



Identifying Areas of Search for Regional Waste Facilities Across Wales

Project Report

Incorporating Sustainability Appraisal Report

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1 Non Technical Summary

1.1 Outline of the Study

1.1.1 A study to identify 'Areas of Search' for Regional Waste Facilities across Wales has been undertaken by RPS on behalf of the three Regional Waste Groups in Wales, as part of reviewing the Regional Waste Plans. The key aims of this study are:

- To identify areas of search for regional in building facilities across each of the three regions in Wales.
- To identify areas of search for regional open-air facilities across each of the three regions in Wales.
- To ensure that the process of identifying areas of search is subject to an appraisal process that is compliant with The Environmental Assessment of Plans and Programmes (Wales) Regulations 2004 (referred to as the Strategic Environmental Assessment Regulations).
- To ensure compliance with the requirements of the Habitats Directive.
- The approach to this study has been to apply the process of undertaking a Sustainability Appraisal, incorporating the requirements of Strategic Environmental Assessment (SEA), to the process of identifying areas of search, thereby delivering the aims of the study together in one overall approach.
- The outcome of the study has been to identify 'Definitive Areas of Search' i.e. those areas in Wales where, based on the strategic nature of the study and the geographic/location issues considered, regional in building or open-air facilities could be located.
- The study focuses on areas of search for potential locations for two broad types of waste management facilities:
 - Open Air Facilities – including landfill, landraise and windrow composting
 - In Building Facilities

1.1.2 This study does not address the need for, or appropriateness of, the various types of waste management facilities. A lifecycle assessment of a number of options for waste facilities and a sustainability appraisal of those options is being undertaken by the Environment Agency Wales. Decisions regarding the way forward, will be undertaken by the three Regional Waste Groups. This areas of search study covers

the whole of Wales, therefore it is of a *strategic* nature. It focuses on issues at a national and regional level. It is intended that this study identifies potential areas of search as a first sieve mapping exercise. These areas would then be subject to scrutiny at the local level. The study has been undertaken in liaison with a Steering Group that has representatives from the following organisations:

- Welsh Assembly Government
- Environment Agency Wales
- Countryside Council for Wales (CCW)
- Planning Officer Society Wales
- Environmental Services Association - Wales
- The three Regional Waste Co-ordinating Authorities
- Welsh Assembly Government's Department of Enterprise, Innovation & Networks

1.1.3 The adopted approach to the Sustainability Appraisal takes into account guidance from the following documents:

- Welsh Assembly Government, August 2004, Strategic Environmental Assessment of Unitary Development Plans, Interim Good Practice Guide (Amendment to SEA Elements of Sustainability Appraisal of Unitary Development Plans 2002)
- ODPM, November 2005, Sustainability Appraisal of Regional Spatial Strategies and Local Development Documents.

1.1.4 The SEA Regulations (Schedule 2) require specific information to be addressed within environmental reports. The requirements of the SEA Regulations have been incorporated within this Sustainability Appraisal, and therefore the requirements for the Environmental Report have been incorporated into this Sustainability Appraisal Report. Welsh Assembly Government, TAN15 "Technical Advice Note 15 July 2004 (TAN 15) provides the technical advice required to evaluate the suitability of development in relation to the site specific flood risk in accordance with the sustainability principles set out in PPW section 2.2. The purpose of which is to ensure that any site selected for future development will not be placing new development under an inappropriate level of risk from flooding and that the development does not increase the risk of flooding to any third party land. The guidance note also provide advice as how to best ensure that new development

maximises the potential for improving current conditions using means such as Sustainable Urban Drainage Systems (SUDS)".The Scoping Report

- 1.1.5 A Scoping Report setting out the proposed approach to the Sustainability Appraisal, "Identifying Areas of Search for Regional Waste Facilities Across Wales: Sustainability Appraisal/Strategic Environmental Assessment: Scoping Report" was produced and circulated on 21st September 2006. Comments were invited from Countryside Council for Wales, CADW, Environment Agency Wales, Welsh Assembly Government, Unitary Authorities, Welsh Assembly Government's Department of Enterprise, Innovation and Networks, Environmental Services Association – Wales and the Strategic Health Authorities. Comments have been documented (see Appendix 2 of the main report) and addressed as appropriate.

1.2 Options/Alternatives

- 1.2.1 The SEA Regulations require an outline of the reasons for selecting the alternatives dealt with. One alternative is the "no plan" or "business as usual" option, which in this case would be *not* to undertake this Areas of Search project. Under this scenario, proposals would come forward subject to market forces without the benefit of a site selection process. Effects would therefore be assessed at the local level i.e. through Environmental Impact Assessment and the planning application process in the absence of the framework and backup provided by a Sustainability Appraisal. This alternative would not allow for any strategic consideration of the sustainability/environmental issues to be made in the selection of sites for regional waste management facilities and as such the undertaking of this Areas of Search project is more appropriate.
- 1.2.2 In addition, the overall aim of this project is to identify areas of search for locations for potential waste management facilities aided by the SA process. The results provide a number of different options for the locations of waste management facilities across all Wales.

1.3 Baseline Information

- 1.3.1 This Sustainability Appraisal covers the whole of Wales, therefore, the data collected is broad and at a strategic level. The use of Geographical Information Systems (GIS) is considered to be the most appropriate methodology at this level. In this case, this entails digital data for environmental designations such as those relating to valued landscapes (e.g. National Parks, Areas of Outstanding Natural Beauty (AONB)) and ecological designations (e.g. Special Areas of Conservation, Sites of Special Scientific Interest). A definitive list of all of the data sets used is provided within the main report, at Appendix 3.

1.3.2 In general, Wales is highly constrained in terms of environmental designations at European and national levels. Key observations include:

- Large areas of Special Areas of Conservation in the north and south west regions.
- Large area of Special Protection Area along the mouth of the Severn.
- Large areas of National Park, AONB and High and Outstanding valued landscapes.
- Large areas of flood zone are located along the mouth of the Severn and along the south coast.

1.3.3 The appraisal process has sought to avoid the most sensitive areas in accordance with the appraisal objectives. The SEA Regulations also require consideration to be given to the future baseline without the project. This would be influenced by a number of environmental trends and/or human activities. Identifying such a future baseline can be difficult to describe as this relies on the availability of trend data. However, below is an indication as to the likely future baseline in relation to the environmental, social and economic issues most pertinent to this study.

Environmental Trends:

- Many areas are at risk of flooding and continuing climate change increases this risk. CO2 emissions are high compared to the capacity of the natural environment to absorb it, energy consumption is not declining and energy generation from non fossil fuels is low. (WSP)

Social Trends:

- There are concentrations of poor health, long term illness and unhealthy lifestyles in the South Wales Valleys (WSP)
- Population decline in the upper parts of the South Wales Valleys and in Anglesey (WSP)
- Population growth in most parts of Wales mainly due to in-migration (WSP)

Economic Trends:

- Increasing need for sustainable waste management facilities (TAN 21).

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- Total employment has grown steadily although the GVA per head remains low compared to UK and European averages i.e. the employment rate is low (WSP)
 - Large proportion of waste goes to Landfill and costs are increasing due to the Landfill Directive. (Wales Waste Strategy 2002)
 - Waste produced by households is increasing. Since 2001-2 there has been an increase of 50 thousand tones to 1.77 million tones in 2002-3. The proportion of waste sent to Landfill has decreased while the proportion of waste recycled and composted has increased (EA Wales Website)
 - Waste produced by businesses has decreased – 5.3 million tones in 2002-3 compared to 6.1 million tones in 1998-9 (EA Wales Website)

1.4 Review of Other Plans and Programmes

1.4.1 The following documents were reviewed to inform the identification of appropriate sustainability appraisal objectives:

- Welsh Assembly Government, November 2001, Planning Policy Wales: Technical Advice Note (Wales) 21 – Waste.
- Welsh Assembly Government, March 2004, Sustainability Appraisal of “People, Places, Futures: the Wales Spatial Plan” Final Report
- SLR, May 2003, Developing a Regional Waste Plan for the South West Wales Region- Sustainability Appraisal (Consultation Draft)
- SLR, October 2003, Developing a Regional Waste Plan for the North Wales Region- Sustainability Assessment Report (Consultation Draft).
- Applied Environmental Research Centre Ltd, May 2003, South East Wales Regional Waste Plan – Analysis of Best Practicable Environmental Option.
- Environment Agency Wales, Briefing Note: Sustainability Assessment Weighting Indicators (unpublished)

1.4.2 The following was reviewed as an example of a UK level Strategic Environmental Assessment on waste management:

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- ODPM, August 2005 Planning Policy Statement 10: Planning for Sustainable Waste Management, Strategic Environmental Assessment (SEA).

1.4.3 The following were also reviewed for information about the effects of waste management facilities:

- ODPM, July 2005, Planning Policy Statement 10: Planning for Sustainable Waste Management
- ODPM, June 2006, Planning for Sustainable Waste Management: Companion Guide to Planning Policy Guidance Note 10
- Defra, 2004, Review of Environmental Health Effects of Waste Management: Municipal Solid Waste & Similar Waste.
- Defra, 2004, Consultation on Sustainable Waste Management: Consultation Paper 1. Environmental Report on Changes to the Waste Strategy 2000 for the Strategic Environmental Assessment.

1.4.4 Other relevant documents are:

- WAG, Wise About Waste: The National Waste Strategy for Wales
- WAG, Consultation on the Environment Strategy for Wales
- Of particular relevance are the sustainability appraisal objectives used for the three regional waste plans in 2003 and the Wales Spatial Plan in 2004.

1.5 Key Sustainability Issues

1.5.1 The collection of baseline data and the review of other relevant plans and programmes informed the identification of the key relevant sustainability issues, shown below.

- Protect areas of designated landscape (including views) and nature conservation value from inappropriate development.
- Minimise adverse environmental effects from the transportation, handling, processing and disposal of waste.
- The proximity principle requires that waste be treated/disposed of as near to the origin as possible to minimise the environmental effect of

transport. The self sufficiency principle requires waste to be treated/disposed of within the area that produces it.

- Locations for waste facilities need to be considered in terms of the Best Practicable Environmental Option.
- Inappropriate handling and management of hazardous and inert waste can cause damage to soil.
- Waste can release greenhouse gas emissions through a number of different pathways.
- Avoid locations where new or extended waste facilities may be incompatible with existing land uses.
- Considerations for the locations of landfills include:
 - distance from residential and recreational areas, waterways, waterbodies and other agricultural and urban sites.
 - existence in the area of groundwater, coastal water and nature protection areas.
 - geological and hydrogeological conditions, flooding, subsidence, landslides or avalanches.
 - protection of nature and cultural patrimony.
- New sites for waste facilities might be located in areas such as:
 - industrial areas.
 - quarries
 - degraded, contaminated or derelict land.
 - existing or redundant sites or buildings that could be adapted for recycling or composting.
 - sites previously or currently used for waste management facilities.
- Avoid risks to human health.
- Protect amenity of the community and other land uses and users affected by waste management facilities - waste management facilities may generate noise, dust, odour and litter/vermin causing nuisance and health effects.

- Facilitate the provision of sustainable waste management
- Affordability - the cost of waste management can depend on a variety of different factors, including the amount of waste being processed, the methods of waste disposal and the proximity of waste handling centres in relation to the origin of the waste.
- Practicability – including deliverability, technical feasibility and making the best use of existing facilities.
- Health impacts arising from waste may represent a cost to the economy.
- Support employment provision.

1.6 Sustainability Appraisal Framework

1.6.1 The methodology for the Sustainability Appraisal is referred to as a Sustainability Appraisal Framework and involves:

- Sustainability Appraisal Objectives
- Criteria for GIS Analysis to enable assessment against the Sustainability Appraisal Objectives. These are questions that can be answered through GIS analysis.
- Weightings for the criteria that are allocated for the two broad types of waste management facilities. These weightings tell the GIS how to interpret the data. The definitions of the weightings are as follows:
 - 1 = Areas of High Potential
 - 2 = Areas of Some Potential
 - 3 = Areas with Some Constraints
 - 4 = Areas with Regional/National Constraints
 - 5 = Exclusion – the development of a waste management facility in these areas is disqualified on grounds of sustainability, policy and/or impracticality.
- Results presented on maps.

1.6.2 The Sustainability Appraisal Framework is presented below.

Sustainability Appraisal Objectives	GIS Analysis Issues
Ensure prudent use of land and resources	Location of existing waste management facility (non-landfill)
	Location of active landfill site
	Location of industrial site (classified as B2)
	Degraded, contaminated or derelict land
	Quarry site

Sustainability Appraisal Objectives	GIS Analysis Issues
	Agricultural Land Classification Grade 1-2 Agricultural Land Classification Grade 3 Agricultural Land Classification Grade 4-5 Green Wedges
Minimise greenhouse gas emissions	Up to 5km from port 0-10km of an urban area (i.e. >10,000 pop) 10-50km of urban area >50km of urban area
Minimise adverse effects on air quality	Air Quality Management Area 0-250m from residential area
Protect and enhance the landscape, townscape and cultural heritage of Wales	World Heritage Sites Locations within an arc of view for a World Heritage Site National Parks Locations within 1km of a National Park Areas of Outstanding Natural Beauty Locations within 1km of an Area of Outstanding Natural Beauty Scheduled Ancient Monuments and within 100m (note: because exact polygon data unavailable) Locations within 100 - 500m of a Scheduled Ancient Monument (to accommodate setting) Heritage Coast Locations within 500m of Heritage Coast Locations within a landscape areas identified on LandMap as visually outstanding (Visual and Sensory) Locations within a landscape areas identified on LandMap as high quality (Visual and Sensory) Locations within a Special Landscape Area (or equivalent) Locations within a historic landscape - Outstanding Locations within a historic landscape - Special Historic Park and Garden and within 100m Locations between 100m to 500m from Historic Park and Garden
Minimise adverse effects on water quality	Groundwater Source Catchment Area Zones I Groundwater Source Catchment Area Zones II Groundwater Source Catchment Area III Zone of Special Interest Locations within 500m of Surface Water Protection Zone Locations on major aquifer Locations on minor aquifer Exclude lakes and rivers Locations within 250m to river with quality objectives RE 1 and 2 Locations within 250 – 500m to river with quality objectives RE 1 and 2 Locations within 100m to river with quality objectives RE 3 and 4 Locations within 100-250m to river with quality objectives RE 3 and 4
Avoid increasing flood risk	TAN 15 Layer C2 TAN 15 Layer C1
Protect biodiversity	Special Area of Conservation (SAC) Locations within 100m of a SAC Locations within 100m – 1km of a SAC Locations within 1 – 2km of SAC Locations within 2 – 10km of SAC

Sustainability Appraisal Objectives	GIS Analysis Issues
	Special Protection Area (SPA) Locations within 100m of SPA Locations within 100m and 1km of SPA Locations within 1 – 2km of SPA Locations within 2 – 10km of SPA Ramsar site Locations within 100m of Ramsar site Locations within 100m – 1km Ramsar site Locations within 1 – 2km of a Ramsar site Locations within 2 – 10km of a Ramsar site Site of Special Scientific Interest (SSSI) Locations within 100m of a SSSI Locations within 100m - 500m of a SSSI Locations within 500m – 1km of a SSSI Locations within 1km – 2km of a SSSI National Nature Reserve (NNR) Locations within 100m of a NNR Locations within 100m – 1km of a NNR Locations within 1 - 2km of a NNR Locations on Local Nature Reserve Ancient woodland Locations within 500m of ancient woodland
Provide employment opportunities and support long term jobs and skills	Locations up to 10km from residential areas
Minimise adverse effects on property prices	Residential Development 0-250m to residential development 251-500m to residential development
Minimise the increased cost of waste management	0-10km of an urban area (i.e. >10,000 pop) 10-50km of urban area >50km of urban area <1km of Primary Road Network (i.e. A road) >2km of Primary Road Network (i.e. A road) Slope >1:3 Slope 1:3 – 1:4
Protect local amenity	Common Land/Open Country Country Parks Public Forests
Minimise adverse effects on public health and avoid increasing health inequalities	Residential Development 0-250m to residential development 251-500m to residential development

1.7 Results of the Sustainability Appraisal

1.7.1 This section summarises the outcomes of the Sustainability Appraisal, which, using GIS analysis, has resulted in the identification of the definitive areas of search. Weightings are applied as below.

1.7.2 Weightings Applied

	Weighting Applied	Definition
Level of Constraint	5	Exclusion – the development of a waste management facility in these areas is disqualified on grounds of sustainability, policy and/or impracticality
	4	Areas of National/Regional Constraints
	3	Areas of Some Constraints
	-	Areas where no significant constraints have been identified (based on appraisal criteria)
Degree of Potential	2	Area of Some Potential
	1	Area of High Potential

- The full results of the GIS analysis are presented in the main report in Appendix 5. The figures show the detailed results for each of the 3 regions of Wales, North, South East and South West, divided into 'In building' and 'Open Air' facilities.
- The detailed results have subsequently been analysed in order to identify the definitive areas of search. The table below summarises the approach followed. In essence, the following principles have been adopted:-
 - Areas weighted 4 or 5 have been excluded because there are too many constraining factors of regional, national or international significance.
 - Areas weighted 3 or '-' in terms of level of constraint have been given different priorities (i.e. 1st, 2nd or 3rd Areas of Search based on the degree of potential identified by the analysis (i.e. weighting 1 or 2)
 - Areas identified as having a combination of either 'no constraints' with only 'some potential', or 'some constraints' with 'high potential' have been given the same priority (i.e. both identified as 2nd Areas of Search) as it is not possible to draw an appropriate distinction between these 2 combinations within the scope of this study.

