



SCOTT WILSON

**Habitat Regulations Assessment (HRA) Screening
(Stage 1) of the Greater Manchester Joint Waste
Development Plan Document (JWDPD)**

D r a f t R e p o r t

July 2010

Scott Wilson.

We work with clients to develop, implement and evaluate projects, programmes and change initiatives to improve performance and reduce risk.

Habitat Regulations Assessment (HRA) Screening of the Greater Manchester Joint Waste Development Plan Document (JWDPD)

Draft Report

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Abbreviations

AA	Appropriate Assessment
AGMA	Association of Greater Manchester Authorities
ATT	Advanced Thermal Treatment
CC	County Council
CCW	Countryside Council for Wales
cSAC	Candidate Special Area of Conservation
CTT	Conventional Thermal Treatment
DCLG	Department of Communities and Local Government (now CLG see below)
CLG	Communities and Local Government
DPD	Development Plan Document
EA	Environment Agency
EC	European Commission
EU	European Union
GM	Greater Manchester
GMGU	Greater Manchester Geological Unit
HGV	Heavy Goods Vehicle
HRA	Habitat Regulations Assessment
IROPI	Imperative Reasons of Overriding Public Interest
JNCC	Joint Nature Conservation Committee
JSP	Joint Structure Plan
JWDPD	Joint Waste Development Plan Document
LDD	Local Development Document
LDF	Local Development Framework
LPA	Local Planning Authority
MBT	Mechanical Biological Treatment
MRF	Materials Recovery/Recycling Facility
NE	Natural England
NW RSS	North West Regional Spatial Strategy
ODPM	Office of the Deputy Prime Minister
PPS	Planning Policy Statement
pRamsar	Proposed Ramsar Site
pSPA	Potential Special Protection Area
RSS	Regional Spatial Strategy
RTS	Regional Transport Strategy
SA	Sustainability Appraisal
SAC	Special Area of Conservation
SEA	Strategic Environmental Assessment
SPA	Special Protection Area
SPD	Supplementary Planning Document
SW	Scott Wilson
UDP	Unitary Development Plan
WTS	Waste Transfer Station

Glossary of HRA terms

Habitat Regulation Assessment (HRA)	<p>This is the assessment of a plan or policy against the requirements of Conservation of Habitats & Species Regulations 2010.</p> <p>This is considered to have the following discrete Stages (DCLG, 2006)</p> <ul style="list-style-type: none">• Evidence Gathering;• Stage 1 HRA: identifying whether a plan is likely to have significant effects (LSE) on European site;• Stage 2 HRA: ascertaining the effect on site integrity• Stage 3 HRA: identification of mitigation measures/alternative solutions
Stage 1 HRA/Screening Stage	<p>This is the identification of whether a plan is likely to have significant effects (LSE) on a European site. This stage 'screens' whether an AA (HRA Stages 2 or 3) is required</p>
Likely Significant Effects (LSE)	<p>This refers to the process undertaken during a Stage 1 HRA</p>
Appropriate Assessment (AA)	<p>This comprises Stages 2 and 3 of HRA</p>

1 INTRODUCTION AND FUNCTION OF THIS REPORT

1.1 Introduction

- 1.1.1 Scott Wilson Ltd (herein referred to as Scott Wilson) has been appointed by Greater Manchester Geological Unit (GMGU), on behalf of the Association of Greater Manchester Authorities (AGMA), to assist in undertaking a Stage 1 ('Screening') Habitat Regulations Assessment (HRA) (under the Conservation of Habitats and Species Regulations 2010) of the potential effects of the Joint Waste Development Plan Document for the ten Greater Manchester authorities on designated European nature conservation sites (Natura 2000 sites). The ten authorities are: Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Stockport, Trafford, Tameside, and Wigan. Figure 1 illustrates the boundary of each of these ten authorities within Greater Manchester.
- 1.1.2 Natura 2000 Sites include Special Areas of Conservation, SACs, and Special Protection Areas, SPAs; as a matter of UK Government policy (Planning Policy Statement 9), Ramsar sites¹ are given equivalent status. These sites are also referred to as 'European Sites'.
- 1.1.3 As the Appropriate Assessment (AA) element of the Habitat Regulations Assessment (HRA) forms subsequent Stages 2 and 3 of the assessment following the initial screening of sites, and to be consistent with terminology applied to this by Natural England (NE), the initial stage of this assessment is termed a 'Stage 1 HRA'. The subsequent Stages 2 and 3 are referred to as 'AA'. The whole process (i.e. Stage 1 HRA and AA) is referred to as 'HRA'. A Glossary is included on page iv of this report with key HRA terms.

1.2 Joint Waste Development Plan Document

- 1.2.1 The Planning and Compulsory Purchase Act 2004 requires local authorities to prepare a Local Development Framework (LDF). The LDF is made up of a portfolio of local Development Plan Documents (DPD), which must include policies to deal with waste.
- 1.2.2 In July 2005, agreement was reached across the ten Association of Greater Manchester Authorities (AGMA) districts to prepare a joint Development Plan Document for waste, to be known as the Greater Manchester Joint Waste Development Plan Document (JWDPD). From hereon the document will be referred to as the Greater Manchester Joint Waste Development Plan Document (JWDPD).
- 1.2.3 Work on the JWDPD is being co-ordinated and managed by the Greater

¹ Wetlands of International Importance designated under the Ramsar Convention 1979

Manchester Geological Unit (GMGU) on behalf of each District. In addition, a Joint Committee has been established to act as an Executive, with responsibility for all documents except those prepared for submission and adoption, which must be agreed by each District's Full Council.

- 1.2.4 The purpose of the JWDPD is to set out a planning strategy to 2027 for sustainable waste management across Greater Manchester, which enables the adequate provision of waste management facilities (including disposal) in appropriate locations for municipal, commercial and industrial, construction and demolition and hazardous wastes. The JWDPD will form part of the ten local authorities' individual LDFs and help deliver the relevant elements of the Community Strategy for each District. The JWDPD will put in place a planning policy framework, which will enable the ten Greater Manchester Authorities to take decisions on the locations of new waste management facilities. Criteria-based policies within the JWDPD will provide a consistent approach for dealing with waste planning applications across the ten authorities.
- 1.2.5 Independent consultants Scott Wilson were commissioned to undertake the integrated Strategic Environmental Assessment / Sustainability Appraisal (SEA/SA) (known herein as 'SA') of the JWDPD. Scott Wilson prepared the SA of the Stage 1 Issues and Options, the SA of the Stage 2 Issues and Options and the SA for the Preferred Options, and an SA for the Draft Publication DPD). The HRA has been undertaken concurrently.
- 1.2.6 This report details the background to the HRA process and the methodology used in carrying out the HRA Screening of the JWDPD. . It also identifies potential impacts from different types of waste facilities and potential pathways to surrounding European sites. As the JWDPD has undergone changes arising from appraisals and public consultation, three 'rounds' of screening has been undertaken as new sites are put forward. The results of the screening of individual waste sites are therefore provided in a number of Technical Appendices (Addenda) to this report. The results are provided in this way so that any additional potential waste sites which may be added in the future can be easily assessed and added as a further addendum to this report.

1.3 Background to Habitat Regulations Assessment

The Habitats Directive and HRA

- 1.3.1 The European Union Directive on Conservation of Natural Habitats and of Wild Fauna and Flora 92/43/EEC (EC 1992a) - the 'Habitats Directive' - is the key European legislation for protecting biodiversity. The Habitats Directive aims to "contribute towards ensuring biodiversity through the conservation of natural habitats and of wild fauna and flora in the European territory of the Member States to which the Treaty applies" (Article 2). It does this by identifying a pan-European network of Special Protection Areas (SPAs) and Special Areas of Conservation (SACs), collectively termed 'Natura 2000' sites, and by protecting these sites against

development through 'Appropriate Assessment', or HRA.

1.3.2 The core HRA requirements of the Habitats Directive are:

Article 6(3): "Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public."

Article 6(4): "If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted. Where the site concerned hosts a priority natural habitat type and/or a priority species the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest."

1.3.3 The principal piece of legislation that transposes the requirements of the Habitats Directive is the Conservation of Habitats and Species Regulations 2010. (The Habitat Regulations). The Habitats Regulations include provisions relating to the designation, protection and management of European sites and controls relating to the strict protection of species of European importance.

