generate in the order of 50 vehicle movements across a daily period.

Project Programme Summary

2.2.66 The EIA will address the likely potential significant effects for the construction and operational stages of the scheme.

2.2.67 The current estimates for development timescales are set out in Table 2 below:

Table 2 – Project Milestones

<table>
<thead>
<tr>
<th>MILESTONE</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction starts</td>
<td>Feb 2012</td>
</tr>
<tr>
<td>Commissioning Starts</td>
<td>Aug 2014</td>
</tr>
<tr>
<td>Planned services commencement</td>
<td>Apr 2015</td>
</tr>
</tbody>
</table>
3 The Site and Its Setting

3.1 Introduction

3.1.1 In order to identify the scope of the issues that will need to be addressed by the EIA, it is necessary to understand the characteristics of the Site and the surrounding area that may be affected by the proposed development.

3.1.2 Details of the Site are provided below and within the following sections. At the Scoping stage, the description of the Site is based on an initial desk study and limited site inspections only. More extensive investigations will take place as part of the full EIA.

3.2 Location

3.2.1 The chosen development site for the proposed Willows Power & Recycling Centre is located within the boundaries of The Willows Business Park in Saddlebow, which is located approximately 3 km south of King’s Lynn, Norfolk (NGR TF 612 172). The Site’s location is shown in Figure 1 with the red line boundary shown in Figure 2.

3.2.2 Locational benefits of the Site include:

- Proximity to significant waste sources arising in King’s Lynn (a sub regional centre) and surrounding West Norfolk area;

- A high level of compatibility with existing and consented surrounding land uses in the Saddlebow Industrial Area;

- Good links to the local and strategic highway network avoiding routes through residential areas;

- Being located adjacent to an existing power station and the associated grid connection;

- The potential for energy in the form of steam and heat to be used by an adjacent local business and others in the community locally; and

- Compliance with planning policy.
3.3 Site Description

3.3.1 The proposed Site comprises a vacant area of land approximately 4.8 hectares in size.

3.3.2 The Site is divided into two separate areas referred to as the North Land and South Land in this report.

3.3.3 The North Land occupies an area of approximately 2.6 hectares and the South Land occupies an area of approximately 2.2 hectares. Both areas comprise an open area of ground vegetated with closely mown grass. The topography of both areas is relatively consistent and flat. It is understood that the Site may have been used previously as a storage area for the construction of the nearby power station.

3.3.4 North Land: The adjacent land to the north consists of a HGV and car park (used by Palm Paper). Beyond this, various warehouses are present together with a large paper mill operated by Palm Paper. To the east of the North Land is a new police investigation centre (under construction). To the west lies an area of open vacant land and beyond that lies a gas fired power station operated by Centrica. To the north west of the Site, there is a derelict building surrounded by scrub and mature Lombardy poplar.

3.3.5 South Land: A drainage ditch runs along the southern boundary of the South Land. The hedge along this boundary with High Road (Lower) contains 13 mature oak trees. A large earth bund is present within the eastern area (approximately 3 - 4 m high) and traverses the length of the South Land on a north/south axis. An electricity pylon is also present within the South Land with overhead cables. A car storage yard/taxi firm and open scrub land are present to the east. To the west is a Household Waste Recycling Centre.

Access

3.3.6 The Willows Business Park is situated approximately 1.1 km south of the A47 King’s Lynn bypass. The Site can be accessed southwards from the A47 via High Road. The A47 has good links with the wider road network, which includes the A17, A10 and A149/A148.
3.4 Summary of Relevant Planning History

Table 3: Summary of Relevant Planning History Surrounding the Site

<table>
<thead>
<tr>
<th>Application No.</th>
<th>Development</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>06/01308/OM</td>
<td>Outline Consent for a Police Investigation Centre</td>
<td>Permitted 05/09/06</td>
</tr>
<tr>
<td>09/03572/RMM</td>
<td>Reserved Matters for the Construction of Police Investigation Centre at Willows Business Park</td>
<td>Permitted 07/07/09</td>
</tr>
<tr>
<td>07/01518/CM</td>
<td>Relocation of the Norfolk Community Recycling Centre from the Centre of King’s Lynn (Horsley Field) to Land within Willows Business Park</td>
<td>Permitted 10/12/07</td>
</tr>
<tr>
<td>08/01544/S36</td>
<td>Application for Consent to Construct and Operate a Combined Cycle Gas Turbine Generating Station at King’s Lynn</td>
<td>Permitted 05/02/09 (by Secretary of State ref 01.08.04/124c)</td>
</tr>
<tr>
<td>08/01544/S36-DIS_A</td>
<td>Application for Consent to Construct and Operate a Combined Cycle Gas Turbine Generating Station at King’s Lynn – Discharge of Condition No.8</td>
<td>Submitted 21/10/10</td>
</tr>
<tr>
<td>09/01000/S</td>
<td>New Warehouse Storage Facility</td>
<td>Permitted 28/08/2009</td>
</tr>
</tbody>
</table>

3.5 Surrounding Land Uses and Proximity to Sensitive Receptors

General

3.5.1 The primary watercourse within the surrounding area is the River Great Ouse which flows generally south to north approximately 870 m west of the Site. The Relief Channel and
associated ‘Tail Sluice’ which serve the power station are located 620 m west of the Site. The River Nar flows generally south to north approximately 640 m east of the Site.

3.5.2 The main settlement in the vicinity of the Site is the town of King’s Lynn (approximately 3 kilometres to the north). The outer southern boundary of King’s Lynn, is defined by the A47 (King’s Lynn to A17), which is located approximately 1.1 km north of The Willows Business Park.

Residential, Commercial and Industrial

3.5.3 The Site is immediately bounded to the west by another vacant site in The Willows Business Park, a Police Investigation Centre (under construction) to the west, and by other industrial scale developments such as Palm Paper Mill to the north, Norfolk Arena to the north-east and King’s Lynn ‘A’ Power Station to the west.

3.5.4 The nearest residential property is situated on High Road approximately 150 m to the south west of the southern most boundary of the South Land.

3.5.5 A Caravan Park (Saddle Bow) is situated approximately 800 m to the north east of the Site. Other residential areas are situated approximately 1.1 km to the north of the Site, on the opposite side of the A47 in South Lynn off the A148 ‘Saddlebow Road’. However there are several isolated residential properties and Farm Houses located within closer proximity (See Open Areas and Farms Section below).

Schools and Hospitals

3.5.6 In addition to the residential properties, there are a number of schools located with 3.6 km of the Site that will be assessed by the ES to ensure that there are no potential damaging environmental impacts or, where any potentially environmental impacts are identified, that appropriate mitigation is outlined. Schools within this area include

- St Michael’s Church of England Primary School, Saddlebow Road, South Lynn, King’s Lynn, Norfolk PE30 5BW (1.2 km to the north and the nearest school to the Site);
- Greyfriars County Primary School, London Road, King’s Lynn PE30 5PY (2.2 km to the north);
- West Lynn Primary School, St. Peters Road, West Lynn, King’s Lynn, Norfolk, PE34 3JL (2.6 km to the north);
• Whitefrairs Voluntary (Aided) Church of England School, Whitefriars Road, King’s Lynn, Norfolk PE30 5AH (2.1 km to the north);
• The Park High School, Queen Mary Road, King’s Lynn PE30 4QG (3.1 km to the north east);
• The College of West Anglia: King's Lynn Campus, Tennyson Avenue, King’s Lynn, Norfolk PE30 2QW (3.5 km to the north);
• King Edward VII School, Gaywood Road, King’s Lynn PE30 2QB (3.6 km to the north); and
• The closest hospital to the application Site is the Queen Elizabeth Hospital (King’s Lynn NHS Trust, Gayton Rd, King’s Lynn, Norfolk PE30 4ET), located 5 km to the north east of the Site.

Open Areas and Farms

3.5.7 The Ordnance Survey map of the area indicates the presence of farms approximately 650m to the east (White House Farm) and Golden Ball Farm approximately 1 km to the south.

3.5.8 In the wider landscape, land to the west and south of The Willows Business Park is given predominantly to arable farming with occasional grazing of the flood banks and flood plains. The fields are large and open with drainage ditches (sometimes banked) and/or gappy hedgerows forming the boundaries. Remnant orchards which were formerly common features can be found between the A47(T) and A17(T). This landscape is open and the cover is sparse save for shelter belts around residential areas/individual properties. Predominant landscape elements include large open arable fields, numerous drainage ditches, electrical pylons, embankments along rivers, A17(T) and A47(T).

3.5.9 East and north (beyond King’s Lynn) the land remains in arable production but blocks of woodland (often plantation) become more evident. There are also interspersed smaller blocks of woodland often associated with farmsteads. Field boundaries are dominated by hedgerows with trees, though drainage ditches do occur predominantly to the west. Predominant landscape elements include medium sized irregularly shaped fields, wooded blocks and the A47 (T).

Local Landscape Designations

3.5.10 Designated sites and landscape and visual resources providing context to the setting of the Site have been identified but there are no landscape designations covering the Site.
Norfolk Coast Area of Outstanding Natural Beauty (AONB)

3.5.11 A small area of the western part of this AONB is located north of King’s Lynn. This part of the AONB includes part of the Sandringham Estate and also comprises farmland, lowland heath, The Wash mud flats, coastal marshes and bog.

Areas of Important Landscape Quality (AILQ)

3.5.12 ‘Open’ AILQ is characterised by drained and settled, open marshland. It adjoins the southern boundary of the Site and covers much of the southern and western parts of the landscape study area. The ‘confined’ AILQ incorporates wetland, wooded country estates and farmland with woodland and covers the eastern side of the landscape study area.

Landscape Character

3.5.13 The Regional Landscape Character Assessment (Countryside Agency) provides information on the character designations within Norfolk. The Site lies in the Fens Character Area (46) close to the boundary of the North West Norfolk Character Area (76) which is situated to the east of the Site.

3.5.14 At the local level The King’s Lynn and West Norfolk Borough Landscape Character Assessment (March 2007) provides information on local landscape character areas.

3.5.15 The Site lies in the north of the ‘E2 The Fens – Open Inland Marshes, Saddlebow and Wormegay’ character area. Other character areas in the study area are:

- E1 The Fens – Open Inland Marshes Tilney All Saints character area (immediately west of the Site, on opposite bank on the River Great Ouse);
- G2 Farmland with Woodland and Wetland - Middleton character area (east of the Site);
- G4 Farmland with Woodland and Wetland - West Winch character area (south east of the Site); and
- D2 The Fens – D2 Settled Inland Marshes – Walpole, Terrington and Clench Warton character area (north east of the Site).
Ecological Designations

3.5.16 There are no designated sites of international conservation importance within 2 km of the Site. There is one site (The River Nar SSSI) of national importance within 2 km of the Site.

3.5.17 Sites of Special Scientific Interest (SSSI) are of national ecological importance for the conservation of wildlife habitats, plants and animals, geological features and landforms. The River Nar SSSI is situated within 600 m of the proposed Site to the east. The SSSI is designated for its unusual range of aquatic habitats and botanical diversity.

3.5.18 There are four County Wildlife Sites (CWSs) within 2 km of the proposed Site (Table 4). These are Saddlebow Reedbed, Adj. River Nar, Rush Meadow and West Winch Common (northern half of CWS only). CWSs are non-statutory designations for sites of county significance for wildlife or geology. They often contain habitats and species that are priorities under the UK Biodiversity Action Plan, which sets out strategies for conservation. CWSs complement SSSIs and nature reserves by helping to maintain links between sites. As there are no pathways between the proposed sites these designations are unlikely to be affected by the proposed Willows development. There are no National Nature Reserves (NNR) and no Local Nature Reserves (LNR) within 2 km of the Site (see Figure 9).