Combined weightings	Resulting Area of Search
Areas of No Constraints and High Potential	1 st Area of Search
Areas of No Constraint and Some Potential Areas of Some Constraints and High Potential	2 nd Areas of Search
Areas of Some Constraints and Some Potential	3 rd Areas of Search

1.7.3 The Definitive Areas of Search are presented in the main report in Appendix 6.

1.8 Description of Environmental Effects

1.8.1 The resulting Areas of Search are presented in map form in the main report, Appendix 5, based on the interpretation set out in the table above.

1.8.2 The likely significant environmental effects associated with this study can be described in relation to the way in which they are minimised. This is because the Sustainability Appraisal Framework excludes sites/areas that are environmentally sensitive, and where appropriate, includes a buffer around such sites/areas so that they are identified as having constraints. However, this only relates to the type of data included in the study, as detailed assessments would need to be undertaken for any site specific proposals.

1.8.3 The Sustainability Appraisal Framework sets out the sites/areas that are excluded i.e. with a weighting of 5, those areas that are constrained i.e. with weightings of 4 and 3 and also areas/sites with potential i.e. weighted 2 or 1. The commentary below summarises the effects although, for the detail the Framework should be referred to.

Biodiversity (including Flora and Fauna)

1.8.4 Sites of ecological importance at International and national levels are excluded, these are Special Areas of Conservation (SACs), Special Protection Areas (SPAs), RAMSAR sites, Ancient Woodland, Sites of Special Scientific Interest (SSSIs) and National Nature Reserves (NNRs).

1.8.5 Buffers have been placed around these designations and identified as constraints. As the distance from the designated sites increases, the level of constraint decreases as reflected by the lowering weighting.

Population

- 1.8.6 Residential areas have been excluded from the search. Buffers around these areas have been included to minimise effects on property prices, human health. Therefore, effects have been minimised.
- 1.8.7 Sites relating to local amenity, Common Land/Open Country, Country Parks and Public Forests, are shown as constrained areas.

Human health

- 1.8.8 Effects on human health are minimised by excluding residential areas from the search. Buffers of up to 500m are constrained for open air facilities and up to 250m for in building facilities.

Soil

- 1.8.9 Areas of land where soil is of high agricultural potential have been designated as a constraint, although not excluded from the search.

Water Quality

- 1.8.10 The study includes objectives to minimise effects on water quality.
- To avoid impacts on groundwater, open-air facilities are excluded from Groundwater Source Catchment Zones (1-3). In building facilities are restricted in Groundwater Source Catchment Area Zones 1 and 2.
 - Source protection zones have been excluded from the search for open air facilities and constrained for in building facilities.
 - Existing sites of lakes and rivers are excluded.
 - Rivers that have ecosystem objectives of RE1 and 2 as defined by the Environment Agency as being suitable for all fish species plus a 250m buffer are constrained. In a similar way, rivers with ecosystem quality objectives of RE3 and RE4 plus a 100m buffer are constrained.
 - Major aquifers have been excluded from the search for open-air facilities and constrained for in building facilities. Minor aquifers are constrained for open air facilities.

Flood risk

- 1.8.11 The study includes objectives to avoid increasing flood risk.

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- Areas that fall within TAN 15 layer C2, include areas that are within floodplains, but are not served by any flood defence infrastructure. These areas are constrained.
 - Areas that fall within TAN layer C1, include developed areas within floodplains that are served by significant infrastructure, including flood defences. These are constrained albeit to a lesser degree than C2 areas.

Air

- 1.8.12 Areas within air quality management areas (AQMA) are constrained. Therefore, the risk of affecting these areas is minimised.

Climatic factors

- 1.8.13 Two objectives are used to minimise greenhouse gas emissions in relation to transportation of waste. Areas within 5km of a port and areas within proximity to urban areas (so as to reduce travelling distances between source and disposal) are identified as having potential.

Material assets

- 1.8.14 The search minimises the effects on property prices by ensuring that areas close to residential developments are excluded from the search. Open air facilities are constrained from areas within 500m of residential areas. In building facilities are constrained from areas within 250m from residential areas.

Cultural heritage

- 1.8.15 The sites of World Heritage Sites, Scheduled Ancient Monuments, Historic Landscapes (Outstanding) and Historic Parks and Gardens are excluded. Buffers surrounding World Heritage Sites, Scheduled Ancient Monuments and Historic Parks and Gardens are constrained as are Historic Landscapes (Special). Areas of Heritage Coast and a surrounding buffer are constrained. Therefore, direct effects on these features and their settings are minimised.

Landscape

- 1.8.16 National Parks, Areas of Outstanding Natural Beauty are excluded. Buffers surrounding these designations of 1km are constrained. Therefore, direct effects on these designations and, to an extent, views are minimised.

Interrelationships

- 1.8.17 Impacts upon population, the cost of waste management and the requirement to transport waste over as short a distance as possible may appear to overlap with regard to waste management. In one instance it is necessary to protect humans as far as possible from the health impacts associated with the management of waste. With regard to this, it would seem logical to site waste management facilities as far away possible away from centres of population. On the other hand, in areas of high population, it is reasonable to assume a greater amount of waste will be generated, indicating that facilities should be located nearby to increase the efficiency of waste management handling and storage processes, whilst minimising the impacts on air and climatic factors due to transportation.

1.9 Use of the Results

- 1.9.1 The main Areas of Search report is only one of the documents which will form part of the review of the Regional Waste Plans.
- 1.9.2 The results of this study are intended to inform the revision of the regional waste plans. The previous work carried out by RPS, established the GIS framework upon which this study is based. The key function of this study is identify areas of search for regional waste management facilities. The purpose of this study is to bring together the various physical and environmental characteristics, which will influence the location of waste management facilities. It does not provide a definitive guide against which planning applications will be judged. Any proposal or allocations that are formulated as a result of this work will be subject to a statutory sustainability appraisal and independent examination in accordance with the procedures and guidelines set by the Planning and Compulsory Purchase Act, 2004.
- 1.9.3 As stated earlier in the report, this study provides a robust baseline of information that will aid the decision-making process regarding the identification of definitive areas of search for waste management facilities. The GIS has been refined as a result of the SA process, allowing Regional Waste Planning Groups to scrutinise the information which has led to the grading of a particular area. This ensures that other studies that are produced to support regional waste plans, can be easily incorporated with this study.
- 1.9.4 In addition, it is acknowledged that the findings of this study could also assist Local Authorities in identifying appropriate locations for waste management development, providing the basis from which more detailed investigations can be undertaken to assess which individual sites are appropriate to be allocated in Local Development Plans.

1.10 Recommendations

The section above describes the environmental effects. This sets out the mitigation that has already been built into the process through the avoidance of highly constrained areas.

1.11 Monitoring

- 1.11.1 The SEA Regulations require a description of monitoring measures. It is envisaged that the monitoring of the implementation of the revised Regional Waste Plans would incorporate monitoring the usefulness of this study in allocation of specific sites and whether when actually consider the detail of the definitive areas of search identified, it is possible to be take forward sites suitable for regional waste facilities

2 Introduction

2.1 Preamble

2.1.1 This study, funded by WAG, to identify 'Areas of Search' for Regional Waste Facilities across Wales has been undertaken by RPS on behalf of the three Regional Waste Groups in Wales, as part of reviewing the Regional Waste Plans. The key aims of this study are:

- To identify areas of search for regional in building facilities across each of the three regions in Wales.
- To identify areas of search for regional open-air facilities across each of the three regions in Wales.
- To ensure that the process of identifying areas of search is subject to an appraisal process that is compliant with The Environmental Assessment of Plans and Programmes (Wales) Regulations 2004 (referred to as the Strategic Environmental Assessment Regulations).
- To ensure compliance with the requirements of the Habitats Directive.

2.1.2 The approach to this study has been to apply the process of undertaking a Sustainability Appraisal, incorporating the requirements of Strategic Environmental Assessment (SEA), to the process of identifying areas of search, thereby delivering the aims of the study together in one overall approach. A full explanation of how this approach has been applied is set out in the report, including ensuring compliance with the requirements of the Habitats Directive, before the results of the appraisal are presented.

2.1.3 The outcome of the study has been to identify 'Definitive Areas of Search' i.e. those areas in Wales where, based on the strategic nature of the study and the geographic/location issues considered, regional in building or open-air facilities could be located.

2.1.4 This report presents the results of the Sustainability Appraisal.

2.2 Overview of the Project

2.2.1 The project has been undertaken for the three Regional Waste Groups, as part of the Regional Waste Plan 1st Review (see "The Regional Waste Plan 1st Review – Content and Approach", January 2006).

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- 2.2.2 A Sustainability Appraisal approach has been adopted for this project, incorporating the requirements of SEA. This has entailed identifying sustainability objectives and criteria, which are then applied to a mapping exercise using Geographical Information Systems (GIS) to locate definitive areas of search for potential regional waste management facilities throughout Wales.
- 2.2.3 It focuses on potential *locations* for two broad types of waste management facilities:
- Open Air Facilities – including landfill, landraise and windrow composting
 - In Building Facilities – including In Vessel Composting, Transfer Stations, Materials Recovery Facilities, Mechanical and Biological Treatment, Thermal Treatment, Metals Recovery Facilities and Anaerobic Digestion.
- 2.2.4 It does not address the need for, or appropriateness of, the various types of waste management facilities. A lifecycle assessment of a number of options for waste facilities and a sustainability appraisal for it is being undertaken by the Environment Agency Wales. Decisions regarding the way forward, will be undertaken by the three Regional Waste Groups.
- 2.2.5 This areas of search study covers the whole of Wales, therefore it is of a *strategic* nature. It focuses on issues at a national and regional level. It is intended that this study identifies potential areas of search as a first sieve mapping exercise. These areas would then be subject to scrutiny at the local level.
- 2.2.6 The study is being undertaken in liaison with a Steering Group that has representatives from the following organisations:
- Welsh Assembly Government
 - Environment Agency Wales
 - CCW
 - Planning Officer Society Wales
 - Environmental Services Association - Wales
 - The three Regional Waste Co-ordinating Authorities
 - Welsh Assembly Government's Department of Enterprise, Innovation & Networks

2.2.7 As stated earlier in the report, this study provides a robust baseline of information to inform the decision-making process regarding the identification of areas of search for regional waste management facilities. The GIS has been refined as a result of the SA process, and enables Regional Waste Planning Groups to scrutinise the information and identify what has led to the grading of a particular area. This ensures that other studies that are produced to support regional waste plans, can be easily incorporated with this study.

2.3 Requirement for Sustainability Appraisal, incorporating the requirements of Strategic Environmental Assessment

2.3.1 Under The Environmental Assessment of Plans and Programmes (Wales) Regulations 2004, a Strategic Environmental Assessment is required for plans or programmes that are prepared for waste management that set the framework for future development consent for development projects set out in the Environmental Impact Assessment Directive. The Areas of Search study will enable Local Authorities in Wales to allocate potential sites for waste management facilities and any proposals for the development of such facilities on these sites are likely to require EIA. Therefore, a Strategic Environmental Assessment is required for this study.

2.3.2 This is set out in the Regional Waste Plan 1st Review – Content and Approach Report, which states that “if the review of the RWP identifies Areas of Search which is to be taken forward to the identification of individual sites in development plans and/or which constitute policy on where developers should or shouldn’t develop facilities, then that particular spatial element would require application of the SEA process”.

2.3.3 In addition, under the Planning and Compulsory Purchase Act 2004, section 39 (2) there is an objective for those with plan making functions to contribute to the achievement of sustainable development (this includes the Wales Spatial Plan and Local Development Plans in Wales). This objective is met by the application of the wider Sustainability Appraisal approach, which considers social and economic issues as well as the environmental issues considered in Strategic Environmental Assessment. As stated in the “Sustainability Appraisal of Regional Spatial Strategies and Local Development Frameworks – Consultation Paper” (ODPM, September 2004), “the requirement to carry out a Sustainability Appraisal and a Strategic Environmental Assessment are distinct. However, it is possible to satisfy both through a single appraisal process”. Therefore, the approach for this study, based on this best practice guidance, is to undertake a Sustainability Appraisal, incorporating the requirements of Strategic Environmental Assessment Regulations. All references within this report to Sustainability Appraisal therefore should be read

as incorporating the requirements of the SEA Regulations, including the overall Sustainability Appraisal Report incorporates the requirements of the Environmental Report.

2.3.4 The adopted approach to the Sustainability Appraisal takes into account guidance from the following documents:

- Welsh Assembly Government, August 2004, Strategic Environmental Assessment of Unitary Development Plans, Interim Good Practice Guide (Amendment to SEA Elements of Sustainability Appraisal of Unitary Development Plans 2002)
- ODPM, November 2005, Sustainability Appraisal of Regional Spatial Strategies and Local Development Documents.
- ODPM, WAG, DOENI, Scottish Executive, A Practical Guide to the SEA Directive, September 2005

2.4 Sustainability Appraisal Process

2.4.1 Based on best practice guidance, the broad stages of Sustainability Appraisal are as follows:

- Stage A – Setting the context and objectives, establishing the baseline and deciding on the scope;
- Stage B – Developing and refining options and assessing effects;
- Stage C – Preparing the SA Report;
- Stage D – Consulting on the Areas of Search Report and the SA Report;
- Stage E – Monitoring the significant effects of implementing the plan.

2.4.2 Stage A entails identifying other relevant plans, policies and programmes and other relevant SA/ SEAs; collecting baseline information; identifying sustainability issues/problems; developing the SA framework; and, consulting on the scope of the SA.

2.4.3 An SA scoping report has been produced for consultation. The responses to the scoping report have then be used to refine the approach to the SA (the SA framework), including establishing the appraisal objectives to be used. Chapters 2 and 4 describe the details of this stage, resulting in the Sustainability Framework as defined in Chapter 5.

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- 2.4.4 Stage B involves assisting in the development of any options and assessing the effects of the 'Areas of Search' against the SA framework. The application of the SA framework in driving the GIS analysis has meant this stage has been undertaken in a very integrated approach. The resulting options (i.e. areas of search) are presented in Chapter 7.
- 2.4.5 Stage C involves the preparation of the SA Report that would form part of the overall final report. This will clearly show how the requirements of the SEA Regulations have been addressed. This report is the result of this stage, the structure of which is described below, followed by clarification of how this report meets the requirements of the SEA Regulations.
- 2.4.6 Stage D involves the submission of the SA Report as part of the 'Areas of Search' report and any consultation associated with it. The SA Report and the results of the Areas of Search study are to be presented regionally.
- 2.4.7 Stage E that entails monitoring the significant effects of implementation. It is anticipated the monitoring that is required would be undertaken as part of the regular monitoring of the implementation of the Regional Waste Plan Review. The SA Report includes a description of what is envisaged for this stage.

2.4.8 The approach and process of the Sustainability assessment was discussed and agreed with the Steering Group at the beginning of the study.

2.5 Structure of this Report

2.5.1 This Sustainability Appraisal Report has been structured, in line with relevant guidance, as follows:-

- Chapter 1 – Non-Technical Summary
- Chapter 2 - Introduction, including overview of the project and requirement for undertaking a Sustainability Appraisal
- Chapter 3 – A description of the scoping stage of the project
- Chapter 4 – A description of the project and options/alternatives considered
- Chapter 5 – A description of the methodology followed for the Sustainability Appraisal
- Chapter 6 – The Sustainability Appraisal Framework, including the objectives and criteria used
- Chapter 7 – A description of the data used and processes followed for the GIS analysis
- Chapter 8 – The results of the sustainability appraisal, including the maps produced from the GIS analysis, the proposed uses of these results, recommendations and mitigation and monitoring.

2.6 Compliance with SEA Directive/Regulations

2.6.1 The SEA Regulations (Schedule 2) require specific information to be addressed within environmental reports. As described in paragraphs 1.11 to 1.14, the requirements of the SEA Regulations have been incorporated within this Sustainability Appraisal, and therefore the requirements for the Environmental Report have been incorporated into this Sustainability Appraisal Report. Each of the items set out in Schedule 2 and where these are addressed within this Sustainability Appraisal Report are set out in Table 1.1 below.

Table 1.1 Compliance with the SEA Regulations

Schedule 2 Requirement	Where addressed in this report
1. An outline of the contents and main objectives of the plan	Chapter 4, under Review of

Schedule 2 Requirement	Where addressed in this report
or programme, and of its relationship (if any) with other relevant plans and programmes.	Other Plans and Programmes
2. The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme.	Chapter 4, under Baseline Information
3. The environmental characteristics of areas likely to be significantly affected.	Chapter 7, under Description of Environmental Effects
4. Any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Council Directive 79/409/EEC on the conservation of wild birds and the Habitats Directive.	Chapter 4, under Key Sustainability Issues
5. The environmental protection objectives, established at international, Community or Member State level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation.	Chapter 4, under Review of Other Plans and Programmes
6. The likely significant effects on the environment, including short, medium and long term effects, permanent and temporary effects, positive and negative effects, and secondary, cumulative and synergistic effects, on issues including – biodiversity; population; human health; fauna; flora; soil; water; air; climatic factors ; material assets; cultural heritage, including architectural and archaeological heritage; landscape; and the inter-relationships between the issues referred to in subparagraphs (a) to (l).	Chapter 7, under Description of Environmental Effects
7. The measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme.	Chapter 7, under Outline Mitigation for Detailed Stage
8. An outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties encountered in compiling the required information.	Chapter 3, under Options/Alternatives
9. A description of the measures envisaged concerning monitoring in accordance with regulation 17.	Chapter 7, under Monitoring
10. A non-technical summary of the information provided under paragraphs 1 to 9.	The front of this report.

