

South East Wales Regional Waste Group

Regional Waste Plan 1st Review



September 2008

FOREWORD BY THE CHAIR OF THE REGIONAL WASTE GROUP



We are all responsible for the generation of waste – whether this is municipal waste at home, commercial and industrial waste at work, construction and demolition waste when our houses, workplaces and roads are being built, or agricultural waste when our food is being produced.

In the past, nearly all of our waste has been dumped in landfills – this is a huge waste of resources and can cause environmental problems. We must now take steps to develop an integrated and adequate network of modern waste management facilities – environmentally friendly facilities that are well planned, well designed, well operated and well regulated – to maximise the recovery of valuable resources from our waste and to minimise the disposal in landfills.

In addition to these resource management and environmental reasons for developing new facilities, Local Authorities in Wales urgently need to develop a new generation of facilities for municipal waste for financial reasons: the landfill tax means that the cost of disposal in landfills continues to increase, and Local Authorities will face large fines from the European Commission and the Welsh Assembly Government if new facilities for recovering resources from waste are not built soon.

For all these reasons, we must now make crucial decisions and take urgent action. Some of these decisions will be hard and the financial cost of action may be high – but doing nothing is not an option.

To this end, on behalf of the South East Wales Regional Waste Group I am pleased to present this ‘Recommended Draft’ of the Regional Waste Plan 1st Review to each constituent authority for endorsement.

The Regional Waste Plan 1st Review will assist the region in developing an integrated and adequate network of modern waste management facilities by providing strategic information on the types of facilities required and the types of locations likely to be acceptable.

This Plan is the outcome of an ambitious program of partnership working; over the last three years the eleven local planning authorities in the region have worked jointly to develop and steer the project, all the time benefiting from the close collaboration, and invaluable input, of a wider range of stakeholder organisations. Continuing in this spirit of partnership, a three-month consultation exercise at the end of 2007 invited comments on the Consultation Draft from a wide a range of interests. The feedback received during the consultation period has been reviewed by the Regional Waste Group when formulating this Recommended Draft.

Once endorsed by each of the Local Planning Authorities and agreed by the Welsh Assembly Government, the RWP 1st Review will become a strategic framework for the preparation of Local Development Plans and a material consideration in the development control process.

Councilor David Poole, Chair of the South East Wales Regional Waste Group

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NON-TECHNICAL SUMMARY

Introduction

- 1 This is the ‘Recommended Draft’ of the South East Wales Regional Waste Plan (RWP) 1st Review – i.e. the draft recommended by the Regional Waste Group to each constituent authority for endorsement
- 2 The RWP 1st Review is a non-statutory plan prepared through a voluntary joint arrangement of 11 Local Planning Authorities with the assistance of other key stakeholders. Once endorsed by each of the Local Planning Authorities and agreed by the Welsh Assembly Government, the RWP 1st Review will become a strategic framework for the preparation of Local Development Plans and a material consideration in the development control process.
- 3 The South East Wales Region and constituent Local Planning Authorities are shown below.



- 4 The **vision** of the RWP 1st Review is to provide a land-use planning framework for the sustainable management of wastes and recovery of resources in South East Wales.
- 5 The **aims** of the RWP 1st Review are:
 - To minimise adverse impacts on the environment and human health.
 - To minimise adverse social and economic impacts and maximise social and economic opportunities.
 - To meet the needs of communities and businesses.
 - To accord with the legislative requirements, targets, principles and policies set by the European and national legislation and policy framework.
- 6 The RWP 1st Review relates to the following principal controlled waste streams:
 - Municipal Solid Waste;
 - Industrial Waste;

- Commercial Waste;
- Construction & Demolition Waste;
- Hazardous Waste; and
- Agricultural Waste (the proportion requiring external management only).

7 The Consultation Draft RWP 1st Review document was published for consultation with stakeholder organisations and the wider public in October 2007. The consultation period ran for 10 weeks from 15 October 2007 to 24 December 2007. Regional consultation activities during the consultation period included:

- an official launch and press conference during the Cylch (Wales Community Recycling Network) Conference in Cardiff – including a speech by Jane Davidson AM, Minister for Environment, Sustainability and Housing;
- four press releases – 108 media outlets were contacted and media coverage included a BBC Wales Today News headline story, a BBC Radio Wales interview and a BBC Politics Show interview;
- availability of a ‘Themes Document’ summarising the main themes of the Plan;
- a website with an on-line survey and consultation documents for download;
- a random postal survey of 3,700 households in the region;
- an industry day for major waste producers and the waste management industry;
- a strategic stakeholder day for representatives of public, private and not-for-profit sector bodies primarily involved in waste, the environment and planning;
- a series of three focus group meetings to which 160 organisations were invited to send a representative;
- the offer to each Unitary Authority of one meeting within their area with a group of their choosing - where Hyder attended to make a presentation and receive feedback. Nine meetings were conducted.

8 These consultation activities amounted to the largest consultation and debate in the region to date on the way forward for selecting and siting the future network of waste management facilities. The feedback received during the consultation period was reviewed by the RWG and used to inform changes to the Plan.

9 **The RWP 1st Review contains two separate main elements:**

- the ‘**RWP Technology Strategy**’ – which provides strategic information on the types waste of management / resource recovery facilities required in South East Wales; and
- the ‘**RWP Spatial Strategy**’ – which provides strategic information on the types of locations likely to be acceptable.

10 These two elements have been developed through different processes, they tackle different issues and have been presented separately. **This RWP 1st Review does not bring the two elements together in order to identify which technologies should be located at which site or in which Area of Search.** The process of combining the two elements is a policy making exercise which can only be undertaken at the local level though the Local Development Plan preparation process.

Regional Waste Planning

- 11 This plan has been prepared by the South East Wales Regional Waste Group in line with the requirements of 'Planning Policy Wales Technical Advice Note 21: Waste' and later guidance from the Welsh Assembly Government.
- 12 The South East Wales Regional Waste Group is one of three such bodies set up in Wales to provide regional coordination and a strategic integrated approach to the management of all waste streams. The Group is led by a Members Steering Group made up of Members from the 11 constituent Local Planning Authorities in the region and is supported by a Regional Waste Technical Group of officers from local government, the Welsh Assembly Government, Environment Agency Wales and other government bodies and representatives from the waste industry and environmental groups.
- 13 The first RWP for South East Wales was agreed by the Members Steering Group, endorsed by all of the local authorities in the region and published in March 2004. Technical Advice Note 21 requires that RWPs are reviewed every 3 years.

From Waste Disposal to Resource Management

- 14 In the past, South East Wales has approached waste as problem that is most conveniently and cost effectively disposed of in landfill. It is now widely recognized that this disposal approach is unsustainable in the long term because of growing volumes of waste, because of the risk of environmental pollution and because of the burying of valuable resources.
- 15 **Waste must now be approached as a resource from which value can, and should, be recovered.** This recovery approach will see the value in waste being realized through the reuse, recycling or composting of products and materials and the production of energy. New facilities will need to be developed in South East Wales to recover value from the waste produced in the region.
- 16 Of particular concern at the current time is the urgent need for new waste management / resource recovery facilities to enable South East Wales to meet the EU Landfill Directive requirements for the diversion of Biodegradable Municipal Waste from landfill.

The RWP Technology Strategy

- 17 Strategic waste management Options are alternative combinations of waste management technologies that would enable the region to meet or exceed legislative targets. Individual technologies for managing waste cannot be considered in isolation – they need to be utilised in combination in an integrated recovery and disposal strategy for all waste streams.
- 18 In order to review the RWP Technology Strategy, four main alternative strategic waste management Options covering the main treatment technologies for residual waste were generated. The four main alternative strategic waste management Options were:
 - Option 1 – A landfill-led strategy for residual waste. This Option is for high levels of source separated recycling followed by low levels of energy from residual waste – where 'low' is interpreted to mean the minimum amount of additional material required to increase the level of Biodegradable Municipal Waste diversion to meet

2020 EU Landfill Directive targets. All residual Commercial, Industrial and Agricultural Wastes will be disposed of to landfill.

- Option 2 – An Energy from Waste-led strategy for residual waste. This Option is for high levels of recycling and composting followed by high levels of energy from residual waste – where ‘high’ is interpreted to mean the maximum feasible amount of residual waste will go to Energy from Waste.
- Option 3 – A Mechanical Biological Treatment-led strategy for residual waste. This Option is for high levels of recycling and composting followed by high levels of Mechanical Biological Treatment – where ‘high’ is interpreted to mean the maximum feasible amount of residual waste will go to Mechanical Biological Treatment.
- Option 4 – An Autoclave-led strategy for residual waste. This Option is for high levels of recycling and composting followed by high levels of treatment using an Autoclave – where ‘high’ is interpreted to mean the maximum feasible amount of residual waste will go to Autoclave.

19 Each main Option was divided into sub-Options. The 19 sub-Options were considered to represent a sufficient range of choices for dealing with waste in South East Wales.

20 The Options were assessed using the following techniques:

- Life Cycle Assessment – to determine the ‘Best Practicable Environmental Option’;
- Sustainability Appraisal – to determine the ‘Sustainable Waste Management Option’;
- Strategic Environmental Assessment; and
- Strategic Health Impact Assessment.

21 The objectives and indicators for the strategic waste management Option Sustainability Appraisal are shown below.

Sustainability Objectives	Sustainability Indicators
Environmental & Health	
To ensure prudent use of land and other resources	<ul style="list-style-type: none"> • Depletion of resources such as wood, water, fuels and ores • Land take
To reduce greenhouse gas emissions	<ul style="list-style-type: none"> • Greenhouse gases emitted
To minimise adverse impacts on air quality and public health	<ul style="list-style-type: none"> • Emissions which are injurious to public health • Emissions contributing to air acidification • Emissions contributing to depletion of the ozone layer • Extent of odour problems • Extent of dust problems • Dioxin emissions
To conserve landscapes and townscapes	<ul style="list-style-type: none"> • Extent of visual and landscape impacts
To protect local amenity	<ul style="list-style-type: none"> • Extent of noise, litter and vermin problems
To minimise adverse effects on water quality	<ul style="list-style-type: none"> • Emissions contributing to eutrophication • Extent of water pollution
Socio-Economic	
To minimise local transport impacts	<ul style="list-style-type: none"> • Total waste kilometres • Transport along roads other than motorways
To provide employment opportunities	<ul style="list-style-type: none"> • Number of jobs likely to be created

To provide opportunities for public involvement and education	<ul style="list-style-type: none"> • Extent of opportunities for public involvement and education
Waste Management Service Delivery	
To minimise costs of waste management	<ul style="list-style-type: none"> • Costs of management and disposal, including material and energy revenues
To ensure reliability of delivery	<ul style="list-style-type: none"> • Likelihood of implementation within required timescale
Policy Framework	
To conform with waste policy	<ul style="list-style-type: none"> • Percentage composted • Percentage recycled • Percentage landfilled

22 After the assessments had been conducted, the views of stakeholders organisations and the wider public on seven of the sub-Options were sought during the Consultation Period.

23 The RWP Technology Strategy has been identified on the following basis:

- the Life Cycle Assessment and Sustainability Assessment identified seven top performing sub-Options;
- the Strategic Environmental Assessment concluded that no clear leader emerged from amongst the Options;
- the strategic Health Impact Assessment concluded that while Options 2, 3 and 4 are good from a public health perspective there is no single best Option; and
- the Consultation Report recommended that the seven sub-Options presented in the Consultation Draft RWP 1st Review should be made available for choice at a local level so that local needs can be taken into consideration.

24 On this basis, and in order to provide adequate flexibility and choice, seven ‘Preferred Options’ have been selected as the RWP Technology Strategy in order to form the framework for the sustainable management of wastes and recovery of resources in South East Wales. The seven Preferred Options of the RWP Technology Strategy are set out in below. The seven Preferred Options are presented in numerical order – this order does not indicate any order of rank or preference

<p>The RWP Technology Strategy</p> <p>High source segregated recycling and composting levels with all remaining residual wastes, where possible, being managed by:</p> <ul style="list-style-type: none"> • high levels of Pyrolysis (sub-Option 2a); and/or • high levels of Incineration with energy recovery (sub-Option 2c); and/or • MBT followed by Pyrolysis (sub-Option 3a); and/or • MBT followed by Gasification (sub-Option 3b); and/or • MBT followed by Incineration with energy recovery (sub-Option 3c); and/or • MBT followed by RDF to off-site energy use (sub-Option 3d); and/or • Autoclave followed by RDF to off-site energy use (sub-Option 4d).

25 All seven Preferred Options of the RWP Technology Strategy:

- have a ‘front end’ recycling and composting rate for Municipal Waste set at 50% in 2013 – this exceeds the current maximum National Waste Strategy for Wales target of achieving at least 40% recycling and composting of Municipal Waste by 2009/10;

- are designed to achieve the 2020 EU Landfill Directive target for the diversion of Biodegradable Municipal Waste from landfill by 2013; and
- ensure that targets for the management of the other principal controlled waste streams are also met – i.e. recycling targets for Construction and Demolition Waste and landfill diversion for Industrial and Commercial Waste.

26 The National Waste Strategy for Wales states that one of its primary objectives is:

“...to make Wales a model for sustainable waste management by adopting and implementing a sustainable, integrated approach to waste production, management and regulation (including litter and fly tipping) which minimises the production of waste and its impact on the environment, maximises the use of unavoidable waste as a resource, and minimises where practicable, the use of energy from waste and landfill”

27 The seven Preferred Options of the RWP Technology Strategy:

- are the best practicable environmental sub-Options;
- maximise the use of unavoidable waste as a resource through high source segregated recycling and composting levels; and therefore
- minimise the use of Energy from Waste and landfill.

28 The indicative new capacity required and indicative number of new facilities required in 2013 for each of the seven Preferred Options are shown below:

Indicative New Capacity Required in 2013 for South East Wales, by Preferred Option (tonnes)							
Technology Type	Preferred Option						
	2a	2c	3a	3b	3c	3d	4d
Clean MRF + Transfer Stations	495,770	495,770	495,770	495,770	495,770	495,770	495,770
In-Vessel Compost	268,626	268,626	268,626	268,626	268,626	268,626	268,626
Pyrolysis	739,148		418,326				
Gasification				418,326			
Incinerator		737,307			416,485		
MBT			739,148	739,148	739,148	739,148	
Autoclave							739,148
Civic Amenity	39,011	39,011	39,011	39,011	39,011	39,011	39,011
Open-Windrow Compost							
C&D Exemption	971,013	971,013	971,013	971,013	971,013	971,013	971,013
C&D Recycling	751,013	751,013	751,013	751,013	751,013	751,013	751,013
Total	3,264,580	3,262,739	3,682,905	3,682,905	3,681,064	3,264,580	3,264,580

Indicative Number of New Facilities Required in 2013 for South East Wales, by Preferred Option							
Technology Types	Preferred Option						
	2a	2c	3a	3b	3c	3d	4d
Clean MRF + Transfer Stations	7	7	7	7	7	7	7
In-Vessel Compost	12	12	12	12	12	12	12
Pyrolysis	12		7				
Gasification				6			
Incinerator		5			3		
MBT			6	6	8	6	
Autoclave							4
Civic Amenity	8	8	8	8	8	8	8
Open-Windrow Compost							
C&D Exemption	373	373	373	373	373	373	373
C&D Recycling	18	18	18	18	18	18	18
Total	430	424	431	430	430	424	423

29 Forecasts of remaining landfill void in 2013 in South East Wales indicate that the region:

- will not need any new non-hazardous waste landfill capacity by 2013;
- has a current need for new hazardous waste landfill capacity; and
- will need new inert waste landfill capacity before the end of the decade.

The RWP Spatial Strategy

30 The RWP Spatial Strategy contains two elements:

- Estimates of the total land area required for new in-building waste management / resource recovery facilities, an analysis of the potentially available land area for new in-building facilities on *existing* land use class B2 'general industrial' (and similar) employment sites, major industry sites and B2 sites that have already been allocated in development plans, and a list of these sites.
- 'Areas of Search' maps for use in identifying *new* sites for in-building and open-air waste management / resource recovery facilities.

31 Advances in technology and the introduction of new legislation, policies and practices mean that many modern waste management / resource recovery facilities on the outside look no different to any other industrial building and on the inside contain industrial demanufacturing processes or energy generation activities that are no different to many other modern industrial processes in terms of their operation or impact. For this reason, many existing land use class B2 'general industrial' (and similar) employment sites, existing major industry areas, and new B2 sites allocated in development plans will be suitable locations for the new generation of in-building waste management facilities that will be required in accordance with the RWP Technology Strategy.

32 The estimated total land area required in South East Wales for new in-building facilities by 2013 for the seven Preferred Options ranges from between 48 hectares to 108 hectares. The analysis of the potentially available land area on existing B2 (and similar) or major industry sites and B2 sites that have already been allocated in development plans has shown that **in each Unitary Authority area for which data is available there is, at the current time, a clear surplus of developable land with a B2 (and similar) planning permission or proposed use to accommodate the highest estimate of the total land area required for new in-building waste management facilities.** In South East Wales there is a total of 729 developable hectares of land with a B2 (and similar) planning permission or proposed use.