1.3.4 Essentially, any "plan or project", alone or "in combination with" other plans or projects, that is "likely" to have a "significant" effect on a "site" requires "Appropriate Assessment". If, following Appropriate Assessment, it cannot be ascertained that the plan/project will not adversely affect the "integrity" of the site, then it should not be permitted unless there are no "alternative solutions" and it needs to be carried out for "imperative reasons of overriding public interest"; in such cases the Member State must take "all compensatory measures" necessary to ensure the overall coherence of the Natura 2000 network. Clearly, each of these key concepts is open to interpretation.

1.3.5 A recent European Court judgment (ECJ, 2004) helps interpret the concept of 'significant effect' and has confirmed that a significant effect is triggered when:

- there is a *probability* or a *risk* of a plan or project having a significant effect on a European site;
 - the plan is *likely to undermine* the site's conservation objectives; and
 - a significant effect *cannot be excluded* on the basis of objective information.
- 1.3.6 The JWDPD is a Local Development Document (LDD) plan which therefore, requires a HRA (to be taken at least through the screening stage: Stage 1HRA).
- 1.3.7 A full outline of the Conservation and Habitats Regulations 2010 relevant to land use plans (Chapter 8) is given in Appendix 2.
- 1.3.8 The Habitats Directive applies the precautionary principle to protected areas: plans/projects can only be permitted once it has been ascertained there will be no adverse effect on the integrity of the site(s) in question. This is in stark contrast to the SEA Directive (EC 2001a), which does not prescribe how plans/projects should respond to the findings of an environmental assessment: it simply states that environmental findings (as documented in an 'environmental report') should be "taken into account" during preparation of the plan/project. In the case of the Habitats Directive, plans/projects may still be permitted if there are no alternatives to them and there are IROPI as to why they should go ahead. In such cases, compensation will be necessary to ensure the overall integrity of the site network.

1.4 Purpose and outline of this report

- 1.4.1 This HRA Stage 1 identifies the potential for the JWDPD to adversely affect the integrity of any of the surrounding European sites in terms of their conservation objectives, namely through indirect, secondary or cumulative effects.
- 1.4.2 Where such potential exists, it then assesses the impacts of this JWDPD against the conservation objectives of the relevant European sites to ascertain whether it would, including in combination with other relevant plans and projects, adversely affect the integrity of any of these sites.
- 1.4.3 Ultimately, this report identifies those waste sites that can be screened *out* as a result of there being no likely significant effects on European sites either alone or in combination, and screens *in* those waste sites that are likely to result in significant effects on European sites, either alone or in combination. All waste sites that are screened in will require additional assessment in a Stage 2 HRA.
- 1.4.4 Importantly, the HRA process is running in parallel with the development of the JWDPD and should influence its outcome in terms of planning to

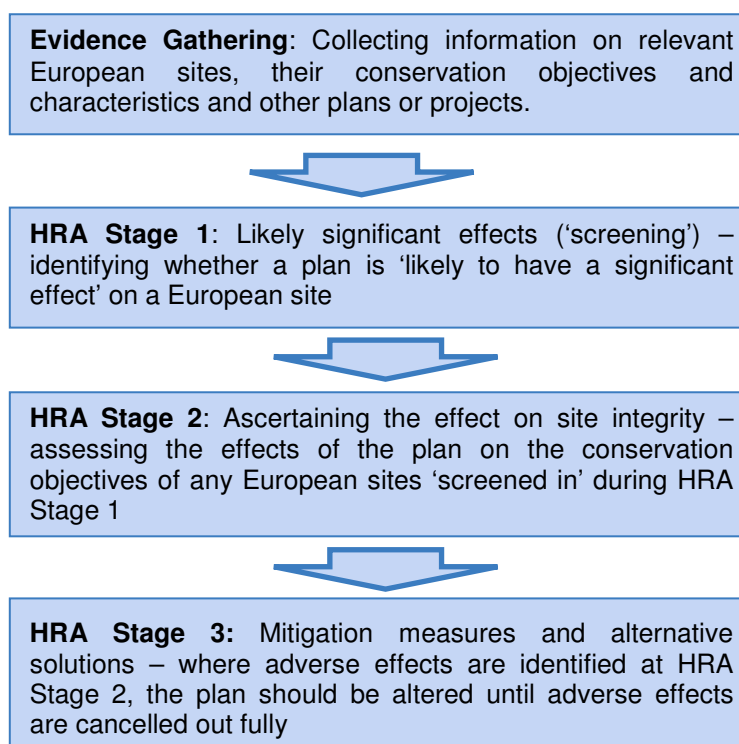
minimise impacts upon European sites within and adjacent to the Greater Manchester districts.

METHODOLOGY

1.5 General approach

- 1.5.1 This Section sets out the basis of the methodology for the HRA. The table in Appendix 3 illustrates the key principles which SW has adhered to in this assessment. This report covers the Evidence Gathering and HRA Stage 1 phases of the four-stage CLG approach to HRA outlined in Table 1.

Table 1: Four-stage approach to Habitat Regulation Assessment (DCLG 2006)



- 1.5.2 The Habitats Directive and Regulations do not specify how assessment should be undertaken. The following documents were used to inform the preparation of this HRA Stage 1:

- The DCLG draft guidance document *Planning for the Protection of European Sites: Appropriate Assessment Managing Natura 2000 sites: The provisions of Article 6 of the Habitats Directive 92/43/EEC* (DCLG 2006);
- *Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC* (EU 2001a); and,
- *The Appropriate Assessment of Spatial Plans in England: a guide to why, when and how to do it* (RSPB: Dodd et al. 2007).

1.5.3 Natural England uses the DCLG Guidance (Draft Guidance: The Assessment of Regional Spatial Strategies and Sub-Regional Strategies under the provisions of the Habitats Regulations prepared for English Nature by David Tyldesley and Associates, July 2006), although this is currently under review. Until then, the documents above are referred to along with SW's own guidance, informed by consultation with NE and RSPB guidance, the principles of which are outlined in Appendix 3. Natural England advises on the preparation of a draft screening report, which is then consulted on before considering a HRA Stage 2 (AA). The main points Natural England expect to be considered in a HRA Stage 1 are:

- the need to refer to the process as HRA, not AA, which is only one stage in the process;
- a brief description of the Plan, so that the HRA can be considered in isolation from the Plan itself;
- the need to include a separate screening process to determine which European sites should be included, with a map showing the relationship of these sites to the Plan area;
- inclusion of comprehensive and locally relevant data for the sites, including conservation objectives;
- identification of the sensitivities/vulnerability of each site to any potential impacts of the plan using the 'source - pathway - receptor' approach; and,
- recognition that HRA is an ongoing process which runs in parallel with the Plan development.

1.5.4 Therefore, this report:

- identifies the European sites that could be potentially affected by plans and policies within and adjacent to the study area of GM;
- outlines details of the sites' European interest features and the environmental conditions that are required to maintain the favourable conservation status of those features;
- explores the vulnerability of the sites to potential impacts arising from the JWDPD and, if possible, screens out those sites that, on consideration, are unlikely to be affected, based on current knowledge;
- where possible, identifies those plans and policies that may conflict with maintaining the favourable conservation status of the sites, based on current knowledge;
- identifies those sites that would need to be assessed further as part of the HRA; and
- provides evidence for a formal assessment of the JWDPD in accordance with the requirements of the Conservation of Habitats & Species Regulations 2010.

1.6 Evidence Gathering

Overview

2.2.1. The approach to Evidence Gathering was to:

- develop a 'long list' of European sites;
- gain an appropriate understanding of the European sites, including their conservation objectives and the current influences upon their objectives;
- gain an appropriate understanding of the JWDPD in its current context; and,
- from the first part of HRA Stage 1, use any potential pathways for effects to identify other plans and projects that might affect these sites in combination with the JWDPD.

Develop a 'long list' of European sites

2.2.2. Current guidance suggests that the following European sites should be included in the long list:

- sites within the authority's boundary;
- sites shown to be linked to development within the authority's boundary through a known 'pathway' (discussed below); and,
- sites recommended in a formal screening opinion by Natural England (Scott Wilson *et al.* 2006).