3 Scoping

3.1 The Scoping Report

3.1.1 The “Identifying Areas of Search for Regional Waste Facilities Across Wales: Sustainability Appraisal/Strategic Environmental Assessment: Scoping Report” was produced and circulated on 21st September 2006. A copy of this Scoping Report is included at Appendix 1 of this Report.

3.1.2 The purpose of the Sustainability Appraisal Scoping Report was to set out the relevant background information and the proposed approach to the appraisal, for comment by the following consultees:

Countryside Council for Wales Cadw Environment Agency Wales Welsh Assembly Government Unitary Authorities	}	Consultees under the SEA Regulations
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Welsh Assembly Government’s Department of Enterprise, Innovation and Networks
 Environmental Services Association - Wales
 Strategic Health Authorities

3.1.3 A robust sustainability appraisal will enable Local Authorities in Wales to make site-specific allocations within their Local Development Plans with the confidence that they are based upon sound and transparent information.

3.2 Consultation Responses: Changes Addressed

3.2.1 A summary of the responses received with associated amendments to the approach and final report is set out in the table below. A full copy of all responses received is included in Appendix 2.

Table 2.1 Summary of Consultees Responses Received to Scoping Report

Consultee (in alphabetical order)	Comment	How Addressed	Location in Report
Blaenau Gwent and Torfaen Borough Councils	Limitations of scoping in only describing the approach in theory without any indication of what or where the sites are makes it difficult to consider the scoring and weightings.	The scoring and weightings have been proposed on the basis of policy and professional expertise, and have been agreed with the Study’s Steering Group.	Paragraph 6.2.1
Blaenau Gwent and Torfaen Borough Councils	Lack of clarity of how ‘avoiding increasing health inequalities’ has been addressed.	Add further explanation on this point in the report.	Paragraph 5.1.7, 8.3.13
Blaenau Gwent and Torfaen Borough Councils	Further clarification is required as to what is meant by ‘some potential’ and ‘some constraints’ and how this will apply to determining a proposed site.	The approach to defining the definitive areas of search will be explained in more detail in the report in order to clarify	Paragraph 1.8 & 8.1 onwards hold a description of the weightings

Consultee (in alphabetical order)	Comment	How Addressed	Location in Report
		this point.	and the associated meanings.
Blaenau Gwent and Torfaen Borough Councils	The scoping report does not provide adequate description of what is meant by 'open air' or 'in building' facilities.	Add further explanation on this point in the report.	Paragraph 1.1.2, 2.2.3
Blaenau Gwent and Torfaen Borough Councils	Are the appraisal objectives prioritised?	Add explanation as to why objectives are not prioritised	Paragraph 6.2.5
Caerphilly Local Health Board	There will be tension between siting waste facilities closer to urban centres and minimising adverse effects on public health.	Final report will acknowledge this tension through the weightings allocated.	Results section discusses this tension in the interrelations section.
Caerphilly Local Health Board	Categories for minimising impacts on public health are very narrow. It is suggested that 0-500 metres should be weighted '4' and 500+ m should be weighted '3'.	The approach adopted is consistent with policy. – No action.	N/A
Caerphilly Local Health Board	No measures are given to avoid increasing health inequalities as stated in the objectives. Townsend/Cahill deprivation scores could be linked to weighting system.	A research study undertaken by the ODPM indicates that modern, appropriately located, well-run and well-regulated, waste management facilities operated in line with current pollution control techniques and standards should pose little risk to human health. Increases in health inequalities are therefore not addressed in the AOS.	Paragraph 5.2.3
Caerphilly County Borough Council	Section 3 of the scoping report should make reference to the Regional Waste Plan 1st Review, content and approach Report	Add reference to Regional Waste Plan. 1st Review – Content and Approach Report	Throughout the document.
Caerphilly County Borough Council	The presentation of the maps is important. The document needs to make figures clear so that different groups of people may look at, and understand them easily.	Clarity of final information and clear presentation of the results is fundamental and will be delivered by this process.	The definitive data maps show information relating to the areas of search clearly.
Countryside Council for Wales	CCW are unsure whether this plan requires SEA under the 2004 regulations or whether it should be undertaken on a voluntary basis. Clarification is needed regarding the status of the Scoping study and the SEA of the Areas of Search study.	This Areas of Search will inform the revision of the regional waste plan. Therefore it was decided appropriate to apply the SA/SEA approach to the study so that the resultant findings are appropriate in sustainability terms.	Paragraph 2.4 describes the SA/SEA process.
Conwy Borough	Weightings for rail head and port	Areas weighted with a '1'	See Appendix

Consultee (in alphabetical order)	Comment	How Addressed	Location in Report
Council	suggest that sites closer than 5 km would be assessed less favourably than those further away. This point needs clarification.	have a high potential and would be considered more favourable. See paragraph 5.15.	
Conwy Borough Council	Many biodiversity sites are covered by more than one designation. It is unclear whether weightings should be cumulative or based on the most significant designation.	Most significant designations are used in such events.	Paragraph 6.2.12, & 1.8 describes how the weightings are applied.
Conwy Borough Council	The meaning of 'Public forest' in table 5.1 is unclear. Certain coniferous forests may provide suitable locations for waste management facilities.	The Public Forest data set is part of the CCW "Open Access Land" data, which also incorporates Open Land, Common Land and is set out for the purposes of the Countryside and Rights of Way Act 2000. It is in no way an inventory of forestry commission land holdings.	Paragraph 7.1.119 & 7.1.126
Conwy Borough Council	No reference has been made to altitude as a GIS analysis issue.	There is no specific policy that identifies altitude as a constraint by itself. Accessibility and feasibility would be addressed through the criteria for slope and distance from the transport network.	N/A
Denbighshire County Council	Suggest additional consultees including town and community councils and representatives of the waste industry	Representatives will be invited to regional presentations of draft report where appropriate.	N/A
Denbighshire County Council	The scoping report would usefully include the broad criteria of the first GIS exercise in the scoping report for ease of reference.	The two reports are separate and should be viewed as standalone. The previous report can easily be referred to . By keeping them separate, this ensures a clear distinction between the purposes and function of the two reports.	N/A
Denbighshire County Council	New requirements for appropriate assessment under the habitats regulations for SAC's and SPA's. This would ideally be included in a separate section in the scoping report.	This will be addressed in the final report.	Paragraph 6.5.1 addresses the issue of the Habitats Directive.
Denbighshire County Council	With reference to paragraph 2.3, bullet 4, there are large areas of flood risk in the north.	Noted	N/A
Denbighshire County Council	Denbighshire County Council disagree with the exclusion of minerals data as a GIS layer.	The purpose of the study is to identify areas which are appropriate for waste management	Table 5.1

Consultee (in alphabetical order)	Comment	How Addressed	Location in Report
		development, assuming prior extraction of any identified mineral resource.	
Denbighshire County Council	Useful to refer to the specific plans that ensure that data is up to date and appropriate.	References will be included in the final report.	
Denbighshire County Council	Suggest that Planning Policy Wales and Local Development plans are referred to under documents reviewed.	References will be included in the final report.	
Denbighshire County Council	Table 4.1, row 2 of the scoping report refers to minimise adverse impacts. This is too vague, and should be made more specific depending on the impacts.	This is a synopsis of current policy – no action required.	N/A
Denbighshire County Council	Table 4.1, social issues - row 1 should include traffic congestion in local communities.	This was not identified during the review of relevant documents. It is considered to be a local issue that would be taken into account during the more detailed identification of specific sites, rather than during this strategic study.	N/A
Denbighshire County Council	Table 4.1, Economic issues - row 1 are too vague to be of any use.	This is a synopsis of current policy – no action required.	N/A
Denbighshire County Council	Suggest an addition to table 4.1 that it should not conflict with any areas with environmental enhancement objectives. For example in areas of urban regeneration work, a waste facility may not be the preferred use in such a location.	The basis of this study is to identify areas for regional in build and open air waste management facilities. It is for local policy to decide on the relative priorities in each area.	
Denbighshire County Council	Weighting should be discussed in a workshop with different professional in order to obtain a consensus.	Consultation has occurred and outlined in paragraph 1.3 of this report	Paragraph 2.2.6
Denbighshire County Council	Agricultural land classification grading is different to what is shown in Table 5.1.	Make clear that 3a and 3b are given a weighting of 3.	
Denbighshire County Council	The proximity to rail head and to the A55 and M4 corridors are also important issues	Noted.	N/A
Environment Agency Wales	Provide further information as to whether a screening exercise was undertaken to determine the requirement for an SEA. The role of the study in relation to the SEA of the regional waste plan as well as the expected timetable for the SEA of regional waste plans.	This Areas of Search will inform the revision of the regional waste plans. Therefore it was decided appropriate to apply the SA/SEA approach to the study so that the process and the findings of the study have been subjected to a robust, statutory appraisal	Paragraph 4.1.6

Consultee (in alphabetical order)	Comment	How Addressed	Location in Report
		methodology.	
Newport City Council	Information layers regarding mineral resources should be included and appropriately weighted in the sustainability appraisal	Any mineral resources would be extracted in accordance with MTAN guidance.	Paragraph 6.4.3
Newport City Council	Table 5.1 identifies the location of industrial sites as being a GIS analysis layer. Would the inclusion of power stations and similar use facilities be beneficial as a GIS layer in order to identify potential energy from waste facilities.	Major Industrial Areas, provided by LAs	Major industrial sites are listed under the GIS analysis issues, paragraph
Newport City Council	The weighting for TAN 15 layer C2 – should be a '5' rather than a '4', to totally exclude areas of high flood risk due to impacts on the water environment and public health, in line with paragraph 5.2 of TAN 15.	The weighting allocated is in line with specific guidance provided by the Environment Agency.	Table 5.1
Newport City Council	In green field areas the weighting for layer C1 should be changed from '3' to '5' for open air facilities as it is unlikely that such facilities will be justified in areas of C1 flood risk.	The weighting allocated is in line with specific guidance provided by the Environment Agency.	Table 5.1
Neath Port Talbot County Borough Council	Consistency of data amongst areas and datasets is imperative to the success of this study. It is a concern that RPS have been supplied with inconsistent data relating to Environment Agency 'Regis' sites and Major Industrial Areas.	The final report clearly states the limitations of the data used.	Paragraph 6.4.4
Neath Port Talbot County Borough Council	Section 3 of the scoping report should make reference to the Regional Waste Plan 1st Review: Content and Approach Report [SWW Regional Waste Group] (January 2006)	Reference added to report.	Paragraph 5.2.1
Pembrokeshire County Council & National Park Authority	Bullet point 2 of paragraph 1.1 should read. "To identify areas of search for regional open-air facilities across each region" to comply with bullet point 1 and statements in paragraph 1.5	Amend text to incorporate the word regional	Throughout report as applicable
Pembrokeshire County Council & National Park Authority	Paragraph 2.6 – The extraction of minerals prior to any development that would sterilize known reserves is in line with approved JUDP and WAG's guidance.	Comments agree with the approach adopted - No further action required.	N/A
Pembrokeshire County Council & National Park Authority	Pembrokeshire County Council note that the BPEO at this strategic level is relevant	Noted	N/A
Pembrokeshire County Council & National Park Authority	Concern that the most up to date information from the EA regarding flood risk is not being used. It should be clearly stated why the July 2004 flood risk maps are being used over the more recent EA Flood Map data, so that the process can be clearly	The use of TAN 15 was recommended by the Environment Agency and agreed by the steering group as the most appropriate because of its use in setting policy.	Table 5.1

Consultee (in alphabetical order)	Comment	How Addressed	Location in Report
	followed should future challenges be made.		
Pembrokeshire County Council & National Park Authority	The Table 5.1 column headings would be clearer if they included the word regional in each column. This would then read, Weighting Regional Open Air Facility.	Add 'Regional' where appropriate	Table 5.1
Pembrokeshire County Council & National Park Authority	Concern that AONB are given only one buffer of 1-2 Km whereas SAC and other environmental designations are given more categories of buffer. Include an additional category under protect and enhance the landscape of locations within 1-2 km of a national parks and AONB boundaries.	A buffer was included around AONB's and NP's to minimise the likelihood of locating a site immediately adjacent to either of these designations. The buffers used for ecological designations are based on policy.	Buffers are included in table 5.1. An explanation of buffers for AONB's can be found on the GIS analysis issues paragraph
Snowdonia National Park	Noted that National Parks are weighted '5'.	No action required.	N/A
Welsh Assembly Government	There is no reference to the EU 6th Environmental Action Plan, the EU thematic strategy on prevention and recycling of waste or EU directives concerning waste.	Relevant policy documents have already been referenced as appropriate.	Paragraph 5.2.1 lists the references for the study.
Welsh Assembly Government	No reference to the NAW scheme, WAG's sustainable development indicators or "one future – different paths"	Relevant policy documents have already been referenced as appropriate.	Paragraph 5.2.1 lists the references for the study.
Welsh Assembly Government	The study would usefully consider the inter-relationships between issues at the scoping stage as well as cumulative effects and synergistic effects of these issues.	Noted.	N/A
Welsh Assembly Government Planning	The work has been commissioned by the three regional waste groups funded by the WAG rather than direct commission from the WAG	Amend text as appropriate.	Paragraph 2.1.1
Welsh Assembly Government Planning	Paragraph 1.7 of the scoping report should include 'regional' level as well as 'national'.	Amend text as appropriate.	Paragraph 2.2.5
Welsh Assembly Government Planning	No reference to Planning Policy Wales (2002), the Policy Clarification Note (2004), the three Regional Waste Plans Stage 1 (2004/5) and GIS Mapping (2005).	References will be made in full in the final report.	Paragraph 5.2.1
Welsh Assembly Government Planning	Suggest adding 'as far as practicably possible' to the proximity principal listed under Key issues in section 4.	Amend text as appropriate.	Table 4.1 – Environmental Issues
Welsh Assembly Government Planning	Locations of landfill under section 4 should make reference to the Policy Clarification Note as well as BPEO.	Will add in final report.	Table 4.1 – Economic issues.
Welsh Assembly Government Planning	Under Social Issues, Section 4-reports should be given full titles rather than just the authors.	Amend text.	Table 4.1 – Social Issues

Consultee (in alphabetical order)	Comment	How Addressed	Location in Report
Welsh Assembly Government Planning	Section 4. Clarify what Health Impacts could arise from waste management facilities and whether they are social impacts as well as economic impacts.	Health impacts are highlighted under both social and economic headings.	Table 4.1
Welsh Assembly Government Planning	Suggest a conflict between 'facilitate the provision of sustainable waste management' (economic issues, table 4.1) and paragraph 5.4, 'The need to provide for sustainable waste management is considered to be a driver for this project rather than an objective'.	In undertaking the review of issues, it was deemed appropriate to identify the key issue of provision of facilities. This study is being undertaken in order to enable the sustainable provision of these and therefore has been identified as a driver of the whole project.	N/A
Welsh Assembly Government Planning	The definitions of weightings in paragraph 5.13 are different to stage 1.	The approach to weightings has been adopted to be consistent with undertaking a SA/SEA.	Weightings are listed under in Appendix and GIS data listing paragraphsThe approach to weightings is given in paragraph 6.2.11

4 Description of the Project

4.1 Background

- 4.1.1 The purpose of this study is to identify appropriate areas of search for waste management facilities in Wales based upon clear, appropriate and available data. The identification of areas of search, together with a robust SEA/SA that clearly establishes the associated environmental impacts of waste management development in these locations, will provide a clear and transparent evidence base for regional waste planning. This study will enable Regional Waste Planning Groups in Wales to identify appropriate areas of search for waste management facilities in their Regional Waste Plans with the confidence that they are based upon sound and transparent information.
- 4.1.2 Under a contractual agreement with the Welsh Assembly Government, the three Regional Waste Planning Groups have been tasked with reviewing the three Regional Waste Plans covering all Wales. The Welsh Assembly Government have identified that the EU Waste Framework Directive lays down a requirement for Member States to establish an “integrated and adequate network of waste disposal installations”. Article 7 of the Framework Directive also requires Member States to produce waste management plans that “relate to suitable disposal sites or installations”. The devolution settlement means that the Welsh Assembly Government is responsible for ensuring that the requirements of the Framework Directive are met in Wales. The three Regional Waste Plans (RWPs) form an important part of Wales’ compliance with the Directive.
- 4.1.3 It has also been acknowledged by the Welsh Assembly Government that the first three RWPs produced in early 2004 were a useful first step but their revision needs to better address the requirement in TAN21 for the identification of areas of search, locations or sites for regional or sub-regional scale facilities. Paragraph 2.16 of TAN21 specifies that: “The identification of areas or types of location for future facilities will be of particular importance. The RWP would not allocate sites for facilities, but it will indicate areas of need and search for potential sites for future facilities, and where possible, a choice of locations that once agreed in the due political process and in recognition of existing contractual arrangements, would serve the region. In some cases a facility might serve other regions also.”
- 4.1.4 The Audit Committee and EPC Committees’ inquiries into waste both made recommendations in relation to the revision of the RWPs. In particular, Recommendation 3 of the Audit Committees report advised that: “*Regional waste plans are revised in order to indicate the types of locations where regional facilities could be situated.*” The Assembly Government in its December 2005 response

accepted the need for RWPs to be revised to indicate types of location where regional facilities could be situated.