3.5.19 Areas designated for their nature conservation value are provided in Table 4.

### Table 4: Designated Sites within 10 km and 2 km Radius of the Site Boundary

<table>
<thead>
<tr>
<th>Designated Site Name</th>
<th>Location</th>
<th>Size of Area</th>
<th>Distance from Site Boundary</th>
<th>Description of Designated Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Wash SPA, SAC, SSSI</td>
<td>TF 558 403</td>
<td>107761.28 ha</td>
<td>6.55 km north west</td>
<td>A large coastal site designated for its sandbanks, mudflats and sandflats, large shallow inlets and bays, reefs, Salicornia and other annuals colonising mud and sand, atlantic salt meadows, Mediterranean and thermo-Atlantic halophilous scrubs and coastal lagoons. It is also designated for its population of common seal (Phoca vitulina) and otter (Lutra lutra).</td>
</tr>
<tr>
<td>Roydon Common and Dersingham</td>
<td>TF 686 224</td>
<td>351.83 ha</td>
<td>8.16 km north west</td>
<td>A large area of heathland, woodland and inland water bodies. It is specifically</td>
</tr>
</tbody>
</table>
### Designated sites within 10 km of the Site boundary

<table>
<thead>
<tr>
<th>Designated Site Name</th>
<th>Location</th>
<th>Size of Area</th>
<th>Distance from Site Boundary</th>
<th>Description of Designated Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bog SAC, SSSI</td>
<td>TF 670 145</td>
<td>13.54 ha</td>
<td>6.16 km south west</td>
<td>Designated for Northern Atlantic wet heaths with cross-leaved heath (<em>Erica tetralix</em>), depressions on peat substrates of the <em>Rhynchosporion</em> and European dry heaths.</td>
</tr>
<tr>
<td>Blackborough End Pit</td>
<td>TF 703 201</td>
<td>86.3 ha</td>
<td>8.53 km north east</td>
<td>Designated for geological reasons.</td>
</tr>
<tr>
<td>Leziate, Sugar and Derby Fens SSSI</td>
<td>TF 693 207  TF 702 208</td>
<td>25.6 ha 8.80 km east</td>
<td>Three fens that are remnants of the extensive fen valley system of the Gaywood River. Habitats include species-rich calcareous grassland, damp acidic grassland and heathland.</td>
<td></td>
</tr>
<tr>
<td>East Winch Common SSSI</td>
<td>TF 702 158</td>
<td>25.6 ha</td>
<td>8.80 km east</td>
<td>Wet, acid heathland on shallow peat. Species present include heather (<em>Calluna vulgaris</em>), cross-leaved heath, purple moor grass (<em>Molinia caerulea</em>) and sphagnum mosses.</td>
</tr>
<tr>
<td>Islington Heronry SSSI</td>
<td>TF 568 189</td>
<td>1.2 ha</td>
<td>4.41 km west</td>
<td>Small, isolated stand of mature oaks (<em>Quercus</em> sp.) surrounded by fenland which supports the largest colony of grey herons (<em>Ardea cinerea</em>) in Norfolk. There are approximately 80 occupied nests each year.</td>
</tr>
<tr>
<td>Wiggenhall St. Germans SSSI</td>
<td>TF 588 139</td>
<td>5.10 ha</td>
<td>3.98 km south west</td>
<td>Designated for geological reasons.</td>
</tr>
<tr>
<td>Setchey SSSI</td>
<td>TF 633 132</td>
<td>32.03 ha</td>
<td>4.38 km south</td>
<td>Designated for geological reasons.</td>
</tr>
<tr>
<td>Bawsey SSSI</td>
<td>TF 680 194</td>
<td>1.27 ha</td>
<td>7.13 km north east</td>
<td>Designated for geological reasons.</td>
</tr>
<tr>
<td>Grimston Warren Pit SSSI</td>
<td>TF 673 223</td>
<td>7.20 ha</td>
<td>7.81 km north east</td>
<td>Designated for geological reasons.</td>
</tr>
</tbody>
</table>

### Designated sites within 2 km of the Site boundary

<table>
<thead>
<tr>
<th>Designated Site Name</th>
<th>Location</th>
<th>Size of Area</th>
<th>Distance from Site Boundary</th>
<th>Description of Designated Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>River Nar SSSI</td>
<td>TF 897 198</td>
<td>233.43 ha</td>
<td>0.54 km east</td>
<td>A river on chalk, with a range of wetland plant communities and a large fish biomass (species include brown trout (<em>Salmo trutta</em>), eel (<em>Anguilla Anguilla</em>), pike (<em>Esox lucius</em>) and roach (<em>Rutilus rutilus</em>). 12 species</td>
</tr>
</tbody>
</table>
### Designated sites within 10 km of the Site boundary

<table>
<thead>
<tr>
<th>Designated Site Name</th>
<th>Location</th>
<th>Size of Area</th>
<th>Distance from Site Boundary</th>
<th>Description of Designated Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saddlebow Reedbeds County Wildlife Sites (CWS)</td>
<td>TF 615 181</td>
<td>6.9 ha</td>
<td>0.77 km north</td>
<td>of dragonfly are present at several locations along the river representing an outstanding species assemblage for the UK.</td>
</tr>
<tr>
<td>River Nar CWS</td>
<td>TF 621 177</td>
<td>0.8 ha</td>
<td>1.08 km north east</td>
<td>Disused railway with neutral unimproved grassland.</td>
</tr>
<tr>
<td>Rush Meadow CWS</td>
<td>TF 629 165</td>
<td>6.0 ha</td>
<td>1.66 km south east</td>
<td>Complex of small meadows divided by varied hedges containing mature trees.</td>
</tr>
<tr>
<td>West Winch Common CWS</td>
<td>TF 628 147</td>
<td>89.5 ha</td>
<td>1.40 km east</td>
<td>Fenland edge with a large area of well-grazed neutral grassland with hedge-lined ditches. Semi-improved and unimproved grassland dominate the habitat throughout.</td>
</tr>
</tbody>
</table>

### Historical/Archaeological Designations

3.5.20 Norfolk has some of the earliest recorded human activity in Great Britain, shown through re-deposited tools and flints in river beds. The area has a rich history of farming, including the draining of the Fens. King’s Lynn was an important port, protected by defensive walls that are now a tourist attraction. No associations of a historic or cultural nature have been identified within the Site.

3.5.21 A significant part of the historic built environment of King’s Lynn is designated as a Conservation Area, the nearest to the Site being some 2.5 to 3 km to the north. The next nearest Conservation Area is located near Terrington St Clements over 7 km to the north-west.

3.5.22 There are no Scheduled Ancient Monuments (SAMs) within 1 km of the Site, the nearest being to the north-east within central King’s Lynn. Other SAMs are located at Clenchwarton, Middleton and Terrington St John outside the 3 km study area.
3.5.23 There are no listed buildings within 1 km of the Site. The nearest are located in South Lynn (a suburb of King’s Lynn) to the north-east of the A47(T), numerous listed buildings of varying grades are located in the centre of King’s Lynn. Other listed properties in the 3 km study area include three located in West Winch. Outside the 3 km study area there are listed buildings in the villages of Clenchwarton, East Winch, Middleton, North Runcton, Terrington St Clement, Terrington St John and Wiggenhall St Germans.

3.5.24 There are no Registered Parks and Gardens within 1 km of the Site. The nearest Registered Park and Garden is the historic urban park known as The Walks in King’s Lynn, located more than 2 km from the Site.

3.5.25 Thirty one Scheduled Ancient Monuments are recorded within a 10 km radius.

Highway Network

3.5.26 The Spine Road routes east to west and is generally 7.3 m wide with a 40 mph speed restriction. There are no street lighting or parking restrictions. There are vegetated verges on both sides of the Spine Road although it appears that 2.0 m wide footways are marked out and are awaiting surfacing. The Spine Road is not adopted by the Local Highway Authority.

3.5.27 At its western end, the Spine Road routes to the King’s Lynn A Power Station. At its eastern end, the Spine Road forms one arm of a four-arm roundabout with Low Road and High Road. High Road routes north to south, and is classed as a local road within the King’s Lynn route hierarchy. It has street lighting north of the Spine Road and footways on at least one side of its carriageway north of Maple Road. At its northern end it forms the southern arm of a five-arm grade separated roundabout with the A47 (T) and A148 Saddlebow Road. The A47 (T) is operated and controlled by the Highways Agency (HA).

3.5.28 Poplar Avenue routes east to west to the north of the Spine Road and forms the minor arm of a simple priority junction with High Road at its eastern end. The western end of Poplar Avenue forms the access into Palm Paper. Poplar Avenue is generally 9.0 m wide with a combined footway / cycleway on its northern side and has street lighting.

3.5.29 Poplar Avenue is not adopted by the LHA and is a private road.
3.5.30 HGVs already use the Spine Road and High Road between the Site and the A47 on a frequent basis. The routes from the Site are therefore considered to be appropriate for HGV traffic.

**Public Rights of Way**

3.5.31 There are no Public Rights of Way on or across the proposed Site.
4 Proposed Content of the EIA

4.1 Introduction

4.1.1 The proposed content of the EIA has been developed following an initial screening exercise, a number of desk based topic specific assessments and site visits where appropriate, a review of the relevant development plan policy and RPS’ previous experience of similar developments.

4.1.2 The EIA will assess the potential significant impacts associated with the proposals. The individual EIA subjects/topics proposed include the following:

1. Background, Introduction and Context
2. The Site and its Setting
3. Planning History and Planning Policy Context
4. Description of Development
5. Need and Alternatives
6. Traffic and Transportation
7. Air & Climate (including Human Health)
8. Landscape and Visual Impact
10. Hydrology and Flood Risk
11. Hydrogeology and Ground Conditions
12. Noise & Vibration
13. Archaeology and Cultural Heritage
14. Socio-Economic Impact
15. Amenity
16. In Combination and Cumulative Effects
17. Summary
18. Health Impact Assessment
4.1.3 Together, these topics will form the ES document. Liaison between consultants will take place where necessary to ensure that where issues may cross over subjects, they are dealt with in the most appropriate way.

4.1.4 Each assessment will consider the potential impacts during both the construction and operation phase and also the cumulative impacts of the proposals. Each topic area will be discussed under a separate chapter within which the following matters will be addressed where relevant:

- Introduction
- Planning Context
- Assessment Methodology
- Baseline Conditions
- Incorporated Enhancement and Mitigation
- Identification and Evaluation of Key Impacts
- Mitigation
- Residual Impacts
- Conclusions

4.1.5 The following sections describe the context of each topic based upon information currently available and the proposed scope of each topic assessment to assist consultees in assessing its adequacy.

4.2 **Background, Introduction and Context**

4.2.1 This section will include narrative on the format and content of the ES and the statutory background to the EIA process.

4.2.2 It will also include information regarding the applicant, the assessment team and the organisation of the ES.

4.3 **The Site and Its Setting**

4.3.1 This part of the Statement will describe the general physical and environmental characteristics of the application Site and its surrounding environs. Other chapters of the ES will provide detailed descriptions of the application Site in relation to particular
environmental topics, providing “baseline” surveys against which the potential effects of the proposals may be evaluated.

4.4 Planning History & Planning Policy Context

Context

4.4.1 This section will include information regarding the planning history of the Site and a summary of the policy context at the European, national, regional and local level. The relevant policies will be reviewed and key points of relevance summarised. This will set the context for more detailed topic analysis that will be included in the specific chapters of the ES.

Proposed Scope of Assessment


4.4.3 Of particular importance in the policy framework is the Development Plan, which is produced in accordance with statutory procedures to guide the development and use of land and provides a framework for the determination of individual planning applications.

4.4.4 Norfolk is a two tier local authority area. NCC as the Waste Planning Authority is responsible for the production of strategic, minerals and waste planning policy and determination of planning applications for minerals and waste related development. The proposed development Site also falls within the administrative area of the King’s Lynn and West Norfolk Borough Council.