Gain an appropriate understanding of the European sites

2.2.3. As HRA focuses upon the "*implications for the site in view of the site's conservation objectives*" (EC 1992a, Article 6(3)), the reasons for the designation of European sites must be understood. This has been identified by a desk study (notably information from Natural England and the Joint Nature Conservation Committee), establishing precisely what is being protected via a site's designation as a European site.

2.2.4. The current status of European sites was established in terms of their nature conservation objectives. Such information has included any known current influences on status, and known trends in either improvement or decline.

1.7 HRA Stage 1

Overview

2.3.1. The approach to HRA Stage 1 was to:

- use the information gained during Evidence Gathering to identify any potential pathways by which impacts associated with the JWDPD might affect European sites;

- identify whether these potential impacts and pathways are likely to have an adverse effect on European sites, and hence represent a “significant” risk in accordance with expert knowledge and/or available guidance and legislation;
- identify whether “insignificant” sources of risk from the JWDPD may result in likely adverse effects to European sites in combination with other plans and projects identified (see Evidence Gathering); and
- consult with Statutory Bodies (e.g. Natural England, The Environment Agency) throughout the process.

2.3.2. In screening the sites short listed within the JWDPD, the Stage 1 assessment has taken the life of the plan into account (i.e. up to 10 years prior to formal review). Detailed temporal impacts would be assessed for those sites included within any Stage 2 and 3 Appropriate Assessment.

Identify any potential pathways by which impacts associated with the GM JWDPD might affect European sites

2.3.3. Any relevant pathways by which potential impacts of the JWDPD might affect European sites have been identified. Briefly defined, pathways are routes by which a change in activity within GM could result in an effect upon a European site. For example, a pathway could be air (e.g. transmission of gaseous or particulate pollution), watercourses (e.g. waterborne pollution), or sites within GM that are used by ecological receptors that contribute to the favourable conservation status of a European site (e.g. breeding habitat for wading birds for which an SPA has been designated). Potential pathways relevant to the JWDPD are described in greater detail in Section 3.

2.3.4. In terms of relevance, the approach has been realistic and practical, and therefore ecological expertise has been employed in order to focus only on pathways that are verifiable as important links between land use and development in GM and European sites.

Identify whether potential pathways are likely to have a significant effect on European sites

2.3.5. The potential for identified impacts and pathways to result in a likely significant effect on a European site has been ascertained based upon the status of the sites, expert knowledge from planners and ecologists of how impacts and pathways might affect sites in a ‘worst case scenario.’

Identify ‘in combination effects’

2.3.6. Potential impacts and identified pathways have been revisited according to the relevant plans and projects identified at Evidence Gathering in order to identify any likely significant effects that may result in combination with the JWDPD, especially those not previously considered to pose significant risk individually.

Consult on our conclusions

- 2.3.7. Natural England (NE) and the Environment Agency (EA) have been consulted on our approach to the HRA. Comments received from Natural England (28th April, 2010) have been incorporated into this Report and associated Technical Appendices.

2 POTENTIAL IMPACTS OF WASTE FACILITIES

3.1 Potential sites/areas for Waste Facilities within Greater Manchester

2.1.1 The Sustainability Appraisal (SA) of the potential sites / areas for waste management facilities (herein referred to as 'waste sites') has been an integral part of the overall waste site appraisal exercise. Initially, a long list of potential waste sites was passed through a preliminary sieve whereby sites that were clearly inappropriate for waste use due to, for example, deliverability issues or close proximity to a highly sensitive receptor were excluded at an early stage. A short list of potential waste sites was produced across the 10 Greater Manchester Authorities.

2.1.2 A pro-forma prepared as part of the SA of the Stage Two Issues and Options Report short listed potential waste sites. Those issues were then taken into consideration in assessing the overall sustainability of the sites for waste uses generally and in specific relation to the following waste management technologies:

A: Landfill / Land raise;

B: Open Air Waste Management Recycling Facilities;

C: Open Windrow Composting (OWC);

D: Conventional Thermal Treatment (CTT);

E: Advanced Thermal Treatment (ATT), includes Gasification and Pyrolysis;

F: Material Recovery Facility (MRF);

G: Mechanical Heat Treatment (MHT);

H: Mechanical Biological Treatment (MBT);

I: Anaerobic Digestion (AD); and

J: In-Vessel Composting (IVC).

2.1.3 For the purpose of the HRA, the waste facility categories have been grouped into the following five categories:

- Waste Management & Recycling – Open Facilities;
- Open Air Windrow Composting;
- Landfill / Land Raise (residual waste facility);
- Thermal Treatment Facility; and
- Waste Management & Recovery – Built (Enclosed) Facilities.

- 2.1.4 Appendix 4 describes these waste facility categories in greater detail.
- 2.1.5 Following this appraisal the suitability of the site for waste facility categories was given a sustainability rating as follows:
- | | |
|--------|---|
| Band A | site is highly suitable waste facility; |
| Band B | site is suitable for waste facility following appropriate mitigation; |
| Band C | site is possibly suitable for waste facility although there are significant mitigation issues involved; and |
| Band D | site is not suitable for a waste facility. |
- 2.1.6 This HRA Screening Report identifies whether any of the waste facility categories identified as being suitable or highly suitable for a particular location within the JWDPD should be screened in as requiring further assessment of its impacts on European sites as part of the HRA process.

3.2 Potential Impacts of Waste Facilities on Designated Sites

- 3.2.1 Waste management development can cause unacceptable harm to nature conservation sites and the flora, fauna and physical characteristics contained therein. Such damage can be incurred *directly* through physical destruction or *indirectly* through pollution, alteration of water tables, dust and other disturbance to sensitive species. This Section identifies the key ways in which potential waste facilities identified in the SA Stage Two Issues and Options Report may result in impacts on European Designated Sites.
- 3.2.2 Appendix 4 provides a table summarising the key processes and potential causes of impact likely to take place in each of the five waste facility categories. A 'worst case' approach has been adopted with regard to potentially polluting processes to ensure all potentially significant effects are identified.

3.3 Indirect Impacts: The Source-Pathway-Receptor Link

- 3.3.1 If an impact is indirect, three components need to be present before a waste facility results in an impact on an ecological receptor, namely (The Environment Agency; 2004a):
- a source (e.g. green waste at a composting facility);
 - a pathway made up of a release mechanisms (e.g. shredding of green waste leading to a bioaerosol) and a transport mechanism (e.g. dispersion of the bioaerosol in ambient air); and
 - a receptor (e.g. Special Area of Conservation).
- 3.3.2 The 'source' of risk of impact on a sensitive site is generally the deposited waste of that facility. For a thermal treatment facility the deposited waste

may result in a potential impact on a designated site by emission of gaseous substances.

- 3.3.3 Generally ‘pathways’ exist through either air (e.g. emissions from a thermal treatment plant, dust) or water (surface water runoff, surface water recharged by groundwater; site leachates). Table 2 identifies potential release points of pollutants from a landfill site in both airborne and subsurface pathways.

Table 2. Potential release points of liquid, gas and solid pollutants from a landfill site into air and subsurface pathways (Source: Environment Agency (2004b))

Airborne	Subsurface
Leakage from landfill gas extraction system e.g. pipework, well heads, valves	Leachate leakage through the basal and side wall containment engineering
Emissions from gas combustion stacks e.g. gas engines and flare stacks	Side wall liner leakage of gas
Gas emissions from capped areas, intermediate capped areas, waste surfaces, flanks, tipping faces	Gas dissolution from the leachate following leakage
Particulate matter emissions from landfill surfaces, tipping faces, roads	

- 3.3.4 The exposure at a particular point will depend on the complex relationship between the ‘source’, the ‘pathway’ and the ‘receptor’. One important factor is the distance between the source and the receptor, and prevailing wind direction or direction of flow of water courses.
- 3.3.5 For example, airborne particles are subject to aerodynamic and gravitational effects, which determine the distance they will travel. Large particles generally settle out quite close to the site, whereas fine particles can travel great distances. Large particles (>30µm) are responsible for most dust related impacts and mostly deposit within 100m of the source (the source is not usually located at the waste facility boundary.) Intermediate-sized particles (10–30µm) are likely to travel up to 200–500m. Smaller particles (<10µm) can travel up to 1 km from the source, although very small particles can travel much further (DETR, 2000a). Government guidance for air quality review and assessment (DETR, 2000c) around stockpiles and landfill sites suggests that such sources are likely to add about 3 µg/m³ to the annual mean background concentration of receptors within 200 – 400m of the sources.
- 3.3.6 Movement through a pathway often changes the concentration of a substance from that emitted. This is true where attenuation and dilution processes occur as leachate moves through the unsaturated and saturated

zones and for aerial dispersion of gas emissions. The movement of gas through the ground or following dissolution from leachate can change the composition and concentration of the emitted substances. This process is important in applying 'buffer zones' around certain waste facility categories. Buffer zones are described in more detail in Section 4.