Estimate of the total land area required for new in-building facilities in 2013 for South East Wales, by Preferred Option (hectares)							
Technology Type	Sub-Option						
	2a	2c	3a	3b	3c	3d	4d
Clean MRF + Transfer Stations	17	17	17	17	17	17	17
In-Vessel Compost	13	13	13	13	13	13	13
Pyrolysis	20		11				
Gasification				19			
Incinerator		23			13		
MBT			47	44	65	47	
Autoclave							18
Total	50	53	89	94	108	78	48

33 The generation and assessment of Areas of Search has been undertaken through a Sustainability Appraisal process that incorporated the requirements of Strategic Environmental Assessment, using a Geographical Information System to produce Areas of Search maps. The process involved:

- The identification of Sustainability Appraisal Objectives.
- The identification of mappable criteria to enable assessment against the Sustainability Appraisal Objectives – effectively questions about spatial issues that can be answered through a Geographical Information System analysis, such as areas with specific designations or features and/or distances from those specific designations or features.
- The application of weightings to each of the criteria to reflect the level of potential or constraint – applying separate weightings for in-building facilities and for open-air facilities.
- The production of composite maps based on the weighted criteria using a Geographical Information System – producing separate maps for in-building facilities and for open-air facilities.

34 This process allowed sustainability principles to be embedded into the process of area selection, rather than an ‘add-on’ process at the end, and enabled the results of the Geographical Information System analysis to be linked directly to the Sustainability Appraisal Objectives.

35 The objectives and mapped criteria for the Areas of Search Sustainability Appraisal are summarised below.

Sustainability Objectives	Mapped Criteria
Ensure prudent use of land & resources	<ul style="list-style-type: none"> • Landfill Site • Quarry site • Agricultural Land Classification • Green Wedges • Industrial Land • Existing Non-Landfill Waste Management Facility
Minimise greenhouse gas emissions	<ul style="list-style-type: none"> • Proximity to Ports / Docks • Proximity to Urban Area
Minimise adverse effects on air quality	<ul style="list-style-type: none"> • Air Quality Management Area • Proximity to Residential Development
Protect & enhance the landscape, townscape & cultural heritage of Wales	<ul style="list-style-type: none"> • Proximity to National Parks • Proximity to Areas of Outstanding Natural Beauty • LandMap • Special Landscape Area • Historic Landscape • Proximity to World Heritage Site • Proximity to Scheduled Ancient Monuments • Heritage Coast • Proximity to Historic Park and Garden
Minimise adverse effects on water quality	<ul style="list-style-type: none"> • Minor Aquifer • Proximity to River Quality Objectives • Proximity to Surface Water Protection Zone • Groundwater Source Catchment Area Zones • Major Aquifer • Lakes and Rivers
Avoid increasing flood risk	<ul style="list-style-type: none"> • TAN 15 Layer C1 • TAN 15 Layer C2
Protect biodiversity	<ul style="list-style-type: none"> • Proximity to Special Area of Conservation • Proximity to Special Protection Area • Proximity to Ramsar Site • Proximity to Site of Special Scientific Interest • Proximity to National Nature Reserve • Local Nature Reserve • Proximity to Ancient Woodland
Provide employment opportunities & support long-term jobs & skills	<ul style="list-style-type: none"> • Proximity to Urban Area
Minimise adverse effects on residential property	<ul style="list-style-type: none"> • Proximity to Residential Development
Minimise the increased cost of waste management	<ul style="list-style-type: none"> • Proximity to Urban Area • Proximity to Primary Road Network • Slope
Protect local amenity	<ul style="list-style-type: none"> • Common Land / Open Country • Public Forests • Country Parks
Minimise adverse effects on public health and avoid increasing health inequalities	<ul style="list-style-type: none"> • Proximity to Residential Development

- 36 The Sustainability Appraisal objectives, criteria and weightings used in the generation and assessment of the Areas of Search are set out in detail in Appendix H.
- 37 The following two broad principles for the viewing and use of the Areas of Search maps and data must be noted:
- The sole purpose of the Areas of Search maps and data is to identify Areas of Search at a strategic level for use by Local Planning Authorities during the Local Development Plan preparation process – as a starting point for more detailed local level assessments to identify appropriate sites for waste management facilities in Local Development Plans.
 - Because the sole purpose of the Areas of Search maps and data is to identify Areas of Search at the strategic level, the Areas of Search maps and data must not be used by any organization or individual to determine the appropriateness of proposals for individual waste management facilities. The Areas of Search maps and data must not be used by Local Planning Authorities as a development control tool.
- 38 More detailed principles for the viewing and use of the Areas of Search maps and data are set out in Chapter 12.
- 39 **The Areas of Search maps for in-building and open-air facilities are presented in Appendix I. Each map comprises:**
- **1st Areas of Search** – identified as areas appropriate for waste management development due to the presence of appropriate site characteristics (such as proximity to the road network) and few significant environmental constraints;
 - **2nd, 3rd and 4th Areas of Search** – identified as those areas that cannot be excluded from consideration as appropriate areas, but where a greater level of constraint or constraints exists; and
 - **Exclusion Areas** – identified as those areas that, on the basis of clear planning policy, have been excluded from consideration as appropriate for waste management development.

Next Steps

- 40 A range of actions and circumstances will be necessary to achieve the implementation of the RWP 1st Review.
- 41 **Actions for Local Planning Authorities:**
- The RWP Technology Strategy and RWP Spatial Strategy will be brought together through the Local Development Plan preparation process in individual Unitary Authority areas in order to identify appropriate sites for waste management / resource recovery facilities. Each Local Planning Authority should include in its development plan elements of the RWP that are germane to its area and should determine actual locations of facilities and make provisions in their development plans.
 - A high standard of public consultation will be essential. The Community Engagement Guidance on Waste Infrastructure will be a valuable tool for Local

Planning Authorities during the process of identifying appropriate sites for waste management / resource recovery facilities.

- Appendix K sets out guidelines that individual Unitary Authorities may wish to follow in bringing together the RWP Technology Strategy and the RWP Spatial Strategy through the Local Development Plan preparation process in their individual Unitary Authority areas in order to identify appropriate sites for waste management / resource recovery facilities.
- Local Planning Authorities should consider liaising with the Wales Environment Trust regarding its RAP-ID initiative in order to hasten site delivery, particularly with respect to initial site identification and with respect to the mutual benefits of co-locating new facilities in Eco-Parks alongside other synergistic activities within the Environmental Goods and Services sector. Details on the RAP-ID initiative are given in Appendix L.

42 **Economic development bodies should note the following points:**

- The RWP Spatial Strategy estimates that the total demand for land area for new in-building waste management / resource recovery facilities in South East Wales ranges from between 48 hectares to 108 hectares.
- The waste management / resource recovery sector presents job and wealth creation opportunities – both directly in upstream resource recovery facilities and in downstream industries that reprocess the recovered materials.
- As the resource recovery sector grows, so too will the markets and competition for the recovered materials – those regions with the best-developed network of upstream resource recovery facilities will have a competitive advantage.
- The seven Preferred Options of the RWP Technology Strategy all involve Energy from Waste. This presents significant opportunities for co-locating and networking Energy from Waste facilities with energy consuming land uses such as large industrial energy users or district heating systems in industrial estates – energy users could benefit from lower energy costs, long term energy contracts at fixed prices and the prestige of using an innovative and environmentally friendly source of energy.
- Advances in technology and the introduction of new legislation, policies and practices mean that many modern waste management / resource recovery facilities on the outside look no different to any other industrial building and on the inside contain industrial demanufacturing processes or energy generation activities that are no different to many other modern industrial processes in terms of their operation or impact. For this reason, many existing land use class B2 ‘general industrial’ (and similar) employment sites, existing major industry areas, and new B2 sites allocated in development plans will be suitable locations for the new generation of in-building waste management facilities that will be required in accordance with the RWP Technology Strategy.
- Enabling an integrated and adequate network of waste management / resource recovery facilities must be viewed as an issue of enabling the development of an element of infrastructure that is required by all businesses in the region – minimising the cost to business of transporting waste for management.
- Economic development bodies have an important role to play in enabling South East Wales to meet the requirements set in EU and national legislation and policy.

43 **Actions for economic development bodies:**

- Economic development bodies must proactively engage with the waste management / resource recovery sector in order to enable the sale or release of appropriate land for new facilities.
- The Welsh Assembly Government and Unitary Authorities own similar amounts of developable land with a B2 planning permission or proposed use and therefore the Welsh Assembly Government and Unitary Authorities equally share the responsibility of enabling the sale or release of appropriate land from within their portfolios for new waste management / resource recovery facilities. The potentially available land area on existing and allocated B2 (and similar) or major industry sites is listed in Appendix G.
- Economic development bodies should consider liaising with the Wales Environment Trust regarding its RAP-ID initiative, particularly in respect of developing facilities alongside other synergistic activities within the Environmental Goods and Services sector. Details on the RAP-ID initiative are given in Appendix L

44 **Actions for Waste Disposal Authorities:**

- There is an urgent need for new Municipal Waste management / resource recovery facilities to enable South East Wales to meet the EU Landfill Directive requirements for the diversion of Biodegradable Municipal Waste from landfill.
- Waste Disposal Authorities will most likely need to work in cooperation to make provision for the new capacity required for Municipal Waste by jointly planning for facilities that serve more than one local authority area due to the efficiencies associated with larger facilities. Some Waste Disposal Authorities may wish, and be able to, make provision within their boundaries for the new capacity required for Municipal Waste. Cooperative working is already underway; three sub-regional groups of local authorities have now emerged for planning and procuring new facilities.
- If a Waste Disposal Authority pursues a local strategy that is different to the RWP Waste Technology Strategy, it is likely that the local strategy would need to robustly justified at the planning application stage of new facilities by reference to a local Best Practicable Environmental Option assessment / Sustainability Appraisal / Strategic Environmental Assessment – because the RWP 1st Review will be a material consideration in the planning process.
- A high standard of public consultation will be essential. The Community Engagement Guidance on Waste Infrastructure will be a valuable tool for Waste Disposal Authorities during the process of planning and procuring new waste management / resource recovery facilities.
- It is recommended that any proposals for larger-scale facilities which require a planning permission and an Environmental Impact Assessment demonstrate clearly to local communities that any potential health impacts have been addressed – whether through the Environmental Impact Assessment process, a site-specific Health Impact Assessment or through the Waste Management Licensing / Pollution Prevention and Control permit application procedure.
- The seven Preferred Options of the RWP Technology Strategy all involve an element of Energy from Waste. Developers should consider opportunities for co-locating and networking Energy from Waste facilities with proposed or existing energy

consuming land uses that could benefit from the heat and/or electricity produced – such as large industrial energy users or district heating systems in industrial estates.

45 **Actions for the Waste Management Industry**

- Individual waste management companies and industry bodies must proactively engage with individual Local Planning Authorities during the Local Development Plan preparation process in order to communicate their needs and interests. The RWP Technology Strategy and RWP Spatial Strategy will be brought together through the Local Development Plan preparation process in individual Unitary Authority areas in order to identify appropriate sites for waste management / resource recovery facilities.
- Many existing land use class B2 ‘general industrial’ (and similar) employment sites, existing major industry areas, and new B2 sites allocated in development plans will be suitable locations for the new generation of in-building waste management facilities that will be required in accordance with the RWP Technology Strategy. It should be noted that at the current time there is a clear surplus of land on existing land use class B2 ‘general industrial’ (and similar) employment sites, existing major industry areas, and new B2 sites allocated in development plans to accommodate the highest estimate of the total land area required for new in-building waste management facilities – the potentially available land area on existing and allocated B2 (and similar) or major industry sites is listed in Appendix G. It should also be noted that some new in-building waste management facilities could be developed within vacant existing industrial buildings and, in certain circumstances, some of these may be lawfully be developed without the need to submit a planning application to the Local Planning Authority. For further details see Chapter 11.
- A high standard of public consultation will be essential. The Community Engagement Guidance on Waste Infrastructure will be a valuable tool for waste management companies during the process of planning and developing new waste management / resource recovery facilities.
- It is recommended that any proposals for larger-scale facilities which require a planning permission and an Environmental Impact Assessment demonstrate clearly to local communities that any potential health impacts have been addressed – whether through the Environmental Impact Assessment process, a site-specific Health Impact Assessment or through the Waste Management Licensing / Pollution Prevention and Control permit application procedure.
- The seven Preferred Options of the RWP Technology Strategy all involve an element of Energy from Waste. Developers should consider opportunities for co-locating and networking Energy from Waste facilities with proposed or existing energy consuming land uses that could benefit from the heat and/or electricity produced – such as large industrial energy users or district heating systems in industrial estates.
- Individual waste management companies should consider liaising with the Wales Environment Trust regarding its RAP-ID initiative, particularly with respect to initial site identification, with respect to the mutual benefits of co-locating new facilities in Eco-Parks alongside other synergistic activities within the Environmental Goods and Services sector and regarding the potential to deliver benefits via combined facilities for Commercial, Industrial and Municipal Wastes. Details on the RAP-ID initiative are given in Appendix L.

PART A:

BACKGROUND & INTRODUCTION

1. Introduction

1.1 From Waste Disposal to Resource Recovery

- 1.1.1 South East Wales has historically approached waste as problem that is most conveniently and cost effectively disposed of in landfill. It is now widely recognized that this disposal approach is unsustainable in the long term because of growing volumes of waste, because of the risk of environmental pollution and because of the burying of valuable resources.
- 1.1.2 **Waste must now be approached as a resource from which value can, and should, be recovered.** This recovery approach will see the value in waste being realized through the reuse, recycling or composting of products and materials and the production of energy. New facilities will need to be developed in South East Wales to recover value from the waste produced in the region.
- 1.1.3 The move from a waste disposal approach to a resource recovery approach is being encouraged and driven by requirements set in European Union (EU) and national legislation and policy. Of particular concern at the current time is the urgent need for new waste management / resource recovery facilities to enable South East Wales to meet the EU Landfill Directive requirements for the diversion of Biodegradable Municipal Waste (BMW) from landfill¹.
- 1.1.4 There will always be a proportion of waste that cannot be reused, recycled / composted or used to produce energy. For this reason there will always be a need for landfill facilities in South East Wales to dispose of the waste produced in the region from which value cannot be recovered.
- 1.1.5 Proposals for the development of facilities to deal with waste materials often face opposition because they are perceived to be a ‘bad neighbour’. This can result in a costly and lengthy planning process in some cases with the proposal ultimately being rejected. This in turn makes developing waste management / resource recovery facilities very risky and time consuming.
- 1.1.6 This Regional Waste Plan (RWP) 1st Review provides strategic information on the types waste of management / resource recovery facilities required through a ‘RWP Technology Strategy’ and provides strategic information on the types of locations likely to be acceptable through a ‘RWP Spatial Strategy’. The RWP Technology Strategy and RWP Spatial Strategy will be brought together through the Local Development Plans (LDP) preparation process in individual Unitary Authority (UA) areas in order to identify appropriate sites for waste management / resource recovery to provide developers – both UAs and the wider waste management industry – with more certainty in developing waste management / resource recovery facilities.

1.2 Regional Waste Planning

- 1.2.1 This Recommended Draft of the Regional Waste Plan 1st Review has been prepared by the South East Wales Regional Waste Group (RWG) in line with the requirements of Planning

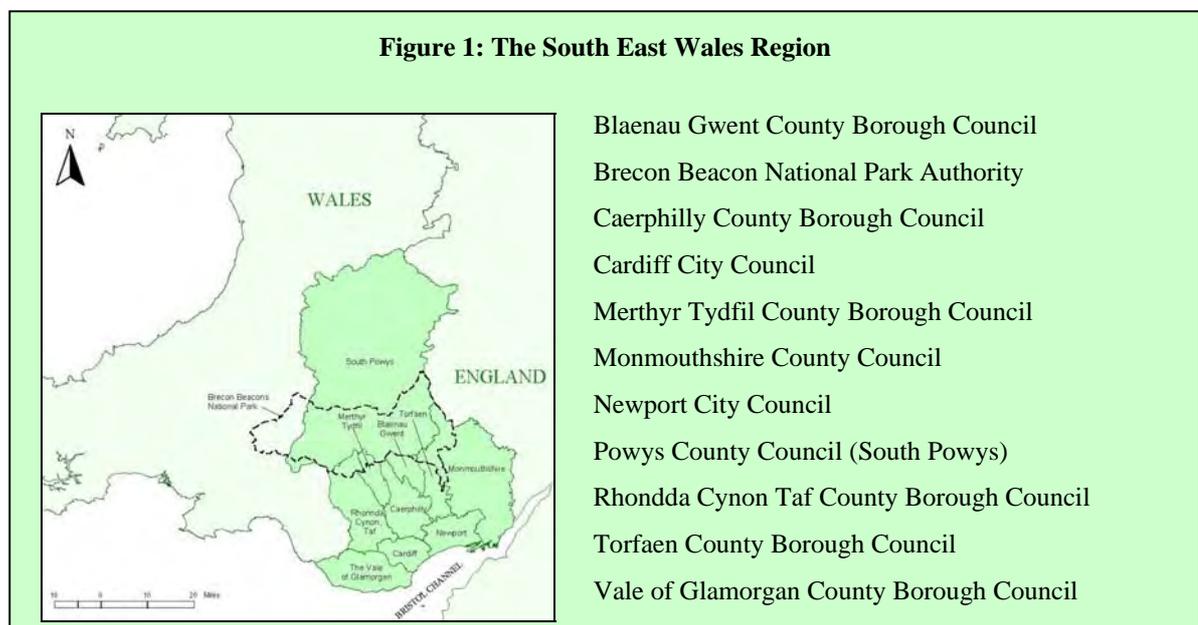
¹ Article 5 of ‘European Union Directive 1999/31/EC of 26 April 1999 on the landfill of waste.’