4.4.5 The East of England Plan (EEP) was adopted in May 2008 and covered the period up to 2021. The East of England Plan is published by the Secretary of State for Communities and Local Government. It covers the counties of Norfolk, Suffolk, Cambridgeshire, Essex, Hertfordshire and Bedfordshire. Together with relevant sections of the Milton Keynes South Midlands Sub-Regional Strategy (2005), it constitutes the Regional Spatial Strategy (RSS) for the East of England. In accordance with the Planning and Compulsory Purchase Act
2004 it replaced RPG6, and with the exception of four policies, replaced the Norfolk Structure Plan.

4.4.6 In implementing the overall vision and objectives of the RSS, waste management policies should be based on the following objectives:

- to ensure timely and adequate provision of the facilities required for the recovery and disposal of the region’s waste and for a reducing quantum of wastes imported into the region;
- to minimise the impact of new development, particularly in the key centres of development and change, on regional waste management requirements;
- to minimise the environmental impact of waste management, including impacts arising from the movement of waste, and help secure the recovery and disposal of waste without endangering human health;
- to seek community support and participation in promoting responsible waste behaviour and approaches to management, viewing waste as a resource and maximising re-use, recycling, composting and energy recovery; and
- in determining proposals for planning permission to give weight to the particular locational needs of some types of waste management facility, together with the wider environmental and economic benefits of sustainable waste management.

4.4.7 In this context, for the purposes of S38(3) of the Planning and Compulsory Purchase Act 2004, the Development Plan thus comprises:

- East of England Plan (May 2008) (EEP)
- Saved policies (May 2008) from the Norfolk Structure Plan (1999) (NSP);
- Saved policies (Sep 2007) from the Norfolk Waste Local Plan (Dec 2000)(NWLP);
- King’s Lynn and West Norfolk Local Plan (1998) (KLWNLP).

4.4.8 All Regional Spatial Strategies including the EEP were revoked in October of this year. However, that decision was recently challenged successfully in the courts and therefore the EEP will be assessed as part of the planning application until such time as this position changes.

4.4.9 The 2004 Planning and Compulsory Purchase Act removed the County Council’s responsibility to prepare and implement a Structure Plan. However, under the terms of the 2004 Act, Structure Plans were “saved” for a period of up to 3 years from commencement
of the Act and have thus remained part of the Development Plan. As this three year period came to an end on 28th September 2007 only 10 policies were saved. Of these, only 4 were saved following the publication of the East of England Plan in May 2008, they were:

- EC.10 – Economy Tourism;
- T.2 – Transport New Development;
- T.17 – Transport General Aviation; and
- RC.8 – Non Renewable energy.

4.4.10 Of the 4 policies above, only Policy T.2 is of relevance in this instance.


4.4.12 The proposed Willows Power & Recycling Centre will also be subject to the policies contained within the King’s Lynn and West Norfolk Local Plan (1998) (KLWNLP).


4.4.14 The King’s Lynn and West Norfolk Draft Core Strategy plans significant growth in King’s Lynn as a sub-regional centre.

4.4.15 The emerging Norfolk Waste Draft Core Strategy and Development Management Policies DPD indicate that ‘strategic’ waste facilities are to be well related to major urban areas including King’s Lynn.
4.4.16 The Site is also identified as potential acceptable for waste management use including thermal treatment in the emerging Norfolk Waste Site Specific Allocation DPD.

4.5 **Description of Development**

4.5.1 This section will describe the proposed development including the layout of the proposed Willows Power & Recycling Centre together with description of the processes to be undertaken and will set out the basis against which the EIA will be conducted. It will also include a description of management and procedures associated with the operations.

4.6 **Need and Alternatives**

4.6.1 These considerations are linked and will be addressed in one chapter of the ES. ‘Need’ will be examined against the available published data on waste arisings from the EA and Local Authority Sources including high level development plan documents, together with a review of existing waste management capacity for the waste stream to be managed at the proposed Willows Power & Recycling Centre.

4.6.2 The assessment of alternatives will focus on a review of alternative development sites, alternative technology and alternative layouts within the Site.

4.6.3 The need assessment will draw upon the findings using documents including the following.

- Joint Municipal Waste Management Strategy for Norfolk;
- East of England Plan;
- Emerging Minerals and Waste Core Strategy and Minerals and Waste Development Management Development Plan Document (DPD); and
- Norfolk Waste Site Specific Allocations DPD.

4.7 **Traffic and Transportation Issues**

**Policy Context**

4.7.1 The Transport Assessment will be prepared in accordance with current guidance set out in the Department for Transport publication ‘Guidance on Transport Assessment’, March 2007 and the environmental assessments would be undertaken in accordance with the Institute of the Environmental Management and Assessment (IEMA) publication ‘Guidance Note No. 1: Guidelines for the Environmental Assessment of Road Traffic’, 1993, DfT Circular
02/2007 “Planning and the Strategic Road Network” and “Environmental Impact Assessment, A Guide to Procedures”, DETR (2000). The results of the assessment methodology will also be assessed against all the relevant development plan documents, including the East of England Plan (EEP), Norfolk Structure Plan (NSP), Norfolk Waste Local Plan (NWLP), King’s Lynn and West Norfolk Local Plan (KL&WNLP) and Planning Policy Guidance Note 13 (PPG13) guidance.

Proposed Scope of Assessment

4.7.2 This chapter of the ES will assess the potential significant environmental impacts of the proposed Willows Power & Recycling Centre in terms of Transport and will be supported by a Transport Assessment (TA). The chapter will describe the assessment methodology, the baseline conditions currently existing at the application Site and surroundings, the potential significant environmental impacts, the mitigation measures required to prevent, reduce or offset any significant adverse impacts and the likely residual effects after these mitigation measures have been employed.

Assessment Methodology

4.7.3 This assessment will take account of the Guidelines for the Environmental Assessment of Road Traffic (Guidance Note No. 1) prepared by The Institute of Environmental Assessment (IEA) (now The Institute of Environmental Management & Assessment (IEMA) ). The IEMA Guidelines recommend two rules to be considered when assessing the impact of development traffic on a highway link:

“Rule 1: include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%)

Rule 2: include any other specifically sensitive areas where traffic flows have increased by 10% or more.”

4.7.4 The above guidance is based upon knowledge and experience of environmental effects of traffic and also acknowledges that traffic forecasting is not an exact science. The 30% threshold is based upon research and experience of the environmental effects of traffic, with less than a 30% increase generally resulting in imperceptible changes in the environmental effects of traffic. At a simple level, the guidance considers that projected changes in traffic flow of less than 10% create no discernible environmental effect, hence the second threshold as set out in Rule 2.
4.7.5 Column 3 in Table 2.1 of the IEMA Guidelines sets out a list of environmental effects which should be assessed for their significance.

4.7.6 Definitions of each of the potential effects identified in the IEMA Guidelines will be set out along with explanatory text relating to assessment criteria.

4.7.7 In accordance with the above guidance, this assessment of the potential environmental effects of traffic will be considered for the following criteria:

- Noise and Vibration;
- Visual Effect;
- Severance;
- Driver Delay;
- Pedestrian Delay;
- Pedestrian Amenity;
- Accidents & Safety;
- Hazardous Loads; and
- Dust & Dirt.

4.7.8 Part of the assessment will include a detailed site inspection of the road network between the Site and the strategic highway network with details of the current geometric layout of the highway, traffic management and regulation orders and general observations of existing road user movements.

4.7.9 The light and heavy vehicle trip generation during construction will be established through an assessment of the materials, equipment and personnel required over the construction period. The light and heavy vehicle trip generation during operation will be established through a consideration of the facility’s inputs and outputs, the potential level of use of rail and sea transport, the expected level of staffing and any proposed measures to encourage sustainable travel and transport. The distribution of vehicular trips on the external network will be agreed with NCC Highway Authority and the Highways Agency.

4.7.10 The impact of new light and heavy vehicle trips generated during construction and operation will be assessed against the expected traffic flows on the network during the periods of construction and operation. Traffic flows will be obtained either from existing data sources or by undertaking new surveys. Discussions will be held with NCC Highway Authority.
Authority and the Highways Agency to establish whether the assessment will need to take account of possible future changes in the surrounding network.

4.7.11 Committed developments will be incorporated into the assessments and will be agreed with NCC Highway Authority and the Highways Agency and the predicted traffic flows generated by each will be obtained from their respective Transport Assessments and included as a cumulative assessment.

4.7.12 Investigations to date have identified the following which are regarded as committed developments: Centrica power station site, the Police Investigation Unit, West Anglia College, the former Pinguin Foods site near Hardwick Road and a new Tesco retail development (Campbell’s Soup).

4.7.13 The environmental significance of the additional vehicular flows will be assessed against the criteria set out above in relation to existing highway users, local residences and other sensitive receptors. In cases where potentially significant environmental impacts are identified, mitigation measures will be outlined.

4.7.14 In addition to the environmental assessments, a Transportation Assessment (TA) will be prepared to accompany the ES. The TA will be prepared in accordance with current guidance set out in the Department for Transport publication ‘Guidance on Transport Assessment’, March 2007. The TA will assess the impact of development upon the operation of the adjoining highway network and will assess sustainable modes of travel at the Site.

4.7.15 The TA will be a separate document, appended to the ES, and its contents will be scoped separately with NCC Highway Authority and the Highways Agency through the preparation of a Transportation Assessment Scoping Report.

4.8 **Air & Climate (including Human Health Impact)**

**Policy Context**

4.8.1 The methodology employed in assessing and evaluating the Site will be assessed against key European and National Legislation, will include:

- The UK Air Quality Strategy (AQS), Defra (2007);
Baseline Conditions

4.8.2 The nearest Air Quality Management Area (AQMA) is located at Railway Road, which is located 2.8 km north of the North Land of the proposed development Site. Other AQMAs located within the Fenland District are more than 15 km from the proposed Site.

Assessment Methodology

4.8.3 A desk based review of existing air quality in the area has been undertaken based on published information. This has included a review of Kings Lynn and West Norfolk Council’s (KLYNC) air quality monitoring, a review of NCC’s specific monitoring, the National Air Quality Information Archive (NAQIA), the UK Nitric Acid Monitoring Network, a report by the Expert Panel on Air Quality Standards (EPAQS) 19 and data available from Natural England and Air Pollution Information Systems (APIS) websites.

4.8.4 The study area for detailed analysis is expected to lie within a 10 km radius in accordance with established ES good practice. Within the study area, the predicted potential effects of emissions will be characterised at a number of sensitive human and ecological receptors, including residential areas such as South Lynn, Hardwick, Highgate and Gaywood.

4.8.5 The following tasks will be undertaken as part of the assessment:

- Construction phase impacts will be assessed using a semi-quantitative risk assessment approach to establish the scale of effects and extent of mitigation necessary;
- A summary of the baseline monitoring will be provided within the EIA in addition to characterising ambient air quality through a review of other monitoring data collected by third parties (e.g. NCC, local authority and national monitoring networks);
- The combustion of waste will give rise to atmospheric emissions of a number of pollutants in low concentrations. The pollutants to be considered will include all...
pollutants for which stack emission limits have been set in the Waste Incineration Directive and those pollutants, which are also included in the Air Quality Strategy;

- Local meteorological and complex dispersion considerations will be identified and the stack height of the facility optimised to take account of any terrain, local buildings and meteorology, including inter annual variation, using 5 years of hourly sequential meteorological data from the most representative recording station;

- Current version of the dispersion models ADMS will be utilised in accordance with EA reporting requirements. In addition, dispersion modelling of deposition to land would also be undertaken to:

  - Inform the potential human health impacts analysis and where appropriate mitigation measures outlined (deposition of metals and dioxins and furans).