3.4 Air as the Pathway

3.4.1 Many European qualifying habitats are known to be under stress partly as a result of poor air quality. This is a difficult issue to address at a regional level. Some pollutants act locally, whilst others are transported far from their source to act at a regional, national or even trans-frontier level. Appendix 5 describes the anthropogenic air pollutants which are of greatest importance for their adverse effect upon ecological resources, and their relevance to the five waste facility categories.

3.4.2 The following sources of air pollution are generated by the waste facility categories appraised in the JWDPD:

- landfill gas;
- landfill gas flare;
- thermal treatment emissions;
- traffic (in particular increased number of Heavy Goods Vehicles (HGV) and general traffic volume within surrounding Waste Transfer Stations (WTS) contained within open and closed waste management and recycling facilities);
- bio-aerosols (including microbes and fungus); (from landfill; open air windrow composting and Mechanical Biological Treatment (MBT) plants within enclosed (built) waste management and recycling facilities); and
- dust (from thermal treatment emissions, open air windrow composting, open waste management and recycling facilities).

3.4.3 The potential extent of effects of these sources of air pollution on ecological receptors is summarised in Appendix 5.

Prevailing wind direction

3.4.4 Appendix 6 provides a wind rose diagram for greater Manchester, based on one year of hourly sequential data collected at Manchester Airport (2005). The airport is located on the southern tip of the Greater Manchester boundary within Stockport and can be considered to be representative of prevailing wind conditions within Greater Manchester. The wind rose shows that, over the course of the year, the prevailing wind direction

around greater Manchester is generally from the south or west, resulting in an average south west wind vector.

3.5 Water flows and quality as a pathway

3.5.1 Through its Review of Consents process, the EA has identified diffuse pollution to be a major factor in causing unfavourable conservation status of European sites, including rivers, wetlands and estuaries/maritime sites. The quality of the water that feeds European sites is an important determining factor in the nature of their habitats and the species they support. Poor water quality can have a range of environmental impacts. These are discussed in Appendix 7.

3.5.2 The following sources of impact relating to water flow/quality may arise from waste facility categories and are assessed in this Report:

- leachate (from open air windrow composting);
- surface water runoff contamination (from all waste facility categories); and
- alteration of water tables (from all waste facility categories depending on size/location of facility).

3.6 Other Pathways

3.6.1 Other potential sources of impact resulting from waste facilities may result in adverse effects on the integrity of a European Sites and are considered in this Report:

- physical disturbance (for all waste facility categories);
- gulls, corvids (crows) and rats (for open air windrow composting and landfill);
- litter (for all waste facility categories); and
- noise (for all waste facility categories).

3.6.2 Further discussion on each of these sources of impact is given in Appendix 8.

3 STATUTORY GUIDANCE AND BUFFER ZONES

- 3.1.1 The Environment Agency (2004c) provides guidance on applying the Habitat Regulations to Waste Management Facilities (including landfill sites). Table 3 summarises this guidance.

Table 3: Recommended buffer zones between waste sites and European Sites (Environment Agency 2004c)

<p>Landfill sites should be assessed for potential impact where;</p> <ul style="list-style-type: none">• the location of the facility falls within 2km of a European Site, and / or• the activity could attract gulls / corvids and it falls within 5km of a SPA/pSPA (or other site vulnerable to disturbance or predation by these pests), and / or• a European Site could be impacted because of a hydraulic connection to an emission. <p>For all other waste management activities these should be assessed for potential impact where;</p> <ul style="list-style-type: none">• the location of the facility falls within 1km of a European Site, and / or• a European Site could be impacted because of a hydraulic connection to an emission.

- 3.1.2 This HRA Stage-1 Screening has therefore applied the following indicative 'buffer zones' around the following waste facility categories. These recommended buffer zones incorporate guidance on potential impacts resulting from all pathways identified in Section 3 (air, water, direct). Essentially, if a pathway (including reference to the dispersal distances that have led to the development of the buffer zones) is identified as existing between any proposed waste site and a vulnerable European site, the waste site is 'screened in' for more detailed assessment.
- 3.1.3 Gabrey (1997) states that transfer stations dealing with domestic/biodegradable or putrescible (liable to undergo decomposition) waste, composting facilities, civic amenity sites and other similar activities are less likely to attract birds and rodents than landfill sites, but may do where a population already exists in the surrounding area. Considering the urban environment of Greater Manchester and high likelihood of vermin in the surrounding area, and to adopt a 'worst case scenario', it is considered appropriate to apply a 5km buffer zone around potential open air windrow composting sites as well as landfill sites where it falls within 5km of a SPA/pSPA (or other site vulnerable to disturbance or predation by these pests).
- 3.1.4 All waste sites are likely to generate Heavy Goods Vehicle (HGV) traffic. The level of traffic generated for each waste site will be dependent on its size, and is likely to be particularly significant for the open and closed

waste management and recycling centres where waste will be deposited by a high number of smaller vehicles, and later collected (following sorting/processing) by a smaller number of larger HGVs. For the purposes of this screening exercise, the 1km buffer zone recommended by the Environment Agency (2004c) to accommodate air emissions from waste facilities is also applied to open and closed waste management and recycling centres due to the likely significant levels of HGV traffic generation.

- 3.1.5 This HRA Stage-1 Screening has therefore applied the following indicative 'buffer zones' around the following waste facility categories to ensure all potential pathways have been considered.

Table 4: Indicative pathway-derived Buffer Zones required between JWDPD Waste Categories and European Sites

Waste Category	Indicative Buffer Zone required for European Designated Site
Landfill / Land Raise (residual waste facility)	2km (EA, 2004c) or 5km if the activity could attract gulls / corvids' and it falls within 5km of a SPA/pSPA (or other site vulnerable to disturbance or predation by these pests), with additional consideration to water pathways and hydraulic connections
Open air waste management and recycling facilities	1km (EA, 2004c) with additional consideration to water pathways and hydraulic connections
Thermal treatment facilities	1km (EA, 2004c) with additional consideration to water pathways and hydraulic connections
Open air windrow composting	1km (EA, 2004c) or 5km (Gabrey, 1997 in EA, 2004c) if the activity could attract gulls / corvids' and it falls within 5km of a SPA/pSPA (or other site vulnerable to disturbance or predation by these pests), with additional consideration to water pathways and hydraulic connections
Enclosed (built) waste management and recycling facilities	1km (EA, 2004c) with additional consideration to water pathways and hydraulic connections

4 RELEVANT PLANS AND PROJECTS

4.1 Introduction

- 4.1.1 Habitat Regulations Assessment must consider at the screening stage, cumulative effects with other plans or proposals on sites being assessed.
- 4.1.2 The North West of England Plan – Regional Spatial Strategy to 2021 (adopted 30th September 2008) provides a framework for the physical development of the region over the next fifteen to twenty years. Incorporating the Regional Transport Strategy (RTS), it addresses the scale and distribution of future housing development and sets priorities for dealing with environmental issues, transport, infrastructure, economic development, agriculture, minerals and the treatment and disposal of waste. The North West Plan, currently in draft form, was submitted to the government in January 2006 and has undergone examination in public.
- 4.1.3 Regional Spatial Strategy (RSS) is part of the statutory development plan for every local authority in the North West. Each LPA must prepare a Local Development Framework (LDF), which is required to be in general conformity with the provisions of RSS. Planning applications will be considered against the provisions of RSS and relevant Local Development Document(s). The "plans and strategies" referred to in this document include statutory Local Development Documents and other elements of the Local Development Framework; Local Transport Plans; Community Strategies; local housing and economic strategies; and also various strategies and programmes produced by government departments and agencies, the utility companies, and other private businesses. The "proposals and schemes" mentioned include but are not limited to, development proposals subject to planning applications and other consents, infrastructure projects and environmental management schemes.
- 4.1.4 It should be noted that whilst the RSS has been abandoned by the Coalition government (elected May 2010), the RSS was in force at the time the screening decision was made.
- 4.1.5 The new planning system requires that the Council replaces its Unitary Development Plans (UDP) with an LDF. The LDF is a collection of planning policy documents for a Borough. These are individually known as Local Development Documents (LDDs), e.g. Development Plan Documents (DPDs). At present there are no LDFs in Greater Manchester. The Greater Manchester Authorities (GMAs) are working on documents which will form part of LDF and are at varying stages of this process. The UDPs and relevant LDF documents for each Greater Manchester District have been reviewed.
- 4.1.6 Appendix 9 lists the plans and projects that have been identified as relevant to this Stage-1 HRA. These plans and policies have the potential to act 'in combination' with the JWDPD on a European Site considered in