Policy Wales Technical Advice Note 21: Waste (TAN 21)² and later guidance from the Welsh Assembly Government (WAG)³.

1.2.2 The South East Wales RWG is one of three such bodies set up in Wales to provide regional coordination and a strategic integrated approach to the management of all waste streams. The Group is led by a Members Steering Group (MSG) made up of Members from the 11 constituent Local Planning Authorities (LPAs) in the region and is supported by a Regional Waste Technical Group (RWTG) of officers from local government, the WAG, Environment Agency Wales (EAW) and other government bodies and representatives from the waste industry and environmental groups. The membership of both the MSG and RWTG is set out in Appendix A.

1.3 The Region

1.3.1 The geographical area covered by the RWG is shown in Figure 1^{4 5}.



1.3.2 The South East Wales RWP region is home to just under half the population of Wales: 1,350,000 people in 545,000 households. There are three distinct parts to the region, each presenting different challenges for waste management:

- the cities of Cardiff and Newport with a population of some 460,000 in an area of 80 sq miles at high densities and with pressure for development;

² Welsh Assembly Government, 2001. *Planning Policy Wales Technical Advice Note 21: Waste*. Cardiff: WAG.

³ Welsh Assembly Government, 2006. *The Revision of the Regional Waste Plans*. Cardiff: WAG.

⁴ The SE Wales Regional Waste Plan area includes 'South Powys' which comprises the former Brecknockshire and Radnorshire and excludes Montgomeryshire. Montgomeryshire falls within the North Wales Regional Waste Plan area.

⁵ Unitary Authorities are Waste Planning Authorities, Waste Collection Authorities and Waste Disposal Authorities. National Park Authorities are Waste Planning Authority but not Waste Collection Authorities or Waste Disposal Authorities. For this reason the capacity requirements for the strategic waste management Options are broken down by UA area and no capacity requirements are presented for the NPA.

- the ‘Valleys’ with about 615,000 people in about 400 sq miles broadly characterised by linear urban communities with a long experience of population loss away from the recent growth points where the valleys meet the M4 Corridor; and
- the rural areas of south Powys, Monmouthshire and the coastal plain spread over 1,700 sq miles, about 77% of the region, with a population of some 275,000 at low densities and with significant areas of strong pressures for growth

1.4 Overview of the first Regional Waste Plan

1.4.1 The first RWP for South East Wales was agreed by the MSG, endorsed by all of the local authorities in the region and published in March 2004.

1.4.2 The first RWP set out the Technology Strategy shown in Figure 2. The RWP allocated the required capacity for each waste management / resource facility type to each local authority area with the purpose that provision is made for meeting those capacity requirements in Development Plans. The RWP also provided a guide to the locational requirements of each facility type to assist LPAs with site selection.

Figure 2: The First RWP Technology Strategy

1.4.3 In order to develop the RWP Technology Strategy it was necessary to generate and assess a number of alternative strategic waste management ‘Options’ – different combinations of waste management technologies that would enable the Region to meet or exceed legislative targets. These Options were generated on the basis of choices at three levels, with a decision being made at each level before moving on to the next choice.

- Aim to achieve the 2020 Landfill Directive targets by 2013
- Achieve this principally through maximising recycling and composting
- Deal with residual waste by MBT
- Choose between either sending the residual waste from MBT to landfill or using it as Refuse Derived Fuel
- Limit the amount of waste going to landfill to that which can not be dealt with acceptably in any other way

1.4.4 At **Level 1** the choice was: **Should targets be met or exceeded?** There were three choices:

- to ‘do nothing’ and continue with existing measures to deal with waste;
- to aim to meet targets set for composting, recycling and diversion of waste from landfill; or
- to seek to exceed targets.

1.4.5 At **Level 2** the choice was: **What amount of recycling and composting should be aimed for?** Targets have been set for recycling and composting together, with flexibility as to whether to put more emphasis on one or the other, or to pursue both equally.

1.4.6 At **Level 3** the choice was: **What method should be used for dealing with residual waste⁶?** There were a number of choices for dealing with the residual waste. It was considered that at the time this amounted to the use of either Mechanical Biological Treatment (MBT), Energy from Waste (EfW) or landfill.

⁶ Residual Waste – waste remaining to be managed after reuse, recycling and composting.

1.4.7 From the above choices, 7 Options were established which between them allowed a broad comparison of all the choices either directly or indirectly and were considered to represent a sufficient range of choices for dealing with waste in the region.

1.4.8 The Options were characterised by whether they met or exceeded targets and by the principal method for dealing with the residual waste:

- Option 0: A ‘Do-Nothing’ strategy
- Option 1: Meet 2013 Targets / MBT-led strategy for residual waste
- Option 2: Meet 2013 Targets / Thermal-led strategy for residual waste
- Option 3: Meet 2013 Targets / Landfill-led strategy for residual waste
- Option 4: Meet 2013 Targets / Landfill-led strategy for residual waste
- Option 5: A ‘Do More’ strategy / Landfill-led strategy for residual waste
- Option 6: A ‘Do More’ strategy / MBT-led strategy for residual waste (including EfW or landfill).

1.4.9 The advantages and disadvantages of these 7 Options were then assessed using the following methods:

- Agreeing and weighting Objectives and Indicators.
- A Life Cycle Assessment (LCA) to compare the environmental costs and benefits of each Option in relation to environmental indicators;
- A wider Sustainability Appraisal (SA) which took account of economics, social consequences, practicability and consistency with policy, in addition to environmental factors; and
- A Health Impact Assessment (HIA).

1.4.10 Following these assessments and a wide stakeholder and public consultation, Option 6 emerged very clearly as the ‘Preferred Option’ and was therefore selected as the basis for the RWP Technology Strategy outlined in Figure 2.

1.5 Reasons for reviewing the RWP

1.5.1 TAN 21 requires that RWPs are reviewed every 3 years. In addition to this requirement, there are a number of practical reasons for reviewing the RWP that can be broken down into two groups:

- The need to review the RWP Technology Strategy – the combination of waste management technologies that would enable the region to meet or exceed legislative targets.
- The need to develop the RWP Spatial Strategy – the influence the RWP exerts over the location of the required waste management / resource recovery facilities.

1.6 Reviewing the alternative strategic waste management Options

1.6.1 It is appropriate to review the RWP Technology Strategy, and the generation and assessment of the alternative strategic waste management Options from which the RWP Technology Strategy is selected, for the following reasons:

- The first RWP was based on forecasts of future waste arisings made in 2002. It has been necessary to **review the forecast models** in light of new data on arisings, current thinking on future arisings and an up-to-date understanding of the regional context. The data contained in the 2005 and 2006 Annual Monitoring Reports (AMRs)⁷ provided updated baseline information for forecasting.
- A number of **new waste management / resource recovery technologies** were not included in the Options developed for the first RWP because, at that time, little information was available about these technologies. More information about these technologies is now available.
- **Research into the markets for the products of MBT processes** can now be factored into the SA.
- The Environment Agency has produced an **updated LCA tool** which allows more accurate assessment of MBT and assessment of other new waste management / resource recovery technologies.

1.7 Developing the Spatial Element of the RWP

1.7.1 It is appropriate to develop the RWP Spatial Strategy for the following reasons:

- The EU Waste Framework Directive requires Member States to publish waste management plans that include either a geographical map specifying the exact location of waste disposal sites or precise mappable criteria. Having failed to ensure that such plans containing maps or precise mappable criteria are in place within the required time frame, the UK government has negotiated a 3-year delay in infraction proceedings up to July 2010. It is not likely that there will be Wales-wide coverage of adopted LDPs containing such maps or precise mappable criteria by 2010 and therefore the WAG is seeking to achieve an adequate level of detail in the RWP 1st Review documents across Wales in order to meet the EU requirements and avoid infraction fines. Appendix B provides further details on the requirements of the Waste Framework Directive.
- TAN 21⁸ states that while it would be for individual local authorities to determine actual locations of facilities and make provisions in their development plans, the RWP should specify the approximate location or type of location of new facilities: *“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 local political process and in recognition of existing contractual arrangements, would serve the region.”*

⁷ The Annual Monitoring Reports for 2005 and 2006 are available on the internet at www.sewaleswasteplan.org.

⁸ Paras 2.15 & 2.16 of ‘Welsh Assembly Government, 2001. *Planning Policy Wales Technical Advice Note 21: Waste*. Cardiff: WAG.’

2. ***The legislation and policy context***

2.1 **European Legislation and Policy**

2.1.1 Waste is an international issue and accordingly there are a number of EU Directives that affect Member States. The most relevant Directives are identified below:

- **Waste Framework Directive** – requires Member States to establish an integrated and adequate network of disposal installations, taking account of the best available technology not involving excessive costs and requires that waste management plans relating to the type, quantity and origin of waste to be recovered or disposed of and suitable disposal sites or installations are produced. Appendix B provides further details on the requirements of the Waste Framework Directive.
- **Landfill Directive** – includes a requirement to limit the amount of BMW sent to landfill.
- **Hazardous Waste Directive**
- **Waste Incineration Directive (WID)**
- **Integrated Pollution Prevention and Control Directive**

2.2 **National Legislation and Policy**

2.2.1 EU Directives set the context for National waste legislation, policy and initiatives. The most relevant of these which provide the context for the RWP 1st Review are identified below:

- **The National Waste Strategy for Wales⁹** (NWSW) – specifies various targets for the management of wastes and contains information relevant to the process for producing Regional Waste Plans. The targets are classified as either: UK targets where Wales must meet targets for the UK set in EU Directives; Primary Wales-specific targets where the WAG and its key partners (e.g. local government) have a direct influence over their outcome; and finally Secondary Wales specific targets where the WAG's influence is less.
- **Planning Policy Wales TAN 21¹⁰** – details the process for producing Regional Waste Plans.
- **Environment Strategy for Wales¹¹** – includes an outcome¹² that appropriate waste management facilities are in place to minimise the amount of waste going to landfill by 2013 and states that this will mean producing energy from waste that cannot practically be recycled.
- **The Landfill Allowance Scheme (Wales) Regulations** – transposed the Landfill Directive requirement to limit the amount of BMW sent to landfill by setting each Waste Disposal Authority (WDA) in Wales decreasing annual BMW landfill allowances in order that Wales meets the Landfill Directive requirements and allows the WAG to impose financial penalties on any WDAs that exceed landfill allowances or fail to comply with reporting requirements.
- **The Landfill (England and Wales) Regulations** – banned the practice of co-disposing of Hazardous and Non-Hazardous Wastes in the same landfill.

⁹ Welsh Assembly Government, 2002. *Wise About Waste: The National Waste Strategy for Wales*. Cardiff: WAG.

¹⁰ Welsh Assembly Government, 2001. *Planning Policy Wales Technical Advice Note 21: Waste*. Cardiff: WAG.

¹¹ Welsh Assembly Government, 2006. *Environment Strategy for Wales*. Cardiff: WAG.

¹² Pgs 28 & 30 *ibid*.

- **The Hazardous Waste (England and Wales) Regulations** and the **List of Wastes (Wales) Regulations** – increased the number of wastes classified as ‘hazardous’ to include items such as waste TVs, computer monitors, fluorescent tubes, and pesticides.
- **The Waste Management (England and Wales) Regulations 2006** – ‘The Agricultural Waste Regulations’ – prohibit unregulated burying and burning of Agricultural Waste on farms and require farmers and growers to: send or take their waste for disposal off-farm at licensed sites; and/or register a licensing exemption with the EAW to recycle waste on-farm; and/or apply to the EAW for a licence to continue on-farm disposal.
- **Pollution Prevention & Control (England and Wales) Regulations 2000** – covers the disposal of waste by landfill, waste treatment and storage facilities.
- **Animal By-Products (Wales) Regulations 2006** – specifies how animal by-products must be used or disposed of.

3. Vision, Aims and Objectives

3.1 Vision and Aims

3.1.1 Guided by the European and National policy context, the RWP 1st Review has the following vision and aims.

Figure 3: Vision & Aims of the RWP 1st Review

Vision: To provide a land use planning framework for the sustainable management of wastes and recovery of resources in South East Wales, with the following aims:

Aim A: To minimise adverse impacts on the environment and human health.

Aim B: To minimise adverse social and economic impacts and maximise social and economic opportunities.

Aim C: To meet the needs of communities and businesses.

Aim D: To accord with the legislative requirements, targets, principles and policies set by the European

3.2 Objectives

3.2.1 To meet these aims, the following objectives have been set for the RWP 1st Review. Again, these have been guided by the European and National policy context and have also been informed by the Strategic Environmental Assessment (SEA) / SA process.

Figure 4: Objectives of the RWP 1st Review

Environmental and Health Objectives (Aim A)

- Ensure prudent use of land and other resources
- Safeguard soil quality
- Minimise greenhouse gas emissions
- Adapt to the effects of climate change
- Minimise adverse impacts on air quality and public health
- Conserve landscapes, townscapes and cultural heritage
- Protect local amenity
- Minimise adverse effects on water quality
- Minimise requirements for water use
- Avoid increasing flood risk
- Protect biodiversity and valuable sites

Socio-Economic Objectives (Aim B)

- Minimise local transport impacts
- Provide employment opportunities
- Provide opportunities for public involvement and education

Waste Management Service Delivery Objectives (Aim C)

- Minimise the costs of waste management
- Ensure reliability of delivery of waste management services

Policy Framework Objectives (Aim D)

- Conform to waste legislation and policy – European, UK and Welsh waste management / resource recovery targets, principles and policies

4. Underlying principles

4.1 Background

4.1.1 It is essential that the RWP 1st Review be guided by sound principles as a basis for the consideration of alternative strategic waste management Options and developing the spatial element. The following key principles have been drawn from the European and National policy context and are considered to be fundamental:

- Sustainability
- The Waste Hierarchy
- The Proximity Principle
- The Self-sufficiency Principle

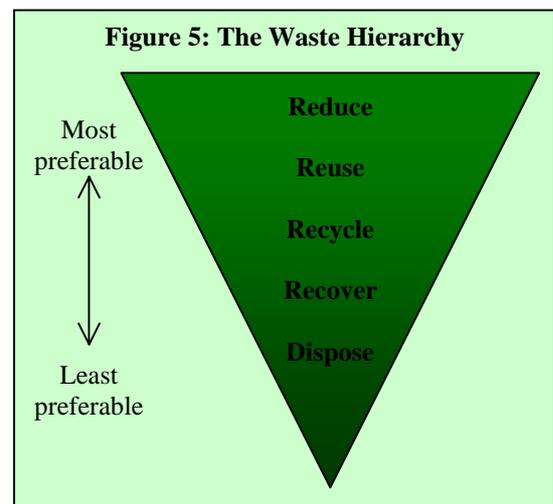
4.2 Sustainability

4.2.1 Sustainability in its simplest form is defined as “*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*”¹³. The NSW states that sustainable development requires that “*waste management should be carried out in a way that does not place undue social, economic or environmental burdens on either present or future generations and that ensures social equity, effective protection of the environment, the prudent use of natural resources and the maintenance of high and stable economic growth and employment*”¹⁴.

4.2.2 TAN 21 requires that the alternative strategic waste management Options be subject to a Best Practicable Environmental Option (BPEO) assessment¹⁵ and also advocates a study of ‘Sustainable Waste Management Options’; a combined assessment process incorporating additional factors relating to economics, social consequences, practicability and consistency with policy¹⁶.

4.3 The Waste Hierarchy

4.3.1 The Waste Hierarchy sets out the order in which approaches to waste management should be considered based on environmental impact. The hierarchy suggests that the most effective environmental solution is to **reduce** the generation of waste. Where further reduction is not practicable, the next best solution is to **reuse** products and materials, either for the same or for



¹³ Brundtland Commission, 1987. *Our Common Future*. Oxford: Oxford University Press.

¹⁴ Para 2.9 of ‘Welsh Assembly Government, 2002. *Wise About Waste: The National Waste Strategy for Wales*. Cardiff: WAG’.

¹⁵ The BPEO is defined as “*for a given set of objectives, the option that provides the most benefits or the least damage to the environment as a whole, at acceptable cost in the long term as well as in the short term*” in: ‘Royal Commission on Environmental Pollution, 1988. *The Twelfth Report Best Practicable Environmental Option*. London: RCEP.’

¹⁶ Paras 3.17-3.20 of ‘Welsh Assembly Government, 2001. *Planning Policy Wales Technical Advice Note 21: Waste*. Cardiff: WAG.’

a different purpose. Failing that, the next best solutions are to **recycle** or compost – in order to recover value from waste through the recovery of materials – followed by methods to **recover energy**. Only if none of these offers an appropriate solution should waste be incinerated without energy recovery or disposed of to landfill. The Waste Hierarchy is shown in Figure 5.