  The output from the air quality assessment will form an important component of, and input to, the Human Health Risk Assessment. The study will be designed to satisfy these requirements.

  - Inform the ecological information for screening (nitrogen deposition and acid deposition).

  It is necessary to carry out an assessment of the impact of aerial deposition at European designated sites within 10 km of the proposed plant.

- The pollutants commonly associated with road traffic emissions and local air quality are nitrogen dioxide (NO2), particulate matter with a mean aerodynamic diameter of less than 10μm (PM10), carbon monoxide (CO), 1,3-butadiene and benzene. For CO, benzene and 1,3-butadiene it is unlikely that any problems will exist with respect to the attainment of the relevant limit values and AQS objectives due to current commitments in existing and proposed national and international policy measures. For the assessment of vehicle emissions, the focus of the assessment will be therefore be on the effects of nitrogen dioxides (NOx) and fine particulates (PM10) emission. The air quality effects associated with vehicles on the local road network, off site, will be quantified using the Design Manual for Roads and Bridges methodology together with any mitigation as may be appropriate;

- Cumulative effects will be assessed having regard to any relevant assessments undertaken by local industrial operators and the local authorities, on the basis of a review of reports held on the public register;
• Emissions from fugitive sources at the plant will also be considered, and where appropriate mitigation measures outlined, including odorous emissions and dusts, primarily on the basis of an investigation of the site sensitivity and design solutions for the Willows Power & Recycling Centre; and
• Consultations will be held with the EA and local authorities to discuss and clarify the approach proposed and in particular to address local concerns relating to the potential impact of emissions on farm land and the food chain.

**Data Gap**

4.8.6 Project specific monitoring has been undertaken by SKM Enviros on behalf of NCC. The data provided from the project specific automatic analyser has been provided as a three-monthly mean and at this stage, it is believed that data has not yet been ratified. The data has been presented and discussed within the air quality assessment; however, more conservative data from Kings Lynn and West Norfolk Council has been used within the assessment.

**4.9 Landscape and Visual Impact**

**Policy Context**

4.9.1 The results of the assessment methodology set out below will also be assessed against all the relevant development plan documents, including the EEP, NSP, NWLP, KLWNLP and PPS1 guidance.

**Baseline Conditions**

4.9.2 The proposed development would be sited within The Willows Business Park on the southern edge of King’s Lynn, 1 km south of the A17(T). The Site is immediately bounded to the west by another vacant site in The Willows Business Park, a Police Investigation Centre (under construction) to the east, and by other industrial scale developments such as Palm Paper Mill to the north, Norfolk Arena to the north-east and King’s Lynn ‘A’ Power Station to the west.

4.9.3 In a broader context, the A10 and the River Nar pass on the east side of The Willows Business Park and the Great River Ouse and a wide flood relief channel runs along the west. South of the business park are open fields with scattered settlements. The landscape
to the south east and east is gently hilly; west of the business park it is flat fenland. The north-western edge of the study area incorporates The Wash, the largest estuary in England. North of King’s Lynn and adjacent to The Wash is the Norfolk Coast AONB.

4.9.4 In order to establish and fully understand the landscape context in which the Willows Power & Recycling Centre is proposed to be located an assessment of the following criteria will be undertaken:

- Topography;
- Vegetation and Other Features on and Adjacent to Site;
- Land Use, Land Cover and Landscape Elements;
- Local Skyline;
- Night-time Character;
- Norfolk Coast Area of Outstanding Natural Beauty;
- Areas of Important Landscape Quality (AILQ);
- Historic and Cultural Landscape Associations; and
- Designated Heritage Features.

**Landscape Character**

4.9.5 The term ‘landscape’ is often readily associated with the countryside, however it can comprise rural, urban coastal and seascapes, etc. The ELC defines ‘landscape character’ as; ‘*a distinct and recognisable pattern of elements that occur consistently in a particular type of landscape.*’

4.9.6 Landscape Character Assessment is a method for describing landscape character in a way that can be readily understood. It does this by mapping the physical, natural, cultural and experiential characteristics that make one area different from another. At a national scale Landscape Character Assessments are co-ordinated by Natural England. This is frequently refined at a regional or more local level by local authorities.

**National Landscape Character**

4.9.7 Natural England have nationally co-ordinated the identification of Landscape Character and Natural Areas. Together these reflect the division of England into areas with particular combinations of geology, soil, plants, animals, settlement history, land use, scenery,
heritage and culture. Each area has a defined local character, distinctiveness and sense of place.

4.9.8 The Landscape Character and Natural Areas are designations of character not quality, and are independent of statutorily protected areas such as AONBs, Sites of Special Scientific Interest (SSSIs) and National Nature Reserves (NNRs). The purpose of Landscape Character and Natural Areas is to ensure that by recognising character, land management and new development can better respect location and associated ecology.

4.9.9 The proposed Willows Power & Recycling Centre lies in the Fens Character Area (46) and is close to the boundary of the North West Norfolk Character Area (76) which located to the east of the Site. Both character areas are located within the study area and the characteristics of each are summarised below:

**The Fens**
- Large scale, flat, fields with extensive vistas, level horizons and huge skies.
- A hierarchy of rivers, drains, ditches and the river engineering infrastructure required to manage the river system has a strong visual influence on the area. Raised embankments create local enclosure.
- Settlements tend to be on ‘islands’ on higher ground.
- Woodland cover and hedgerows are sparse. Shelter belts close to farms and dwellings are usually willow, poplar or Leyland cypress.
- Fields, roads and ditches tend to have a geometric pattern. Roads and railways are often on elevated banks.
- Ribbon development along main arterial roads.

**Northwest Norfolk**
- Large scale arable and grassland landscape on rolling upland terrain with long views over remnant heath and large belts of mixed woodland.
- Large estates give a unified, well managed quality to the landscape.
- The few straight roads have wide verges and uniform hawthorn hedges generously set back from the road.
- Large, widely spaced villages, often around a village green. Isolated Georgian farmhouses.
Local Landscape Character

4.9.10 A Landscape Character Assessment has been prepared on behalf of the Borough of King’s Lynn and West Norfolk. This more local assessment covered the rural landscape only and hence the urban area of King’s Lynn was not included. It is a refinement of the national character assessment with consideration given at more local detail thus resulting in a subdivision of the Fens and Northwest Norfolk National Character Areas into further character Types and Areas. Seven of these Local Landscape Character Types are located within the study area and these landscape types are subdivided into a total of 18 different Landscape Character Areas (LCAs).

4.9.11 Following a review of this local Landscape Character Assessment and a visit to the study area, the sensitivity of each LCA will be assessed in accordance with the criteria given in Table 5.

Table 5: Landscape Evaluation Summary

<table>
<thead>
<tr>
<th>Landscape Character Type</th>
<th>Landscape Character Area</th>
<th>Sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Open Coastal Marshes</td>
<td>A1 Open Coastal Marshes – Terrington</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>A2 Open Coastal Marshes – North Wooton</td>
<td>High</td>
</tr>
<tr>
<td>B Drained Coastal Marshes</td>
<td>B1 Drained Coastal Marshes – Terrington</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>B2 Drained Coastal Marshes – North Wooton</td>
<td>High</td>
</tr>
<tr>
<td>D The Fens – Settled Inland Marshes</td>
<td>D1 The Fens – Settled Inland Marshes – Clenchwarton Marsh</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>D2 The Fens – Settled Inland Marshes – Walpole, Terrington and Clenchwarton</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>D3 The Fens – Settled Inland Marshes – Terrington St. John</td>
<td>Medium</td>
</tr>
<tr>
<td>E The Fens – Open Inland Marshes</td>
<td>E1 The Fens – Open Inland Marshes, Tilney All Saints</td>
<td>Medium</td>
</tr>
<tr>
<td>Character Type</td>
<td>Description</td>
<td>Importance</td>
</tr>
<tr>
<td>----------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>E2</td>
<td>The Fens – Open Inland Marshes, Saddlebow and Wormegay</td>
<td>Medium</td>
</tr>
<tr>
<td>E3</td>
<td>The Fens – Open Inland Marshes, Wiggenhall St Mary</td>
<td>Medium</td>
</tr>
<tr>
<td>F</td>
<td>Wooded Slopes with Estate Land</td>
<td>Medium</td>
</tr>
<tr>
<td>F3</td>
<td>Wooded Slopes with Estate Land – Babinhey River</td>
<td>Medium</td>
</tr>
<tr>
<td>F5</td>
<td>Wooded Slopes with Estate Land – Pott Row and Roydon Common</td>
<td>Medium</td>
</tr>
<tr>
<td>F7</td>
<td>Wooded Slopes with Estate Land – North and South Wooton and Castle Rising</td>
<td>Medium</td>
</tr>
<tr>
<td>G</td>
<td>Farmland with Woodland and Wetland</td>
<td>Medium</td>
</tr>
<tr>
<td>G1</td>
<td>Farmland with Wetland and Woodland – Bawsey and Leziate</td>
<td>Medium</td>
</tr>
<tr>
<td>G2</td>
<td>Farmland with Wetland and Woodland – Middleton</td>
<td>Medium</td>
</tr>
<tr>
<td>G3</td>
<td>Farmland with Wetland and Woodland – Gayton and East Winch</td>
<td>Medium</td>
</tr>
<tr>
<td>G4</td>
<td>Farmland with Wetland and Woodland – West Winch</td>
<td>Medium</td>
</tr>
<tr>
<td>H</td>
<td>Settled Farmland with Plantations</td>
<td>Medium</td>
</tr>
<tr>
<td>H1</td>
<td>Settled Farmland with Plantations – Stow Bardolph</td>
<td>Medium</td>
</tr>
<tr>
<td>Urban</td>
<td>King’s Lynn Urban Area</td>
<td>Medium</td>
</tr>
</tbody>
</table>

4.9.12 The proposed development is located on the edge of the southern boundary of the King’s Lynn Urban LCA, within Character Type E ‘The Fens – Open Inland Marshes’ and LCA E2 ‘The Fens – Open Inland Marshes, Saddlebow and Wormegay’. This character area incorporates the course of the River Nar and is bounded by the banks of the River Great Ouse to the west.
Landscape Designations

4.9.13 Designated sites and landscape and visual resources providing context to the setting of the proposals Site are identified but there are no landscape designations covering the proposals Site.

International and National Designations

4.9.14 Table 6 below sets out the ecological sites with International or National Designations within 15 km of The Willows Business Park.

Table 6: Ecological Sites with International or National Designations

<table>
<thead>
<tr>
<th>Classification</th>
<th>Name</th>
<th>Reference</th>
<th>Distance from WBP</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSSI</td>
<td>River Nar SSSI</td>
<td>1001656</td>
<td>600 m</td>
</tr>
<tr>
<td>SPA</td>
<td>The Wash</td>
<td>UK9008021</td>
<td>7 km</td>
</tr>
<tr>
<td>SAC</td>
<td>Roydon Common and Dersingham</td>
<td>UK0012801</td>
<td>7-12 km</td>
</tr>
<tr>
<td>SAC</td>
<td>The Wash and North Norfolk Coast</td>
<td>UK0017075</td>
<td>7 km</td>
</tr>
<tr>
<td>SAC</td>
<td>Norfolk Valley Fens</td>
<td>UK0012892</td>
<td>7-12 km</td>
</tr>
</tbody>
</table>

Regional Designations

4.9.15 There are no conservation areas, listed buildings or scheduled ancient monuments within 1 km of the Site. The nearest are located near Terrington St Clement and within King’s Lynn. There are no listed buildings within 1 km of the Site. The nearest are located in Clenchwarton, East Winch, Middleton, North Runcton, Terrington St Clement, Terrington St John, West Winch, Wiggenhall St Germans, and King’s Lynn. There are no Scheduled Ancient Monuments (SAMs) within 1 km of the Site. The nearest SAMs to the Site lie within Clenchwarton, Middleton, Terrington St John, and King’s Lynn.