this Report. These include those that are considered likely to influence surface water dynamics or quality within Rochdale Canal and the Mersey catchment; those considered likely to influence traffic along the M62 within the GM boundary, and those considered likely to influence the overall increase in population and industry in the area. An increase in population may increase recreational pressures on surrounding European sites, increase demand on water resources, increase in traffic on surrounding roads and other sources of air pollution. Mineral abstraction may affect water tables and place greater demand on water resources. With regard to mitigation, only certain main relevant policies are included. In addition to the above plans and projects, the Merseyside Joint Waste Development Plan is currently under development.

- 4.1.7 Within UDP and LDF policy there is a general presumption against development on Green Belt land. However, it may be necessary to locate certain types of waste facility (e.g. open windrow composting) within the Green Belt. Green Belt can therefore be considered as an 'ecological buffer' between a waste development site and a European site where other plans or policies are unlikely to act 'in combination' with the JWDPD. The presence of Green Belt around European Sites is highlighted and considered in this Report.
- 4.1.8 At this stage we have identified a range of plans and projects that may act in combination with the JWDPD. This list was consulted on with Local Authorities, Natural England and the Environment Agency.

5 EUROPEAN SITES

5.1 Introduction

5.1.1 This section describes the 'long list' of European sites considered in this HRA Screening report. Information on the location of the potential waste facility sites assessed and the associated European sites is provided in a series of Technical Appendices (addenda) to this report. These addenda also contain figures showing the locations of the potential waste sites and European sites listed below and assess the potential impacts on the surrounding European sites from the proposed waste facility sites.

5.1.2 GMGU produced a list of European sites that might be affected by the JWDPD, either alone or in combination with other plans and, therefore, believed to require screening as part of the HRA process.

5.1.3 European Sites within the plan area:

- Peak District Moors SPA (South Pennines Moors Phase 1);
- South Pennine Moors Phase 2 SPA;
- Manchester Mosses SAC;
- South Pennine Moors SAC; and
- Rochdale Canal SAC.

5.1.4 European Sites outside the plan area:

- Rixton Clay Pits SAC; and
- Rostherne Mere Ramsar site.

5.1.5 To this list, we have added the following, based on aquatic linkage through the Mersey Estuary catchment (See Appendix 10):

- Mersey Estuary SPA / Ramsar site;
- Liverpool Bay pSPA; and
- Mersey Narrows and North Wirral Foreshore pSPA / pRamsar site.

5.1.6 This 'long list' of sites that might be affected by the JWDPD has been issued to Natural England and the Environment Agency. Comments on the HRA have been received from these agencies and are considered in this report.

5.1.7 The sites assessed in this HRA Stage 1 Screening are described in the subsections below.

5.2 Manchester Mosses SAC

5.2.1 Manchester Mosses SAC comprises three sites, of which one is located within the GM boundary.

- 5.2.2 Manchester Mosses SAC consists of three SSSIs - Risley Moss, Holcroft Moss, and Astley and Bedford Mosses - totalling 172.21ha in Cheshire and Greater Manchester (SJ 691973; 53°28'16" N, 02°27'56" W). Risley Moss is owned and managed by Warrington Borough Council, while Holcroft Moss is owned and managed by Cheshire Wildlife Trust. Both of these sites are undergoing restoration. Part of Astley and Bedford Mosses is owned and managed by Wildlife Trust for Lancashire, Manchester and North Merseyside and is undergoing restoration, but the remainder (c.50%) is in private ownership. Management agreements or purchase of the land will be necessary for restoration on these areas.
- 5.2.3 While most mossland that formerly covered a large area of low-lying Greater Manchester, Merseyside and southern Lancashire, and provided a severe obstacle to industrial and agricultural expansion, it has been converted to agriculture or lost to development, Manchester Mosses SAC is an example that has survived as 'degraded raised bog on the Mersey floodplain, with their surfaces elevated above surrounding land due to shrinkage of the surrounding tilled land' (JNCC 2006d).
- 5.2.4 Manchester Mosses SAC is designated for its Habitats Directive Annex I habitat (EC 1992b) of 'Degraded raised bogs still capable of natural regeneration' (JNCC 2006d).
- 5.2.5 All three sites comprising Manchester Mosses SAC have suffered from drainage and landfilling in the past and are affected by continued, if reduced, drainage, particularly from boundary ditches. However, recent rehabilitation management over the past 15-20 years has increased peat-producing *Sphagnum* species. Risley Moss, and Astley and Bedford Mosses have been cut for peat at some time in the past.

5.3 Rochdale Canal SAC

- 5.3.1 Rochdale Canal SAC is located within Greater Manchester. Rochdale Canal SAC covers 25.73ha within the local authorities of Rochdale and Tameside, Greater Manchester (SD 893038; N 53°31'50", W 02°09'40"). It comprises a partially restored section of the Rochdale Canal that extends approximately 20km from Littleborough to Failsworth, passing through urban and industrialised sections of Rochdale and Oldham and the intervening areas of agricultural land (mostly pasture) (JNCC 2006e).
- 5.3.2 Water supplied to the Rochdale Canal in part arises from the Pennines. This water is acidic and relatively low in nutrients, while water from other sources is mostly high in nutrients. The aquatic flora of the Canal is thus indicative of a mesotrophic water quality (i.e. is moderately nutrient-rich) although there is evidence of some local enrichment. The Canal contains important habitats for submerged aquatic plants and emergent vegetation, including extensive colonies of floating water-plantain (*Luronium natans*).
- 5.3.3 The primary reason for selection of this site is the Habitats Directive Annex

II species (EC 1992c) of floating water-plantain. Rochdale Canal supports a significant population of this species in a botanically diverse waterplant community, which also holds a wide range of pondweeds (*Potamogeton* spp.). This population of floating water-plantain is representative of the formerly more widespread canal populations of northwest England. It is protected under Schedule 8 of the Wildlife and Countryside Act 1981 and is a priority species under the UK Biodiversity Action Plan.

- 5.3.4 The Canal was recently subject to a major restoration scheme to open it up for full navigation from Manchester to Yorkshire, including the SSSI/SAC section. Natural England worked with partners to ensure the restoration was done sensitively in order to preserve the interest of the site. The restoration phase of the Canal is nearly complete and it is now open to full navigation. As the possible impacts of boat movements along the Canal are not fully known at this stage, they are being recorded and a working protocol has been agreed for the site. Floating water-plantain translocation schemes have been undertaken as part of the restoration programme and are monitored closely.
- 5.3.5 It is unlikely that the site could be considered to be in favourable condition. In addition, the site has recently been restored as an active working Canal, and whilst much work has been carried out by British Waterways to maintain the ecology of the site during and after the restoration, NE believe that the Canal is still recovering from the dredging and plant translocation undertaken during restoration. As such further recovery is required before the aquatic plant assemblage, for which the site is notified, can be considered to be in favourable condition. Recent monitoring undertaken by British Waterways has produced data that NE believe would concur with this judgement. Therefore, the site was reassessed to be in unfavourable-recovering condition on 16th June 2003.