- 4.1.5 Recommendation 9 of the EPC Committee's inquiry into waste advised, "...Regional Waste Plans should be revised to ensure they identify suitable geographical locations for regional facilities and that the Welsh Assembly Government provides local authorities with clearer guidance to deliver this objective." The Assembly Government's response on 8th March 2006 identified that "...it is seeking greater clarity and rigour in the revised regional waste plans that will be produced in 2007. The current plans already have the status of material considerations in the planning process and the revised plans will be expected to identify with more certainty the types of sites that will be considered suitable for waste management facilities."
- 4.1.6 This study identifies to the Regional Waste Planning Groups the areas that, based upon relevant land use policy and constraints, are the most appropriate locations for waste management facilities. This study, along with the associated Health Impact Assessment and SEA/SA of waste technology options, provides a robust evidence base that each Regional Waste Planning Group can provide a Local Authorities with a clear implementation strategy for the Regional Waste Plan Reviews.
- 4.1.7 As described in paragraph 1.2, the aims of this study to identify definitive areas of search for regional waste facilities have been met by applying the process of Sustainability Appraisal, incorporating the requirements of SEA, to the GIS mapping exercise, thereby producing a robust approach to the area selection process that is supported by the principles of sustainability. The areas of search project is then considered to be compliant with the SEA Regulations requirements and can therefore be utilised within the Regional Waste Plan Review.
- 4.1.8 The Sustainability Appraisal process is described in paragraph 1.16 to 1.23. The application of this process to the GIS mapping exercise has involved defining the Sustainability Appraisal Framework, and specifically the objectives and criteria which have then been used in the GIS Analysis by applying the relevant weighting to geographic areas based on relevant data sources and identifying through this approach the definitive areas of search.
- 4.1.9 This approach has allowed sustainability principles to be embedded into the process of area selection, rather than a 'add-on' process at the end, and enabled the results of the GIS analysis to be linked directly to the Sustainability Appraisal objectives.
- 4.1.10 There are however, some limitations to this approach. The strategic nature of the study has meant that it has not been possible to identify local constraints that would in some cases enable the appraisal objectives to be met more fully. In addition, there are limitations because this is a spatial study, and does not take into account

the relevant technology options that would be proposed for a specific area, apart from the two broad categories of 'in building' and 'open air'. The strategic and spatial nature of the study has therefore limited the capability of this study in terms of identifying significant environmental effects. This is explained in more detail in the results section of the report, but in essence means that a more detailed environmental assessment would need to be undertaken for specific sites and specific technologies as these are combined.

4.2 Options/Alternatives

- 4.2.1 The SEA Regulations require an outline of the reasons for selecting the alternatives dealt with.
- 4.2.2 One alternative is the “no plan” or “business as usual” option, which in this case would be *not* to undertake this Areas of Search project. Under this scenario, proposals would come forward subject to market forces without the benefit of a site selection process. Effects would therefore be assessed at the local level i.e. through Environmental Impact Assessment and the standard planning application process in the absence of the framework and backup provided by a Sustainability Appraisal. This alternative would not allow for any strategic consideration of the sustainability/environmental issues to be made in the selection of sites for regional waste management facilities and as such the undertaking of this Areas of Search project is more appropriate.
- 4.2.3 The overall aim of this project is to identify alternatives in terms of areas where regional waste management facilities could be located and therefore addresses the requirement to consider alternatives in the context of SEA.. The results provide a number of different options for the locations of waste management facilities across all Wales.

5 Baseline, Policy Review and Key Sustainability Issues

5.1 Baseline Information

5.1.1 This Sustainability Appraisal covers the whole of Wales, therefore, the data collected is broad and at a strategic level. The use of GIS is considered to be the most appropriate methodology at this level. GIS data has been collected from the Welsh Assembly, local authorities and other organisations. The data obtained has been collected in response to:

- The requirements of the Sustainability Appraisal. In order to address the proposed sustainability appraisal objectives set out in Chapter 5, specific data was sought that is consistent with the two considerations below.
 - Data availability, quality and reliability.
 - Consistency of data amongst areas.

5.1.2 A list of datasets included (including the source and date of the data) is provided in Appendix 3.

General Observations from GIS Datasets

5.1.3 In general, Wales is highly constrained in terms of environmental designations at European and national levels. Key observations include:

- Large areas of Special Areas of Conservation in the north and south west regions.
- Large area of Special Protection Area along the mouth of the Severn.
- Large areas of National Park, AONB and High and Outstanding valued landscapes.
- Large areas of flood zone are located along the mouth of the Severn and along the south coast.

5.1.4 The appraisal process has sought to avoid the most sensitive areas in accordance with the appraisal objectives.

5.1.5 The SEA Regulations require a description of the current and future baseline. In relation to the current baseline, a large geographical area is addressed in the Sustainability Appraisal and it is not feasible to describe the baseline in detail beyond the presentation of base mapping. This is considered to be appropriate at

this level and in relation to the purpose of this project. Regarding the future baseline without the project, this would be influenced by a number of environmental trends and/or human activities. Identifying such a future baseline can be difficult to describe as this relies on the availability of trend data. However, this report provides an indication as to the likely future baseline in relation to the environmental, social and economic issues most pertinent to this study, as identified from the Wales Spatial Plan, TAN 21, Wales Waste Strategy 2002, A living and working environment for Wales: The state of the Welsh environment 2003 (WAG), and the Environment Agency Wales website. It is emphasised that this study focuses on potential locations for future waste management facilities, and does not cover the exact nature of these facilities and their capacity to deal with future quantities of waste. Waste facilities would still come forward in the absence of the findings of this study, although it could be assumed that the locations would be less favourable in sustainability terms and would not have the support of a robust identification of alternatives

5.1.6 Environmental Trends:

- Many areas are at risk of flooding and continuing climate change increases this risk. CO₂ emissions are high compared to the capacity of the natural environment to absorb it, energy consumption is not declining and energy generation from non fossil fuels is low. In addition habitat and associated species and landscape areas are the subject of increasing pressures relating to the development of infrastructure and the expanding housing capacity required to meet the acknowledged growing need for these facilities.

5.1.7 Social Trends: There are concentrations of poor health, long term illness and unhealthy lifestyles in the South Wales Valleys

- Population decline in the upper parts of the South Wales Valleys and in Anglesey
- Population growth in most parts of Wales mainly due to in-migration

5.1.8 Economic Trends:

- Increasing need for sustainable waste management facilities.
- Total employment has grown steadily although the GVA per head remains low compared to UK and European averages i.e. the employment rate is low

-
- Large proportion of waste goes to Landfill and costs are increasing due to the Landfill Directive
 - Waste produced by households is increasing. Since 2001-2 there has been an increase of 50 thousand tones to 1.77 million tones in 2002-3. The proportion of waste sent to Landfill has decreased while the proportion of waste recycled and composted has increased
 - Waste produced by businesses has decreased – 5.3 million tones in 2002-3 compared to 6.1 million tones in 1998-9

5.2 Review of Other Plans and Programmes

5.2.1 The following documents were reviewed to inform the identification of appropriate sustainability appraisal objectives:

- Welsh Assembly Government, November 2001, Planning Policy Wales: Technical Advice Note (Wales) 21 – Waste.
- Welsh Assembly Government, March 2004, Sustainability Appraisal of “People, Places, Futures: the Wales Spatial Plan” Final Report
- SLR, May 2003, Developing a Regional Waste Plan for the South West Wales Region- Sustainability Appraisal (Consultation Draft)
- SLR, October 2003, Developing a Regional Waste Plan for the North Wales Region- Sustainability Assessment Report (Consultation Draft).
- Regional Waste Plan First Review, Content and Approach Report.
- Applied Environmental Research Centre Ltd, May 2003, South East Wales Regional Waste Plan – Analysis of Best Practicable Environmental Option.
- Environment Agency Wales, Briefing Note: Sustainability Assessment Weighting Indicators (unpublished)

5.2.2 The following was reviewed as an example of a strategic environmental assessment on waste management for England:

- ODPM, August 2005 Planning Policy Statement 10: Planning for Sustainable Waste Management, Strategic Environmental Assessment (SEA).

5.2.3 The following were also reviewed for information about the effects of waste management facilities:

- ODPM, July 2005, Planning Policy Statement 10: Planning for Sustainable Waste Management
- ODPM, June 2006, Planning for Sustainable Waste Management: Companion Guide to Planning Policy Guidance Note 10
- Defra, 2004, Review of Environmental Health Effects of Waste Management: Municipal Solid Waste & Similar Waste.
- Defra, 2004, Consultation on Sustainable Waste Management: Consultation Paper 1. Environmental Report on Changes to the Waste Strategy 2000 for the Strategic Environmental Assessment.

5.2.4 Other relevant documents are:

- WAG, Wise About Waste: The National Waste Strategy for Wales
- WAG, Consultation on the Environment Strategy for Wales

5.2.5 Of particular relevance are the sustainability appraisal objectives used for the three regional waste plans in 2003 and the Wales Spatial Plan in 2004 and these are set out in Appendix 4.

5.3 Key Sustainability Issues

Issues

5.3.1 The collection of baseline data and the review of other relevant plans and programmes informed the identification of the key relevant sustainability issues, shown below in Table 4.1.

Table 4.1: Key Sustainability Issues

Key Sustainability Issue	Source(s)
Environmental Issues	
Protect areas of designated landscape (including views) and nature conservation value from inappropriate development.	TAN 21 SLR, May 2003 SLR, October 2003 Applied Environmental Research Centre Ltd, May 2003

Minimise adverse environmental effects from the transportation, handling, processing and disposal of waste. Vehicle emissions lead to adverse effects on air quality and generates dust, noise and odour. General handling of waste can lead to releases of pollutants such as cadmium, mercury, leachates, NO ₂ , CO ₂ , dioxins, bio-aerosols.	TAN 21 and Defra, 2004
Principles of proximity and self sufficiency are set out in TAN 21. The proximity principle requires that waste be treated/disposed of as near to the origin as far as practicably possible to minimise the environmental effect of transport. The self sufficiency principle requires waste to be treated/disposed of within the area that produces it.	TAN 21
Locations for waste facilities need to be considered in terms of the Best Practicable Environmental Option.	TAN 21
Inappropriate handling and management of hazardous and inert waste can cause damage to soil.	Defra, 2004
Waste can release greenhouse gas emissions through a number of different pathways, including; <ul style="list-style-type: none"> • Waste collection vehicles • Energy used to power waste facilities • Combustion of waste • Flaring of landfill gases, and • Decomposition of waste in landfill 	Applied Environmental Research Centre Ltd, 2003
Avoid locations where new or extended waste facilities may be incompatible with existing land uses.	TAN 21
Considerations for the locations of landfills include: <ul style="list-style-type: none"> • distance from residential and recreational areas, waterways, waterbodies and other agricultural and urban sites. • existence in the area of groundwater, coastal water and nature protection areas. • geological and hydrogeological conditions, flooding, subsistence, landslides or avalanches. • protection of nature and cultural patrimony. 	TAN 21
New sites for waste facilities might be located in areas such as: <ul style="list-style-type: none"> • industrial areas. • quarries • degraded, contaminated or derelict land. • existing or redundant sites or buildings that could be adapted for recycling or composting. • sites previously or currently used for waste management facilities. 	TAN 21

Social Issues	
Avoid risks to human health.	Welsh Assembly Government, March 2004, SLR, May 2003 SLR, October 2003 Applied Environmental Research Centre Ltd, May 2003 Defra, 2004
Protect amenity of the community and other land uses and users affected by waste management facilities - waste management facilities may generate noise, dust, odour and litter/vermin causing nuisance and health effects.	TAN 21
Economic Issues	
Facilitate the provision of sustainable waste management	TAN 21
Affordability - the cost of waste management can depend on a variety of different factors, including the amount of waste being processed, the methods of waste disposal and the proximity of waste handling centres in relation to the origin of the waste. The BPEO approach refers to an acceptable cost. ADD Policy Clarification as well as BPEO	TAN 21
Practicability – including deliverability, technical feasibility and making the best use of existing facilities.	TAN 21
Health impacts arising from waste may represent a cost to the economy.	TAN 21 Defra, 2004
Support employment provision.	TAN 21 Welsh Assembly Government, March 2004

6 Sustainability Appraisal Framework

6.1 Overall Approach

6.1.1 The overall approach to the Sustainability Appraisal, as described in earlier chapters, is to apply the process of Sustainability Appraisal, incorporating the requirements of SEA Regulations, to the GIS mapping process. The first phase is to identify the Sustainability Appraisal Framework which will drive the whole appraisal process, including defining the criteria which will be used in the GIS analysis.

6.2 Key Components of the Sustainability Appraisal Framework

6.2.1 The proposed Sustainability Appraisal Framework has been agreed by the Steering Group and involves:

- Sustainability Appraisal Objectives
- Criteria for GIS Analysis to enable assessment against the Sustainability Appraisal Objectives
- Weightings for the criteria are allocated to two broad types of waste management facilities.
- Results to be presented on maps.

Sustainability Appraisal Objectives

6.2.2 These have been informed by the following:

- Appraisal objectives used in other relevant documents as identified in section 4;
- the availability and nature of GIS data as set out in section 4 and 6; and
- the key sustainability issues identified in section 4.

6.2.3 In particular, the objectives were drawn from the sustainability appraisals of the Wales Spatial Plan and the three regional waste plans (shown in Appendix 4).

6.2.4 The need to provide for sustainable waste management facilities (under TAN 21) is viewed as a driver for this project rather than being a sustainability appraisal objective.

6.2.5 The sustainability appraisal objectives are shown in Table 5.1 below. Priority has not been applied to the appraisal objectives or the associated criteria. It is important to

consider all of the objectives in a balanced way, not giving any importance to a specific one.

Notable Issue Raised During the Determination of Sustainability Appraisal Objectives

- 6.2.6 An objective relating to waste minimisation has not been included. This is because this issue cannot be linked to the *location* of potential waste management facilities, an approach which is set out in TAN 21.

Criteria for GIS Analysis

- 6.2.7 In order to measure the way in which areas perform against the sustainability appraisal objectives, criteria for GIS analysis have been identified. These are effectively questions that can be answered through a GIS analysis. They relate to areas with specific designations or features and/or distances from specific designations or features. The criteria are shown in Table 5.1 below.

Notable Issues Raised During the Determination of Criteria for GIS Analysis

- 6.2.8 Regarding an objective for the promotion of employment opportunities, it is anticipated that any potential waste management facilities would provide some employment albeit relatively low numbers of jobs. Therefore, an area up to 10km from residential areas would be favoured for this reason.
- 6.2.9 In order to address an objective relating to avoiding increasing health inequalities it is considered that reference to distances away from residential development would be adequate for this part of the study. It is not considered suitable at the Wales or Regional level to use additional geographic health information layers as hard criteria, or to develop weighted analysis, because the health issues are interconnected and act in complex ways that a numerical weighted analysis cannot adequately encompass. These health issues are best considered in detail at the site-specific level.
- 6.2.10 For the flood risk objective there was some debate within the Steering Group as to which of two data sets would be most appropriate. TAN15 data relates to current Welsh Assembly Government policy whereas Flood Map data, compiled by the Environment Agency is more up to date. It was agreed to proceed with TAN15 data only in accordance with the Environment Agency's advice to the Steering Group.

Weightings for Criteria and Presentation of Results

6.2.11 Weightings are applied to each of the criteria and for each of the following broad types of waste management facilities (refer to paragraph 1.8 re. details of these types):

- Open Air Facility
- In Building Facility

6.2.12 These weightings tell the GIS how to interpret the data. The definitions of the weightings are as follows:

- 1 = Areas of High Potential
- 2 = Areas of Some Potential
- 3 = Areas with Some Constraints
- 4 = Areas with Regional/National Constraints
- 5 = Exclusion – the development of a waste management facility in these areas is disqualified on grounds of sustainability, policy and/or impracticality.

6.2.13 For example, a site within a SSSI would be excluded from the areas of search, whereas a site within 1 to 2km from a SSSI would be considered to have some constraints. The whole geographical area of Wales would be subject to the complete set of criteria for GIS analysis. Therefore, the selection of areas of search for waste management facilities would be driven by the sustainability appraisal framework from an early stage. This is considered to be preferable to first identifying areas of search and then, later, undertaking a sustainability appraisal. It is anticipated that by adopting the proposed approach, the identification of areas of search will have a robust and transparent basis.

6.2.14 The GIS analysis addresses weightings 1 and 2 differently to 3, 4 and 5. This is because 1 and 2 represent potential and 3, 4 and 5 represent constraints. Regarding the constraints, the areas of the highest constraints overlay those with lesser constraints i.e. a 5 overlays a 3 and a 4, a 4 overlays a 3 and so on. 1s and 2s are shown as hatched on top of areas with no weighting or a 3 i.e. areas of potential are not shown on any areas with constraints weighted 4 and 5. The results are presented by the definitive areas of search maps which are included with this report form. Further detail on the results is provided in Chapter 6.