Local Designations

4.9.16 Table 7 below sets those local sites which are directly relevant to any landscape and visual assessment.
Table 7: Summary of Locally Designated Sites

<table>
<thead>
<tr>
<th>Site Name</th>
<th>National Grid Ref.</th>
<th>Designation</th>
<th>Distance from Site to Designations (km)</th>
<th>Level of Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saddlebow Reedbeds</td>
<td>TF615181</td>
<td>CWS</td>
<td>830 m (north)</td>
<td>Local</td>
</tr>
<tr>
<td>Adj.River Nar</td>
<td>TF621177</td>
<td>CWS</td>
<td>930 m (north east)</td>
<td>Local</td>
</tr>
<tr>
<td>Rush Meadow</td>
<td>TF629165</td>
<td>CWS</td>
<td>1200 m (east)</td>
<td>Local</td>
</tr>
<tr>
<td>West Winch Common</td>
<td>TF628147</td>
<td>CWS</td>
<td>1470 m (east)</td>
<td>Local</td>
</tr>
</tbody>
</table>

Proposed Scope of Assessment

4.9.17 The principal potential impacts to be considered will be the effects of the proposed Willows Power & Recycling Centre on views from residential receptors, other viewpoints, the landscape and seascape and the potential effect on landscape character and quality.

4.9.18 In summary, the landscape and visual assessment will:

- Be carried out in accordance with established methodology and guidance;
- Focus on valued landscape and visual resources (at national, regional and local levels); and
- Establish the extent and importance of potentially significant landscape and visual effects.

4.9.19 In addition, the assessment will pay attention to mitigation and enhancement measures established during the Site planning and design stage, and examine the scope for further mitigation and enhancement in terms of residual effects.

Published Methodologies and Guidance

4.9.20 The discipline of landscape and visual impact assessment (LVIA) has evolved over a number of years. Current LVIA methodology in the UK is founded on guidance and techniques published by the Landscape Institute/Institute of Environmental Management and Assessment and the Countryside Agency/Scottish Natural Heritage. The LVIA will be undertaken with reference to published guidance:
  Landscape Institute and the Institute of Environmental Management and Assessment;
• Landscape Character Assessment: Guidance for England and Scotland (2002) 
  Countryside Agency and Scottish Natural Heritage;
• Although the proposed Willows development is not a transport scheme, the 
  Transport Analysis Guidance (WebTAG) will also be referred to as it contains 
  useful general guidance; and
• Guidance for assessing and reducing the impacts of lighting associated with the 
  scheme will be provided by ‘Lighting in the Countryside: Towards Good Practice 
  (OPDM 2001) and ‘Guidance Notes for the Reduction of Light Pollution’ (The Institute 
  of Lightening Engineers 2000).

Assessment Objectives

4.9.21 The principal objectives of the assessment will be:

• To describe, classify and evaluate the existing landscape likely to be affected by the 
  proposed development at the construction and operational phases;
• To identify visual receptors with views of the proposed development; and
• To assess the significance of the direct and indirect impacts on landscape character 
  and visual resources, taking into account the measures proposed to mitigate any 
  impacts identified.

Distinction between Landscape and Visual Impacts

4.9.22 In accordance with current guidance, landscape and visual impacts will be assessed 
  separately, but through a closely linked procedure. A clear distinction will be drawn between 
  landscape and visual impacts as described below:

• Landscape impacts relate to the effects of the proposals on the physical and other 
  characteristics of the landscape and its resulting character, quality and value; and
• Visual impacts relate to the effects on views experienced by visual receptors (e.g. 
  residents, footpath users, tourists etc) and on the visual amenity experienced by 
  those people.
Study Area

4.9.23 The extent of the study area for the landscape and visual assessment will be influenced by the final height of the building(s) and stack. Initial work will focus on a study area for the assessment extending to a 15 km radius from the proposals Site in all directions unless otherwise agreed with NCC. This will be reviewed as design information is defined.

Methodology

4.9.24 The Landscape and Visual Impact Assessment (LVIA) will be undertaken by a Chartered Landscape Architect with experience of similar types of development and carried out in accordance with the latest guidance within the GLVIA. The assessment will also draw upon guidance in “A Landscape Character Assessment Guidance for England and Scotland”, published by the Countryside Agency and Scottish Natural Heritage.

4.9.25 The assessment will be undertaken in the following stages:

- Baseline data collection via desk-top, consultation and fieldwork supported by previous work undertaken by RPS;
- Description of the baseline landscape character and visual amenity of the Site and surrounding area to identify relevant landscape and visual receptors (including key viewpoints) and determine their sensitivity to change, supported by previous work undertaken by RPS;
- Development of landscape mitigation proposals, as an iterative part of the Willows Power & Recycling Centre design, which would avoid or reduce adverse landscape and visual effects and where possible enhance and safeguard beneficial effects;
- Description of the magnitude of change in the landscape and visual amenity as a consequence of the proposed development;
- Description of the potential landscape and visual impacts arising from the proposed development both during the construction and operation periods, including temporary and permanent effects, direct and indirect effects, short-term and long-term effects and daytime and night time effects;
- Identification of any additional landscape mitigation measures;
- Identification of residual impacts on the landscape and visual resource; and
- Evaluation of the significance of landscape and visual impacts arising from the proposed development both during construction, operation and after establishment mitigation proposals (year 1 and year 15 after completion of construction).
Baseline Landscape Assessment Methodology

4.9.26 Baseline assessment will include an appraisal of the landscape within the study area. The studies will identify the landscape resources and character of the surrounding area and examine how the development will affect individual features, key characteristics and the wider landscape character.

4.9.27 Baseline information on the landscape will be gathered through a combination of desk studies, consultation and field surveys. Documents that will be used in the assessment may include aerial photographs, OS maps and published landscape character assessments.

4.9.28 A series of field surveys will be carried out to gain a better understanding of the landscape, to determine its character, elements, features and condition and identify visual receptors and visual barriers. The surveys will establish the landscape resources that combine to give the landscape a distinct sense of place.

4.9.29 Relevant landscape character assessments will be reviewed. Particular attention will be paid to the key landscape characteristics of the relevant landscape types/character areas both individually and in combination.

Baseline Visual Assessment Methodology

4.9.30 The geographical extent of potential visibility will be established for stack heights by production of theoretical Zone of Visual Influence. The ZVI will be achieved using Digital Terrain Model (DTM) and Digital Surface Model (DSM) data for this study area.

4.9.31 Due to the likely extent of the ZVI it would be impossible to assess the visual impact on every individual visual receptor within the ZVI of the proposed development. Consequently, key viewpoints (see Figure 7) looking towards the proposals will be agreed with NCC and other relevant consultees as part of the baseline assessment. These viewpoints would be representative of sensitive residential and recreational receptors situated within the study area at different distances and directions from the scheme. The representative viewpoints will be used to assess the potential visual impacts of the proposals on the different range of views towards the Site. The exact number of viewpoints that will be used will not be determined until further baseline studies are undertaken.

4.9.32 Wireline diagrams of the proposed development will be produced and set alongside baseline photographs of the landscape to illustrate the location and potential appearance of
Assessment of Potential Effects

4.9.33 The effects of the proposed Willows Power & Recycling Centre will be established in accordance with established methodology and guidance. The proposed development will be assessed within the context of the character and attributes of the local landscape. The extent and significance of character change resulting from the proposals will be established and also evaluated as to its importance.

4.9.34 Attention will be paid to the potential effects on valued visual resources, chiefly sensitive residential and recreational receptors.

4.10 Ecology and Nature Conservation

Policy Context

4.10.1 The results of the methodology as set out below will be assessed against all key European and National Legislation, which include the Conservation (Natural Habitats, & c.) Regulations 1994, Conservation (Natural Habitats, & c.) Regulations 1994 and the Wildlife and Countryside Act 1981 (as amended) and Wildlife and Countryside Act 1981 (as amended). The results of the assessment methodology will also be assessed against all the relevant development plan documents, including the EEP, NSP, NWLP, KLWNLP and PPS9 guidance.

Baseline Conditions

4.10.2 The entire Site is situated within The Fens Natural Area which is characterised by low-lying, level terrain that is predominantly cultivated, with little natural or semi natural habitat remaining.

4.10.3 Woodland cover is very sparse with the majority of trees found lining roads, villages and shelterbelts. Marshes, swamps and fens add a distinct character to the area and provide outstanding habitats such as swamps, fen meadow and neutral and improved grasslands. All the fens have artificial water courses essential to drainage.

4.10.4 There are no designated sites of international conservation importance within 2 km of the Site. There is one site (The River Nar SSSI) of national importance within 2 km of the Site.
4.10.5 Sites of Special Scientific Interest (SSSI) are of national ecological importance for the conservation of wildlife habitats, plants and animals, geological features and landforms. The River Nar SSSI is situated within 600 m of the proposed Site to the east. The SSSI is designated for its unusual range of aquatic habitats and botanical diversity.

4.10.6 There are four County Wildlife Sites (CWSs) within 2 km of the proposed Site (Table 4). These are Saddlebow Reedbed, Adj. River Nar, Rush Meadow and West Winch Common (northern half of CWS only). CWSs are non-statutory designations for sites of county significance for wildlife or geology. They often contain habitats and species that are priorities under the UK Biodiversity Action Plan, which sets out strategies for conservation. CWSs complement SSSIs and nature reserves by helping to maintain links between sites. As there are no pathways between the proposed sites these designations are unlikely to be affected by the proposed Willows development. There are no National Nature Reserves (NNR) and no Local Nature Reserves (LNR) within 2 km of the Site.

4.10.7 Areas designated for their nature conservation value are provided in Table 4 and 6 of Chapter 3 including Sites of International Conservation Importance.

Proposed Scope of the Assessment

4.10.8 The ecological assessment of the study area will follow established guidelines. Throughout the investigation, the approach adopted will be based upon recognised techniques of ecological survey and impact assessment (e.g. Institute of Environmental Assessment (IEA), 1995; Treweek, 1999; and guidance developed by the Institute of Ecology and Environmental Management, 2006).

4.10.9 This formal scoping exercise will highlight relevant ecology and nature conservation impacts, and that:

- Ecological Impact Assessment should be undertaken in accordance with IEEM 2006 Guidelines;
- Potential direct and indirect impacts on BAP priority species, protected species and designated sites, including potential impacts on air quality should be assessed;
- Surveys for all protected species at an appropriate time of year are required in addition to consulting with local wildlife recording groups for information;
- The impact of the development on the existing ecology of the four County Wildlife Sites (CWS) within 2 km of the Site should be assessed;
• The impact of the proposed development on the existing ecology of the two SACs, one SPA and 11 SSSIs within 10 km of the Site should be assessed;
• Methods to minimise, mitigate, compensate for any adverse impact should be stated along with proposed monitoring pre, during and post-development; and
• The assessment should cover the lifespan of the plant and examine all aspects of its construction and operation.

Assessment Methodology

4.10.10 To inform the ecological evaluation of the Site and to determine what impacts the proposed Willows development may have on the ecological value of the Site and its surroundings, a desk study and series of site surveys will be undertaken.

4.10.11 Relevant statutory and non-statutory organisations will be contacted for information on designated sites of nature conservation importance, and habitats and species of importance to nature conservation. The aim of this exercise is to supplement the field survey results by collating and reviewing ecological information relevant to the Site and the local area.

4.10.12 The absence of available information associated with specific groups (e.g. invertebrates) does not necessarily mean that features of nature conservation importance are absent, but rather that no detailed records are available. Similarly, it is accepted that sites of significant nature conservation value may exist within an area for which there is no record, and this has been addressed in the field surveys.