5.4 South Pennine Moors SAC

- 5.4.1 South Pennine Moors SAC includes land within the GM boundary. The South Pennine Moors SAC covers 64,983.13ha within the local authorities of Oldham, Rochdale and Tameside in Greater Manchester and Barnsley, Bradford, Calderdale, Cheshire, Derbyshire, Kirklees, Lancashire, Leeds, North Yorkshire, Sheffield and Staffordshire (SK144960; N 53°27'37", W 01°46'59") (JNCC 2006f). Around 4,282.39 ha (6.59%) of the SAC lie within Greater Manchester. The site is largely enclosed on two sides by large industrial urban areas, which means that large numbers of people use the area for recreational activities. Around two-thirds of the SAC is within the Peak District National Park. Land management is primarily driven by agriculture, rough grazing for sheep and grouse-shooting.
- 5.4.2 The primary reason for selection of this site as a SAC is its Habitats Directive Annex I habitats (EC 1992c) of European dry heaths, blanket bogs, and old sessile oak woods with *Ilex* and *Blechnum* in the British Isles. Other qualifying Annex I habitats present are Northern Atlantic wet heaths with *Erica tetralix*, and transition mires and quaking bogs.

- 5.4.3 Atmospheric pollution over the last few hundred years has depleted the lichen and bryophyte flora and may be affecting dwarf-shrubs (JNCC 2006f). The impact has arguably been greatest on blanket bog, wet heath and transition mire where the bog-building *Sphagnum* mosses have been largely lost. Combined with historical overgrazing, burning (accidental and deliberate), drainage and local trampling, large areas of blanket bog have become de-vegetated and eroded. The combination of these effects means that most if not all of the blanket bog will not be classed as favourable according to English Nature's condition assessment criteria.
- 5.4.4 Impacts associated with access, e.g. trampling, have been a key issue and, with proposals under the Countryside and Rights of Way Act 2000 (CRoW Act 2000), will continue as such. Management of the site, especially north of the National Park, is further complicated by the large number of common areas.
- 5.4.5 Woodland cover has declined over many centuries to the point that it is fragmented, relatively small-scale and largely restricted to steeper valley sides. Restoration of existing stands and re-creation of woodland is being undertaken to expand and link habitat fragments.
- 5.4.6 Maintenance of the habitats relies primarily on appropriate grazing levels and burning regimes. Although all efforts are made to control current pressures, including an integrated management strategy and conservation action programme as part of an EU-funded LIFE project for the area to the north of the National Park, it is unclear whether this can fully mitigate the long-term influence of historical factors such as atmospheric pollution, past burning and overgrazing.

5.5 Peak District Moors SPA (South Pennines Moors Phase 1)

- 5.5.1 The Peak District Moors SPA covers 45,301.54ha across Greater Manchester, Cheshire, Derbyshire, South and West Yorkshire and Staffordshire (53°28'03" N, 01°45'51"W) (JNCC 2006g). Around 2,364.74ha (5.22%) of the SPA lie within Greater Manchester. The site covers extensive tracts of semi-natural moorland habitats including upland heath and blanket mire. The site is of European importance for several upland breeding species, including birds of prey and waders.
- 5.5.2 The site is designated for its Habitats Directive Annex II species (EC 1992c) of breeding short-eared owl (*Asio flammeus*), merlin (*Falco columbarius*) and golden plover (*Pluvialis apricaria*) (JNCC 2006g).
- 5.5.3 Major urban and industrial centres near to the Peak District Moors provide significant visitor pressure, and approximately two-thirds of the moorlands are open to public access. Habitat damage through physical erosion or fire, combined with disturbance of breeding birds, can be significant. Initiatives for sustainable recreation are being developed. Many habitats are sub-optimal (in vegetation terms) as a consequence of historic air pollution,

high grazing pressure and wildfire burns. Grazing pressure is generally being lowered and appropriate burning encouraged under Environmentally Sensitive Area (ESA) schemes. Notwithstanding these schemes, evidence suggests that breeding birds in the southwest of the SPA may be declining on both open moorland and enclosed rough grazing land, possibly due to general agricultural improvement of the surrounding areas which are used by some species for some of their habitat requirements, e.g. merlin and golden plover spend some of their time feeding outside the SPA on adjacent areas of in-by land.

5.6 South Pennines Moors Phase 2 SPA

- 5.6.1 The South Pennines Moors Phase 2 SPA covers 20,944.49ha in Greater Manchester, Lancashire, and North and West Yorkshire (53°48'38" N, 02°04'16" W) (JNCC 2006h). Approximately 2,094.45ha (10.0%) of the site lies within Greater Manchester. The site comprises typical habitats of upland hills and valleys: bogs, marshes, fens, heath, scrub and grassland.
- 5.6.2 South Pennines Moors Phase 2 SPA is designated for its Habitats Directive Annex II species (EC 1992c) of breeding short-eared owl, merlin and golden plover (Article 4.1 qualification), and its internationally important assemblage of birds including breeding common sandpiper (*Actitis hypoleucos*), dunlin (*Calidris alpina*), twite (*Carduelis flavirostris*), snipe (*Gallinago gallinago*), curlew (*Numenius arquata*), wheatear (*Oenanthe oenanthe*), whinchat (*Saxicola rubetra*), redshank (*Tringa totanus*), ring ouzel (*Turdus torquatus*) and lapwing (*Vanellus vanellus*) (Article 4.2 qualification) (JNCC 2006h).
- 5.6.3 The South Pennine Moors SPA (Phase 2) is flanked on two sides by large industrial urban areas, meaning that large numbers of people use the area for recreational activities. Maintenance of the ecosystems on which the birds depend relies on appropriate grazing levels and burning regimes, and overgrazing by sheep is a key pressure on the site. Management of grazing is further complicated by the presence of a large number of commons within the SPA. Pressures outside the site, in particular the loss of bird feeding areas through agricultural intensification, increase the vulnerability of the bird populations. All these issues are being tackled through the production of an integrated management strategy and conservation action programme as part of an EU-funded LIFE project, which has brought together statutory and voluntary bodies and the private sector in a wide-ranging partnership.

5.7 Rixton Clay Pits SAC

- 5.7.1 The Rixton Clay Pits SAC is 13.64ha site situated to the east of Warrington comprising parts of extensive disused brickworks excavated in glacial boulder clay (JNCC 2006i). The extraction of clay has left a series of clay banks and hollows that have filled with water since workings ceased in the 1960s, leading to the formation of a diversity of ponds of varying maturity

and size. New ponds have also been created more recently for wildlife and amenity purposes. Great crested newts are known to occur in at least 20 ponds across the site. The site also supports species-rich calcareous grassland, scrub and mature secondary woodland.

- 5.7.2 Rixton Clay Pits SAC is designated for its Habitats Directive Annex II species (EC 1992c) of great crested newt (*Triturus cristatus*) (JNCC 2006i).
- 5.7.3 Great crested newt numbers have been dwindling nationally at a rate reported at 2% of colonies (or 360 populations) per year (The Wildlife Trusts 2000). Major causes have been the loss of breeding ponds and surrounding terrestrial habitat by built development and waterborne pollution from industry and roads. Overall, pond habitat is suffering a decline nationally, as they are less favoured to other modes of landscaping (e.g. amenity mowing regimes) and intensive landscape management.
- 5.7.4 Warrington Borough Council owns and manages the site. A possible conflict between grassland management and great crested newts has been identified and is being addressed through research on the site. However, the great crested newt population is increasing at the site.