4.3.2 It is accepted that even in the long term, certain wastes might only be dealt with by disposal to landfill. It is also accepted that although the clear preference is to move away from disposal, there will be a period where landfill will remain to be the main available option. In that period, and for those materials still destined for disposal only, LPAs must ensure that there is adequate landfill capacity available.

4.4 The Proximity Principle

4.4.1 The Proximity Principle states that waste should be treated and/or disposed of as near to the source of origin as possible because transporting waste itself has an environmental impact and because we all need to take responsibility for our own waste arisings and not be content with distributing it to other locations for disposal.

4.5 The Self-sufficiency Principle

4.5.1 The Self-sufficiency Principle sets out that, as far as practically possible, waste should be treated and/or disposed of within a sensibly defined region where it is produced. Therefore, each of the three regions in Wales should aim, as far as is practicable, to provide for facilities with sufficient capacity to manage the predicted quantity and nature of waste arisings from that region.

4.5.2 While the RWP provides for facilities with sufficient capacity to manage the predicted quantity and nature of waste arisings from the region, this does not mean that all waste arising within the region must be managed within the region. For example:

- the Proximity Principle may mean that in some circumstances it is appropriate to transport particular wastes for a shorter distance out of the region than a for longer distance within the region; and/or
- it may not be practicable to manage some wastes according to the Self-Sufficiency or Proximity Principles due to their nature or volume – they may instead need to be managed at facilities serving the whole of Wales or the UK, e.g. Hazardous Waste treatment / disposal.

4.6 Other Considerations

4.6.1 There are a number of other principles that have implications for the land-use framework of the RWP 1st Review and for the way in which the Plan is prepared.

- **Producer Responsibility** – this approach is intended to require producers who put goods or materials onto the market to be more responsible for these products or materials when they become waste;
- **The Precautionary Principle** – this approach is used by decision makers in the management of risk. Precaution should be applied where scientific evidence is insufficient, inconclusive or uncertain, or where there are indications through

preliminary evaluation that there are reasonable grounds for concern that the potentially dangerous effects on the environment, human, animal or plant health may be inconsistent with the chosen level of protection;

- **Consultation and Equal Opportunity** – the RWP should be subject to wide consultation as a matter of principle. This will ensure that the Plan benefits from the views and contributions of all those with an interest in planning for waste management, including local communities, producers of waste, the waste management industry, environmental organisations and those with regulatory responsibilities; and
- **Integration and Partnership** – such concepts are integral to the RWP approach. Partnership between local authorities, the voluntary sector, the private sector and communities can allow a greater range of choices to be implemented and widen ‘ownership’ of both problems and solutions.

5. Waste arisings and management – the current position

5.1 Types of Waste

5.1.1 The RWP 1st Review relates to the following principal ‘controlled’ waste streams:

- Municipal Solid Waste (MSW);
- Industrial Waste;
- Commercial Waste;
- Construction & Demolition Waste (C&D);
- Hazardous Waste; and
- Agricultural Waste (the proportion requiring external management only).

5.1.2 MSW includes household waste and any other wastes collected by a Waste Collection Authority, such as municipal parks and gardens waste, beach cleansing waste, Commercial or Industrial Waste and waste resulting from the clearance of fly-tipping. Household waste includes domestic waste from household collection rounds, waste from services such as street sweepings, bulky waste collection, litter collection, hazardous household waste collection and garden waste collection, waste from civic amenity sites and wastes separately collected for recycling or composting through bring recycling schemes and kerbside recycling schemes.

5.1.3 Industrial Waste is waste from any factory or industrial process (excluding mines and quarries).

5.1.4 Commercial Waste is waste arising from premises used wholly or mainly for trade, business, sport, recreation or entertainment, excluding MSW and Industrial Waste.

5.1.5 C&D Waste is waste arising from the construction, repair, maintenance and demolition of buildings and structures, including roads. It consists mostly of brick, concrete, hardcore, subsoil and topsoil, but it can also contain quantities of timber, metal and plastics.

5.1.6 The term ‘Hazardous Waste’ covers a wide range of waste materials that present different levels of risk. Some could present a serious and immediate threat to human health and the environment, for example those that are toxic, are carcinogenic or contain pathogens. Others, such as fluorescent tubes or TVs and computer monitors, pose little immediate threat but could cause long-term damage over a period of time.

5.1.7 Agricultural Waste is waste produced at agricultural premises as a result of an agricultural activity. Manure and slurry is not classified as waste when used as a fertiliser¹⁷.

5.1.8 Very Low Level Radioactive Waste (VLLW) including Substances of Low Activity (SOLA) may be disposed of in the same way as Municipal, Industrial and Commercial Waste and should therefore be considered as part of this Plan. However, there is limited knowledge with regard to the arisings of this type of waste and it is suggested that any detailed evaluation of the requirements for this waste stream are undertaken in a subsequent review.

¹⁷ DEFRA, 2006. *The Agricultural Waste Regulations – Frequently Asked Questions and Answers*. Version 2.0. London: DEFRA.

5.2 Annual Monitoring Reports

- 5.2.1 Central to the process of undertaking the RWP 1st Review is the collection and analysis of information regarding the waste situation within the region and the implementation of the first RWP. This information has been published annually in AMRs¹⁸.
- 5.2.2 Information on the waste situation within the region has been collected and reported in order to monitor the region's waste arisings, recovery and disposal and in order to make forecasts of future arisings. The challenge of planning for waste management and resource recovery facilities must be undertaken with a sound information base; it is therefore important to have comprehensive, accurate, timely, and consistent information. This information has provided a sound basis for analysing current trends and growth rates and enabled a review of the forecast models that were used in the preparation of the first RWP.
- 5.2.3 Information on the region's waste management / resource recovery facilities is collected and reported in order to monitor implementation of the RWP – both in terms of the facilities that are being planned for in local authority development plans and in terms of the facilities that are currently operating.
- 5.2.4 The sections below summarise and discuss the headline information from the AMRs. Much more detailed information is available in the AMRs^{19 20}.

5.3 Current Waste Arisings

- 5.3.1 Data regarding the arisings of each of the principal controlled waste streams shows:

- In 2005/06, regional arisings of MSW were 825,000 tonnes. Household waste arisings were 1,248 kg per household and 504 kg per person.
- In 2002/03 regional Industrial & Commercial Waste arisings were 1,320,000 tonnes – Industrial Waste arisings were 860,000 tonnes and Commercial Waste arisings were 460,000 tonnes.
- In 2003, regional arisings of C&D Waste were 2,750,000 tonnes.
- In 1998, regional arisings of Agricultural Waste were 19,108 tonnes.
- In 2004, regional arisings of Special Waste were 234,000 tonnes.

- 5.3.2 It is not possible to calculate the known arisings of All Controlled Waste each year because annual data on arisings is collected only for the MSW and Hazardous Waste streams. It is estimated that in

Figure 6: Known and Estimated Controlled Waste Arisings in South East Wales in 2002/03 (tonnes)

Waste Stream	2002/03
MSW	762,215
Industrial	860,213
Commercial	455,977
C&D	Est 2,535,699
Agricultural	Est 18,355
Special / Hazardous	106,674
All Controlled Waste	4,739,133

¹⁸ The Annual Monitoring Reports for 2005, 2006 and 2007 are available on the internet at www.sewaleswasteplan.org.

¹⁹ The Annual Monitoring Reports for 2005, 2006 and 2007 are available on the internet at www.sewaleswasteplan.org.

²⁰ EAW release new data on the arisings and management of wastes on a continuous cycle. New data sets released since the AMR 2007 include: 2006 Hazardous Waste Data; 2006 Commercial & Industrial Waste Arisings (estimate based on 2002/3 survey data re-grossed to 2006 ONS figures); 2006 Agricultural Waste Arisings Data; Landfill Void as at 31 March 2007; 2006 Construction & Demolition Waste Data; and Numbers and capacity of waste management operations (PPC, WML & Exemptions).

2002/03 All Controlled Waste arisings were 4.7 million tonnes. The known and estimated waste arisings in 2002/03 are shown in Figure 6²¹.

5.4 Forecast Waste Arisings

5.4.1 In order to review the strategic waste management Options it has been necessary to review the forecast of future waste arisings in light of new data on arisings, current thinking on future arisings and an up-to-date understanding of the regional context. When reviewing the forecasts, consideration was given to past trends, to future population change, economic activity and legislation, and to the effect of minimisation campaigns and waste reduction plans. These reviewed forecasts were published in the AMR 2006. Appendix C provides details of the forecasts used for each of the waste streams and the forecast arisings for the region up to the year 2025²². All Controlled Waste arisings are forecast to increase from 4.7 million tonnes in 2002/03 by 19% to 5.6 million tonnes in 2012/13 and by 24% to 5.9 million tonnes in 2019/20. The forecast arisings for 2012/13 and 2019/20 are shown in Figure 7²³.

Figure 7: Forecast Controlled Waste Arisings in South East Wales in 2012/13 & 2019/20 (tonnes)

Waste Stream	2012/13	2019/20
MSW	1,153,179	1,390,411
Industrial	593,590	549,912
Commercial	542,849	545,021
C&D	3,245,301	3,284,348
Agricultural	16,600	15,472
Special / Hazardous	98,244	83,486
All Controlled Waste	5,649,763	5,868,649

5.4.2 The forecast growth or reduction of the individual waste streams between 2002/03 and 2019/20 is as follows:

- MSW arisings are forecast to increase from 760,000 tonnes, by 82%, to 1,390,000 tonnes.
- Industrial Waste arisings are forecast to decrease from 860,000 tonnes, by 36%, to 550,000 tonnes.
- Commercial Waste arisings are forecast to increase from 460,000 tonnes, by 20%, to 550,000 tonnes.
- When combined, Industrial and Commercial Waste arisings are forecast to decrease from 1,320,000 tonnes, by 17%, to 1,090,000 tonnes.
- C&D Waste arisings are forecast to increase from 2,540,000 tonnes, by 20%, to 3,280,000 tonnes.
- Agricultural Waste arisings that are likely to require an external management route are forecast to decrease from 18,000 tonnes, by 16%, to 15,000 tonnes in 2019/20.
- Hazardous Waste arisings are forecast to decrease from 110,000 tonnes, by 22%, to 80,000 tonnes.

5.4.3 It should be noted that there is inherent uncertainty in the forecasting of future waste arisings, particularly as far ahead as 2019/20. For the purposes of this review however, these forecast were considered sufficient robust to enable a range of options to be assessed and to allow conclusions to be drawn. The RWG will keep the actual rates of growth or

²¹ Source: AMR 2007 Table 28.

²² Further details on the forecasts used can be found in the AMR 2006.

²³ Source: AMR 2006 Table 36.

reduction of the individual waste streams under constant review and will form an integral part of the on going monitoring of the RWP.

5.5 Current Management of Wastes

5.5.1 Data regarding the management of each of the principal controlled waste streams shows:

- In 2005/06 111,000 tonnes / 13.5% of MSW arisings were recycled and 67,000 tonnes / 8.2% were composted. This represented a continued increase in the quantity and proportion recycled but virtually no change in the quantity and proportion composted after three successive years of increase. In 2005/06 384,000 tonnes of BMW arisings were sent to landfill; this represented a continued decrease.
- In 2002/03 310,000 tonnes / 23.7% of Industrial and Commercial Waste arisings were sent to landfill. This was a reduction in both the quantity and proportion landfilled since the previous survey year. As the proportion of Industrial and Commercial Waste arisings sent to landfill has reduced, the proportion recycled has increased; in 2002/03 30.4% was recycled.
- In 2003 1,230,000 tonnes / 44.6% of C&D Waste arisings were recycled as aggregate and soil. This represents a continued increase in both the quantity and proportion recycled.
- In 2004 166,000 tonnes / 70.8% of Special Waste arisings were sent to landfill. This was a marked increase in both the quantity and proportion sent to landfill increased in 2004 following a decrease between 1999 and 2002 and two years of no real change in 2002 and 2003. However, the marked increase in 2004 can be attributed to a single source / event, and therefore 2004 could be interpreted as year of temporary increase against a wider picture of no change.

5.6 Performance against the NWSW Targets

5.6.1 The performance of the region against the NWSW targets has been closely monitored throughout the review process. Whilst both the availability and quality of data across the various waste streams has improved over time, there remains a lack of data to fully establish the performance against a number of the targets. Of the targets to which sufficient regional data is available, the data shows a mixed bag of significant challenges and met targets:

- **Stabilisation and reduction of Household waste²⁴**. Arisings of Household Waste in 2005/06 were significantly higher than the target figures for 2009/10 and 2020. Data for 2005/06 shows an encouraging decrease in arisings for the first time – however, firm conclusions should not be drawn until several successive years demonstrate evidence of a continued decline in arisings.
- **Recycling and composting of Municipal Waste²⁵**. The region met and exceeded the 2003/04 targets for the recycling and composting of MSW. In 2005/06 the region was also already exceeding the 2006/07 minimum recycling target. However, given that in 2005/06 there was no increase in the proportion composted, the 2006/07 minimum composting target presented a significant challenge: the 2005/06

²⁴ By 2009/10 (and to apply beyond) waste arisings per household should be no greater than those (for Wales) in 1997/98. By 2020 waste arisings per person should be less than 300Kg per annum.

²⁵ By 2006/07 achieve at least 25% recycling / composting of municipal waste with a minimum of 10% composting (with only compost derived from source segregated materials counting) and 10% recycling.

data showed that six local authorities were composting less than 10% of their MSW arisings.

- **Landfilling of BMW**²⁶. The quantity of BMW arisings sent to landfill continues to decrease. In 2005/06 all local authorities landfilled less BMW than the amount allowed by the Landfill Allowance Scheme (LAS). However, the 2010 target year presents a significant challenge: the region must achieve an annual decrease of 4.8% to landfill a maximum of 315,000 tonnes of BMW in 2010.
- **Reducing business waste arisings**²⁷. The region has already met and exceeded the 2010 target for reduction of waste arisings from businesses by some considerable margin.
- **Landfilling of Industrial & Commercial Waste**²⁸. The region has met and significantly exceeded the target for the reduction of the amount of Industrial & Commercial Waste landfilled.
- **Re-use and recycle Construction and Demolition Waste**²⁹. The region had met and exceeded the 2010 target for the reuse and recycling of C&D waste by 2001 and was still exceeding the target in 2003.
- **Reducing Special Waste arisings**³⁰. On the basis of data on arisings in 2003 it was possible to conclude that the region was already meeting the 2010 target for the reduction of Special Waste arisings by quite some margin. The data showing a marked increase in arisings in 2004 challenges the validity of this conclusion. However, this marked increase can be attributed to a single source / event, and therefore 2004 could be interpreted as year of temporary increase against a wider picture of no change.

5.7 Existing Waste Management Facilities

- 5.7.1 Appendix D provides details of existing waste management / resource recovery infrastructure across South East Wales.
- 5.7.2 Appendix D, Table D1 shows that in 2005/06 there were 202 non-landfill waste management facilities with Waste Management Licences (WMLs) / Pollution Prevention & Control (PPC) permits with a maximum licensed capacity of 8,410,000 tonnes.
- 5.7.3 It should be noted that Table D1 does not include those waste management facilities that are registered 'exempt'. Lower risk waste management activities such as reuse and recycling often do not present a threat to the environment or human health and are therefore exempt from the waste licensing regulations. There are around 45 categories of exemption, most of which are subject to specific constraints on waste types, quantities, capacities and duration of storage and most exempted categories of activity need to be registered with the EAW. However, very little detail is required in order to register an exemption – it is therefore

²⁶ By 2010 no more than 75% of the BMW produced in 1995 can be landfilled, by 2013 no more than 50% and by 2020 no more than 35%.

²⁷ By 2005 achieve a reduction in waste produced equivalent to at least 5% of the 1998 arisings figure and by 2010 achieve a reduction in waste produced equivalent to at least 10%.

²⁸ By 2005 reduce the amount of industrial and commercial waste sent to landfill to less than 85% of that landfilled in 1998, by 2010 reduce the amount to less than 80%.

²⁹ By 2005 re-use or recycle at least 75% of C&D waste produced, by 2010 re-use or recycle at least 85% of C&D waste produced.

³⁰ By 2010 reduce the amount of hazardous waste generated by at least 20% compared with 2000. The WAG has clarified that this target only applies to waste classified as Special Waste in 2000

difficult to determine both the exact details of the activity concerned and the capacity / tonnage of each facility.

5.7.4 It is recommended that the capacity figures for non-landfill facilities should be treated with some caution. The capacities identified are the legislative maximum throughput allowed under the terms of the license or permit. In reality there may be other limiting factors that restrict the site from operating up to the licensed maximum and therefore the capacity information obtained from the WML may be an overestimate.

5.7.5 Appendix D, Table D2 shows landfill capacity in the region in March 2006. The region has:

- no hazardous Landfill;
- approximately 16.4 million m³ of non-hazardous Landfill void;
- 2.1 million m³ of 'Inert Landfill' void; and
- zero or 0.5 million m³ of 'In-House Industrial Landfill' void – this depending on the outcome of a PPC permit application.

5.7.6 A series of maps in Appendix D show the regional distribution of existing facilities.

5.8 Progress in Developing New Waste Management Facilities

5.8.1 Between 2004/05 and 2005/06 the number of non-landfill waste management facilities with WMLs / PPC permits increased by 13 and the capacity increased by 6.3%. The new facilities included two more civic amenity sites, one more invessel composting facility, three more Material Recovery Facilities (MRFs) and one more windrow composting facility.