4.10.13 Relevant organisations which could be contacted for information during the desk-based study included the following:

• Natural England: Norfolk and Suffolk Government Team;
• Norfolk Biodiversity Information Service;
• Norfolk Wildlife Trust;
• County Bird Recorder;
• Norfolk Bat Group;
• NCC;
• Borough Council of King’s Lynn and West Norfolk; and
• Norfolk Herpetofauna Group.
4.10.14 The Norfolk BAP will also be reviewed in order to assess which species and habitats have been highlighted as requiring positive conservation action with the aim of maintaining and enhancing their ecological value and integrity within the regional boundary. The potential impact on any of these species or habitats by the development proposals will be assessed in order to assist with achieving the action plan targets for their protection. Where possible recommendations that may enhance the Site for these species as part of the scheme’s overall design, will be provided.

4.10.15 In addition, local workers and landowners will be approached informally for specific local information. Responses and comments received from local people and landowners will be incorporated into the evaluation of the Scheme where appropriate.

Data Gap

4.10.16 In 2008, Mott MacDonald Ltd undertook an extended Phase I ecological assessment of the Site (Mott MacDonald, 2009). The assessment included desk-based research, a Phase I habitat survey, a protected species walkover, a reptile survey and a pond suitability assessment for the potential presence of great crested newts. The results from these surveys will be referenced where necessary.

4.10.17 In addition, a programme of field surveys relating specifically to the Site itself and the immediate surrounding land has been undertaken. Field survey work included the following:

- Extended Phase I habitat survey – aims to map habitat types and consider the potential for protected and notable species and habitats (survey completed in May 2010);
- Badger survey – was undertaken in March 2010 (the optimal survey season) using the method described by Harris et al. (1989);
- Bat roost potential and bat activity surveys – a survey was undertaken during March 2010. The survey focused on trees, structures and buildings, within and approximately 25 m from the Site;
- Breeding bird survey - breeding birds surveys were undertaken between March and June 2010. They were assessed using the method outlined in the Common Bird Census methodology (Marchant, 1983) and guidelines contained within the Handbook of Biodiversity Methods (David Hill et al, 2006) and Bird Monitoring Methods (Gilbert et al, 1998);
- Great crested newt survey - Survey visits took place on 14th April, 28th April, 18th May and 26th May 2010. Conditions were suitable for surveying on all dates. Surveys were carried out within the optimal survey period. The survey was undertaken following Natural England guidelines (English Nature, 2001);
- Reptile survey - The survey followed guidelines provided by the Herpetofauna Worker’s Manual (JNCC, 2001). A total of 25 reptile tiles were distributed along the earth bund in South Land on the proposed development site on 28th March 2010. On 18th May 2010, a further 75 tiles were laid: 25 on North Land and 50 on South Land; and
- Other mammals - any other evidence of mammal activity (including deer, hare, rabbit and fox) was recorded in an ad hoc manner during site visits.

4.10.18 Detailed methodologies for all ecological surveys will be provided in the baseline reports.

4.10.19 The Site is not covered by any statutory or non-statutory nature conservation designation.

**Ecological Impact Assessment (EcIA)**

4.10.20 The Ecological Impact Assessment will follow recently published guidelines (IEEM, 2006) and will use all information gained through the various studies to identify all Valued Ecological Receptors (VERs) present within the Zone of Influence, the potential impacts on VERs, the significance of those impacts and mitigation methods through which impacts can be avoided or reduced as much as possible. Where mitigating effects are not possible then suitable ecological habitat compensation will be devised. The EcIA will include a confidence level for predictions and incorporate additional social and economic considerations, where appropriate.

**Environmental Management Action Plan**

4.10.21 Following best practice guidelines set out by IEEM an Environmental Management Action Plan (EAP) will be produced which will pull together all ecological mitigation, compensation, enhancement and monitoring proposals with respect to the scheme.
4.11 Hydrology and Flood Risk

Policy Context

4.11.1 The results of the methodology as set out below will be assessed against all key European and National Legislation, including the Waste Framework Directive 2000/60/EC, the Environmental Protection Act (1990) and Water Resources Act (1991). The results of the methodology set out below will also be assessed against all the relevant development plan documents, including the EEP, NSP, NWLP, KLWNLP, PPS23 and PPS25 guidance.

Baseline Conditions

4.11.2 The Site elevation is around 1.6 to 2.2 m AOD across the North Land (northern part of the Site) and 1.5 m to 2 m AOD across the South Land.

4.11.3 A drainage ditch c.0.5 m deep runs along the southern boundary of the North Land with the Spine Road. On the South Land, another drainage ditch c.0.5 m deep runs along the northern boundary of that part of the Site as well as along the southern boundary with High Road.

4.11.4 Shallow drainage ditches run along the Spine Road and appear to drain into an attenuation pond at the east end of the Site, along the western edge of Low Road.

4.11.5 The attenuation pond drains via a drain tributary into either the Relief Channel to the west of Site, or into the River Nar to the east of Site. The hydrology of the drainage network in the area around the Site is unclear, with some discharges said to flow to the Relief Channel and others to the River Nar.

4.11.6 Land to the south of the Site comprises rough grassland and agricultural fields defined by land drains operated by the Internal Drainage Board.

4.11.7 The land in and around the Site is defended by formal flood defences along the nearby watercourses.

4.11.8 The Site is located on relatively flat land surrounded by man-made and natural watercourses and water bodies of varying sizes.
4.11.9 The River Great Ouse and the Great Ouse Relief Channel are located c.700 m and 400 m west of the Site respectively and the River Nar is located 600m east of the Site.

4.11.10 A review of the Strategic Flood Risk Assessment (SRFRA) flood map indicates that the Site presently lies within undefended Flood Zone 1 and therefore has a ‘low probability’, that is, less than 1 in 1000 probability of flooding in any one year.

4.11.11 By 2115, beyond the expected design lifetime of the development, the Site will be located in Tidal Flood Zone 3a - at risk of residual flooding following a breach in tidal defences. The contract period for the PFI is 25 years.

4.11.12 The EA Flood Zones and acceptable development types are explained in Table D1 of PPS25. According to this, water-compatible, less vulnerable and more vulnerable uses of land and essential infrastructure defined in Table D.2 of PPS25 are appropriate in this zone, while highly vulnerable uses of land are only appropriate subject to the Sequential Test being applied.

4.11.13 The proposed development is classified as a less vulnerable land use.

**Proposed Scope of the Assessment**

4.11.14 The EIA will be undertaken with due consideration for the sustainable aims of all relevant National Policy and Legislation as set out above with the key objectives of the EIA being:

- To assess the flood risk to the proposed development and to demonstrate the feasibility of appropriately designing the development such that any residual flood risk to the development and its users would be acceptable;
- To assess the potential effect of the proposed development on flood risk elsewhere and to demonstrate the feasibility of appropriately designing the development such that the development would not increase flood risk elsewhere; and
- To assess the potential effect of the proposed development on water quality and groundwater conditions.

**ES Chapter**

4.11.15 The ES chapter will include an assessment of the existing (baseline) hydrology, flood risk and water quality conditions at the Site. The potential impacts on the flood risk and water
quality will be identified for the construction and operational phases and mitigation proposed to neutralise any impacts identified.

4.11.16 Any residual risks will be analysed with a view to informing the site management and maintenance plans, in order to minimise any residual impacts resulting from development, which cannot be removed through incorporated design measures.

Assessment Methodology

4.11.17 As a matter of best practice, the assessment will be undertaken based on the relevant guidance on hydrology and flood risk assessment, including PPS25.

Consultations

4.11.18 The hydrological site conditions, flooding, and water quality will be determined by consulting maps and published information regarding the topography, geology, and hydrology of the area. Much of the information will be obtained from an Envirocheck report and from environmental assessments and technical reports undertaken for other developments in the vicinity:

- ES, Palm Paper, Harrison Environmental Consulting 2007;
- ES, P B Power, Centrica Environmental Report.2010;
- Willows Business Park: Waste Treatment Facility Flood Risk Assessment April 2009 Mott MacDonald;
- Report by the Director of Planning and Transportation. Planning Regulatory Committee 18 April 2008. Applications Referred to Committee for Determination: Borough of King’s Lynn and West Norfolk: C/2/2008/2003: King’s Lynn: Land at Willows Business Park, Saddlebow Road: Retrospective application for the relocation of NCC Community Recycling Centre from King’s Lynn: NCC Environment & Waste; and

4.11.19 The EA will provide information regarding groundwater monitoring, flooding and flood levels, abstractions, historical flooding and flood defences.

4.11.20 In addition the proposed development will informally be discussed with the EA Development and Flood Risk Engineer.
Water Quality Assessment

4.11.21 A qualitative assessment of potential effects on local surface water quality will be undertaken and relates primarily to the proposed changes to the surface water drainage regime.

Flood Risk Assessment

4.11.22 A detailed Flood Risk Assessment (FRA) will be undertaken for the application Site. The FRA will meet the intent of PPS25 and the key components of the FRA will be as follows:

- Confirmation of flood levels for the Site including potential effects of climate change, and comparison of these flood levels against topographic levels over the Site and surrounds;
- Identification of any hydrological constraints to the proposed development;
- Assessment of the existing surface-water runoff regime at the Site, and determination of the potential effects of the development on peak runoff rates and on runoff volumes;
- Development of a conceptual mitigation strategy for runoff from the proposed development, including an outline for an appropriate attenuation storage volume; and
- Consideration of flood storage compensation measures.

Data Gap

4.11.23 Although the EA has indicated that informally that it is satisfied with the outline proposals in regard to flood risk assessment and mitigation, this position will need to be clarified formally. NCC as the Waste Planning Authority will also be requested for a view on whether there is a potential requirement to undertake a sequential test exercise.

Analysis

4.11.24 The significance of effects on surface water hydrology, surface water runoff, flooding and water quality have been categorised using the criteria contained within Table 8.
Table 8 – Significance Criteria

<table>
<thead>
<tr>
<th>Significance Criteria</th>
<th>Description of Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substantial adverse</td>
<td>Severe detrimental affect to local watercourses. Permanent flooding or change to flow characteristics of watercourses. Permanent reduction in the quality of the surface water resource. Permanent adverse effect on aquatic flora or fauna.</td>
</tr>
<tr>
<td>Moderate adverse</td>
<td>Moderate detrimental effect to local watercourses. Severe temporary flooding or change to flow characteristics of watercourses. Severe temporary reduction in the quality of surface water resources. Severe temporary effect on aquatic flora and fauna.</td>
</tr>
<tr>
<td>Minor adverse</td>
<td>Temporary and minor detrimental effect to local watercourses. Moderate local flooding adjacent. Moderate local scale reduction in surface water quality, reversible with time. Reversible detrimental effects on aquatic flora or fauna.</td>
</tr>
<tr>
<td>Negligible</td>
<td>No appreciable effect on humans, aquatic flora and fauna, or surface water resources. Any minor effects are reversible.</td>
</tr>
<tr>
<td>Minor beneficial</td>
<td>Minor reduction in risk to humans, animals or plant health. Minor localised improvement to the quality of surface water resources or minor reduction in flood risk.</td>
</tr>
<tr>
<td>Moderate beneficial</td>
<td>Moderate reduction in risk to humans or aquatic fauna and flora. Moderate localised improvement to the quality of surface water resources or minor reduction in flood risk.</td>
</tr>
<tr>
<td>Substantial beneficial</td>
<td>Major reduction in risk to humans or aquatic fauna and flora. Significant localised / moderate to significant regionalised improvement to the quality of surface water resources. Moderate to significant localised/regionalised reduction in flood risk.</td>
</tr>
</tbody>
</table>

4.12 Hydrogeology and Ground Conditions

Policy Context

4.12.1 The results of the methodology as set out below will be assessed against all key European and National Legislation, including the Waste Framework Directive 2000/60/EC, the Environmental Protection Act (1990) and Water Resources Act (1991). The results of the methodology set out below will also be assessed against all the relevant development plan documents, including the EEP, NSP, NWLP, KLWNLP, PPS23 and PPS25 guidance.
Baseline Conditions

4.12.2 An initial review of the hydrogeological and ground condition aspects of the proposed
development has been undertaken.