6.2.15 The weightings are shown in Table 5.1 below.

6.3 The Sustainability Appraisal Framework

6.3.1 Table 5.1 below sets out the Sustainability Appraisal Framework.

Table 5.1: Sustainability Appraisal Framework (See Appendix for criteria weightings)

Sustainability Appraisal Objectives	GIS Analysis Issues
Ensure prudent use of land and resources	Location of existing waste management facility (non-landfill)
	Location of active landfill site
	Location of industrial site (classified as B2)
	Degraded, contaminated or derelict land
	Quarry site
	Agricultural Land Classification Grade 1-2
	Agricultural Land Classification Grade 3 Agricultural Land Classification Grade 4-5 Green Wedges
Minimise greenhouse gas emissions	Up to 5km from port
	0-10km of an urban area (i.e. >10,000 pop)
	10-50km of urban area >50km of urban area
Minimise adverse effects on air quality	Air Quality Management Area 0-250m from residential area
Protect and enhance the landscape, townscape and cultural heritage of Wales	World Heritage Sites
	Locations within an arc of view for a World Heritage Site
	National Parks
	Locations within 1km of a National Park
	Areas of Outstanding Natural Beauty
	Locations within 1km of an Area of Outstanding Natural Beauty
	Scheduled Ancient Monuments and within 100m (note: because exact polygon data unavailable)
	Locations within 100 - 500m of a Scheduled Ancient Monument (to accommodate setting)
	Heritage Coast
	Locations within 500m of Heritage Coast
	Locations within a landscape areas identified on LandMap as visually outstanding (Visual and Sensory)
	Locations within a landscape areas identified on LandMap as high quality (Visual and Sensory)
	Locations within a Special Landscape Area (or equivalent)
	Locations within a historic landscape - Outstanding
	Locations within a historic landscape - Special
Historic Park and Garden and within 100m	
Locations between 100m to 500m from Historic Park and Garden	
Minimise adverse effects on water quality	Groundwater Source Catchment Area Zones I
	Groundwater Source Catchment Area Zones II
	Groundwater Source Catchment Area III
	Zone of Special Interest
	Locations within 500m of Surface Water Protection Zone
	Locations on major aquifer
	Locations on minor aquifer
	Exclude lakes and rivers
	Locations within 250m to river with quality objectives RE 1 and 2
	Locations within 250 – 500m to river with quality objectives RE 1 and 2
	Locations within 100m to river with quality objectives RE 3 and 4
Locations within 100-250m to river with quality objectives RE 3 and 4	
Avoid increasing flood risk	TAN 15 Layer C2
	TAN 15 Layer C1
Protect biodiversity	Special Area of Conservation (SAC)

Sustainability Appraisal Objectives	GIS Analysis Issues
	Locations within 100m of a SAC Locations within 100m – 1km of a SAC Locations within 1 – 2km of SAC Locations within 2 – 10km of SAC Special Protection Area (SPA) Locations within 100m of SPA Locations within 100m and 1km of SPA Locations within 1 – 2km of SPA Locations within 2 – 10km of SPA Ramsar site Locations within 100m of Ramsar site Locations within 100m – 1km Ramsar site Locations within 1 – 2km of a Ramsar site Locations within 2 – 10km of a Ramsar site Site of Special Scientific Interest (SSSI) Locations within 100m of a SSSI Locations within 100m - 500m of a SSSI Locations within 500m – 1km of a SSSI Locations within 1km – 2km of a SSSI National Nature Reserve (NNR) Locations within 100m of a NNR Locations within 100m – 1km of a NNR Locations within 1 - 2km of a NNR Locations on Local Nature Reserve Ancient woodland Locations within 500m of ancient woodland
Provide employment opportunities and support long term jobs and skills	Locations up to 10km from residential areas
Minimise adverse effects on property prices	Residential Development 0-250m to residential development 251-500m to residential development
Minimise the increased cost of waste management	0-10km of an urban area (i.e. >10,000 pop) 10-50km of urban area >50km of urban area <1km of Primary Road Network (i.e. A road) >2km of Primary Road Network (i.e. A road) Slope >1:3 Slope 1:3 – 1:4
Protect local amenity	Common Land/Open Country Country Parks Public Forests
Minimise adverse effects on public health and avoid increasing health inequalities	Residential Development 0-250m to residential development 251-500m to residential development

6.4 Limitations and Assumptions

- 6.4.1 Only, broad, strategic level data has been included as this is considered to be a first sieve mapping exercise. It would be impractical to include data at a local level at this stage. It is anticipated that the areas of search identified by this project would be subject to more detailed assessments through the local planning process.
- 6.4.2 This project relates only to locational issues and matters that are specific to the nature of the various types waste management facilities are outside the scope of this project. However, in the analysis of locations, differentiation is made between two broad types of waste management facilities i.e. open air and in building facilities.
- 6.4.3 Data has not been included for minerals resources. However, it is assumed that prior extraction of any resource will be considered prior to any waste development project being brought forward at the local level.
- 6.4.4 As only GIS data is used there are limitations in terms of availability, quality and reliability of data. Where possible data has been used that is consistent across all areas within the study. It is assumed that where data has been provided, the quality and suitability of the data has been assessed by the data owner/provider and is considered to be “fit for purpose”, RPS cannot take responsibility for data errors/inconsistency in the original data sets. However, due to a lack of consistent Wales wide data sets for certain topic areas, local plan data has been substituted where it is found to be robust and fit for purpose. An example of this can be seen in the case of valued landscapes. In order to assess valued landscapes LandMap data has been used, however, where this is not available relevant local development plan policy is used. This means using Special Landscape Area (SLA) policy to assess the landscape character of an area where there is no coverage for LandMap.

6.5 Compliance with the Habitats Directive

- 6.5.1 Directive 92/43/EEC (the Habitats Directive) on the Conservation of Natural Habitats and of Wild Fauna and Flora requires an Appropriate Assessment (AA) to be undertaken to assess the impacts of a land-use plan against the conservation objectives of a European Site and to ascertain whether it would adversely affect the integrity of that site. Where significant negative effects are identified, alternative options should be examined to avoid any potential damaging effects.
- 6.5.2 Of particular relevance to all land-use Development Plans is the need to ensure that Article 6(3) and Article 6(4) are complied with. Article 6(3) states that ‘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'.

6.5.3 Article 6(4) states that "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 a 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".

6.5.4 The Habitats Directive is designed to promote a hierarchy of avoidance, mitigation and compensation as a result of the potential impacts of a proposed plan or strategy. Any plan should firstly avoid any negative impacts upon European sites by identifying possible impacts early in plan making and that any resultant policies and proposals which emerge from this process avoid such impacts. Mitigation then follows this so as any identified impacts can be controlled so that no adverse effects remain as a result of a particular proposal. If it is found that, despite applying suitably robust mitigation measures there could be impacts upon a site, then an assessment must be undertaken with the aim of identifying an alternative solution. If no alternative solution can be found, the Habitats Directive requires that compensatory measures are required for any remaining adverse effects, but they are only permitted if there are no alternative solutions and the proposals within a plan are required for imperative reasons of overriding public interest.

6.5.5 SEA involves the systematic identification and evaluation of the impacts of a strategic plan on the environment. SA broadens this scope by including economic and social impacts therefore encompassing the three dimensions of sustainable development. There are clear parallels between the requirements of the Appropriate Assessment and SA as they are all processes for assessing and minimising the environmental and sustainability impacts of plans.

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- 6.5.6 European sites are critically important biodiversity assets in Wales and as such their protection is a key component of sustainable development. Consequently, there are no inherent conflicts between the overarching aims of AA and SA.
- 6.5.7 As stated earlier the purpose of this study was to identify suitable areas of search for 'in-building' and 'open-air' facilities waste management facilities for all Wales. In deriving the areas of search an approach has been adopted which is compliant with the requirements of a Sustainability Appraisal. As set out earlier in this report, the purpose of the Sustainability Appraisal is to ensure that the process of identifying areas of search for waste management facilities is supported by the principles of sustainability.
- 6.5.8 As it is possible to see from the criteria which have been used to derive the areas of search, the distance from the boundary of any designated area of International importance has been a key consideration in establishing whether firstly an area is suitable for the development of a waste management facility or whether there are particular constraints which, according to planning policy, would effectively preclude an area from being considered for waste management development. This study is strategic in nature and as such there will be certain issues that when being reviewed at the local level may further requirements to take into consideration for water-bodies that feed into areas that are designated features due to their water-based features.
- 6.5.9 The criteria relating to the potential impact upon European sites have essentially adopted the first key stage of the requirements under the Habitats Directive in that they have been derived in order to prevent the likelihood of potential impacts of waste management development on European sites of ecological importance.
- 6.5.10 This project provides the relevant information, which a Local Planning Authority, in its role as a Competent Authority, can assess whether there is a need to undertake an Appropriate Assessment on the basis specific land use allocations and development proposals. The data CD which has been prepared to accompany this report enables Local Authorities to scrutinise the data that has been utilised as the basis for the areas of search for each which have been defined. For clarification this report does not consider the issue of cross-boundary (administrative boundary) impacts upon European sites.

7 GIS Analysis

7.1 Data Sources and Explanation

7.1.1 The sustainability objectives have been derived from a series of data sets that were regarded to be appropriate indicators of the appraisal objectives. These Data Sources have been used to define the areas of search study. This section identifies the data sets that have been used for each objective, listing any assumptions and identifying any limitations where appropriate. A full list of the datasets used in the areas of search project is given in appendix 3.

Ensure Prudent Use of Land and Resources

7.1.2 Prudent use of land and resources identifies areas that are suitable for waste management facilities based on the minimal impact that they will have on land use. The following analysis issues have been used to identify areas that fall under this sustainability appraisal objective. These include:

- Location of existing waste management facility (non-landfill)
- Location of active landfill site
- Location of industrial site (classified as B2)
- Quarry site
- Agricultural Land Classification
- Green Wedges

7.1.3 An explanation for the data used to define these analysis issues is given for each of the issues above.

Location of existing waste management facilities

7.1.4 Information relating to waste management facilities was included in the study to identify areas that are presently being used for the purposes of waste management. The two data sets appropriate to waste management facilities include information on:

- The locations of existing waste management facilities (non-landfill), and
- The locations of active landfill sites

Non- Landfill

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- 7.1.5 Areas that are currently being used for waste management facilities will provide suitable locations for further sites. The location of existing non-landfill facilities has been included within the search as being areas suitable for more non-landfill sites.

Data Source

- 7.1.6 The location of non-landfill sites were derived from the Environment Agency Wales Regis database.

Weighting Applied

- 7.1.7 Open-air waste facilities have not been weighted since it is not relevant whether a site is already an existing non-landfill, waste management facility. In addition such sites are located within industrial areas which would not have any potential for the location of landfill. There will often be areas of land within or adjoining an existing in-building facility that may be capable of development for further in building facilities. This is an appropriate use for such sites and is therefore weighted 1 as an area of high potential.

Landfill Data

- 7.1.8 EA Wales provided landfill data categorised as; a) licensed/permitted landfill sites that are actively receiving or intending to receive waste, and b) licensed/permitted landfills which have ceased receiving waste but have not yet reached definitive closure in accordance with the Landfill (England and Wales) Regulations 2002. Existing active landfill sites provide suitable areas for waste management facilities. Please see Appendix 7 for full data explanatory note from EA Wales.

Data Source

- 7.1.9 The location of active and closed landfill sites has been provided by Environment Agency Wales,

Weighting Applied

- 7.1.10 Open-air waste facilities: For landfills that are actively receiving/intending to receive waste; there are opportunities to extend existing landfills either vertically or horizontally and there is often land within the landfill boundaries that is suitable for composting with the product subsequently being used for restoration. This is an appropriate use for such sites and is therefore weighted 1 as an area of high potential, although each application will be dealt with on its own merits, as not all may be suitable for extension. Landfills that have ceased receiving waste but not reached definitive closure; may not weighted as 3 for open-air facilities.

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- 7.1.11 Waste Facilities in Buildings: Landfills actively receiving/intending to receive waste; There are often areas of land that can be developed for other waste management facilities, possibly for a temporary period related to the life of the host landfill. This offers an opportunity to pre-treat waste prior to the on-site landfill of any residual waste in line with national government policy. This is an appropriate use for such sites and is therefore weighted 1 as an area of high potential. Landfills that have ceased receiving waste but not reached definitive closure; weighted as 2 for in-building facilities.

Location of industrial site (classified as B2 and Major Industry)

- 7.1.12 Industrial areas, including those containing other heavy or specialised industrial uses and existing or redundant sites or buildings that could be used to house materials recycling facilities may provide suitable locations for waste management facilities.

Data Source

- 7.1.13 The study identifies industrial areas that have been derived from information held within local plans of each local authority relating to employment/industrial areas. One limitation of this data is, that not all local authorities were able to provide data that differentiate between various types of industrial/employment uses, with some allocations being suitable to locate waste facilities and others not. This limitation highlights the need for each site to be judged on merit against planning considerations. For large industrial land use, for example, the steel works at Port Talbot, the EA IPPC database was interrogated to provide a list of large industrial sites. The selected IPPC point data were then digitised @ 1:10,000 to provide estimated boundaries.

Weighting Applied

- 7.1.14 Open-air waste facilities: Whilst some of the larger industrial areas within Wales may have the potential to accommodate a landfill within the boundaries of the industrial site, a weighting of 4 has been applied to acknowledge that some sites would be constrained in view of the possible impact on adjoining land-uses.
- 7.1.15 Waste Facilities in Buildings: this is an appropriate use for such sites and is therefore weighted 1 to ensure that these sites will be included.

Agricultural Land Classification

- 7.1.16 The objective also identifies the quality of the land, in addition to existing land uses. Planning Policy Wales gives guidance on conserving the best and most versatile agricultural land. Grades 1, 2 and 3a are the best and most versatile and should be

conserved as a finite resource for the future. Land in these grades should only be developed if there is an overriding need for the development and either previously developed land or land in a lower agricultural grade is unavailable. Land maps, based on the quality of soils were included in the study to identify these areas of opportunity and constraint.

Data Source

- 7.1.17 Agricultural land classification (ALC) maps were used to define this layer. The maps, provided by the Environment Agency, plot the grade of land, ranging between 1- 5 for each of the three regions within Wales.

Weighting Applied

- 7.1.18 Open-air waste facilities: In principle following the end of the operation of a landfill, land may be restored to agricultural quality although it is more difficult to restore it to the best and most versatile grades. Temporary uses such as these are therefore not incompatible with the use of agricultural land. Weightings of 4 for grades 1 and 2, and 3 for grade 3 have been applied to reflect this incompatibility. A weighting of 2 for the poorest grades (4 and 5) reflect the potential use of this land. Data is not available at the regional scale to identify the sub division of land within grade 3.
- 7.1.19 Waste Facilities in Buildings: In practice, built development is likely to be excluded or restricted in what will be the open countryside for other reasons but, as explained in the introduction, the weightings here are on the basis of these specific criteria. Weightings of 4 for grades 1 and 2 and 3 for grade 3 reflect the incompatibility with such developments. A weighting of 2 for the poorest grades (4 and 5) reflect the potential use of this land.

Green Wedges

- 7.1.20 Green wedges refer to areas of open space within urban areas. Planning Policy Wales contains guidance on managing urban form by means of Green Belts and green wedges. The opportunities stated for both designations are focused on access to open land, recreation, retention for agriculture and forestry and the maintenance of landscape and wildlife interest. Such areas provide some local constraints for siting waste management facilities.

Data Source

- 7.1.21 Information on Green wedges was derived from information held within the land use development plans of various local authorities throughout Wales.

Weighting Applied:

7.1.22 Open-air waste facilities: this land-use does not affect the openness of an area permanently and can also contribute to the improvement of derelict land. However, as these areas are conserved in planning policy for areas of amenity and similar uses, areas may be inappropriate for waste management. For these reasons a weighting of 3 has been applied.

7.1.23 Waste Facilities in Buildings: since a permanent structure would be contrary to the principles of the designation it would not be appropriate to locate such facilities in the green wedge. However, there may be scope to utilise existing buildings, which would have no further impact on the designation, and a weighting of 3 reflects this limited potential.

Minimise greenhouse gas emissions

7.1.24 The sustainability objectives aim to minimise the impacts on climate change. The principle impact that the location of a waste facility can have in relation to climate change is the distances that have to be travelled in transporting waste, which results in differing degrees of fossil fuel use and CO_2 production. The approach applied here is to identify sites, which have the potential to reduce the amount of transport associated with waste materials. RPS requested rail network data, to enable proximity to rail head to be considered as part of this study. Unfortunately the data was unavailable and as such has not been included, therefore consideration of the transportation of waste by rail would be a matter to be addressed at the local decision-making process.

7.1.25 Two GIS analysis issues have been identified, they include:

- Distance from port
- Distance from urban areas.

Distance from port

7.1.26 As far as possible, waste management facilities should be located so that the opportunities to maximise non-road transport are explored. In this respect, areas in close proximity to ports are favoured where existing wharves can be used.

Data Source

7.1.27 This information was digitised from 1:10,000 OS mapping. The GIS analysis places a 5 km buffer around each of these locations.

Weighting Applied:

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- 7.1.28 A weighting of 2 has been allocated for both open air and in building facilities. Both facilities may benefit from the proximity of a nearby port, however due to the costs the of establishing a link between facilities and existing ports, such areas offer some potential rather than high potential.

Distance from an urban area

- 7.1.29 The distance from an urban area with high populations (>10,000 people) where a large proportion of the regions waste is produced can influence the amount of transport required to move waste from its source to the management facility. This category is split into three criteria to reflect the preference for siting facilities within appropriate distance of urban areas. These categories include areas within 0-10 km, 10-50 km and area in excess of 50 km from urban population.

Data Source

- 7.1.30 The data was derived from Office of National Statistics (ONS) Urban Classification, population and boundary data sets.

Weighting Applied:

- 7.1.31 The weightings applied are the same for both in-building and open air facilities. Areas within 10 km of urban developments and also with 1km of 'A' road network are most favoured and have been allocated a weighting of 1. Areas within 10km of urban area but over 1km from are less favoured due to increased inaccessibility and therefore are weighted as 2 as still hold potential. Areas between 10 and 50 km are also regarded as having potential, but less so due to the increased distance. These areas have been designated with a weighting of 2. Finally, areas outside of 50 Km are regarded as constraints, and have been allocated a weighting of 3 accordingly.

Minimise adverse effects on air quality

- 7.1.32 The areas of search limits the negative impacts on air quality by including two GIS analysis issues that highlight areas that are sensitive to negative changes in air quality. The first analysis issue identifies all areas that are in an air quality management area. The second issue identifies the location of residential areas. Both issues act as constraints to siting waste management facilities.

Air Quality Management Area

- 7.1.33 Air Quality Management Areas (AQMA) are locally designated areas, designed to protect and enhance air quality within the given area. This data has been derived from information held within Development Plans. There are currently no AQMA within the North Region.