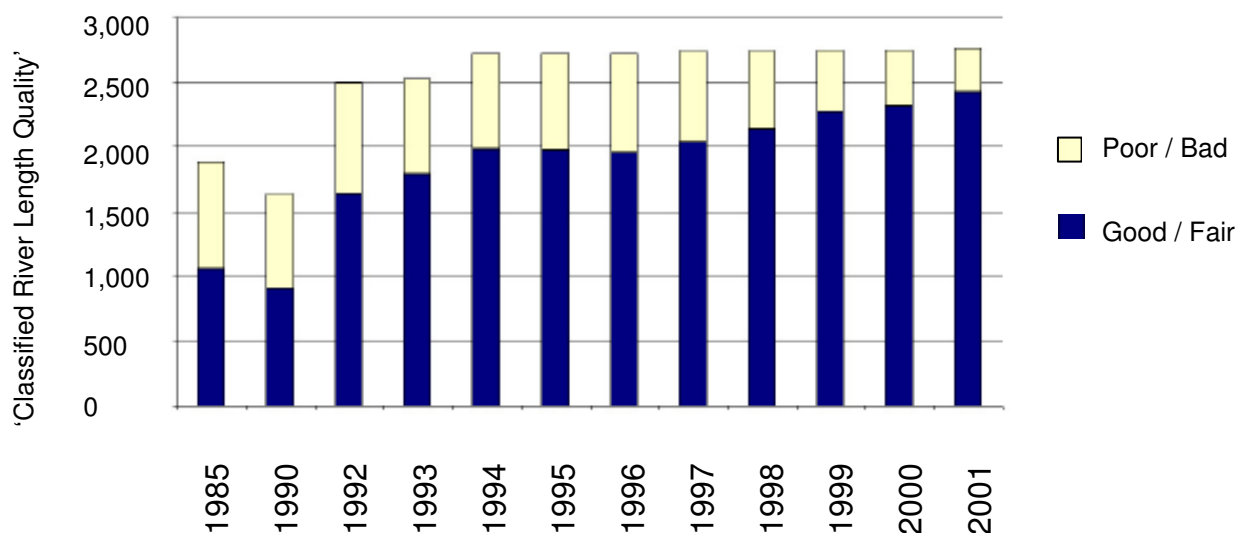
5.8 Rostherne Mere Ramsar site

- 5.8.1 Rostherne Mere Ramsar site covers 79.76ha and is situated 16km southwest of the centre of Manchester, outside but close to the southern outskirts of Greater Manchester (N 53°21'14", W 02°23'05") (JNCC 2006j). It is the deepest, one of the largest, and the most northerly of the meres of the Shropshire-Cheshire Plain. Owing to its depth it rarely freezes over, which ensures that it offers excellent habitat to large numbers of wintering wildfowl. The mere has little submerged vegetation but its shoreline is fringed with common reed (*Phragmites australis*). Associated fringing habitats such as reed swamp, fen, carr and damp pasture add to the value of the mere.
- 5.8.2 It is surrounded by large blocks of woodland and moderately intensively farmed grassland. Remains of a former peat bog in the north and willow beds in the south are other notable habitats. It lies at the end of a single-stream system, receiving water from the much shallower Little Mere (an artificial amenity lake formed in the 19th century) and Mere Mere. The three meres drain a small catchment of agriculture, urban areas and parkland.
- 5.8.3 Rostherne Mere Ramsar site is designated under Ramsar criterion 1 because it is recognised as an important wetland within the biogeographic region: it is one of the deepest and largest of the meres of the Shropshire-Cheshire Plain, and its shoreline is fringed with common reed. It also supports nationally important populations of cormorant (*Phalacrocorax carbo*), bittern (*Botaurus stellaris*), and water rail (*Rallus aquaticus*).

5.9 Mersey Estuary SPA / Ramsar site

- 5.9.1 The Mersey Estuary (53°18'51" N, 02°49'25" W) is a large sheltered estuary that receives drainage from a catchment area of c.5,000km² (Langston *et al.* 2006) encompassing the conurbations of Liverpool and Manchester, and including the River Mersey and the River Bollin and their tributaries in Cheshire and Merseyside. The estuary covers 5023.35ha of saltmarsh and inter-tidal sand and mudflats, with limited areas of brackish marsh, rocky shoreline and boulder clay cliffs, within a rural and industrial environment. The intertidal flats and saltmarshes provide feeding and roosting sites for large and internationally important populations of water birds, and during the winter the site is of major importance for duck and waders. The site is also important during the spring and autumn migration periods, particularly for wader populations moving along the west coast of Britain (JNCC 2006k).
- 5.9.2 The Mersey Estuary qualifies as a SPA as it regularly supports an internationally important population ($\geq 1\%$ of the GB population) of golden plover (Article 4.1), and important populations of migratory redshank, dunlin, pintail (*Anas acuta*), shelduck (*Tadorna tadorna*), Eurasian teal (*Anas crecca*), wigeon (*Anas penelope*), black-tailed godwit (*Limosa limosa*), curlew, grey plover (*Pluvialis squatarola*), great crested grebe (*Podiceps cristatus*), lapwing, and ringed plover (*Charadrius hiaticula*) (JNCC 2006k).
- 5.9.3 The Mersey Estuary is additionally designated as a Ramsar site as it supports up 89,576 waterfowl (5-year peak mean 1998/99-2002/03) (Criterion 5) (UN 2005) and internationally important populations of common shelduck, black-tailed godwit, redshank, Eurasian teal, pintail and dunlin (Criterion 6) (JNCC 2006l).
- 5.9.4 Water pollution has been an issue in the Mersey estuary since at least the 18th century, when the Mersey catchment became a prime location for industrial expansion, especially the textile industry. With this there was an associated growth in bleaching, dyeing, and finishing trades, and paper, heavy chemical and glass industries, which are still in production to this day. All of these industries used the waterways as a means for the disposal of industrial waste, resulting in a legacy of pollutants within the River Mersey, and including mercury, pesticides (e.g. DDT), and persistent organic contaminants (e.g. polychlorinated biphenyls (PCBs), pentachlorophenol (PCP)) (Mersey Basin Campaign 2004). In addition, there was surface runoff and the discharge of domestic waste-water and sewage directly into the waterways from a large and growing human population, resulting in gross pollution (Langston *et al.* 2006). The high levels of sewage discharged into the waterways resulted in low oxygen levels and a major difficulty in improving water quality.

Table 5: Water quality improvements across the Mersey catchment from 1985 to 2001 (Mersey Basin Campaign 2004)



5.9.5 The problem of water pollution in the Mersey Estuary ‘was probably at its worst in the 1960s’ making it the most polluted estuary in the UK (Mersey Basin Campaign 2004). Major improvements to water quality have been realised since the formation of the Mersey Basin Campaign in 1985, which aims to ‘revitalise the River Mersey and its waterfront’ (Langston *et al.* 2006). Table 4 illustrates the water quality improvements in the River Mersey reported by the Mersey Basin Campaign (Mersey Basin Campaign 2004), which are assumed to refer to chemical water quality, and river length.

5.9.6 The major projects that brought about the improvements to water quality tackled the direct discharges of sewage into the region’s waterways. New projects included: primary sewage works at Sandon Dock replaced 28 crude sewage discharges directly into the Mersey Estuary through the MEPAS scheme (Mersey Estuary Pollution Alleviation Scheme); fine sewage screening plants on the Wirral peninsula; secondary sewage treatment and petrochemical effluent treatment plants at Ellesmere Port; secondary sewage treatment plants at Widnes and Warrington; modification of the Davyhulme sewage treatment plan in Greater Manchester to treat ammonia (which may kill salmonid species); and later secondary sewage treatment plants at Birkenhead/Bromborough. Other improvements have been made, including reducing inputs of mercury, lead, cadmium, PCP and chlorinated hydrocarbons into the estuary.

5.9.7 However, certain inputs remain, including:

- pesticides and herbicides from agriculture (largely dairy farming) into

the upper river system;

- phthalate esters (used as plasticisers - increase flexibility in plastics) thought to come from wastewater discharges in the upper Mersey;
- hydrocarbon contamination from oil spillage/spills from Tranmere Oil Dock/Terminal, Stanlow (Shell) Oil Refinery and oil tanks along the southern bank of the estuary, from pipelines that run between these sites along the southern bank of the estuary, and from oil shipping spills in the Irish Sea;
- PCBs from the River Mersey (possibly also dredge spoils); and
- PCBs from contaminated land in the catchment area (Marine Biological Association, 2006).

5.9.8 The General Quality Assessment (GQA) scheme, introduced by the National Rivers Authority (NRA), and replaced by the Environment Agency (EA) in 1996, monitors the water quality of rivers and canals throughout England and Wales. It assesses the chemical and biological status, nutrient levels, and aesthetic water quality from permanent sampling stations. The Mersey Basin Campaign (2005) reports on sites in the Mersey catchment that detail low (Grades D, E and F, or 'fair' to 'bad') biological and chemical river water quality (Only those within the Mersey catchment – see Appendix 10 – are described). Such sampling sites are particularly concentrated in the area between Knowsley and Manchester, including St. Helens and Wigan, although biological quality is generally poor from Liverpool to Manchester.