5.8.2 Between April 2006 and March 2007 LPAs approved 14 planning applications for waste management / resource recovery facilities and refused none. Those approved included a bio-diesel plant using waste cooking oil as a resource and a facility for the recycling and sorting of Waste Electrical & Electronic Equipment (WEEE).

5.8.3 Significant steps forward have been taken by local authorities in procuring facilities for Municipal Waste management. Three sub-regional groups of local authorities have now emerged:

- Powys CC is working with Ceredigion CC in the North of the region³¹;
- the 'Heads of the Valleys' consortium in the centre of the region; and
- 'Project Gwyrdd' in the South of the region.

³¹ Ceredigion falls within the South West RWP area.

PART B:

THE RWP TECHNOLOGY STRATEGY

6. The methods available

6.1 Background

6.1.1 The first practical reason behind the RWP 1st Review is the need to review the RWP Technology Strategy – the combination of waste management technologies that would enable the region to meet or exceed legislative targets – by reviewing the generation and assessment of the alternative strategic waste management Options from which the RWP Technology Strategy is selected.

6.1.2 Understanding the principal waste management technologies is a necessary pre-cursor to the process of generating and assessing alternative strategic waste management Options for the review.

6.1.3 The aim of this chapter is to:

- identify where the principal waste management technologies sit within the waste hierarchy;
- provide a technical overview of the principal technologies for managing MSW and wastes within the other principal controlled waste streams that are similar to MSW;
- identify the various outputs from each technology; and
- provide an evaluation of the effectiveness of each of the technologies by identifying their key issues and benefits.

6.2 Reduce and Reuse

6.2.1 Society needs to minimise the amount of waste that it produces and maximise the reuse of the waste that is produced. The extent to which the regional waste planning process can influence the level of reduction and reuse is limited and therefore is not the main focus of this review.

6.3 Recovery of Materials

6.3.1 Recycling involves the reprocessing of wastes into a usable item either in the same form as the original product or into a different product. To achieve recycling, the appropriate waste materials must be separated from the whole mixed waste stream and/or from each other and may be cleaned prior to onward transfer to a reprocessing plant. The sorting wastes for recycling is often undertaken by mechanical and hand sorting processes within **Material Recovery Facilities (MRFs)**. ‘Dirty MRFs’ process the whole mixed MSW waste stream and ‘Clean MRFs’ process source separated recyclables. The products of a MRF – the materials for further reprocessing – are called ‘recyclates’.

6.3.2 Composting is a biological process in which biodegradable wastes, such as garden and kitchen waste, are decomposed aerobically – in the presence of oxygen – under the action of micro-organisms. The process produces heat, carbon dioxide, water and a stabilised residue of lower volume than the input material. The nature and quality of the residue will depend on the input material, the composting process itself and the market into which the residue is due to be sent; it may be marketed as a compost, soil conditioner or mulch and may have a variety of applications including horticultural, agricultural, and landfill restoration uses. The

British Standards Institution’s ‘Publicly Available Specification for Composted Materials’ (BSI PAS 100:2005), has been developed to improve confidence in composted materials. The specification covers the entire process by which compost is produced: from raw materials and production methods, through to quality control. It ensures that certified composts are quality assured, traceable, safe and reliable. In addition, the Animal By-Products (Wales) Regulations 2006 place restrictions on the composting of animal by-products. Composting can take two forms:

- **In-Vessel Composting (IVC)** – where the composting of source separated green waste and/or kitchen waste is undertaken in an enclosed container in order to provide control over temperature, moisture, and odour levels and in order to provide a faster decomposition process compared to windrow composting.
- **Windrow Composting** – where long rows of source separated green waste are left to decompose in the open air. The ‘windrows’ are turned regularly to bring new material to the surface and oxygenate the pile. There is no automation or temperature control. Windrows are sometimes used as a final maturation step for material that has been processed through IVC.

6.3.3 **Anaerobic Digestion (AD)** is a biological process which can be used as an alternative to IVC for managing source separated garden and kitchen waste. AD is discussed in more detail below.

6.3.4 **Mechanical Biological Treatment (MBT) / Biological Mechanical Treatment (BMT)** is a generic term for an integration of several mechanical and biological processes commonly found in other waste management facilities such as MRFs and composting facilities. MBT / BMT facilities are usually designed to recover value from the ‘residual’ mixed MSW waste that is left over after recycling / composting by separation at source. MBT / BMT facilities can be configured to meet different objectives regarding the products of the process. The products of an MBT / BMT facility can include recyclates, low-grade soil conditioner, a Refuse Derived Fuel (RDF), and a partially stabilised residue for disposal in landfill. MBT / BMT facilities are an ‘intermediate’ solution for waste, instead of final solution, because they produce a residual to be used as a fuel or disposed of in landfill. Figure 8 summarises some of the key issues and benefits of MBT / BMT.

Figure 8: Issues & Benefits of MBT / BMT

MBT / BMT	
Issues	<ul style="list-style-type: none"> • Intermediate solution – markets / outlets / disposal required • Uncertain markets for fuel / soil conditioner • Intermediate solution – increases cost, land take, planning and permitting time, etc. • The amount of BMW reduction yet to be clarified for different systems • Limited track record in the UK
Benefits	<ul style="list-style-type: none"> • Increase recovery of recyclable materials • Reduces biodegradability • Reduces volume for disposal • Flexible

6.3.5 **Mechanical Heat Treatment (MHT)** is a generic term for an integration of several mechanical and thermal process. **Autoclave** is the most common type of MHT process; this is the application of steam to the wastes in a sealed pressurised vessel. The waste is generally heated to a temperature of between about 130°C and 180°C. MHT facilities can be configured to meet different objectives regarding the products of the process. The main product of autoclaving MSW is a floc like material which is comprised of the organic components of the waste stream broken down into a fibrous material – this may be used as a raw material for another product, as an RDF or to produce a low-grade soil conditioner. Because MHT does not involve the breakdown of organic materials through the action of biological processes it is unlikely to significantly reduce the biodegradability of the organic materials. Metal, glass and plastic recyclates may also be produced. Autoclaving is in common use for the treatment of some clinical wastes and also for certain rendering processes for animal wastes. However, its application to MSW is a recent innovation with only one facility in the UK soon to be operating on a commercial scale. Figure 9 summarises some of the key issues and benefits of MHT.

Figure 9: Issues & Benefits of MHT

MHT	
Issues	<ul style="list-style-type: none"> • A variety of operational risks due to new technology • No commercial track record in the UK • Uncertain markets for floc • Unlikely to significantly reduce biodegradability • May degrade some recyclables
Benefits	<ul style="list-style-type: none"> • May be used to pre-treat waste to produce a number of outputs • Sanitises the waste • Cleans some recyclables • Considered to be relatively low capital cost • Flexible

6.4 Recovery of Energy

6.4.1 Energy from Waste (EfW) is a process where energy in the form of heat and/or power is recovered from burning waste. Energy can be produced from waste through the following methods:

- Incineration
- Pyrolysis
- Gasification
- Anaerobic Digestion
- The combustion of RDF

6.4.2 **Incineration** is a mature and well-established technology that is used to reduce the volume of waste, remove its biodegradability and/or reduce its hazardous properties through combustion. To allow the combustion to take place a sufficient quantity of oxygen is required to fully oxidise the fuel. Incineration combustion temperatures are typically in excess of 850°C. The waste is converted into carbon dioxide and water. Sophisticated process control and extensive flue gas cleaning equipment minimise emissions to air. There are two principal solid residues from such systems: Incineration Bottom Ash (IBA) which is made up of non-combustible materials such as metals and glass and a small amount of carbon; and the flue gas treatment residues. The IBA may be recycled as a substitute aggregate or disposed of to landfill and flue gas treatment residues are landfilled. The heat

generated in the combustion process can be exported in the form of steam to adjacent businesses or as hot water via a district heating system to adjacent residential and commercial properties and/or can be used to generate electricity to export to local users or the grid. When MSW is incinerated it is normally incinerated in its raw mixed form or residual mixed form (i.e. the left over after recycling / composting by separation at source). The volume of waste needing disposal following incineration is reduced by approximately 90%, limiting the need for landfill. The BMW content in MSW is reduced to zero. The Waste Incineration Directive (WID) applies to most activities that involve the burning of waste, whether for disposal or when used as a fuel³². The WID aims to prevent, or limit as far as practicable, negative effects on the environment from the incineration and co-incineration of waste. Figure 10 summarises the key issues and benefits of incineration.

Incineration	
Issues	<ul style="list-style-type: none"> • Negative public perception • Most systems more cost effective at larger scale • Capital intensive
Benefits	<ul style="list-style-type: none"> • Proven on MSW • Established technology with sophisticated process control and flue gas cleaning • No BMW in outputs • Reduces waste volume – almost all outputs may be recycled • Small scale options available

6.4.3 There are two common forms of incineration:

- *Moving Grate*: where the waste is propelled through the furnace by a mechanically moved grate. Waste continuously enters at one end of the furnace and the ash is continuously discharged at the other.
- *Fluidised-Bed*: where waste burns on a bed of inert particles. This bed is ‘fluidised’ by air being blown vertically through the material and wastes are moved through the furnace by the action of this fluidised bed of particles.

6.4.4 Advanced Thermal Treatment (ATT) technologies are primarily those that employ gasification and/or pyrolysis of waste. The pyrolysis and gasification of solid materials is not a new concept; it has been extensively used to produce fuels such as charcoal, coke and town or producer gas. Charcoal and coke are produced by pyrolysing wood and coal respectively and producer gas is a combustible gas produced by the gasification of coke in the presence of air and steam. It is only in recent years that pyrolysis and gasification has been commercially applied to the treatment of wastes such as MSW.

6.4.5 For both pyrolysis and gasification, MSW may be mechanically separated to remove the majority of the non-organic based material and it may require processing to remove excess moisture, and shredding to reduce the size.

6.4.6 In contrast to incineration, **Pyrolysis** is the thermal degradation of a substance in the absence of oxygen. This process requires an external heat source to maintain the temperature required. Typically, relatively low temperatures of between 300°C to 800°C are used during pyrolysis of materials such as MSW. The products produced from pyrolysing

³² The WID defines a co-incineration plant as any stationary or mobile plant whose main purpose is the generation of energy or production of material products, and: which uses waste as a regular or additional fuel; or in which waste is thermally treated for the purpose of disposal. This would, for example, include cement works that burn waste as a fuel.

materials are a solid residue and a synthetic gas / syngas. The solid residue, sometimes described as a char, is a combination of non-combustible materials and significant amounts of carbon. The syngas is a mixture of gases of which the combustible constituents include carbon monoxide, hydrogen, methane and a broad range of other volatile organic compounds. A proportion of these can be condensed to produce oils, waxes and tars. If required, the condensable fraction can be collected by cooling the syngas, potentially for use as a liquid fuel. The syngas can be combusted to generate heat for export in the form of steam to adjacent businesses or as hot water via a district heating system to adjacent residential and commercial properties and/or can be used to generate electricity to export to local users or the grid. The solid residue needs to be disposed of to landfill, or treated further to reduce the carbon content – for example by gasification or combustion. If treated further the final solid residue could then be recycled as a substitute aggregate.

6.4.7 **Gasification** can be seen as sitting between incineration and pyrolysis because it involves the partial oxidation of a substance. This means that oxygen is added but the amounts are not sufficient to allow the fuel to be completely oxidised and full combustion to occur. The temperatures employed are typically above 750°C. The main product is a syngas, which contains carbon monoxide, hydrogen and methane. The other main product produced by gasification is a solid residue of non-combustible materials that contains a relatively low level of carbon. As with pyrolysis, the syngas can be combusted to generate heat for export in the form of steam to adjacent businesses or as hot water via a district heating system to adjacent residential and commercial properties and/or can be used to generate electricity to export to local users or the grid. The solid residue may be recycled as a substitute aggregate or disposed of to landfill.

Figure 11: Issues & Benefits of Pyrolysis and Gasification

Pyrolysis and Gasification	
Issues	<ul style="list-style-type: none"> • A variety of operational risks due to new technology • No commercial track record for MSW in the UK • Not all systems have energy efficiency benefits over incineration • High capital cost
Benefits	<ul style="list-style-type: none"> • Reduces waste volume • No BMW in outputs • Potential benefits of small scale – may facilitate local use of output heat and electricity • Qualifies as renewable energy, receives partial incentive • Reduced emissions compared to incineration may mean flue gas cleaning costs are reduced • Potential to combust syngas could enable higher energy efficiency than incineration • Small scale options available

6.4.8 Figure 11 summarises some of the key issues and benefits of pyrolysis and gasification.

6.4.9 **Anaerobic Digestion (AD)** is a biological process in which biodegradable wastes, such as source separated garden and kitchen waste, flood sludges, or the mechanically separated organic rich fraction of MSW, are decomposed anaerobically – in the absence of oxygen – under the action of micro-organisms in an enclosed vessel and under controlled conditions. The process produces a ‘biogas’ containing methane and carbon dioxide and a residual solid / slurry called a ‘digestate’. The biogas can be combusted to generate heat and/or electricity. The digestate can be separated into solids fibre and liquid effluent fractions. The dewatered fibre may be used directly on land as a soil improver provided it meets appropriate regulatory criteria or is matured through a composting process prior to its use. The liquid effluent may be recycled in the AD process, used directly as a liquid fertilizer if meeting

appropriate criteria, or used in subsequent aerobic (composting) treatment of the fibre. AD is often used in the treatment of sewage sludge at wastewater treatment works and is widely used on farms to break down manure into slurry. As with composting, a Publicly Available Specification (PAS 110) is also being developed for the use of Anaerobic Digestates. In addition, the Animal By-Products (Wales) Regulations 2006 place restrictions on the use of animal by-products in biogas plants.

6.4.10 **Refuse Derived Fuels** produced by MBT or MHT processes could be combusted by large industrial energy users (e.g. cement kilns), power stations or incinerators to generate heat and/or electricity.

6.5 Disposal to Landfill

6.5.1 Landfill is the permanent deposit of waste onto or into land. Wales has historically approached waste as problem that is most conveniently and cost effectively disposed of in landfill. It is now widely recognized that this heavy reliance on disposal to landfill is unsustainable in the long term because of growing volumes of waste, because of the risk of environmental pollution and because of the burying of valuable resources.

6.5.2 Whilst landfill is no longer the preferred management option, there will always be a need for landfill facilities in South East Wales for the following reasons:

- There will inevitably be a period of transition when alternative waste management technologies / facilities are being introduced and during this time waste will continue to be buried in existing landfill sites.
- All other waste management methods leave residual amounts of waste which will continue to be placed in landfill.
- It is likely that for some wastes the BPEO will continue to be landfill.

6.5.3 Landfills are now classified as either accepting non-hazardous waste, inert waste, or hazardous waste.

6.5.4 Modern landfills involve a significant amount of engineering in order to contain the waste, control emissions and minimise potential environmental effects. Where biodegradable materials are disposed of the primary by-products are: landfill gas – a combination of carbon dioxide and the powerful greenhouse gas methane; and leachate – a liquor resulting from water passing through the waste mass. As such, landfills require containment lining systems and abstraction systems for both landfill gas and leachate. The collected landfill gas can be combusted to generate electricity. The majority of landfills are operated on a phased cell system where, as one cell is being filled, another is being prepared and another is being completed and restored – usually to an agricultural, amenity or nature conservation after-use. Waste is tipped at a designated ‘working face’ on the cell where active disposal is taking place and then spread out and compacted. At the end of the working day the waste is often covered by ‘daily cover’ consisting of soil, or another inert material, in order to reduce odour, litter spread and access to the waste by birds and vermin.

6.6 Treatment Facilities for Specific Wastes

6.6.1 Wastes not similar to MSW require specific types of treatment facilities. Such facilities include:

- battery recycling;
- chemical treatment;
- C&D waste recycling;
- End of Life Vehicle (ELV) treatment;
- packaging recycling;
- tyre recycling / recovery;
- WEEE treatment;
- thermal treatment of soils;
- vitrification;
- high temperature incineration.

6.7 Facilities for the Reception, Bulking and Transfer of Waste

6.7.1 Facilities for the reception, bulking and transfer of waste include:

- **Household Waste Recycling Centres (HWRCs) / Civic Amenity (CA) Sites** provided by local authorities for receiving household waste normally delivered by the public direct to the site. Most HWRCs will become 'Designated Reception Facilities' for WEEE, some of which will include hazardous components.
- **Transfer Stations** where waste is bulked into larger containers prior to onward transfer to a point of re-use, recovery or disposal.

6.8 The Need for an Integrated Recovery and Disposal Strategy

6.8.1 None of the above technologies for managing waste should be considered in isolation; they will need to be considered and utilised in combination in an integrated recovery and disposal strategy. The different combinations of waste management technologies that would enable the region to meet or exceed legislative targets are the subject of the next chapter.