4.12.3 A limited data set has been used to conceptualise the site setting with regards to the likely
ground conditions and controlled water environment.

4.12.4 Further information and any relevant reports available for the Site and the adjacent land will
be reviewed as part of the assessment to determine the current Site conditions and identify
any gaps in the data set.

Geology

4.12.5 The published British Geological Survey (1:50,000) scale geology map, Sheet (145 – King’s
Lynn and the Wash) (Solid and Drift Edition) indicates that the area is underlain by marine
alluvium of the Terrington Beds. This in turn overlies the Kimmeridge Clay of the Jurassic
period. In addition, a band of made ground is present just to the west of the Site.
Information from the previous investigation at the Site as provided by NCC indicates that
ground conditions consist of topsoil overlying Terrington Beds comprising clay with shell
fragments to a maximum thickness of 2.3 m. Peat was encountered beneath the Terrington
Beds at a maximum thickness of 1.3 m. Barroway Drove Beds were encountered beneath
the peat comprising soft silty clay with lenses of peat to a maximum thickness of 5.8 m
below ground level. Kimmeridge Clay was encountered in the north land beneath the
Barroway Drove Beds but the base was not proven.

Geotechnical Constraints

4.12.6 The potential for any geotechnical constraints at the Site in relation to the proposed
development will be confirmed following the desk study and site walkover.

4.12.7 The nature of the underlying sediments will be taken into account in the design of the
foundations of the proposed structure.
Hydrogeology

4.12.8 The Terrington Beds, peat lenses and Barroway Drove Beds are classified as non-aquifer and are of low permeability. The Site does not have a groundwater vulnerability status and is not within a source protection zone.

4.12.9 The EA operates a classification system to categorise the importance of groundwater resources (aquifers) and their sensitivity to contamination. Aquifers are classified as major, minor and non-aquifers, based on the amenity value of the resource. A major aquifer is a significant resource capable of producing large quantities of water suitable for potable supply. Minor aquifers produce water in varying quantities and qualities, and if utilised are of local importance. Non-aquifers are low permeability strata, which contain no significant exploitable groundwater. Non-aquifers also have very limited capacity to transmit contaminants.

4.12.10 Soil vulnerability classification is a system used by the EA to group the many different soils in England and Wales into three classes of "leaching potential" based on soil physical properties, which affect the downward movement of pollutants.

4.12.11 The Envirocheck Report indicates that the hydrogeology beneath the Site comprises a Non-aquifer with the overlying soils having a low leaching potential. Groundwater vulnerability is thus assessed as being low.

4.12.12 To protect drinking water from pollution, the EA has designated groundwater Source Protection Zones (SPZ) around major groundwater abstraction points. The zones restrict the type of activities and development permitted within their boundaries to protect the groundwater reserves. The Site is reported to be outside the total catchment area of the EA groundwater SPZ.

Proposed Scope of Assessment

4.12.13 Further review of the hydrogeological and ground condition aspects of the proposed development will be undertaken followed by a comprehensive assessment of baseline conditions and the potential impacts of the development on the ground conditions and hydrogeological regimes.
4.12.14 Any existing information and relevant reports available for the Site and the adjacent land will be reviewed in order to determine the current site conditions and identify any gaps in the data set.

4.12.15 Any further environmental data searches will be obtained to inform the EIA of any potential source-pathway-receptor linkages and to provide an indication of any geotechnical constraints that may occur.

4.12.16 A site walk-over will be undertaken by a suitably qualified hydrogeologist (and potentially by a geotechnical engineer) as part of the desk study.

4.12.17 The potential effects of the proposed Willows Power & Recycling Centre on hydrogeology will be addressed as part of the EIA including the potential impacts with the construction of the Site. This includes any de-watering requirements, pollution prevention measures etc., as well as impacts during the operational phase (including accidental impacts), such as the storage of hazardous materials, site drainage and the development of hardstanding areas.

4.12.18 When considering the issues of land contamination, the focus will be in relation to contamination risks from former and/or proposed uses and activities, and/or the migration of contaminants from surrounding land uses, as referred to in PPC guidance document H7.

4.12.19 On the basis of information reviewed to date, it is not anticipated that any further intrusive site investigation works will be required or that there will be a need for a controlled waters quantitative risk assessment (to indicate the potential risk posed by the Site to the surrounding environment). This would, however, be confirmed through further consultation with the EA on completion of the desk study.

4.13 Noise & Vibration

Policy Context

4.13.1 As a matter of best practice, the noise and vibration assessment will be undertaken based on the relevant guidance on noise and vibration assessment. This includes:

- British Standard (BS) 4142 ‘Method for Rating industrial noise affecting mixed residential and industrial areas’ (BS 4242);
- EPR 1.00 ‘How to Comply with your Environmental Permit’; and Horizontal Guidance – H3 Part 2 Noise Assessment and Control; and


Baseline Conditions

4.13.3 The Site is located on Willow Road and is within the Saddlebow Industrial Estate and The Willows Business Park. The Site comprises two discrete parcels of land, referred to as the North Land and the South Land. The North Land is located to the north of the Spine Road and the South Land is located to the south. The site is currently vacant grassland.

4.13.4 The site is bounded to the north by Poplar Avenue; to the east by Low Road; and to the south by High Road. To the immediate north of the site is Saddlebow Industrial Estate and The Willows Business Park, which includes the Norfolk Arena. The Norfolk Arena hosts speedway, stock-car and banger racing. To the immediate east and south of the Site is agricultural land and to the immediate west is King’s Lynn Combined Cycle Gas (CCG) power station. The A47 is to the north of the industrial estate and business park and approximately 1,000 m to the north of the site. The Fen Line railway line between King’s Lynn and Cambridge is approximately 800 m to the east and carries electric passenger trains and a few occasional diesel freight trains.

4.13.5 The nearest residential noise sensitive receptors (NSRs) to the proposed Willows Power & Recycling Centre to be assessed in terms of any potential impacts and, where appropriate, mitigation measures outlined are:

• 1 and 2 High Road, which are approximately 240 m to the south (distance to the proposed IBA process building);
• New Farm House, which is approximately 310 m to the south (distance as measured above);
• 3 and 4 High Road, which are approximately 560 and 590 m to the south (distance as measured above);
• Polperro and Polperro Too, which are approximately 720 m to the south (distance as measured above);
• 5, 6, Batana and The Haven, High Road, which are approximately 950 m to the south (distance as measured above);
• Saddle Bow Caravan Park, which is approximately 890 m to the northeast (distance to northern façade of main process building); and
• Merries Farm and Pear Tree Farm, which are approximately 1,300 m west (distance to proposed Air Cooled Condenser).

4.13.6 The nearest Vibration Sensitive Receptors (VSRs) to the proposed Willows Power & Recycling Centre, as measured from the proposed waste bunker, are:

• An existing pumping station on the southern boundary of the North Land, which is approximately 30 m away;
• Palm Paper, which is approximately 110 m away;
• Air-Cooled Condenser of Kings Lynn CCG power station, which is approximately 180 m away; and
• National Grid pipeline, which is approximately 150 m away.

Overview of Baseline Conditions

4.13.7 The significant existing sources of noise emission in the area are industrial and manufacturing facilities within the industrial estate; the existing power station; vehicles associated with the industrial estate and business park; the Fen Line railway; and road traffic on the A47 and minor roads in the area.

4.13.8 Noise levels at NSRs on High Road that are several hundred metres to the south of the proposed Willows Power & Recycling Centre will not be significantly influenced by noise sources in the area except for vehicle pass-bys on High Road. At these NSRs, background and ambient noise levels will be primarily influenced by meteorological sources, such as the noise of wind passing over the fields and through nearby bushes and trees.

Proposed Scope of Assessment

4.13.9 The noise and vibration chapter will assess the potential noise and vibration effects associated with the proposed development, which are considered to be:
- Construction: potential noise and vibration associated with plant and activities associated with the construction phase, including any proposed piling; and
- Operation: potential noise and vibration associated with 24-hour operation of the Site, including additional vehicle movements.

Proposed Consultation

4.13.10 The main consultee for noise and vibration is the Borough Council of King’s Lynn and West Norfolk’s Environmental Health Team. In addition to the formal scoping request, RPS sent a memorandum containing the proposed baseline noise monitoring locations and assessment methodologies (as described herein) to the Environmental Health department at the Borough Council of King’s Lynn and West Norfolk in April 2010. A response was received that expressed satisfaction with the assessment methodologies with a request for some clarifications.

Proposed Methodology

4.13.11 The noise and vibration assessment will need to robustly cover effects that may arise during both the construction and operational phases.

4.13.12 The noise assessment methodology requires a comparison to be made between the existing daytime and night-time noise environments at the NSRs and the future noise levels that would be expected to occur at those locations, with the development of the proposed Willows Power & Recycling Centre both during construction and operation. Baseline noise surveys undertaken on behalf of NCC comprised a 5-hour survey and a number of 15-minute surveys at a number of locations in the area during the daytime. Baseline noise surveys undertaken for the Centrica power station application comprised a 27-hour survey and a number of 10-minute surveys at a number of locations in the area during the daytime and night-time of October 2007. Noise monitoring locations are set out in Figure 8.

4.13.13 BS 4142 requires a representative background noise level to be adopted for the assessment of noise effects during the operation of the proposed Willows Power & Recycling Centre. It is common practice to determine baseline noise levels on the basis of a long-term (several days) survey so that the full temporal variation during different conditions (including weather) can be understood.
4.13.14 Existing noise levels were determined by a field study in June 2010 that comprised one long-term (14 consecutive days) noise survey (Polperro Too, High Road) and one short-term survey (Saddle Bow Caravan Park) at separate locations in the area. The noise monitors were installed at locations at which data would be obtained that were representative of the NSRs where there is a potential to be affected by the proposed development.

4.13.15 The assessment has adopted the minimum of the ambient and background noise levels determined for each daytime and night-time period during the survey. The long-term survey at Polperro Too measured background noise levels of 33 – 41 dB $L_{A90}$ and 27 – 40 dB $L_{A90}$ during the daytime and night-time respectively.

4.13.16 Further noise monitoring has also been undertaken recently to provide a winter comparison.

**Noise and Vibration during the Construction of the proposed Willows Power & Recycling Centre**

4.13.17 Potential noise emissions from the Site during the construction phase will be predicted using SoundPLAN noise modelling software, which implements the methodology contained within Annex F of BS 5228-1. Source terms will be obtained from Annex C of BS 5228-1 based on typical construction plant and activities. The significance criteria will be based upon one of three methodologies contained within Annex E of BS 5228-1.

4.13.18 Delivery HGVs will be required to transport construction materials and equipment to the Site. The noise assessment will predict the change in noise emissions from roads around the Site due to an increase in the flow of HGVs using the methodology contained within the Calculation of Road Traffic Noise (CRTN).

**Noise and Vibration during the Operation of the proposed Willows Power & Recycling Centre**

4.13.19 Potential noise levels arising from the operation of the proposed Willows Power & Recycling Centre will be predicted using SoundPLAN noise modelling software implementing the methodology contained within ISO 9613-2. Source terms for the principal noise sources of the development will be defined as octave-band spectra from 63 Hz to 8 kHz, which is commensurate with the frequency range over which ISO 9613-2 is applicable. Source terms will be derived from measurements of similar plant and vehicles.
4.13.20 The potential noise effects associated with an increase in the flow of HGVs on local roads, due to the operation of the proposed development will be predicted using the methodology contained within CRTN.