Weighting Applied

7.1.34 Open-air waste facilities: The weighting attached to such consideration will depend on the scope of the pollution control system in each case and the effect on land use and amenity. A weighting of 4 has been applied to recognise the importance of these areas in regard to policy and it is unlikely to be acceptable without rigorous environmental controls being in place.

7.1.35 Waste Facilities in Buildings: Waste management facilities in buildings offer significant opportunities to control the processes and the emissions to the atmosphere. However, where an Air Quality Management Area has been declared a risk assessment will be required in order to judge the extent to which the local circumstances are affected. A weighting of 4 is therefore appropriate.

0-250m from residential area

7.1.36 TAN 21 includes within section 6.5 general guidance on, among others, the location of landfills in relation to the distance from residential development. No specific distance is given but the guidance is drafted in respect of environmental risk assessment. In section 6.2 reference is made to the need to consult the Environment Agency in respect of any development proposed within 250m of a closed landfill.

Data Source

7.1.37 Data was derived from settlement boundaries as part of OS Meridian2 1:50,000 vector mapping.

Weighting Applied

7.1.38 Locations within 250 metres from residential areas have been weighted 4 for open-air facilities. In building facilities have been allocated a weighting of 3 as effective planning and environmental controls should not cause adverse impacts on local air quality.

Protect and enhance the landscape, townscape and cultural heritage of Wales

7.1.39 The areas of search study includes consideration of numerous constraints regarding landscape, townscape and cultural heritage assets, including data sets for the following:

- National Parks
- Areas of Outstanding Natural Beauty

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- World Heritage Sites
 - Scheduled Ancient Monuments
 - Heritage Coasts
 - Locations within landscape areas identified on LandMap as being of High Quality or Visually Outstanding, or
 - Locations within a Special Landscape Area
 - Locations within a historic landscape (Special or Outstanding)
 - Historic Parks and Gardens

World Heritage Sites

7.1.40 Section 6.5.22 of Planning Policy Wales and Welsh Circular 61/96 'Planning and the Historic Environment: Historic Buildings and Conservation Areas' deals with World Heritage Sites. PPW explains that the impact of development proposals on both the sites and their setting should be carefully considered and that these are material issues when considering planning applications. Some World Heritage Sites will also be included as Scheduled Ancient Monuments and the associated weighting.

Data Source

7.1.41 Data relating to World Heritage Sites was derived from information held by WAG.

Weighting Applied

7.1.42 Open-air waste facilities: A weighting of 5 is applied to recognise that World Heritage Sites offer significant constraints and will subsequently not be suitable for open air facilities.

7.1.43 Waste Facilities in Buildings: in principle the same assessment applies to these facilities as applies to landfill and windrow composting.

Locations within an arc of view for a World Heritage Site

7.1.44 Areas within view of a World Heritage Site have been considered due to the potential effects on the sites setting.

Data Source

7.1.45 This information relates to designation data provided by WAG.

Weighting Applied

- 7.1.46 A weighting of 4 has been applied for both in building and open air facilities to reflect the important setting in which world heritage sites are situated. These settings offer major constraints to siting waste management facilities.

National Parks

- 7.1.47 National parks offer areas of visually important landscapes. The statutory purpose of National Parks is to conserve and enhance their natural beauty, wildlife and cultural heritage and to promote opportunities for public understanding and enjoyment of their special qualities. Planning Policy Wales addresses the conservation of the landscape, and places these areas as high priority for conservation

Data Source

- 7.1.48 Data relating to national parks was derived from information held by the Welsh Assembly Government

Weighting Applied

- 7.1.49 Both in-building and open-air facilities have allocated with a weighting of 5 to reflect their significance for conservation.

Locations within 1km of a National Park

- 7.1.50 Similarly to the arc of view of World Heritage Sites, locations that surround national parks are sensitive areas where development may impact upon the setting of the park. Areas within 1km of the boundary of a national park are given consideration so not to site a waste management facility adjacent to these areas.

Data Source

- 7.1.51 Information has been derived from data held by the Welsh Assembly Government.

Weighting Applied

- 7.1.52 A weighting of 3 has been applied for both in-building and open-air facilities, which reflects that areas may be suitable for development depending on careful planning and appropriate locations.

Areas of Outstanding Natural Beauty

- 7.1.53 The primary purpose of designating Areas of Outstanding Beauty (AONB) is the conservation and enhancement of their natural beauty.

Data Source

- 7.1.54 Information relating to AONB's has been derived from the Countryside Council for Wales.

Weighting Applied

- 7.1.55 Both open air facilities and in building facilities have been allocated with a weighting of 5 to conform to national planning policy, which protects these areas.

Locations within 1km of an Area of Outstanding Natural Beauty

- 7.1.56 Areas within proximity to areas of AONB's may be sensitive to the landscape impacts arising from waste management facilities also. Although these areas are not within the footprint of the AONB, such areas may be readily seen from the designated sites and detract from the landscape value.

Data Source

- 7.1.57 Information relating to 1 km zones around AONB's was derived from the Countryside Council for Wales.

Weighting Applied

- 7.1.58 A weighting of 3 has been applied for both in-building and open-air facilities which reflects that areas may be suitable for development depending on careful planning and the choice of appropriate locations.

Scheduled Ancient Monuments

- 7.1.59 Planning Policy Wales deals with conserving the historic environment in Chapter 6. Section 6.5.1 to 6.5.6 deals with ancient monument either scheduled or unscheduled. It explains that these are material considerations in determining a planning application and the Assembly must be consulted on any developments that are likely to affect the site of a scheduled ancient monument.

Data Source

- 7.1.60 This information relating to the geographic location of scheduled monuments has been derived from WAG data at the scale of 1:50,000.. The original data from WAG was supplied as point data, this has been buffered by 100m to generate a polygon area that attempts to cover the site extents, although, an exact boundary is unavailable and therefore complete coverage cannot be guaranteed.

Weighting Applied

7.1.61 Open-air waste facilities: Within 100m of a scheduled ancient monument are excluded as being incompatible use of land within the policy guidance. Within 100 – 500 metres from a scheduled ancient monument, a weighting of 4 has been applied to open air facilities.

7.1.62 Waste Facility in Buildings: in principle the same assessment applies to these facilities as applies to landfill and windrow composting.

Heritage Coast

7.1.63 Planning Policy Wales deals with planning policy and the coast at section 5.7. In essence, the policy recognises that there will be development pressures in coastal locations but that the general policy stance is that only those developments that require a coastal location should be permitted. Heritage Coast is a designation that does not directly affect the status of an area in planning terms. However, the features that contribute to the designation of such areas may be important in the formulation of planning policies or development control decisions.

Data Source

7.1.64 Data relating to the location of heritage coasts has been derived from data held by CCW

Weighting Applied

7.1.65 A weighting of 4 has been allocated for open air facilities as planning policy restricts the siting of development which is not directly appropriate to coastal locations. Similar issues apply with respect to in-building facilities in coastal locations and therefore a weighting of 4 is also applied.

LandMap areas identified as being as visually outstanding or of high quality (Visual and Sensory)

7.1.66 The LandMap system is a database that collects information relating to landscape throughout Wales. The LandMap system combines numerous datasets relating to the landscape and landuse. The Visual and Sensory information was used to define this layer. This aspect identifies those landscape qualities that are perceived through the senses. It deals with the individual physical attributes of landform and land cover, as well as their visual patterns of distribution and sensory characteristics, and the relationships between them in a particular area.

Data Source

7.1.67 Landmap – Visual and Sensory aspects, categories for high quality or outstanding.

Weighting Applied

- 7.1.68 Land characterised as being of high quality or visually outstanding under the LandMap system has been allocated a weighting of 3 for both open air and in building facilities, to reflect the importance of these areas.

Locations within a Special Landscape Area (or equivalent)

- 7.1.69 Planning Policy Wales addresses the conservation of the landscape in chapter 5. Paragraph 5.3.11 deals with non-statutory designations such as Special Landscape Areas. The policy recognises the value of these areas, particularly where their designation has been informed by community involvement and reflects community values. However, it notes that such designations should only be applied where there is good reason to believe that normal planning policies cannot provide the necessary protection and advises that they should not unduly restrict acceptable development. The principle data source for landscape value for the purposes of this study is Landmap (see above). Where the LandMap does not cover a specific area, data on Special Landscape Areas has been applied.

Data Source

- 7.1.70 Local Plan data held by Local Authorities.

Weighting Applied

- 7.1.71 Open-air waste facilities: given that these uses are essentially open in nature, it will, in most circumstances, be possible to develop a proposal that does not adversely affect the purpose of the designation. In these circumstances a weighting of 3 is appropriate indicating some constraints.
- 7.1.72 Waste Facilities in Buildings: Built development is, by definition, potentially more intrusive in the landscape although careful design and landscaping can allow the development to proceed without an adverse impact, a weighting of 3 is appropriate.

Locations within a historic landscape – Special or Outstanding

- 7.1.73 Locations within a historic landscape characterised as being special or outstanding have also been considered for GIS analysis. These areas act as constraints for siting waste management facilities.

Data Source

- 7.1.74 The data was derived from information held by the Welsh Assembly Government

Weighting Applied

7.1.75 Locating a waste facility within Historical Landscapes classified as being either outstanding or special, landfill and open windrow composting is unlikely to be acceptable without rigorous environmental controls being put in place and therefore a weighting of 4 and 3 has been given respectively for both open-air and in-building facilities.

Historic Park and Gardens

Data Source

7.1.76 WAG information on Historic Parks and Gardens was used in addition to Information relating to significant views onto Historic Parks and Gardens and Site boundary

Weighting Applied

7.1.77 For both in-building and open air facilities', Historic parks and gardens and within 100 m have been allocated a weighting of 5 to reflect planning policy. Within the distance of 100 metre - 250 metres, development of open air facilities is restricted through the weighting of 5. In building facilities are allocated a weighting of 4.

Minimise adverse effects on water quality

7.1.78 Various data sets have been included within the search which highlight key areas of water quality. These areas are weighted appropriately to avoid siting waste facilities within sensitive areas. The data used for this analysis includes data relating to water quality, this includes:

- Groundwater Source Protection Zones
- Locations within 500 metres of Surface water protection zones
- Locations of Aquifers
- Positions of lakes and rivers
- Locations to river with quality objectives
- Zones of Special Interest

Groundwater Source Protection Zones 1-3

7.1.79 Groundwater provides a major source of drinking water in the UK. The zone systems have been defined on the basis of the risk from contamination to the groundwater. For example a ground water zone classified as 1 is more at risk from

contamination than a zone classified as three. This relates to the time it takes and the distance needed to travel for contamination to affect these zones.

Data Source

- 7.1.80 Information relating to this has been derived from the Environment Agency Source Protection Zone GIS data.

Weighting Applied

- 7.1.81 For Open-air waste facilities, all three zones are set as exclusion areas with a weighting of 5. For in-building facilities, Zone I is an exclusion area, Zone II a score of 4 and Zone III a score of 3, where a precautionary approach has been taken based on the pollution potential of the activity at the strategic level.

Locations within 500m of Surface Water Protection Zone

Data Source

- 7.1.82 Data for this layer was derived from the Environment Agency Policy for development in the River Dee catchment.

Weighting Applied:

- 7.1.83 A weighting of 4 has been allocated both in building and open-air waste management facilities within 500 metres of a surface water protection zones, defining these areas as national/regional constraints.

Locations of aquifers

- 7.1.84 The underground storage of water in aquifers provides a major source of fresh water to the UK. Aquifers are vulnerable to pollution from contaminants, and unlike rivers, contaminants may be stored in these reserves for many years if they become polluted. Once polluted these waters are very difficult to decontaminate, and methods will be extremely costly. It is therefore necessary to protect these areas as much as possible from contamination from pollutants.

Data Source

- 7.1.85 Information relating to groundwater vulnerability was provided by Environment Agency. Both groundwater vulnerability and vulnerability drift data sets were used at a scale of 1:100,000.

Weighting Applied

7.1.86 Open-air waste facilities, Major Aquifer will be an exclusion zone, with a weighting of 5. For Minor Aquifers where there is natural geological protection and attenuation potential a score of 3 has been applied.

7.1.87 For waste facilities within buildings a score of 3 is given for major aquifers, however no weighting has been assigned to minor aquifers, due to the reduced risk of contamination.

Lakes and rivers

7.1.88 Lakes and Rivers are excluded from the search as it is not physically possible to site waste management facilities in these areas. These areas subsequently need to be taken out of the analysis.

Data Source

7.1.89 Information provided by the Welsh Assembly Government derived from OS Meridian 2 data at 1:50,000 scale.

Weighting Applied

7.1.90 A weighting of 5 has been applied to both Rivers and Lakes, to exclude these features.

Locations to river with quality objectives

7.1.91 The Environment Agency classify rivers with quality objectives based on their ecosystem potential. Rivers are graded in accordance with the potential to sustain fish populations of different classes. Rivers with high RE values, for example RE 1 have a high potential for all types of fish. These are subsequently most likely to suffer negative impacts from pollution.

Data Source

7.1.92 Information provided by the Environment Agency on rivers with water quality objectives relates to the RE values, river ecology classification objectives. These values suggest how suitable the rivers are for fish populations

Weighting Applied

7.1.93 The weighting has been applied to these objectives based on the sensitivity of the objective as well as the distance from the riverbank. For RE 1 & 2, up to 250m a score of 4, has been given to open air facilities, whilst a score of 3 has been allocated to in building facilities. From 250 – 500m a score of 3 is applied for both in building and open air facilities.. The weighting for rivers with quality objectives RE 3

& 4, the distance from the riverbank has decreased to reflect the lower potential for ecosystem damage. Between 0 – 100m, a weighting of 4 has been assigned to open air facilities, and a weighting of 3 for in building facilities. Between 100 – 250m a score of 3 has been assigned to both.

Avoid increasing flood risk

- 7.1.94 Technical Advice Note 15 (TAN15) issues guidance to planning authorities for decisions on planning applications in flood risk areas. TAN15 layer C1 and C2 have been used for the mapping exercise. These layers represent developed areas that are at risk from flooding, where layer C2 shows areas of floodplain without significant flood defence infrastructure, and layer C1 shows areas that are not defended by flood alleviation works.

Data Source

- 7.1.95 The layers used included Tan 15 C1 and C2, derived from information held by WAG.

Weighting Applied

- 7.1.96 For TAN 15 layer C2, indicating floodplain without significant flood defence infrastructure,, a score of 4 has been applied. For layer C1, a weighting of 3 has been applied. The scores reflect that although risk from flooding is present, engineering solutions can provide mitigation and compensation measures for proposed schemes.

Protect biodiversity

- 7.1.97 The sustainability objective ‘to protect biodiversity’ encompasses a wide range of GIS data sets. This data provides information on the geographic location of sites of local, national and international importance. The data sets used to identify areas of biodiversity include statutory and non- statutory designated sites.

- 7.1.98 Statutory designated sites are split into sites of International importance – these include RAMSAR Sites, Special Protection Areas, and Special Areas of Conservation; and Sites of National Importance that consists of National Nature Reserves and Sites of Special Scientific Interest.

- 7.1.99 Non-statutory sites are sites considered to be of Regional/Local importance and consist of Local Nature Reserves and sites which listed due to their Nature Conservation importance.

Sites of International Importance - Ramsar Sites

7.1.100 Ramsar sites are internationally designated sites conserved for their importance as wetlands. These areas have been designated under the Ramsar convention largely for their potential as feeding and breeding grounds for wading birds.

Sites of International Importance - Special Protection Areas (SPA's)

7.1.101 Special Protection Areas (SPAs) are internationally designated sites that are strictly protected in accordance with Article 4 of the Birds Directive. These areas are classified on the basis of them supporting populations of rare or vulnerable birds.

Sites of International Importance - Special Areas of Conservation SAC's)

7.1.102 Special Areas of Conservation (SACs) are strictly protected sites that have been designated under the EC Habitats Directive. These sites are designated due to them holding a significant population of an important ecological asset. These assets include species relating to flora or fauna as well as habitats.

Data Source

7.1.103 Information relating to Ramsar designations, SAC's and SPA's was derived from information held by the Countryside Council for Wales. The Habitats Regulations assessments under IPPC are expected to consider impacts on European Sites at a distance of 5kms. The search subsequently considers the impacts upon these sites at different distances from the footprint of the designation. Additional buffers have been placed on the boundary of internationally designated sites to include areas within 100 metres, between 100m-1km, 1-2km and at a distance of 2-10 km.

Weighting Applied

7.1.104 A weighting of 5 has been allocated for both in-building and open-air facilities, which excludes the footprint of the sites from the search. Within 100 metres of these sites, both types of facility have been designated with a 4. Once past this distance, up to a distance of 1 km, a weighting of 4 is allocated to open air facilities, however in building facilities have been allocated 3. This reflects that in building facilities present fewer risks to the site within this distance. Between 2 km and 10 km, both types of facility have been allocated a weighting of 3. Once past 2 km, up to a distance of 10 km, open air facilities have been allocated a weighting of 3, however in building facilities will no longer provide significant constrains and will not receive a weighting. This will ensure that areas between 2 and 10 km may be included in the search for in building facilities.

Sites of National Importance

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- 7.1.105 Sites of national importance include National Nature Reserves and Sites of Special Conservation interest.

National Nature Reserves (NNR's)

- 7.1.106 National Nature Reserves are nationally important sites that have been designated for their particularly valuable habitats.

Sites of Special Scientific Interest (SSSI's)

- 7.1.107 SSSI's are designated for their general wildlife value.

Data Source

- 7.1.108 Information relating to NNR's and SSSI designations was derived from information held by the Countryside Council for Wales.