7. Generating the strategic Options

7.1 Background

- 7.1.1 Individual technologies for managing waste cannot be considered in isolation – they need to be utilised in combination in an integrated recovery and disposal strategy for all waste streams. Accordingly, the RWP 1st Review generates and assesses alternative combinations of waste management technologies that would enable the region to meet or exceed legislative targets – alternative ‘strategic waste management Options’.
- 7.1.2 Given the challenging nature of waste management targets, the strategic waste management Options need to be ‘visionary’, with a planning horizon of at least 20 years. Options that fail to meet key objectives should be discounted at an early stage, to avoid unnecessary appraisal.
- 7.1.3 Forecasts of future waste arisings are required to underpin the option development process. Appendix C provides details of the forecasts used for this review for each of the principal controlled waste streams.

7.2 Generating Options for the RWP 1st Review

- 7.2.1 As with the first RWPs in Wales, the process of generating and assessing alternative strategic waste management Options has been approached with the aim of producing RWP 1st Review documents for all of Wales that are based on comparable principles and techniques.
- 7.2.2 The Options were generated on the basis that in an integrated recovery and disposal strategy for all waste streams, MSW and wastes within the other principal controlled waste streams that are similar to MSW will be managed together and should therefore be modelled and assessed together. Wastes that are not similar to MSW require specific types of treatment facilities and were therefore considered separately³³.
- 7.2.3 The following key issues for the review of the Options were agreed by each of the three RWGs in Wales:
- **All Options for the review would be designed to achieve the 2020 BMW Landfill Directive target by 2013³⁴.** For the first RWPs, all three regions agreed a ‘Do More’ approach of aiming to achieve the 2020 BMW Landfill Directive target by 2013³⁵. The RWP 1st Review has therefore taken this decision as a starting point in the generation of Options.
 - **EfW Options would be sub-divided into incineration with energy recovery, pyrolysis, and gasification, and autoclave would be included in the Options** – in order to take account of better information on new technologies, the markets for their outputs and the new capabilities of the LCA tool.

³³ See paras 6.6.1 and 8.2.6.

³⁴ Referring back to para 1.4.4, this effectively removes the ‘Level 1’ choice.

³⁵ 2020 BMW Landfill Directive Target: ‘to reduce the amount of biodegradable municipal waste landfilled to 35% of that produced in 1995’.

- **2013 would be the target and assessment year for the Options.** The target and assessment year used for the first RWPs was 2013. There are two advantages of using the same year for the review: it focuses attention on the early investment required in infrastructure and it provides consistency and enables comparison with the first RWP.

7.2.4 For all of the Options the ‘front end’ recycling and composting rate for MSW was set at 50%. This exceeds the current maximum NSW target of achieving at least 40% recycling and composting of Municipal Waste by 2009/10³⁶. This identical front-end performance across all Options:

- reflects the likelihood of the new target of 50% recycling and composting of Household waste by 2020 set in the English Waste Strategy 2007³⁷ soon being reflected in new Welsh targets; and
- allows direct comparison of the technologies used to recover and dispose of ‘residual’ waste – the waste that is left over after front end recycling and composting.

7.2.5 All of the Options ensure that targets for the management of the other principal controlled waste streams – i.e. recycling targets for C&D waste and landfill diversion for Industrial and Commercial Waste – are also met.

7.3 The Strategic Waste Management Options

7.3.1 Figure 12 presents the strategic waste management Options generated for the review.

7.3.2 Four main Options covering the main treatment technologies for residual waste were developed. Each main Option is divided into sub-Options. The 19 sub-Options are considered to represent a sufficient range of choices for dealing with waste in the region.

7.3.3 **Option 0 – A ‘do nothing’ strategy.** This Option is included for assessment purposes only – as a baseline to compare the other Options against.

7.3.4 **Option 1 – A landfill-led strategy for residual waste.** This Option is for high levels of source separated recycling followed by low levels of energy from residual waste – where ‘low’ is interpreted to mean the minimum amount of additional material required to increase the level of BMW diversion to meet 2020 EU Landfill Directive targets. All residual Commercial, Industrial and Agricultural Wastes will be disposed of to landfill.

7.3.5 **Option 2 – An EfW-led strategy for residual waste.** This Option is for high levels of recycling and composting followed by high levels of energy from residual waste – where ‘high’ is interpreted to mean the maximum feasible amount of residual waste will go to EfW.

7.3.6 **Option 3 – An MBT-led strategy for residual waste.** This Option is for high levels of recycling and composting followed by high levels of MBT - where ‘high’ is interpreted to mean the maximum feasible amount of residual waste will go to MBT.

³⁶ By 2009/10 achieve at least 40% recycling/composting of municipal waste with a minimum of 15% composting (with only compost derived from source segregated materials counting) and 15% recycling.

³⁷ Department for Environment, Food and Rural Affairs, 2007. *Waste Strategy for England 2007*. London: DEFRA.

7.3.7 **Option 4 – An Autoclave-led strategy for residual waste.** This Option is for high levels of recycling and composting followed by high levels of treatment using an Autoclave – where ‘high’ is interpreted to mean the maximum feasible amount of residual waste will go to Autoclave.

Figure 12: Strategic Waste Management Options for the RWP 1st Review

Main Option	Description
<p>Option 0</p> <p>A 'do nothing' Strategy</p>	<p>This option is included for assessment purposes only – as a baseline to compare the other options against.</p> <p>Front end levels of recycling / composting have been applied as in all the other options, but with no further treatment, projected on to tonnages arising in 2013.</p>
<p>Option 1</p> <p>A Landfill-led strategy for residual waste.</p>	<p>High recycling and composting levels with <i>low</i> levels of thermal treatment of residual waste using either:</p> <ul style="list-style-type: none"> • Pyrolysis (sub-Option 1A); or • Gasification (sub-Option 1B); or • Incineration with energy recovery (sub-Option 1C). <p>All remaining residual waste would then be sent to landfill.</p> <p>(Recycling / treatment levels are those required to achieve the 2020 BMW Landfill Directive target in 2013).</p>
<p>Option 2</p> <p>An Energy from Waste-led strategy for residual waste.</p>	<p>High recycling and composting levels with all remaining residual wastes, where possible, being managed by <i>high</i> levels of thermal treatment using either:</p> <ul style="list-style-type: none"> • Pyrolysis (sub-Option 2A); or • Gasification (sub-Option 2B); or • Incineration with energy recovery (sub-Option 2C); or • Anaerobic Digestion (sub-Option 2D). <p>Any remaining residual waste would then be sent to landfill.</p> <p>(Recycling levels are those required to achieve the 2020 BMW Landfill Directive target in 2013. Energy from Waste levels aims to minimise waste to landfill).</p>
<p>Option 3</p> <p>An MBT / BMT-led strategy for residual waste.</p>	<p>High recycling and composting levels with all remaining residual wastes managed by MBT / BMT with the output recovered / disposed of using either:</p> <ul style="list-style-type: none"> • Pyrolysis (sub-Option 3A); or • Gasification (sub-Option 3B); or • Incineration with energy recovery (sub-Option 3C); or • RDF to off-site energy use (sub-Option 3D); or • On-site Anaerobic Digestion (sub-Option 3E); or • Landfill (sub-Option 3F). <p>For sub-Options 3A-3E, any remaining residual waste would then be sent to landfill.</p> <p>(Recycling levels are the maximum possible – may exceed those required to achieve the 2020 BMW Landfill Directive target in 2013).</p>
<p>Option 4</p> <p>An Autoclave-led strategy for residual waste.</p>	<p>High recycling and composting levels with all remaining residual wastes managed by Autoclave with the output recovered / disposed of using either:</p> <ul style="list-style-type: none"> • Pyrolysis (sub-Option 4A); or • Gasification (sub-Option 4B); or • Incineration with energy recovery (sub-Option 4C); or • RDF to off-site energy use (sub-Option 4D); or • Landfill (sub-Option 4E). <p>For sub-Options 4A-4D, any remaining residual waste would then be sent to landfill.</p>

8. Assessing and consulting on the strategic Options

8.1 Background

8.1.1 Having generated the alternative strategic waste management Options for the review, a number of techniques set out in TAN 21, the NWSW and legislation were used to assess the Options. These techniques were:

- Life Cycle Assessment (LCA) – to determine the ‘Best Practicable Environmental Option’ (BPEO);
- Sustainability Appraisal (SA) – developed from BPEO and ‘Sustainable Waste Management Option’ (SWMO);
- Strategic Environmental Assessment (SEA); and
- Strategic Health Impact Assessment (HIA).

8.1.2 To achieve consistency across Wales, the WAG appointed EAW to undertake a LCA and SA and on behalf of the three RWGs. In parallel, the three regions jointly commissioned Hyder Consulting (UK) Limited and Peter Brett Associates to undertake, respectively, a SEA and strategic HIA of the Options.

8.1.3 The various techniques set out by TAN 21 and the NWSW for assessing the Options have inevitable overlaps:

- the SA has used data produced by the LCA;
- the strategic HIA has taken account of some of the information produced for the SA; and
- SEA is a legally required procedure that has overlaps with all the other forms of assessment – some of the environmental data generated by the other assessments has been used in the SEA.

8.1.4 After the assessments had been conducted, the views of stakeholders organisations and the wider public on seven of the sub-Options were sought during the Consultation Period.

8.2 Life Cycle Assessment (LCA)

8.2.1 This section summarises and discusses the LCA technique and results. Much more detailed information is available in the LCA report³⁸.

8.2.2 LCA is used to assess the environmental aspects of activities or products during their whole life. It has been defined as the “*systematic identification of all environmental benefits and disbenefits that result, both directly and indirectly from a product or process throughout its entire life, from raw materials extraction, to their eventual return to the environment*”³⁹. Guidance on the SA of strategic waste management Options recommends the use of a

³⁸ Environment Agency Wales, 2007. *Sustainability Appraisal and Life Cycle Analysis of Strategic Waste Management Options; Report for the first review of SE Wales Regional Waste Plan*. Cardiff: EAW.

³⁹ Para 3.21 of ‘Welsh Assembly Government, 2001. *Planning Policy Wales Technical Advice Note 21: Waste*. Cardiff: WAG.’

quantitative assessment such as LCA for appraising the effect of the options on resource use and emissions⁴⁰.

- 8.2.3 The Environment Agency launched the WISARD⁴¹ LCA software tool in 1999 with the aim of providing an objective mechanism to assist in decision-making for waste managers and planners in regard to managing waste. The WISARD tool was used to assess the options for the first RWP. The 'Best Practice Statement' in the first RWP stated that the WISARD tool "...was modified to allow modeling of Mechanical Biological Treatment, a newly emerging technology. There is a need for the WISARD tool to be updated as a matter of urgency for use in the future".
- 8.2.4 In 2007 the Environment Agency launched the WRATE⁴² software tool as a successor to WISARD. WRATE allows more accurate assessment of MBT and assessment of other new waste management / resource recovery technologies. It uses LCA to identify and quantify all the emissions from managing the waste – from collection through transportation to final recovery or disposal. It takes into account all the resources used and any benefits from recovering energy or materials.
- 8.2.5 The WRATE tool was used in accordance with government guidance⁴³ to assess the sub-Options in order to determine the BPEO.
- 8.2.6 The Options were generated on the basis that, in an integrated recovery and disposal strategy for all waste streams, MSW and wastes within the other principal controlled waste streams that are similar to MSW will be managed together⁴⁴. In the same way, WRATE enables comparison of options for treating MSW and wastes within the other principal controlled waste streams that are similar to MSW. Wastes not similar to MSW were therefore excluded from the assessment as 'unmodelled waste'.
- 8.2.7 EAW advised that there is insufficient evidence that the floc produced by autoclave could be used as a RDF for pyrolysis or gasification and therefore sub-Options 4a and 4b were excluded from the assessment⁴⁵.
- 8.2.8 Figure 13 shows the BPEO scores for the sub-Options for South East Wales⁴⁶ in ranked order. A higher score indicates better performance. The scores show that the best performing seven sub-Options for the BPEO all fall close to each other and all fall within main Option 2 (an EfW-led strategy for residual waste), 3 (an MBT / BMT-led strategy for residual waste) or 4 (an Autoclave-led strategy for residual waste).
- 8.2.9 Overall, the BPEO is sub-Option 2A (residual wastes managed by high levels of Pyrolysis).

⁴⁰ Office of the Deputy Prime Minister, 2002. *Strategic Planning for Sustainable Waste Management: Guidance on Option Development and Appraisal*. London: ODPM.

⁴¹ WISARD – Waste: Integrated Systems Analysis for Recovery and Disposal.

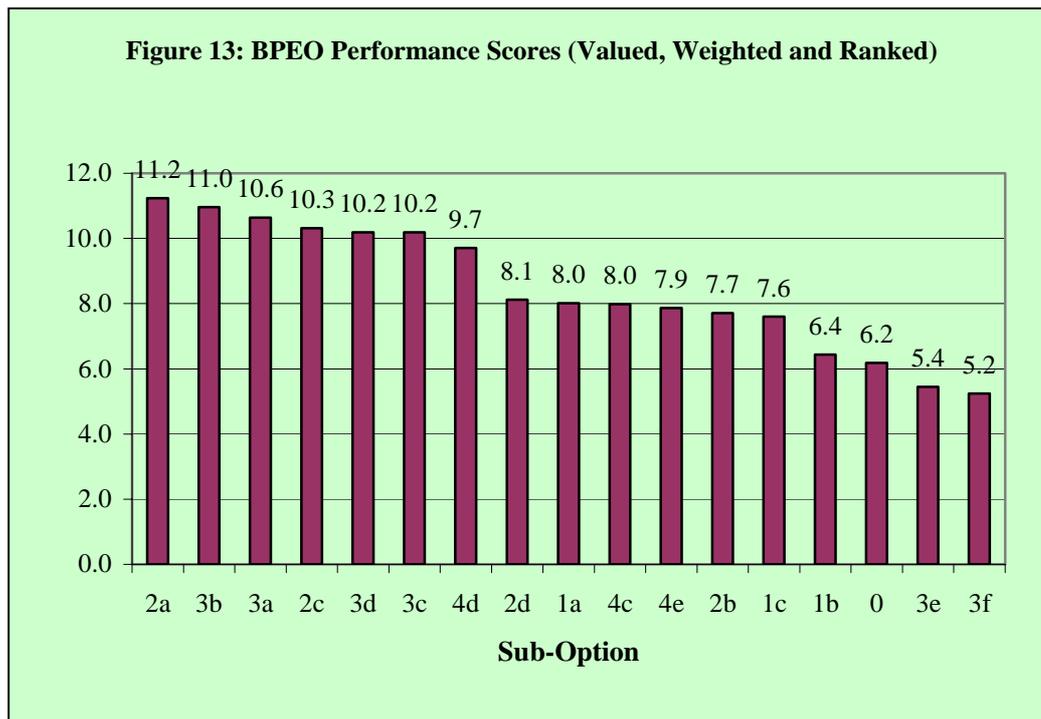
⁴² WRATE – Waste and Resources Assessment Tool for the Environment.

⁴³ Government Guidance is set out in: 'Welsh Assembly Government, 2002. *Wise About Waste: The National Waste Strategy for Wales*. Cardiff: WAG', 'Welsh Assembly Government, 2001. *Planning Policy Wales Technical Advice Note 21: Waste*. Cardiff: WAG.', and 'Office of the Deputy Prime Minister, 2002. *Strategic Planning for Sustainable Waste Management: Guidance on Option Development and Appraisal*. London: ODPM.'

⁴⁴ See paras 6.6.1 and 7.2.2.

⁴⁵ See Pg 15 of 'Environment Agency Wales, 2007. *Sustainability Appraisal and Life Cycle Analysis of Strategic Waste Management Options; Report for the first review of SE Wales Regional Waste Plan*. Cardiff: EAW.'

⁴⁶ Source: Figure 27 *ibid*.



8.3 Sustainability Appraisal (SA)

8.3.1 This section summarises and discusses the SA technique and results. Much more detailed information is available in the SA report⁴⁷.

8.3.2 SA is the process and assessment method that is at the centre of developing a RWP Technology Strategy. It is a methodology for appraising strategic waste management Options that takes account of environmental, socio-economic and implementation issues through the use of indicators that are weighted by decision makers. In taking account of such a wide range of issues, and through the use of weighted indicators, the SA methodology provides a robust and comprehensive approach to identifying any ‘preferred options’ and transparency in decision-making.

8.3.3 EAW undertook the SA, in accordance with government guidance⁴⁸, to assess the sub-Options in order to determine the SWMO.

8.3.4 EAW advised that there is insufficient evidence that the floc produced by autoclave could be used as a RDF for pyrolysis or gasification and therefore options 4a and 4b were excluded from the assessment⁴⁹.

8.3.5 In order to **identify and agree the sustainability objectives and indicators** to be applied in this assessment, the RWG reviewed the 22 sustainability indicators used in the preparation

⁴⁷ Ibid.

⁴⁸ Government guidance is set out in: ‘Welsh Assembly Government, 2002. *Wise About Waste: The National Waste Strategy for Wales*. Cardiff: WAG’, ‘Welsh Assembly Government, 2001. *Planning Policy Wales Technical Advice Note 21: Waste*. Cardiff: WAG.’ and ‘Office of the Deputy Prime Minister, 2002. *Strategic Planning for Sustainable Waste Management: Guidance on Option Development and Appraisal*. London: ODPM.’