4.13.21 The thresholds of significance for the assessment of noise effects upon residential receptors will be based upon guidance contained within BS 4142 and EPR 1.00. The semantic scale for assessing the significance of adverse effects has been adopted based upon the semantic scale for noise change. The overall significance of the development has been determined as the maximum effect determined by any one of the criteria.

4.13.22 Significant operational vibration effects are unlikely and, therefore, a quantitative assessment is not required.

**Cumulative Effects**

4.13.23 Existing industrial facilities within the surrounding area will be assessed as part of the current baseline scenario. The assessment has considered the potential cumulative noise and/or vibration effects arising from the concurrent construction or operation of the proposed Willows Power & Recycling Centre with the construction or operation of consented developments in the area, including the Centrica power station, considering the proximity of consented developments to NSRs that are predicted to be affected by the proposed development and the expected noise and vibration emissions from consented developments.

4.14 **Archaeology and Cultural Heritage**

**Policy Context**

4.14.1 The results of the methodology as set out below will be assessed against all key European and National Legislation, including the Ancient Monuments and Archaeological Areas Act 1979 and the Planning (Listed Buildings and Conservation Areas) Act 1990. The results of the assessment methodology will also be assessed against all the relevant development plan documents, including the EEP, NSP, NWLP, KLWNLP and PPS5 guidance.

**Baseline Conditions**

4.14.2 There are no statutory or non-statutory archaeological designations within the bounds of the Site. Data from the Norfolk Historic Environment Record and the Norfolk National Mapping
Programme indicates that there are no Scheduled Ancient Monuments (SAMs) within the proposed Site boundary and the Site does not lie within a locally designated Archaeological Sensitive Area (ASA).

4.14.3 The Site has a limited archaeological potential. It lies in an area which is and has always been marginal agricultural land and unattractive to settlement. There may be evidence for salting in this area, but an earlier survey of the Site recorded nothing in the immediate area, although fieldwork was limited due to grass cover.

4.14.4 Locally, a number of salterns have been recorded, for which associated pottery suggests a medieval date. Pottery on the eastern bank of the River Nar may indicate a small settlement on a former roddon, while the ridge and furrow is likely to be of late medieval date or later.

4.14.5 The aim of the study is to assess the likelihood of the Site to contain archaeological remains and to provide an indication of what, if any, further work would be required with regard to archaeology.

Proposed Scope of Assessment

4.14.6 For designated cultural heritage resources of international and national significance (World Heritage Sites, Scheduled Monuments, Listed Buildings Grade I and II*, Registered Parks and Gardens of Special Historic Interest Grade I and II*, Registered Battlefields), the study area is a circle of 10 km radius centred on the proposed development. In accordance with established ES good practice.

4.14.7 For designated historic environment resources of regional and local significance (Conservation Areas, Listed Buildings Grade II, Registered Parks and Gardens of Special Historic Interest Grade II, locally designated Parks and Gardens, locally listed buildings, locally identified historic landscape areas), the study area is a circle of 3 km radius centred on the proposed development.

4.14.8 For buried archaeological sites that are recorded on the Historic Environment Record but not otherwise designated, the study area is a circle of 1.5 km radius centred on the Site.

4.14.9 It is proposed to consult the Historic Environment Record (HER). Information on Scheduled Ancient Monuments, Registered Parks and Gardens, Battlefields and listed buildings will be obtained from English Heritage. Relevant documentary and archival material, both published and unpublished, held in libraries and archives, will be examined as appropriate.
An iterative approach will be taken during this process to determine the scope of such consultations.

4.14.10 A field visit and walkover survey will be undertaken to establish the presence of previously unrecorded above ground archaeology, and/ or further to assess the potential of recorded above ground archaeology. The field visit will also provide an indication of the suitability of any further survey techniques.

4.14.11 All available information is relevant and detailed enough to mitigate the need for additional works over and above that set out in this scoping report.

4.14.12 The assessment will conform to the relevant legislation and guidance, including:

- **Planning Policy Statement: Planning for the Historic Environment (PPS5):** Department of Communities and Local Government 2010;
- **Code of Conduct Institute of Field Archaeologists 2002;** and
- **Standard And Guidance for Archaeological Desk based Assessment Institute of Field Archaeologists 2001.**

4.14.13 The baseline information will provide sufficient information to enable the formulation of a mitigation strategy, if necessary, to ensure the recording, preservation or management of any significant archaeological material, if present. It may also identify the need for further investigation, whether intrusive or not, where the character and value of the resource cannot be sufficiently defined to permit a mitigation strategy or other response to be devised.

4.14.14 PPS5 sets the Governments overarching aim with respect to the historic environment and its heritage assets. PPS5 looks to conserve these historic assets for the enjoyment and quality of life they bring to this and future generations. Paragraph HE 7.2 states:

“In considering the impact of a proposals on any heritage asset, local planning authorities should take into account the particular nature of the significance of the heritage asser and the value that it holds for this and future generations”.

4.14.15 In addition, the **Design Manual for Road and Bridges (Vol 11, Section 3 Part 2 HA208/07)** Highways Agency August 2007 details categories of relative importance:

- Sites of Very High Value – usually world Heritage sites or sites of acknowledged International Importance;
• Sites of High Value or National Importance – usually Scheduled Ancient Monuments, or monuments in the process of being scheduled;
• Sites of Medium Value, these being of Regional or County importance;
• Sites of Low Value, these being of district or Local importance;
• Sites of Negligible Value - with very little of no surviving archaeological interest; and
• Sites of Unknown Value.

4.14.16 For the purposes of this project, designations of relative importance are based on this designation.

4.14.17 For the purposes of this project, archaeological periods are defined as follows:

• Prehistoric [comprising Lower Palaeolithic (pre 30,000 BC), Upper Palaeolithic (30,000 - 10,000BC), Mesolithic (10,000 - 3,500BC), Neolithic (3,500 - 2,000BC), Bronze Age (2,000 - 700BC) and Iron Age (700BC - AD43)];
• Roman (AD43 - AD450);
• Medieval (AD450 - AD1540); and
• Post Medieval (AD1540 onwards).

4.15 Socio Economic Impact

Context

4.15.1 The proposed Willows Power & Recycling Centre is located in the administrative area of King’s Lynn and West Norfolk Borough Council.

Proposed Scope of Assessment

4.15.2 A range of social and economic data sets will be drawn upon to carry out this assessment. The most important single source will be the 2001 Census, which contains a wide range of economic and related data, including economic activity, industry, occupation, qualifications, travel to work, mode of travel to work and car ownership.

4.15.3 Since the data in the 2001 Census is now nine years old, other sources will be used for more up to date information where appropriate and available. These include the NOMIS Labour Market Profiles and studies carried out by local authorities and other agencies.
4.15.4 The issue of compatibility of data sources will be addressed. More generally, the limitations of the data sources in terms of geographical coverage, use as time series data, and the extent to which firm conclusions can be drawn, given that human behaviour and individual choice are involved in this topic area, will also be covered.

4.15.5 Baseline conditions will be established using the sources listed. The assessment will also take into account the perception of those baseline conditions as set out in the economic and community strategies of the local authorities and other agencies, and the objectives and proposed actions of those strategies.

Geographical Scope

4.15.6 Data will be presented and analysed for the ward in which the proposed development is located and the Borough, with Norfolk, the East Region and Great Britain for comparison where appropriate. The extent to which data is readily available for the King’s Lynn and West Norfolk area will be investigated.

4.15.7 The assessment will consider in detail the relationship of the proposed Willows Power & Recycling Centre with the surrounding community and how it is designed to bring local benefits, for example:

- Employment, first in construction and then in the sought after field of advanced waste treatment technologies which require highly skilled staff, to be advertised locally; and
- Waste awareness and education, where the plans will build in active community engagement through the establishment of visitor centre, and associated educational activities etc.

4.16 Amenity

4.16.1 The principal means of control over potential environmental nuisance due to the generation of litter or through the attraction of vermin and other pests to the Site will be good site management practices reinforced by the requirements of the Environmental Permit for the proposed development.

4.16.2 Consideration of the effect on the amenity of local areas and their residents is, however, important when assessing the suitability of a Site for the development proposed. Therefore,
amenity issues will be assessed against all relevant material planning policies and guidance, including the EEP, NSP, NWLP and KLWNLP.

4.16.3 Any waste management facility has the potential to give rise to effects associated with dust, noise, odour and vermin; although the purpose of the Environmental Permit is to ensure that such effects are either designed out or adequately controlled. Such issues will be considered under a section dealing with amenity, which will assess the relevant design/control measures and possible effects on sensitive receptors, in the surrounding area, using a risk based approach.

Assessment Methodology

4.16.4 The chapter provides a qualitative assessment of the potential impacts.

4.17 In Combination and Cumulative Effects

4.17.1 The assessment of in combination and cumulative effects will draw together any likely significant in combination and cumulative effects identified in specialist studies. The assessment will also consider the potential cumulative effects of other development proposals.

4.17.2 The following committed developments in the vicinity of the proposed scheme may, when constructed, lead to a cumulative impact together with the proposed Willows Power & Recycling Centre:

- King’s Lynn B Power Station;
- National Grid Overhead Electricity Transmission Lines;
- Police Investigation Unit;
- Proposals for relocation of The College of West Anglia;
- Redevelopment of Pinguin Foods site near Hardwick Road for a Sainsbury’s Retail Development; and
- Tesco retail store (Campbell’s Soup site).

4.17.3 A systematic procedure for identifying and evaluating the significance of effects from multiple activities including the proposed Willows Power & Recycling Centre will be used to the causes, pathways and consequences of potential impacts within the EIA is an essential part of the process.
4.17.4 These three elements below will define the complex cause-effect relationship that is central to cumulative effects assessment:

- **Identifying sources** – the multiple activities that cause potential impacts or environmental change;
- **Considering processes** – pathways of impacts between the sources and receptors and the linkages among these impacts; and
- **Effects** – analysis of the attributes of these effects - whether such impacts are additive, antagonistic or synergistic.

4.18 **Summary**

4.18.1 This concluding section of the ES will draw together the results of the topic specific assessments. It will describe the disciplines addressed, summarise how they have been assessed and identify the likely significant effects and details further mitigation measures required and recommended. It will also highlight areas where consideration has been given to the following categories of impacts:

- Cumulative impacts, which are those effects of development that may interact in an additive or subtractive manner with the impacts of other developments that are not currently in existence, but may be by the time the development is implemented; and
- Interactions between impacts, where impacts in different categories as set out in the individual topic chapters may act in conjunction with either beneficial or detrimental effect.

4.18.2 Residual impacts, which relate to those that remain significant following the application of mitigation measures.

4.19 **Health Impact Assessment**

4.19.1 It is proposed that a HIA will be undertaken as a separate, stand-alone study to accompany the planning application and ES. This is an optional step but one that Cory and Wheelabrator is undertaking to demonstrate our robust and comprehensive approach to the ES. Pre-application consultation will be undertaken with NCC, Director for Public Health, the
Health Protection Agency and other key bodies to take account of local concerns including the potential impacts of emissions on farm land and the food chain.

4.19.2 Health Impact Assessment (HIA) is a multidisciplinary process designed to identify and assess the potential health effects (both adverse and beneficial) of a proposed project, plan or programme and to deliver evidence-based recommendations that maximise health gains; and reduce or remove potential negative impacts or inequalities.

4.19.3 Although not a regulatory requirement to the planning process, HIA has been proven valuable in alleviating community concerns by putting health risks into context and in promoting effective mitigation and community support initiatives.
Figure 1 – General Location Plan
Figure 2 – Site Location Plan
Figure 3 – Proposals Site Boundary
Figure 5 – Elevations
Figure 6 – Process Flow Diagram

See paragraph 2.2.28
Figure 7– Candidate Landscape Viewpoints
Figure 8 – Noise Monitoring Locations
Figure 9 – Designated Ecological Sites within 10 km