5.9.9 The main current environmental pressures upon the Mersey Estuary SPA and Ramsar site are considered to be:

- disturbance of sediment releasing legacy heavy metal pollution (mercury, lead, cadmium and other poisons) that is bound into the sediment, or other introduction of these metals;
- pollution via rivers and drains by both treated sewerage and untreated runoff containing inorganic chemicals and organic compounds from everyday domestic products, which 'may combine together in ways that make it difficult to predict their ultimate effect of the marine environment... Some may remain indefinitely in the seawater, the seabed, or the flesh, fat and oil of sea creatures' (Langston *et al.* 2006);
- pollution via commercial shipping by chemical pollution and the dumping of litter at sea;
- 'coastal squeeze' and physical loss from land reclamation and coastal flood defences and drainage used in order to develop coastal land, and from sea level rise;
- loss or physical damage of marine benthic habitat directly and indirectly (through changed sedimentation/deposition patterns) as a result of navigational or aggregate dredging;
- disturbance to birds from increased recreational pressure (e.g. boat or other recreational activity) and wildfowling;
- introduction of non-native species and translocation; and
- selective removal of species (e.g. bait digging, wildfowl, fishing)

(Wildlife Trust 2006; Langston *et al.* 2006).

- 5.9.10 Although the Mersey estuary does have a high load of nutrients mainly from diffuse sources, with levels for phosphate and nitrogen decreasing from point sources, recent modelling has shown that due to the natural turbidity of the water, there is only a low risk of excessive algal growth. Therefore NE does not consider nutrients to be a pressure on Mersey Narrows and Wirral Foreshore (Mandy North, Natural England, *pers. comm.*).

5.10 Mersey Narrows and North Wirral Foreshore pSPA / pRamsar site

- 5.10.1 The Mersey Narrows and North Wirral Foreshore pSPA and pRamsar site covers 2089.41ha on the northwest coast of England at the mouths of the Mersey and Dee estuaries (53°29'53" N, 07°03'43" W). The site comprises a number of intertidal habitats important to non-breeding waders and breeding terns.
- 5.10.2 Egremont foreshore on the west bank of the Mersey estuary is important as a low tide feeding habitat for waders. Seaforth Nature Reserve on the north bank lies on land reclaimed in the 1960s and consists of a complex of open water, saltmarsh and grasslands. Specifically it comprises two lagoons, a shallow water lagoon which functions as a settlement lagoon for water pumped from the River Mersey into the Seaforth Docks and a freshwater lagoon separated from the saltwater lagoon by a wide bund. The site is particularly important as a high tide roost, especially during high spring tides, and a nesting site for terns.
- 5.10.3 The extensive intertidal flats at North Wirral Foreshore support large numbers of feeding waders at low tide, particularly knot (*Calidris canutus*) at East Hoyle Bank and Mockbeggar Wharf, and also include important high-tide roost sites. The most notable feature of the site is the exceptionally high density of wintering turnstone (*Arenaria interpres*). The Mersey Narrows and North Wirral Foreshore has clear links in terms of bird movements with the nearby Dee Estuary SPA and Ramsar site, Ribble and Alt Estuaries SPA and Ramsar site, and (to a lesser extent) the Mersey Estuary SPA and Ramsar site (Wirral MBC 2001).
- 5.10.4 The Mersey Narrows and North Wirral Foreshore area is proposed as a SPA and Ramsar site on the grounds of its importance as feeding and roosting habitat for non-breeding wading birds, and as a breeding site for terns (Wirral MBC 2001).
- 5.10.5 Although not yet a designated SPA or Ramsar site, NE has drafted nature conservation objectives for the site (Natural England 2007a).
- 5.10.6 Due to its location at the mouth of the Mersey Estuary and in the Liverpool Bay, this site has been subject to the same changes as described for the

Liverpool Bay pSPA and pRamsar site, and the Mersey Estuary SPA and Ramsar site, in particular water quality improvements since the 1960s (especially since 1985), and increases in agricultural effluent pollution during this same period.

- 5.10.7 Although the Mersey estuary does have a high load of nutrients mainly from diffuse sources, with levels for phosphate and nitrogen decreasing from point sources, recent modelling has shown that due to the natural turbidity of the water, there is only a low risk of excessive algal growth. Therefore NE does not consider nutrients to be a pressure on Mersey Narrows and Wirral Foreshore (Mandy North, Natural England, *pers. comm.*).

5.11 Liverpool Bay pSPA

- 5.11.1 The Liverpool Bay pSPA is a 197,504.24ha maritime site located in the south-eastern region of the northern part of the Irish Sea bordering northern England and north Wales, and running as a broad arc from Rossall Point near Fleetwood, Lancashire in the north, to Moelfre on the north-east coast of Anglesey at the most westerly extent. Large areas of muddy sand stretch from Rossall Point to the Ribble Estuary, and sand predominates in the remaining areas, with a concentrated area of gravelly sand off the Mersey Estuary and a number of prominent sandbanks off the English and Welsh coasts.
- 5.11.2 As the site extends up to approximately 20km from the shoreline most of the area of the pSPA site is relatively shallow water up to 20m deep. The tidal currents throughout the pSPA are generally weak which, combined with a relatively large tidal range, facilitates the deposition of sediments. It is contiguous with a number of other European sites, including the Ribble and Alt Estuaries SPA and Ramsar site, Mersey Narrows and North Wirral Foreshore pSPA and pRamsar site, and Mersey Estuary SPA and Ramsar site.
- 5.11.3 In 2004, the Joint Nature Conservation Committee (JNCC) reported on aerial survey data aimed at identifying likely numbers and distributions of waterbirds using Liverpool Bay in the non-breeding season (Webb *et al.* 2004a). This was followed by recommendations for and selection of boundaries for a SPA in Liverpool Bay (Webb *et al.* 2004b).
- 5.11.4 Liverpool Bay qualifies for SPA status because it regularly supports (Webb *et al.* 2004a) important populations of red-throated diver (*Gavia stellata*) (Annex I species; EC 1992b) and common scoter (*Melanitta nigra*), and >20,000 waterfowl during the non-breeding season, which is a potential qualification as a Ramsar Site (Criterion 5 regarding Article 2 of the Ramsar Convention). Other species that might be included, as they may occur in numbers of national importance are: great crested grebe; common eider (*Somateria mollissima*); red-breasted merganser (*Mergus serrator*); cormorant; and little gull (*Larus minutes*) (from Webb *et al.* 2004b).

- 5.11.5 Important areas for red-throated diver within Liverpool Bay include off the Ribble Estuary, North Wales and the North Wirral Foreshore, while common scoter tend to be clustered in Red Wharf Bay (Anglesey) and Conwy Bay, Great Orme's Head to the North Wirral Foreshore and Formby Point to Shell Flat (off Blackpool) (Webb *et al.* 2004a).
- 5.11.6 Since the site is not yet a SPA, there are no current nature conservation objectives provided, but they would likely be similar to those of other maritime and estuarine SPAs, particularly nearby sites such as the Mersey Estuary SPA.
- 5.11.7 With the proposed site encompassing approximately 198,000ha and a range of estuarine and maritime habitat, the Liverpool Bay pSPA is subject to a wide range of pressures of varying spatial scope and human activity. Perhaps the most direct way to establish the proposed site's recent changes in health / ecological status is through the changing environmental pressures upon the Irish Sea.
- 5.11.8 The industrial revolution of the 19th century led to the Irish Sea being used to dispose liquid waste, including sewage and unwanted by-products of industrial processes (including mining, manufacturing, nuclear waste reprocessing and energy generation). Liverpool Bay itself was actively used for the disposal of domestic sewage sludge and industrial waste. At the peak of activity 50,000 tonnes (dry weight) was disposed of in the Bay each year. Such activities ceased when all dumping of waste at sea was prohibited under the 1993 International Maritime Convention, and sewage and other waste are no longer dumped offshore in an uncontrolled manner. While Liverpool Bay is hyper nutrified, there is no evidence of harmful algal blooms or de-oxygenation of seawater (Environment Agency, *pers. comm.* 2007).
- 5.11.9 A number of areas on the coasts of North Wales, Merseyside and Lancashire are traditional seaside holiday centres where marine tourism and leisure activities make a major contribution to the local economy. There are existing, partially completed and proposed marina developments at Conwy, Beaumaris, and the Mersey and Ribble Estuaries.
- 5.11.10 The eastern Irish Sea is a focal point for commercial shipping. With eight commercial ports either located within or adjacent to Liverpool Bay a very high proportion of the shipping traffic traverses the Bay. A number of ports undertake navigational dredging and disposal of material in or adjacent to the pSPA.