Weighting Applied

- 7.1.109 Both open air and in building facilities have been weighted with a 5 for areas within the footprint of an NNR and SSSI. This excludes these areas from development. Between the boundaries of these sites, up to a distance of 100 metres, both facilities are weighted 4 to reflect that development should not be located within this proximity. Between 100 metres to 1km, a weighting of 4 remains for open-air facilities, however in – building facilities are given a weighting of 3 for NNR. For SSSIs, between 100 - 500m, a weighting of 4 remains for open-air facilities, with in – building facilities given a weighting of 3, between 500 – 1km a weighting of 3 is applied to both facility types. At a distance between 1 and 2 km, both facilities have been assigned a weighting of 3, which indicates that these areas offer national constraints.

Non-Statutory Sites

- 7.1.110 Non Statutory sites are designated by local authorities for their particularly valuable assets to the surrounding area.

Local Nature Reserves (LNR's)

- 7.1.111 LNR's are locally designated sites of wildlife interest. These areas are designated for their natural interest at the local level. LNR's do not have any statutory designation, and will range in quality and type.

Data Source

7.1.112 Information relating to LNR's designations was derived from information held by the Countryside Council for Wales.

Weighting Applied

7.1.113 A weighting of 3 has been allocated for both open-air and in-building facilities to reflect the importance of these sites in the context of statutory designations.

Ancient woodland

7.1.114 Planning Policy Wales gives guidance under caring for biodiversity that local planning authorities should seek to protect trees, groups of trees and areas of woodland where they have natural heritage value or contribute to the character or amenity of a particular locality. Ancient and semi-natural woodlands are noted as being irreplaceable habitats of high biodiversity that should be protected from development that would result in significant damage.

Data Source

7.1.115 Information relating to the locations of known ancient woodland has been derived from the Countryside Council for Wales.

Weighting Applied

7.1.116 Development in ancient woodland areas would be excluded for both open air and in-building facilities. A weighting of 5 reflects this. In areas within 250 metres from ancient woodland, a weighting of 4 has been allocated for both in-building and open air facilities.

Provide employment opportunities and support long-term jobs and skills

7.1.117 The potential exists for waste management facilities to provide employment opportunities to the surrounding areas around such facilities. The search subsequently promotes areas that surround residential areas.

Locations up to 10km from urban areas

7.1.118 Waste management facilities offer employment opportunities. The search reflects these potential opportunities, by identifying areas within close proximity to residential areas as being suitable for waste management facilities.

Data Source

7.1.119 Information relating to residential areas was derived from settlement boundaries as part of OS Meridian 2 1:50,000 mapping together with ONS population data.

Weighting Applied

- 7.1.120 A weighting of 2 has been applied to areas within 10 Km of residential development, which highlights the potential opportunities for employment by siting waste management facilities nearby to existing areas of residential development.

Residential Development

- 7.1.121 Residential development has been divided into three categories, firstly, the constraints associated with siting facilities within the footprint of the development; the weighting then reflects the constraints of locating facilities within 250 metres and 500 metres respectively. Again, as the distance from the residential areas increase, the associated weighting also decreases to reflect the lessening constraints. This strategic assumption is not able to take into account the topography of individual areas, including the effects of screening which may lessen or increase the effect accordingly.

Data Source

- 7.1.122 The location of residential developments was derived from OS 1:50,000 Meridian 2 vector mapping.

Weighting Applied

- 7.1.123 Areas within the footprint of residential developments have been assigned a weighting of 5 to exclude both types of facility altogether. Within a zone of 0 to 250m of the edge of a residential area, landfill is unlikely to be acceptable without rigorous environmental controls being put in place. A weighting of 4 reflects this. A weighting of 3 for in building facilities reflects the fewer environmental constraints associated with in-building facilities near residential developments. In a zone of 251 to 500m environmental controls and sensitive landfill boundary design could enable a landfill to be integrated into the area and a weighting of 3 reflects this, whilst no constraints are perceived for in-building facilities at this distance.

Minimise the increased cost of waste management

- 7.1.124 The cost of waste management is dependent on numerous factors. The Areas of Search identifies aspects associated with the cost of waste management to include the distance that waste will need to travel from its origin to the area of disposal, as well as the distance to the nearest existing A road network.

Distance from an Urban Area

7.1.125 This analysis issue uses the same data set as the objective 'minimise the increased cost of waste management'. The search favours areas that are closer to areas of population, where waste is produced. The GIS analysis has used areas within 10 km, between 10-50km and areas outside of 50 km as indicators of increased costs of transporting waste.

Data Source

7.1.126 Data was derived from ONS Urban Area boundaries and classification data.

Weighting Applied

7.1.127 The weightings applied are the same for both in-building and open air facilities. Areas within 10 km of urban developments and with 1km of A road are most favoured and have been allocated a weighting of 1. Areas with 10km of urban area but over a kilometre from the A road network are less favourable due to inaccessibility and have been graded as 2. Areas between 10 and 50 km are also regarded as having potential, but less so due to the increased distance. These areas have been designated with a weighting of 2. Finally, areas outside of 50 Km are regarded as constraints, and have been weighted accordingly with a designation of 3.

Primary road network

7.1.128 Accessibility of waste management facilities is a key issue in defining the areas of search for regional and sub regional facilities. The distance of primary road networks to potential waste management facilities is therefore an important consideration. When considering road transport, most local authorities seek through their development plans to locate waste facilities in close proximity to the primary road network. What constitutes the primary road network will vary with the circumstances of the area and will differ in urban and rural locations. Proximity does not necessarily mean a direct connection to the highway; it can include a dedicated access road built at the expense of the developer.

Data Source

7.1.129 A roads extracted from OS Meridian 2 1:50,000 data.

Weighting Applied

7.1.130 Weightings for both in building and open-air facilities are the same for this category. If Within 1 km of an existing A road and withing 10km of urban area, a weighting of 1 has been allocated. Where an area is within 1km of A road but over 10km from urban area, a weighting of 2 hs been allocated.

Slope

- 7.1.131 Steep gradients are likely to be impractical for site development (although cannot be ruled out as engineering solution may be available) and would need investigating for mitigation measures when at site-specific level. This data is not directly linked to slope stability.

Data Source

- 7.1.132 Information relating to slope was derived from datasets provided by WAG, from DTM grid data at 5m resolution.

Weighting Applied

- 7.1.133 Open-air waste facilities: The ability to develop on steep land is inherently a design issue informed by a risk assessment that is necessarily site specific. The engineering required will become more difficult the steeper the slopes and a weighting of 4 has been applied to slopes greater than 1:3 and a weighting of 3 to those between 1:3 and 1:4.
- 7.1.134 Waste Facilities in Buildings: It is possible to develop a platform on which to erect a waste facility building. However, similar issues apply to those identified under 'open air and, for this reason; the same weightings have been applied.

Protect local amenity

- 7.1.135 The protection of local amenity plays a key role in maintaining sustainable communities. This objective identifies common land/open country, country parks as well as public forests to be areas suitable for providing local amenity, and included within the search as constraints.

Common Land/Open Country

- 7.1.136 Planning Policy Wales gives guidance on public commons in para 5.2.10. Common land is recognised as a finite resource that should not be developed unnecessarily. Its proper management should be encouraged and access should not be prevented unnecessarily. Local Planning Authorities will develop policies appropriate to these principles. TAN 16- Sport, Recreation and Open Space provides guidance on open space for amenity and recreation. Paragraph 2.12 states that "Open space with significant amenity, nature conservation or recreational value should be protected".

Data Source

7.1.137 Information relating to common land has been derived from information held by CCW. The "Open Access Land" data set was used to define areas of common/open land.

Weighting Applied

7.1.138 In view of the national policy approach this land is unlikely to be suitable for either open air or in-building waste facilities unless in a local area, where no other suitable land is available. A weighting of 3 is therefore appropriate

Country Parks

7.1.139 Country parks offer areas of amenity for the public. Most local parks are managed by local councils. Although these areas are locally designated, their significance to local amenity should ensure that these areas are conserved where possible.

Data Source

7.1.140 Data supplied by Countryside Council for Wales.

Weighting Applied

7.1.141 A weighting of 4 has been allocated to country parks for both in building and open air facilities.

Public Forests

7.1.142 Planning Policy Wales gives guidance under caring for biodiversity that local planning authorities should seek to protect trees, groups of trees and areas of woodland where they have natural heritage value or contribute to the character or amenity of a particular locality.

Data Source

7.1.143 The CCW "Open Access Land" data set was used to define areas of public forests.

Weighting Applied

7.1.144 A weighting of 3 for both in building and open-air facilities reflects that public forests for the purposes of amenity should be protected.

Minimise adverse effects on public health and avoid increasing health inequalities

7.1.145 Locating waste management facilities too close to residential developments may also have associated health impacts. The proximity of residential developments has been used to define this search boundary. Part of this objective, to 'avoid increased

health inequalities' has also been included (see paragraph 5.1.7 and 8.3.13 for details).

Residential Development

7.1.146 TAN 21 includes advice on the location of waste management facilities at para C35 of Annex C. These are generally those with the least adverse impacts on the local population and the environment and with the best potential contribution to a facilities framework. Particular care should be taken to avoid locations where new or extended waste facilities may be incompatible with existing land-uses. TAN 21 also includes within section 6.5 general guidance on, among others, the location of landfills in relation to the distance from residential development. No specific distance is given but the guidance is drafted in respect of environmental risk assessment. In section 6.2 reference is made to the need to consult the Environment Agency in respect of any development proposed within 250m of a closed landfill.

7.1.147 This analysis uses the same GIS analysis issues used to define the 'minimise adverse effects to property prices' issue. The three categories are weighted accordingly.

Data Source

7.1.148 The data for residential developments has been derived from OS Meridian 2 settlement boundaries @ 1:50,000.

Weighting Applied

7.1.149 Open-air waste facilities: Within residential areas landfill sites are excluded as being an incompatible use of land in line with the policy guidance quoted. Within a zone of 0 to 250m of the edge of a residential area, landfill is unlikely to be acceptable without rigorous environmental controls being put in place. A weighting of 4 reflects this. In a zone of 251 to 500m environmental controls and sensitive landfill boundary design could enable a landfill to be integrated into the area and a weighting of 3 reflects this position.

7.1.150 Waste Facilities in Buildings: Within residential areas built facilities are excluded as being an incompatible use of land in line with the policy guidance quoted. However, it is quite possible for employment areas to be located in close proximity to residential areas and since, under the guidance quoted above, such areas are acceptable for waste facilities in buildings, there is no reason to develop a buffer around residential areas and reflect this in a weighting. Built facilities allow strict enforceable measures to be put in place to manage and control the emissions, such

as dust, odour and noise. In principle there is no objection to built facilities being located adjacent to residential development, therefore within 250m a weighting of 3 has been applied, > 250m has not been weighted.

8 Results of the Sustainability Appraisal

8.1 Detailed Results

8.1.1 This chapter presents the outcomes of the Sustainability Appraisal, which, using GIS analysis, has resulted in the identification of the definitive areas of search, i.e. those areas in Wales where, based on the strategic nature of the study and the geographic/location issues considered, regional in building or open-air facilities could be located. As described in Chapter 5, weightings were applied for each criteria defined in the Sustainability Framework, as presented in Table 7.1 below.

Table 7.1 Weightings Applied

	Weighting Applied (from Criteria – see Table 5.1)	Definition
Level of Constraint	5	Exclusion – the development of a waste management facility in these areas is disqualified on grounds of sustainability, policy and/or impracticality
	4	Areas of National/Regional Constraints
	3	Areas of Some Constraints
	-	Areas where no significant constraints have been identified (based on appraisal criteria)
Degree of Potential	2	Area of Some Potential
	1	Area of High Potential

8.2 Definitive Areas of Search

8.2.1 The detailed results have subsequently been analysed in order to identify the definitive areas of search. Table 7.2 below summarises the approach followed. In essence, the following principles have been adopted:-

- Areas weighted 5 have been excluded because there constraining factors of regional, national or international significance.
- Areas weighted 4 have been identified as being in proximity to areas of International or Regional constraints.
- Areas weighted 3 or ‘-’ in terms of level of constraint have been given different priorities (i.e. 1st, 2nd or 3rd Areas of Search based on the degree of potential identified by the analysis (i.e. weighting 1 or 2)
- Areas identified as having combination of either ‘no constraints’ with only ‘some potential’, or ‘some constraints’ with ‘high potential’ have been given the same priority (i.e. both identified as 2nd Areas of Search) as it is not possible to draw an adequate distinction between these 2 combinations within the scope of this study.

Table 7.2

Combined weightings	Resulting Definitive Area of Search
Areas of No Constraints and High Potential	1st Area of Search
Areas of No Constraint and Some Potential	2nd Areas of Search
Areas of Some Constraints and High Potential	
Areas of Some Constraints and Some Potential	3rd Areas of Search
Areas with National or Regional Constraint	4th Areas of Search

8.2.2 The Areas of Search are presented in hardcopy maps in Appendix 5. The same regional and technology split is presented as for the detailed results.

8.3 Description of Environmental Effects

8.3.1 The SEA Regulations require a description of the environmental characteristics of areas likely to be significantly affected. The maps illustrate the broad environmental characteristics of the areas that would potentially be affected should these sites go forward at the local level. More detailed studies should be undertaken at the local level.

8.3.2 The SEA Regulations require a description of the likely significant effects on the environment. As these sites have been selected through the SA process using the SA Framework presented in Chapter 5, significant negative effects on the environment are minimised albeit within the limits of the project.

8.3.3 This section describes the general effects on the environment at the strategic level. It does this by describing how significant receptors will be avoided as part of the SA process. It is presented under the topics set out in schedule 2 of the SEA regulations. The descriptions of the types of effects are necessarily broad due to the nature of the project i.e. information is limited to the area types included and is of strategic, rather than local, detail.

Biodiversity (including Flora and Fauna)

8.3.4 Ecological assets in terms of flora and fauna have been identified within this study by capturing areas of statutory and non-statutory designation. The importance of these designations in terms of policy has informed the weightings allocated to each of the designations.

8.3.5 The footprint of statutory designated sites, including SAC's, RAMSAR sites, SSSI's, NNR's and SPA's have all been designated as absolute areas of constraint, constituting areas that are unsuitable for waste management facilities. These have subsequently been omitted from the search. In addition, impacts on designated sites as a result of placing waste management facilities nearby have been considered. This has been undertaken by applying buffer areas around the footprint of designated sites, which present areas of some constraint. Naturally, as the distance

from the designated sites increases, the level of constraint decreases as reflected by the lowering weighting. The buffer zones vary depending on the importance of the designated site; buffers have been derived from information held within current planning policy regarding siting development near such sites, the weightings are appropriate to this and reflect the distance from the designated site, as well as the type of waste facility.

8.3.6 For Ramsar sites, SPA's, SAC', SSSI's and NNR's, development within 100 metres of these sites will be restricted due to the weighting of 4 being allocated to these areas. Areas allocated with a weighting of '4' do not present absolute constraints, but do represent areas of national/regional constraint, and are subsequently defined as third areas of search.

8.3.7 At this point the designated sites assume different buffer areas dependent on their degree of sensitivity. Ramsar sites, SAC's, SPA's and NNR's are all allocated weightings of '4' for open air facilities and '3' for in building facilities for developments that fall between 100 m – 1km from the designated site. This indicates that areas within 1 km may offer some potential for in – building waste management facilities, dependent on the degree of potential within the area, but will still be inappropriate for open air facilities. In contrast, SSSI's, which constitute a lower level of designation, are allocated a weighting of '4' for open air, and '3' for in building facilities in areas within 100 – 500 metres from the site, and areas between 500- 1 km from the site are both allotted with the weighting of '3'.

8.3.8 For biodiversity issues, the areas of search subsequently reflects areas that are considered to be constrained by virtue of planning policy, reflected at the broad, national level. The study does not take into account the quality of the designated sites on a case-by-case basis, nor does it reflect the presence of any single species of significant importance, which may alter decisions at the local level.

8.3.9 Ancient woodland has also been omitted from the search for suitable sites by allocating it with a weighting of '5'. In addition, surrounding areas of land up to a distance of 500 metres from ancient woodland sites are also regarded as a national/regional constraint, and included within the 3rd area of search. Therefore, by excluding sites of nature conservation importance and applying buffers around them representing constraints, the permanent negative effects on biodiversity (including flora and fauna) are minimised.

Population

8.3.10 Residential development and urban areas are excluded from the search under objectives linked to property prices, the cost of waste management and greenhouse gas emissions associated with transport.

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- 8.3.11 Medium to long-term positive effects on employment are maximised by identifying areas up to 10km from residential areas as having potential.
- 8.3.12 The areas of search also highlight areas of local amenity as being generally unsuitable for siting waste management facilities. Areas of public local amenity including common land, country parks and public forests have been designated with a weighting of '3 and 4 for Country Parks'. The weightings are the same for both open air and in building facilities, which places these areas within the third areas of search for both types of facility, and not taken forward as being suitable for waste management. Therefore, negative effects on local amenity are minimised.