⁴⁹ See Pg 15 of ‘Environment Agency Wales, 2007. *Sustainability Appraisal and Life Cycle Analysis of Strategic Waste Management Options; Report for the first review of SE Wales Regional Waste Plan*. Cardiff: EAW.’

of the first RWP and concluded that all remained relevant for the review. The objectives and indicators fall into four broad categories: environmental and health; socio-economic; waste management service deliver; and policy framework. The objectives and indicators are listed in Figure 14.

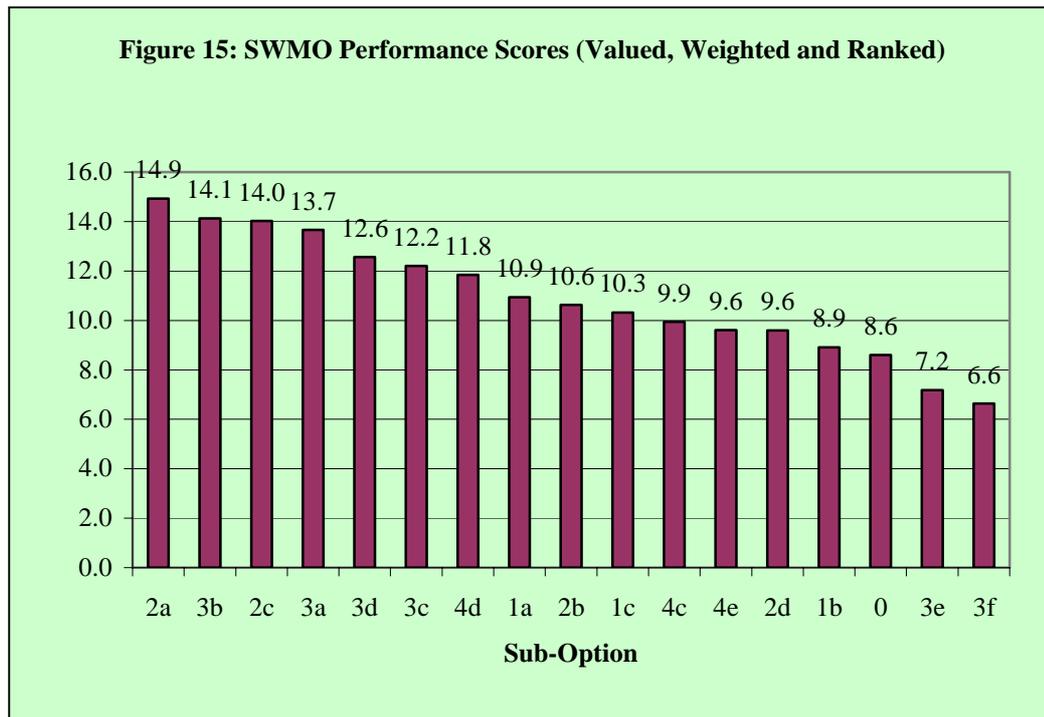
8.3.6 Performance scores for the sustainability indicators were generated using three methods:

- quantitative assessment – the output from the WRATE tool;
- generic data – scores are generated based on data available such as land take, number of jobs created etc; and
- professional judgment.

Figure 14: Strategic Waste Management Option Sustainability Appraisal – Objectives and Indicators

Sustainability Objectives	Sustainability Indicators	Method of Measurement
Environmental & Health		
To ensure prudent use of land and other resources	<ul style="list-style-type: none"> • Depletion of resources such as wood, water, fuels and ores • Land take 	WRATE output Generic data
To reduce greenhouse gas emissions	<ul style="list-style-type: none"> • Greenhouse gases emitted 	WRATE output
To minimise adverse impacts on air quality and public health	<ul style="list-style-type: none"> • Emissions which are injurious to public health • Emissions contributing to air acidification • Emissions contributing to depletion of the ozone layer • Extent of odour problems • Extent of dust problems • Dioxin emissions 	WRATE output WRATE output WRATE output Professional judgement Professional judgement WRATE output
To conserve landscapes and townscapes	<ul style="list-style-type: none"> • Extent of visual and landscape impacts 	Professional judgement
To protect local amenity	<ul style="list-style-type: none"> • Extent of noise, litter and vermin problems 	Professional judgement
To minimise adverse effects on water quality	<ul style="list-style-type: none"> • Emissions contributing to eutrophication • Extent of water pollution 	WRATE output WRATE output
Socio-Economic		
To minimise local transport impacts	<ul style="list-style-type: none"> • Total waste kilometres • Transport along roads other than motorways 	Generic data Generic data
To provide employment opportunities	<ul style="list-style-type: none"> • Number of jobs likely to be created 	Generic data
To provide opportunities for public involvement and education	<ul style="list-style-type: none"> • Extent of opportunities for public involvement and education (concerning sustainable waste management practices) 	Professional judgement
Waste Management Service Delivery		
To minimise costs of waste management	<ul style="list-style-type: none"> • Costs of management and disposal, including material and energy revenues 	Generic data
To ensure reliability of delivery	<ul style="list-style-type: none"> • Likelihood of implementation within required timescale, taking account of maturity of technology, necessary level of public participation, and the need for planning permission (taking account of scale of development and likely perceived adverse impacts) 	Professional judgement
Policy Framework		
To conform with waste policy	<ul style="list-style-type: none"> • Percentage composted • Percentage recycled • Percentage landfilled 	Generic data Generic data Generic data

8.3.7 **Weighting of the indicators** is recommended by the government guidance⁵⁰. This is because it is accepted that decision-makers are likely to attach more importance to some indicators over others. All organizations that are members of the RWG, including local authorities, government agencies and waste trade associations, were given the opportunity to provide a weighting of the indicators to capture a variety of opinions and different perspectives. Each organisation was given 22 points to divide between the 22 indicators, according to their perceived relative importance. These were used to determine the final weighting of the indicators for the region. The final weightings agreed for the region were then applied to the performance scores generated for the indicators.



8.3.8 Figure 15 shows the SWMO scores for the sub-Options for South East Wales⁵¹ in ranked order. A higher score indicates better performance. The scores show that the best performing seven sub-Options for the SWMO all fall within main Option 2 (an EfW-led strategy for residual waste), 3 (an MBT / BMT-led strategy for residual waste) or 4 (an Autoclave-led strategy for residual waste). The best performing seven sub-Options are the same as those for the BPEO and in the same rank order, except for sub-Options 2c and 3a which swap rank.

8.3.9 The SA report recommended that that the highest scoring Options should form a technical basis for development of the Regional Waste Plan for South East Wales⁵². The best performing seven sub-Options are:

⁵⁰ Office of the Deputy Prime Minister, 2002. *Strategic Planning for Sustainable Waste Management: Guidance on Option Development and Appraisal*. London: ODP.

⁵¹ Source: Figure 30 of 'Environment Agency Wales, 2007. *Sustainability Appraisal and Life Cycle Analysis of Strategic Waste Management Options; Report for the first review of SE Wales Regional Waste Plan*. Cardiff: EAW.'

⁵² Pg 42, *ibid*.

- Rank 1 – sub-Option 2a – High source segregated recycling and composting levels with all remaining residual wastes, where possible, being managed by high levels of Pyrolysis
- Rank 2 – sub-Option 3b – High source segregated recycling and composting levels with all remaining residual wastes being managed by MBT followed by Gasification.
- Rank 3 – sub-Option 2c – High source segregated recycling and composting levels with all remaining residual wastes, where possible, being managed by high levels of Incineration with energy recovery
- Rank 4 – sub-Option 3a – High source segregated recycling and composting levels with all remaining residual wastes being managed by MBT followed by Pyrolysis.
- Rank 5 – sub-Option 3d – High source segregated recycling and composting levels with all remaining residual wastes being managed by MBT followed by RDF to off-site energy use.
- Rank 6 – sub-Option 3c – High source segregated recycling and composting levels with all remaining residual wastes being managed by MBT followed by Incineration with energy recovery.
- Rank 7 – sub-Option 4d – High source segregated recycling and composting levels with all remaining residual wastes being managed by Autoclave followed by RDF to off-site energy use.

8.3.10 The summary of the SA noted the following:

- All sub-Options except 0, 1b, 2b, 2d, 3e, 3f and 4e deliver 2020 BMW landfill diversion targets by 2013.
- The difference in scores for the top sub-Options is very close in some cases, meaning that the order of ranking should not be viewed as a fixed hierarchy.
- The fact that pyrolysis scores well may be due to the German plant used within the WRATE tool. Efficiency and emissions standards in Germany are higher than in some other European countries so its overall performance may be better than other technologies based in UK.
- The fact that fuel for off-site energy use scores well is perhaps not surprising given that this uses a facility that is already in existence; from an environmental perspective the burdens are much less than for building a new facility, visual and landscape indicators score well as the facility is already in existence and the burning of the waste directly offsets the burning of fossil fuels in the cement kiln. Caution must be exercised in relation to this technology choice, as the likely constraint in the delivery of these options is the availability of capacity. The model indicates a required capacity of over 400,000 tonnes per annum for sub-Option 3d (residual wastes managed by MBT followed by RDF to off-site energy use) and over 160 000 tonnes per annum for sub-Option 4d (residual wastes managed by Autoclave followed by RDF to off-site energy use) – it may be difficult to secure this capacity either within the region or further a field. There is also uncertainty as to whether any of these plants would accept the fuel due to its composition derived from mixed residual waste.
- Pyrolysis and gasification plants do not have an established history of treating Municipal Waste in the UK, and neither does RDF to off-site energy use such as cement kilns. Therefore, sub-Options 2c (residual wastes managed by high levels Incineration with energy recovery) and 3c (residual wastes managed by MBT

followed by Incineration with energy recovery) may look like more attractive and more deliverable options in this regard.

- Whilst it is difficult to conclusively say that one option significantly outperforms the others, all of the top 6 sub-Options fall under either main Option 2 (an EfW-led strategy for residual waste) or 3 (an MBT / BMT-led strategy for residual waste). Therefore, this study shows that Option 2 and Option 3 are in general the best suited options overall for South East Wales. However, sub-Options 2b, 2d, 3e and 3f do not perform well due to their specific nature. Options 0, 1 and 4 do not perform particularly well for South East Wales.

8.4 Strategic Environmental Assessment (SEA)

8.4.1 This section summarises and discusses the SEA technique and results. Much more detailed information is available in the Environmental Report⁵³.

8.4.2 The objective of the SEA Directive is “...to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development, by ensuring that...an environmental assessment is carried out of certain plans and programs which are likely to have significant effects on the environment.”⁵⁴

8.4.3 The SEA Directive defines⁵⁵ ‘environmental assessment’ as a process comprising:

- preparing an Environmental Report in which the likely significant effects on the environment of implementing the plan or programme, and reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme, are identified, described and evaluated;
- carrying out consultation on the draft plan or programme and the accompanying Environmental Report;
- taking into account the Environmental Report and the results of consultation in decision making; and
- providing information when the plan or programme is adopted and showing how the results of the environmental assessment have been taken into account.

8.4.4 In order to maintain alignment between the SEA and the SA, the SEA was conducted using the same set of technology assumptions.

8.4.5 For Option 0 (a ‘do nothing’ strategy) the Environmental Report notes:

- While this Option looks at the effects of landfill, it also looks at the front end recycling and composting elements that are common to all of the Options. Consequently, the following points are common to all Options.
- The legacy of many historic landfill sites is one of contamination of land, groundwater and surface water. This goes back to the days when waste disposal was not so heavily regulated and the potential effects of our actions either not considered

⁵³ Hyder Consulting Ltd, 2007. *Strategic Waste Management Options: Strategic Environmental Assessment*. Cardiff: Hyder Consulting Ltd.

⁵⁴ Article 1 of ‘Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment’.

⁵⁵ Article 2(b) and Articles 5.1 *ibid*.

or not so well understood. Modern landfill sites are highly managed operations with sophisticated liners, capping and gas and leachate management systems designed into them. Discharges and emissions from sites are regulated and monitored for compliance to restrict and manage the negative impacts upon the environment.

- Disposing of waste to landfill results in the production of methane and leachate as the biodegradable fraction of the waste decomposes.
- Methane is a powerful greenhouse gas and a significant contributor to global warming. However, it is also a potential resource and can be burnt, generating heat and power. Whilst this combustion still generates carbon dioxide, this serves to divert the release of CO₂ from non-renewable carbon stores such as fossil fuels. It should be noted that in general, over the life of a landfill, only some 50% of the landfill gas is captured with the remainder migrating to landfill or oxidised through the landfill cap.
- Pests and vermin such as gulls associated with landfill are now frequently controlled through the use of falconers or other deterrents. Litter and odour nuisance is reduced through the maintenance of small deposit faces, daily capping with inert material and taking into account weather conditions, wind direction etc.
- The composting and recycling elements common to all the Options come with their own environmental effects. This include potential for dust and odour generation – common to any process that involved the handling, storage or treatment on waste – as well as more specific impacts such as CO₂ generation and requirements for energy inputs.
- However, whilst CO₂ is generated as a by-product of composting, it is considered to be neutral in terms of impact, being of biogenic origin. The composting process itself also assists in the sequestration of up to 20% of the carbon within the waste.

8.4.6 For Option 1 (a Landfill-led strategy for residual waste) the Environmental Report notes:

- Option 1 is similar to Option 0 in many ways. However, it does differ significantly in its compliance with legislative requirements. Specifically it addresses the need to ‘pre-treat’ all waste destined to landfill in some way. In this sense, Option 1 constitutes a ‘do-minimum’ approach, adopting low levels of thermal waste treatment between the recovery and separation of recyclables and organic waste and the final disposal of the waste to landfill.
- Energy recovery from the residual treatments can help to offset the energy requirements for each process.
- Sub-Option 1b will not result in sufficient diversion of biodegradable waste material from landfill to enable it to meet the WAG target of achieving the 2020 Landfill Directive targets in 2013.

8.4.7 For Option 2 (an EfW-led strategy for residual waste) the Environmental Report notes:

- This Option has the potential to enhance resource recovery through various pre-treatment processes. However, it is assumed for the purposes of the assessment that for the gasification process much of the BMW remaining following extraction of RDF goes to landfill without further treatment. This means that sub-Option 2b as modelled does not meet the WAG target for diverting BMW from landfill.

8.4.8 For Option 3 (an MBT/BMT-led strategy for residual waste) the Environmental Report notes:

- MBT provides a method for enhancing the recovery of materials from waste, providing RDF and treating the organic waste fraction.
- This option has the potential to perform very well, particularly in terms of meeting the LAS targets. However, the assumptions of the assessment make the outcomes in both this assessment and the LCA more conservative than the full potential of the options that could be realised in some cases. From the information used in the LCA, Options 3e and 3f do not meet the WAG target for MSW in 2013.
- This Option inherently requires significant land take as a result of the component steps involved in the various processes. This can be offset to a degree through the careful planning and location of the various facilities, but this will be dependent on the design and execution of any regional plan. The actual effects, for example in terms of biodiversity impact or other physical effects cannot be assessed through this study alone, being highly dependent on the physical location of the processes and its relationship with any sensitive receptors.
- It should be noted that the assessment assumes that the treated products of the biological processes are not recycled as soil improvers or similar, which affects the performance of these Options with respect to landfill. This is, however, a reasonable assumption given that to deliver a suitably high quality compost the incoming waste stream must be relatively clean to begin with.

8.4.9 For Option 4 (an Autoclave-led strategy for residual waste) the Environmental Report notes:

- MHT is often offered in systems where it is followed by anaerobic digestion (AD) or hydrolysis of the organic fraction. The autoclaving process separates a high proportion of the organic content, labels and wrapping of tins and plastic also tend to be removed and enter the organic fraction. A disadvantage is the heat and other energy used in pressurisation. Hence, the incorporation of AD into the MBT system with power generation is often proposed to ensure that the necessary heat (often Combined Heat and Power heat) and power for pressurisation is readily available on site.
- In line with the recommendations of the Environment Agency policy advisors, sub-Options 4a and 4b have been excluded from the assessment, as there is insufficient evidence to suggest that these are viable options.
- Sub-Option 4e does not meet the WAG target for MSW in 2013.

8.4.10 The Environmental Report concludes:

- Generally speaking, there is no clear leader amongst the Options, however, given the landfill emphasis associated with Options 0, 1 and parts of Option 4, on the whole Options 2 and 3 are more likely to ensure that the Landfill Directive and Welsh Assembly Government targets will be met by 2013 and potentially beyond.
- Many impacts are already heavily regulated, making it difficult to determine if there are any 'real' differences between emissions from different technologies. For example: all technologies that release atmospheric emissions are regulated to comply with common UK and European Standards, meaning that they will all, as a minimum, meet regulatory compliance requirements.
- All sub-Options except 0, 1b, 2b, 2d, 3e, 3f and 4e deliver 2020 BMW landfill diversion targets by 2013

- Many of the direct effects that could be anticipated from the technologies could not be fully assessed within the context of this study because the extent of the effects are most likely to be determined by the specific qualities of the receiving environment and cannot be identified in isolation of the spatial element. Impacts identified that could not be assessed include: effects on sites designated for biodiversity or ecological reasons; effects on specific local communities; effects of specific water courses; effects on the historic environment; effects on the landscape in general; the secondary and cumulative effects associated with these effects.
- Effects that could be considered in greater detail relate primarily to the land and resource requirements, and the emissions associated with the processes.
- There remains potential for a number of cumulative and secondary impacts, largely resulting from regulated emissions and land take. These will need to be the subject of the Plan monitoring, both to inform future plans and to identify the extent of the effect.
- It is difficult to ascertain degree of impact without some indication of the siting of facilities, both relative to each other and relative to sensitive receptors.
- Further assessment will be required as the plan is implemented – it is important that this assessment looks at / brings together the spatial element and the technologies in greater detail, regardless of which Option is promoted. This may include Habitats Directive Appropriate Assessment.