Human health

- 8.3.13 Negative, secondary effects on human health are minimised through siting waste facilities outside of areas of residential development. A weighting of '5' has been allocated to all areas within the footprint of residential development, ensuring that waste facilities will not be placed within these areas. Human health impacts from locating facilities nearby to residential developments are also acknowledged. Best practice guidance states that areas within 250 metres of residential developments should be excluded. For clarification this Best Practice Guidance only refers to open air facilities. Areas of land surrounding residential developments may however be suitable for waste management facilities, dependent on their type and distance placed from existing housing. Areas within 250 metres of the development may be suitable for in-building facilities if careful consideration is given to the design. In this case best practice should include a site-specific risk assessment to be conducted to determine the likely effects at this distance. As the search should not necessarily rule out locations within 250 metres, these areas have been weighted '3' so that they will be included within the search. Within the same distance, it is not considered suitable to locate open-air facilities within 250m of a residential development, reflecting national policy, and subsequently weighted '4' so that these areas will not be located within this distance.
- 8.3.14 From 251-500 metres, the potential for effects on health is reduced. At this distance in-building facilities are no longer regarded as a significant constraint, and open-air facilities have been allocated a weighting of '3' to further reflect this. Subsequently, areas between 251-500 metres will be appropriate for in- building facilities, and included within the definitive areas of search.

Soil

- 8.3.15 Areas of land where soil is of high agricultural potential have been designated as a constraint, although never absolutely excluded from the search. In section 2.9, Planning Policy Wales states that where possible, development should favour areas

of lower agricultural soil quality as opposed to areas of productive soils characterised by ALC grades 1-2. Land that falls under grades 1 and 2 is given a weighting of 4, which is a national or regional constraint.

- 8.3.16 The mapping process reflects this by considering land with poor soils, classified under the ALC scheme as 4-5, as being areas of opportunity rather than constraint. Soil quality defined by the ALC system subsequently provides information relating to areas of opportunity. In such cases the mapping process actively seeks out areas with poor soils as being areas of some potential, and includes these within the definitive search areas accordingly.
- 8.3.17 The constraints of soils characterised by grades 1,2 and 3 can be seen on the maps. For example, land to the south of the M4, near junction 37 has areas of soil, which are classified as ALC grade 1-2. These areas are unfavourable due to the quality of the soil for agricultural purposes. This area has been omitted from the search, as these areas are weighted 3, to ensure that these areas will not be identified as being suitable for waste facilities on the basis of this constraint. Therefore, permanent negative effects on valued soils are minimised

Water

- 8.3.18 The areas of search has identified two main objectives to secure the water environment, these include objectives to minimise the adverse effects on water quality, and to avoid increasing flood risk.

Water Quality

- 8.3.19 To avoid negative impacts on groundwater, open-air facilities are excluded in the three Groundwater Source Catchment Zones (1-3). Similarly, in building facilities are restricted in Groundwater Source Catchment Area Zone 1, by allocating the areas with a weighting of '5'. In-building facilities are allocated with a weighting of '4' for areas designated as zone 2. These areas are regarded as national/regional constraints and are not brought forward into the search. In contrast, due to the reduced risk, in building facilities will be included within the 2nd areas of search, within Catchment zones 3. This relationship can be seen on the constraints maps. A source protection zone 3 is designated to land immediately to the west of the Severn Bridge. For in-building facilities, the constraints map shows this area as being within the third areas of search. For open-air facilities, that same area has been excluded from the search altogether, and has been left blank.
- 8.3.20 Existing sites of lakes and rivers are excluded due to the impracticality of these areas for development. In addition to this, the inclusion of sites within close proximity to rivers with water quality objectives has been limited. Rivers that have

ecosystem objectives of RE1 and 2 as defined by the Environment Agency as being suitable for all fish species are considered as constraints of '4' for open air facilities and '3' for in building facilities for a distance of up to 250 metres from the river bank. Although these sites are not excluded from the search, areas within 250 metres of rivers with RE1 and 2 objectives have not been brought forward in the search for open air facilities; however have been included in the search for in-building facilities. Past 250 metres, up to a distance of 500 metres, both in-building and open air facilities have been allocated a weighting of '3', and are placed in the second areas of search. Once past 500 metres, the mapping exercise does not consider the development of either in-building or open-air facilities as being a constraint to the water environment.

8.3.21 In a similar way, rivers with ecosystem quality objectives of RE3 and RE4 have been weighted as in RE1 and 2, however the buffer has been reduced so that development is only constrained within 100 metres of the river rather than 250 metres, to reflect the difference in quality objectives. Open air facilities have been designated with a weighting of '4' within 100 metres from the river bank, whilst in-building facilities have been designated with a weighting of '3'. Thereafter, up to a distance of 250 metres from the river, both types of waste facility have been allocated with a weighting of '3', and including in the 2nd areas of search, where sites may be appropriate for waste facilities depending on the level of potential in the area. Rivers with quality objectives of RE3 and 4 are no longer considered as constraints past 250 metres.

8.3.22 The locations of major and minor aquifers have also been included in the Areas of Search. Major aquifers have been excluded from the search for open-air facilities through the allocation of a weighting of '5'. Open-air facilities' have been allocated a weighting of '3' on minor aquifers, placing these areas in the second areas of search category. In building facilities pose less of a risk to groundwater, and have subsequently been allocated a weighting of '3', presenting some constraints on major aquifers, however have been included within the 2nd areas of search. In building facilities on minor aquifers have not been assigned a weighting, and therefore have been included in the first areas of search, indicating that such areas would provide suitable locations for siting waste management facilities. The negative effects on these designations have therefore been minimised.

Flood risk

8.3.23 The search also takes into account the risk of flooding. Areas defined by the Environment Agency TAN layer C1, include developed areas within floodplains that are served by significant infrastructure, including flood defences. Both open air and

in building facilities have been allocated with a weighting of '3', so that they are included within the second areas of search.

- 8.3.24 Areas that fall within TAN layer C2, include areas that are within floodplains, but are not served by any flood defence infrastructure. These areas are identified as being of national and regional constraints, and allocated a weighting of '4'. The weightings reflect the increased risks in these areas. The effects on flood risk have been minimised.

Air

- 8.3.25 The negative effects on air quality have been minimised by identifying areas of national and regional constraint in locations that are regarded to be sensitive to changes in air quality. These include areas that are identified to be existing air quality management areas (AQMA's), as well as areas in close proximity to residential developments..

- 8.3.26 Areas classified by local authorities as being part of an air quality management area have been designated a constraint. In such cases, areas are allocated with a weighting of '4' for both open air and in-building facilities, placing them in the third areas of search. These areas are not brought forward as places that are suitable for waste management facilities.

- 8.3.27 Air quality impacts arising from siting an open-air waste facility close to residential development have also been identified. Areas within 250 metres of residential developments have been allocated with a weighting of '4', placing these areas as a national/regional constraint. Within this same area of 250 metres, in-building facilities have not been identified as a significant constraint, as appropriate design and planning may make such areas suitable for these facilities.

Climatic factors

- 8.3.28 The objective to minimise greenhouse gas emissions relates to this topic. There are two GIS analysis issues that have been used to strategically limit the greenhouse gas emissions arising from transporting waste. These issues offer areas of potential rather than constraints. In order to minimise climate change effects, areas within 5km of a port have been designated with a weighting of '2', implying that such areas will have some potential, when considering suitable locations.

- 8.3.29 Locations in close proximity to urban areas that have a population of greater than 10,000 have also been allocated as areas of potential rather than constrains if suitably close. These areas close to urban areas will yield shorter transportation distances. For example, areas within 10 km of urban areas and within 1m of A Road

network have been assigned a weighting of 1, illustrating that such areas have high potential for waste management sites due to the short distance waste needs to be transported. Moving further away from urban areas subsequently increases the distance waste needs to travel. This is reflected in the weighting of '2' for areas between 10-50 km from urban areas. Lastly, outside of 50 km from urban areas, the proximity becomes a constraint due to the increased distance, and has therefore been allocated with a weighting of '3'. This fits in the second areas of search, and although still included in the search, are not necessarily favoured over the areas under the first areas of search. Therefore, negative climatic effects have been minimised.

Material assets

- 8.3.30 For this study, material assets relate to the maintenance of house prices and the prudent use of land. The search minimises the negative effects on property prices by ensuring that areas close to residential developments are not included within the search. Areas of residential development are considered constraints, and excluded from the search by allocating these areas with a weighting of '5'. Areas outside the footprint of residential developments to a distance of 250 metres are considered a national constraint for open-air facilities, being weighted as 4. However in building facilities, have been allocated a weighting of '3', meaning that they provide some constraints, but will be considered in the 2nd areas of search. The distance between 251-500 metres are no longer a constraint for in-building facilities, and are appropriate for the first areas of search. Open air facilities within this proximity to residential developments are regarded as having some constraints, and are included in the second area of search. Once past the distance of 500 metres, neither type of waste facility is regarded as detrimental to property prices.
- 8.3.31 The maps show this relationship. For example, residential areas throughout Cardiff have been excluded from the search. This is shown on the southeast map, where the entire footprint of Cardiff has been excluded. However, outside of the urban boundary, small pockets of search areas present themselves where the proximity of residential areas no longer provides constraints.
- 8.3.32 The reuse of particular types of sites including existing waste sites, quarry sites and degraded, contaminated and derelict land is encouraged. Therefore these have been identified as having potential. This enables a positive effect on the prudent use of land.

Cultural heritage

- 8.3.33 The study minimises effects on the identified aspects of cultural heritage by showing constraint in areas designated as having value relating to cultural heritage. All

features that have been identified as being of cultural heritage value have been identified within the study as being constraints, and subsequently these areas are not suitable for the location of waste management facilities. These assets include a range of features such as, World Heritage Sites, scheduled ancient monuments, locations of heritage coasts, historic parks and gardens, as well as various visually sensitive receptors identified from LandMap.

- 8.3.34 Areas within and around important heritage assets, including; World Heritage Sites, Historic parks and gardens, Areas defined as having Outstanding Historic landscapes, and within 100 metres of scheduled monuments have all been allocated a weighting of 5, excluding these areas. An example of this can be seen in the southeast region, where large areas have been excluded from the search due to the Brecon Beacons National Park designation.
- 8.3.35 Other designated areas have been defined as constraints, however have not been absolutely excluded. Heritage Coasts, locations within historic landscape as well as areas classified by LandMap as being visually outstanding have all been allocated with a weighting of '4' with LandMap and Historic Landscapes defined as 'Special' are designated as 3. These areas could be examined further to identify potential at a more local level.
- 8.3.36 Certain areas around identified cultural heritage features provide fewer constraints, and have been weighted accordingly. For example, buffers around scheduled ancient monuments or historic parks and gardens. Therefore, permanent negative effects on cultural heritage features have been minimised.

Landscape

- 8.3.37 The search also identifies important landscape designations including national parks and areas of outstanding natural beauty (AONB's). AONB's and national parks have both been allocated a weighting of '5' so that these areas are excluded. In addition, locating waste management facilities around these areas is assessed by the search, so that impacts from distant views are eliminated as far as possible. Areas within 1 km of both national parks and AONB's have been allocated a weighting of '3', placing this band surrounding designated sites as a national/regional constraint. Therefore, negative effects on valued landscapes have been minimised.

Interrelationships

- 8.3.38 The interrelationships between the weightings and the location of the analysis issues have formed the maps, which highlight areas of potential and areas of constraints throughout the three Welsh regions. The combination of all of the GIS analysis issues that have formed the search fit together without conflict. This section

addresses the interrelationships between the various objectives and analysis issues that have been included within the exercise, and describes how potential conflicts between objectives have been resolved.

The balance between human health, cost of waste management and impacts to the environment

8.3.39 Impacts upon population, the cost of waste management and the requirement to transport waste over as short a distance as possible may appear to overlap somewhat with regard to waste management. In one instance it is necessary to protect humans as far as possible from the health impacts associated with the management of waste. With regard to this, it would seem logical to site waste management facilities as far away possible away from centres of population. On the other hand, in areas of high population, it is reasonable to assume a greater amount of waste will be generated, indicating that facilities should be located nearby to increase the efficiency of waste management handling and storage processes, whilst minimising the impacts on air and climatic factors due to transportation.

8.3.40 For this reason, the study has identified that areas of residential development should be regarded as absolute constraints, being weighted with a '5'. This has been allocated to protect property prices as well as minimise negative effects on human health. In contrast, areas outside of centres of population, are allocated as areas of high potential, in order to minimise the impacts of greenhouse gas emissions, whilst also minimising the increased cost of waste management, both of which have been given a weighting of '1', if within 10 Km and within proximity to A roads. The resulting exercise subsequently favours areas surrounding urban population, however protects areas of residential development.

Cumulative Effects

8.3.41 The results of this study identify potential areas for new waste management facilities. It is possible that a number of sites within an area could be proposed for such facilities. This could lead to cumulative effects on sensitive receptors.

8.3.42 Also, proposals for waste management facilities could come forward in areas where other types of developments are also taking place. This could also lead to cumulative effects.

8.3.43 It is recommended that the potential for cumulative effects be considered at the local level.

8.4 Use of the Results

- 8.4.1 As stated earlier in this report, this document is only one of the documents, which will form part of the review of the Regional Waste Plans.
- 8.4.2 The results of this study are intended to inform the revision of the regional waste plans. The previous work carried out by RPS, established the GIS framework upon which this study is based. The key function of this study is to identify areas of search for waste management facilities. The purpose of this study is to bring together the various physical and environmental characteristics, which will influence the location of waste management facilities. It does not provide a definitive guide against which planning applications will be judged. Any allocations that are formulated within development plans as a result of this work will be subject to an SEA/SA as part of the individual relevant Plan and the Plan itself will undergo Habitat Regulations Assessment. Furthermore, any planning application submitted as a result of this work will also be subject, where relevant, to EIA and HRA and that in accordance with the requirements of the SEA Regulations detailed monitoring will be required.
- 8.4.3 As stated earlier in the report, this study provides a robust baseline of information upon which robust and sound decisions can be made regarding the identification of definitive areas of search for waste management facilities. The GIS has been refined as result of the SA process, allowing Regional Waste Planning Groups to scrutinise the information, which has led to the grading of a particular area.
- 8.4.4 The findings of this study will also assist Local Authorities in identifying appropriate locations for waste management development, providing the basis from which more detailed investigations can be undertaken to assess which individual sites are appropriate to be allocated in Local Development Plans.
- 8.4.5 This study has shown that there are various areas of search that have been found to be applicable for waste management development, both in building and open-air facilities. First areas of search have been shown to be appropriate for waste management development due to the presence of appropriate site characteristics, such as proximity to the road network, and there are few significant environmental constraints. As we progress through the areas of search the level and number of constraints begin to limit an area's ability to accommodate waste management development. Finally, there are those areas, which, on the basis of clear planning policy, have been excluded from consideration as appropriate for waste management development because of an overriding sustainability constraint.
- 8.4.6 The locations, which have been identified as second, third, and fourth areas of search, cannot be excluded from consideration as appropriate areas. However, in

instances where a greater level of constraint, or constraints exists, it must be acknowledge that in turn a greater level of operational mitigation may adequately control potential environmental impacts. The only instance where this would not be the rule is in the case of proximity to principle areas of waste arisings.

8.5 Recommendations

8.5.1 As set out earlier in the report the purpose of this report was to identify areas of search for in building and open air waste management facilities. These areas of search have been derived by adopting the approach of subjecting the site assessment criteria to the principles of a Sustainability Appraisal.

8.5.2 As a result of this study, the following recommendations are proposed;

8.5.3 The purpose of the project is to identify areas of search at a regional level which can then be used by local authorities to identify preferred locations or sites for new waste management facilities. The ranking of a particular area effectively establishes the issues that would need to be addressed in any more detailed planning assessments at later stages. These more detailed assessments may require the quantification of this risk, based on the nature of the waste management facility, or facilities, before an Authority can be satisfied that the identification of the location or site is appropriate. In identifying a location or site, there is a need to consider the findings of this study and other relevant information. Other information relevant could include waste arisings information, an assessment of available waste management capacity, the health impacts associated with particular waste management development and applicability of particular waste management technologies.

8.5.4 Local Authorities should prioritise areas higher up the assessment order. This study has been undertaken at a Wales wide, strategic level, and as a result there may be local circumstances which cannot be assessed by this study. Waste management facilities are only one aspect of development which Local Authorities must consider in their Local Development Plans, and as a result other pressures and priorities may justify selecting 2nd, 3rd or 4th areas of search over a 1st areas. In these instances it is suggested that the Sustainability Appraisal process, which must be subject to all Local Development Plans, is an appropriate mechanism for justifying any such approach.

8.5.5 As it is possible to see from the definitive maps which accompany this project, there are a number of existing waste management facilities which have been shown to be in areas which are, by virtue of the identified constraints, shown to be excluded. When implementing the findings of this study, there is a need to acknowledge that in some circumstances the associated impacts of a waste management facility are

being appropriately mitigated against at these sites. As a result they may not present an unacceptable risk to the constraining designations or land use characteristics. In these instances it will be for Local Authorities to assess whether the expansion of operations at these locations is appropriate and that any potential adverse effects can be effectively controlled.

8.5.6 As set out earlier, Local Authorities will be provided with the relevant GIS information that has been utilised in this study. It is recommended that regular feedback from users is collated so that any issues and queries can be addressed to ensure that the information is relevant and appropriate.

8.6 Outline Mitigation for Detailed Stage

8.6.1 The section above describes the environmental effects. This sets out the mitigation, which has already been built into the process through the avoidance of highly constrained areas.

8.6.2 For each of the areas of search identified, the following issues will need to be considered during the identification of specific sites:

- Location of small areas of residential properties or individual dwellings that have not been included in this strategic study;
- The implications of altitude, depending on the specific technology and climatic conditions;
- The results of the health impact assessment and any areas identified through this, which should be avoided.

8.6.3 It is likely that additional issues will arise during this more detailed stage and therefore this list should not be considered as definitive.

8.7 Monitoring

8.7.1 The SEA Regulations require a description of monitoring measures. It is envisaged that the monitoring of the implementation of the revised Regional Waste Plans would incorporate monitoring the usefulness of this study in the allocation of specific sites and will consider the detailed individual sites and their land use suitability for regional waste facilities.