8.4.11 Further information on the SEA of the RWP 1st Review and how requirements of the regulations have been fulfilled is provided in Chapter 14 ‘Summary – Strategic Environmental Assessment’.

8.4.12 The Environmental Report also addressed the requirements of the EU Habitats Directive. The Directive requires an Appropriate Assessment to be undertaken where the impacts of land-use plans are likely to have a significant effect on a European site, or, where it cannot be demonstrated that it would not have a significant effect, to assess the implications for the European site in view of the site’s conservation objectives. The Directive states⁵⁶:

“Any plan or project not directly connected with or necessary to the management of the site but likely to have 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.”

8.4.13 The Environmental Report found that, while there are some 22 Natura 2000 sites within the region, the strategic and non-spatial nature of the alternative strategic waste management Options means that it is not possible to determine how any Option might impact on the conservation status of a particular designated area. However, the Environmental Report for the RWP Technology Strategy, together with the Environmental Report for the Areas of

⁵⁶ Article 6 para (3) of ‘Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora’.

Search, provides a starting point for identification of effects – screening – of the Options upon Natura 2000 sites. In particular the Environmental Report identifies:

- environmental issues within the Plan area in relation to biodiversity, flora and fauna;
- relevant plans, policies and programmes in relation to habitats and species and how they relate to the Options;
- the environmental baseline;
- objectives which relate to biodiversity, flora and fauna; and
- significant effects.

8.4.14 The Environmental Report, together with the Environmental Report for the Areas of Search, provides relevant information that will assist LPAs, as a Competent Authority, to assess the requirement for an Appropriate Assessment at the appropriate stage when specific land-use allocations and development proposals have been formulated.

8.5 Strategic Health Impact Assessment (HIA)

8.5.1 This section summarises and discusses the strategic HIA technique and results. Much more detailed information is available in the strategic HIA report⁵⁷.

8.5.2 HIA is a means of taking health into account in decision-making processes so that the potential health effects on people of policies, programmes and other developments, whether positive and/or negative, are not overlooked.

8.5.3 ‘Health’ is often perceived as simply the absence of disease. However, the World Health Organisation defines health as “*a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity*”⁵⁸. The NWSW recommends the following steps in the HIA process:

- Screening and scoping: identifying the relevance of a policy or development to people’s health, and whether HIA is required.
- Profiling: establishing baseline information, and characterising the health status of the community and the environment.
- Risk assessment: identifying the hazards of contaminants and determining the health effects and exposures via different pathways.
- Risk communication: involving the public and communities who may be affected in the decision-making process.
- Risk management: setting priorities based on risk assessment, identifying and establishing risk reduction policies, taking into account the different perceptions of risk.
- Decision-making: determining appropriate action based on risk assessment and involvement of stakeholders.
- Auditing and monitoring: determining whether the commitments of the HIA have been implemented and whether risks are being properly managed.

8.5.4 The strategic HIA has found:

⁵⁷ Peter Brett Associates, 2008. *Regional Waste Plans 1st Review; Strategic Health Impact Assessment*. London: PBA.

⁵⁸ Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June 1946, and entered into force on 7 April 1948.

- Option 1 (a Landfill-led strategy for residual waste) has overall minor positive health impact. This is because the strategy plans for a small number of facilities to help to recover energy from some of the residual waste remaining after 50% recycling and composting. This will create jobs, education and learning opportunities, help mitigate climate change and provide a small degree of flexibility in the waste management system at a regional and national level.
- Option 2 (an EfW-led strategy for residual waste) has an overall moderate positive health impact. This is because the strategy plans for a larger number of facilities, compared to Option 1, to help to recover energy from the majority of the residual waste remaining after front end recycling and composting. This will create jobs, education and learning opportunities, help significantly mitigate climate change effects arising from activity in Wales and provide some flexibility in the waste management system at a regional and national level.
- Option 3 (an MBT / BMT-led strategy for residual waste) has an overall moderate to major positive health impact. This is because the strategy plans for a large number of MBT / BMT facilities with associated thermal treatment facilities to help further recycle and recover energy from the majority of the residual waste remaining after front end recycling and composting. This will create jobs, education and learning opportunities, help to considerably mitigate climate change effects arising from activity in Wales and provide a considerable degree of flexibility in the waste management system at a regional and national level.
- Option 4 (an Autoclave-led strategy for residual waste) has an overall moderate to major positive health impact. This is because the strategy plans for a large number of Autoclave facilities with associated thermal treatment facilities to help further recycle and recover energy from the majority of the residual waste remaining after front end recycling and composting. This will create jobs, education and learning opportunities, help mitigate climate change effects arising from activity in Wales and provide a considerable flexibility in the waste management system at a regional and national level.

8.5.5 The strategic HIA concludes:

- The technology analysis points to further residual waste recycling rather than just energy recovery as the better option i.e. Options 3 (an MBT / BMT-led strategy for residual waste) and 4 (an Autoclave-led strategy for residual waste), though Option 2 (an EfW-led strategy for residual waste) is seen as a good option.
- The spatial analysis, because of the numbers of facilities, size of sites, and the need for more waste lorry movements, points to Option 2 (fewer sites, though larger, and less waste lorry movements overall) on balance being the better option.
- Overall, taking into account both the technology and spatial analyses, there is no single best public health strategic waste management Option. Options 2, 3 and 4, are good Options from a public health perspective at regional and national level and each of them has strengths and weaknesses.
- It is not been possible to identify any differences between the various sub-Options within each of the main Options 1-4 except to say that there are likely to be greater potential negative mental health and social capital and cohesion effects from the potentially greater concern some local people are likely to have about thermal treatment facilities, particularly incineration with energy recovery, that might be sited near their neighbourhoods.

8.6 Consultation

8.6.1 This section summarises the results of the consultation relating to the strategic waste management Options. More detailed information on the methods of consultation is available in Section 14 ‘Summary – Consultation’. Much more detailed information on the consultation methods and results is available in the Consultation Report⁵⁹.

8.6.2 Based on the results of the LCA and SA, and given that the SEA concludes that no clear leader emerges from amongst the Options, and given that the strategic HIA concludes that while Options 2, 3 and 4 are good from a public health perspective there is no single best Option, the best performing seven sub-Options in the SA were presented in the Consultation Draft RWP 1st Review as alternative RWP Waste Technology Strategies that would enable South East Wales to meet or exceed legislative targets:

- Sub-Option 2a – High source segregated recycling and composting levels with all remaining residual wastes, where possible, being managed by high levels of Pyrolysis
- Sub-Option 2c – High source segregated recycling and composting levels with all remaining residual wastes, where possible, being managed by high levels of Incineration with energy recovery
- Sub-Option 3a – High source segregated recycling and composting levels with all remaining residual wastes being managed by MBT followed by Pyrolysis.
- Sub-Option 3b – High source segregated recycling and composting levels with all remaining residual wastes being managed by MBT followed by Gasification.
- Sub-Option 3c – High source segregated recycling and composting levels with all remaining residual wastes being managed by MBT followed by Incineration with energy recovery.
- Sub-Option 3d – High source segregated recycling and composting levels with all remaining residual wastes being managed by MBT followed by RDF to off-site energy use.
- Sub-Option 4d – High source segregated recycling and composting levels with all remaining residual wastes being managed by Autoclave followed by RDF to off-site energy use.

8.6.3 The consultation survey asked respondents which of the seven sub-Options was their preferred choice. The responses to this question are shown in Figure 16⁶⁰. The responses indicated that the following sub-Options were most strongly favoured⁶¹:

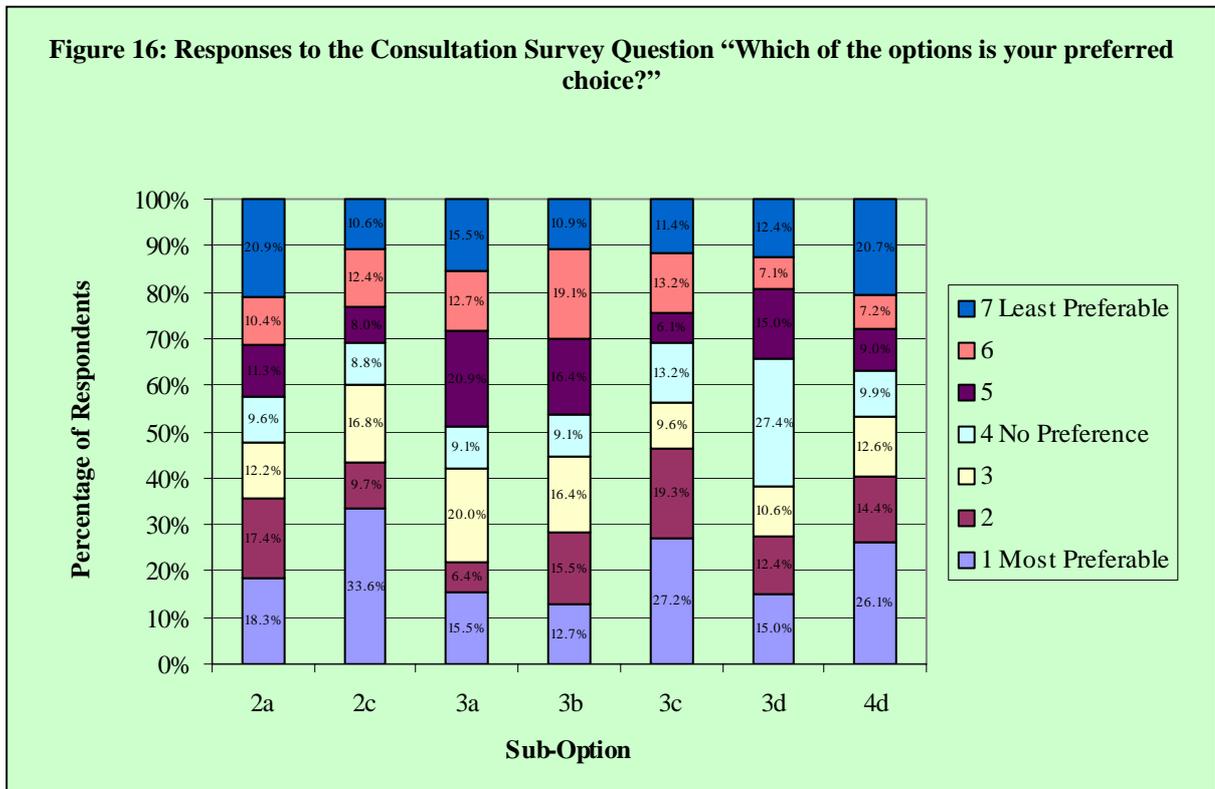
- Sub-Option 2c – High source segregated recycling and composting levels with all remaining residual wastes, where possible, being managed by high levels of Incineration with energy recovery
- Sub-Option 3c – High source segregated recycling and composting levels with all remaining residual wastes being managed by MBT followed by Incineration with energy recovery.

⁵⁹ Hyder Consulting (UK) Ltd, 2008. *South East Wales Regional Waste Plan 1st Review; Consultation Report*. Cardiff: Hyder.

⁶⁰ Source: Figure 12 *ibid*.

⁶¹ Recommendation para 3.4.40 in ‘Hyder Consulting (UK) Ltd, 2008. *South East Wales Regional Waste Plan 1st Review; Consultation Report*. Cardiff: Hyder.’

- Sub-Option 4d – High source segregated recycling and composting levels with all remaining residual wastes being managed by Autoclave followed by RDF to off-site energy use.



8.6.4 However, as a key finding the Consultation Report recommended that, while some types of facilities / treatment routes have been preferred above others, all the top seven options presented in the Consultation Draft RWP 1st Review should be made available for choice at a local level so that local needs can be taken into consideration⁶².

⁶² Para 7 *ibid.*

9. The RWP Technology Strategy

9.1 Background

9.1.1 Having generated and assessed the alternative strategic waste management Options for the review, one or more ‘Preferred Options’ must be selected as the RWP Technology Strategy.

9.2 The RWP Technology Strategy – Seven Preferred Options

9.2.1 The RWP Technology Strategy has been identified on the following basis:

- the LCA and SA identified seven top performing sub-Options;
- the SEA concluded that no clear leader emerged from amongst the Options;
- the strategic HIA concluded that while Options 2, 3 and 4 are good from a public health perspective there is no single best Option; and
- the Consultation Report recommended that the seven sub-Options presented in the Consultation Draft RWP 1st Review should be made available for choice at a local level so that local needs can be taken into consideration.

9.2.2 On this basis, and in order to provide adequate flexibility and choice, seven ‘Preferred Options’ have been selected as the RWP Technology Strategy in order to form the framework for the sustainable management of wastes and recovery of resources in South East Wales. The seven Preferred Options of the RWP Technology Strategy are set out in Figure 17⁶³.

Figure 17: The RWP Technology Strategy

High source segregated recycling and composting levels with all remaining residual wastes, where possible, being managed by:

- high levels of Pyrolysis (sub-Option 2a); and/or
- high levels of Incineration with energy recovery (sub-Option 2c); and/or
- MBT followed by Pyrolysis (sub-Option 3a); and/or
- MBT followed by Gasification (sub-Option 3b); and/or
- MBT followed by Incineration with energy recovery (sub-Option 3c); and/or
- MBT followed by RDF to off-site energy use (sub-Option 3d); and/or
- Autoclave followed by RDF to off-site energy use (sub-Option 4d).

9.3 Important Caveats Regarding the RWP Technology Strategy

9.3.1 Regarding the management of Municipal Waste, the RWP Technology Strategy will provide strategic direction for those UAs that require it. It will not prejudice any existing progress and facilities either where a UA has in good faith gone about its procurement process in line with the first RWP or where a UA has for sound reasons made other plans which have been developed and justified through a process of a local BPEO assessment / SA / SEA.

⁶³ The seven Preferred Options are presented in numerical order. This order does not indicate any order of rank or preference.

- 9.3.2 The range and combinations of technologies that have been rigorously assessed through this RWP 1st Review comprehensively represent the range currently being marketed in the UK. However, new technologies, enhancements of existing technologies and new combinations of technologies may be developed and marketed through the life of the Plan and it would be unreasonable, and perhaps detrimental, to preclude the adoption of any emerging effective and safe technologies simply because they have not been assessed through this review. Any new technologies that come forward should be subject to an assessment process as rigorous as used in this review before considering their adoption.
- 9.3.3 The process of generating and assessing alternative strategic waste management Options has only considered AD as a residual waste treatment technology. AD may have an important role to play as an alternative to IVC for managing source separated garden and kitchen waste – this plan does not in any way prejudice the further assessment and use of AD in this role.
- 9.3.4 A great number of assumptions underpin the modelling work that was used to develop the RWP Technology Strategy. As with any modelling process, the model must be based on a set of working assumptions and will be subject to practical limits. For example, the WRATE tool assessed each waste management technology on the basis of a particular facility, or range of facilities, already in existence. In practice, any new facilities that are developed in the future of any technology type will vary depending on the client, the provider, the location, the size, any specific regulatory requirements, etc. It is therefore essential that, when considering the best technology option for development, the developer and/or LPA take detailed local factors into consideration.
- 9.3.5 The RWP Technology Strategy will be a material consideration in the planning process. However, it is only one material consideration that many need to be balanced against many other material considerations.
- 9.3.6 The relevant measures envisaged to prevent, reduce and as fully as possible off-set any significant adverse effects on the environment of implementing the Preferred Options set out in the Environmental Report⁶⁴ must be taken into account when planning for and developing any facilities.
- 9.3.7 In terms of delivery, the following issues should be noted:
- Fuel to off-site energy use is likely to be constrained by the availability of capacity of off-site energy users⁶⁵.
 - Those Preferred Options involving a two-stage process for managing residual waste⁶⁶ are likely to have higher land area requirements. This may mean a greater chance of difficulties at the site purchasing, planning and permitting stages.
 - Preferred Option 2c (residual wastes managed by Incineration) has the highest capacity requirement for hazardous waste landfill.

⁶⁴ Volume 2 Assessment Tables of 'Hyder Consulting Ltd, 2007. *Strategic Waste Management Options: Strategic Environmental Assessment*. Cardiff: Hyder Consulting Ltd.'

⁶⁵ The modelling indicates a required capacity of over 400,000 tonnes per annum for Preferred Option 3d (residual wastes managed by MBT followed by RDF to off-site energy use) and over 160,000 tonnes per annum for Preferred Option 4d (residual wastes managed by Autoclave followed by RDF to off-site energy use) – it may be difficult to secure this capacity either within the region or further a field.

⁶⁶ Preferred Options 3a, 3b and 3c.

- The WAG⁶⁷ has indicated that it will only provide capital funding support to technologies that provide a final, rather than intermediate, solution for MSW. Therefore, those Preferred Options involving an intermediate stage in managing residual waste⁶⁸ may be less deliverable.

9.3.8 The NWSW⁶⁹ states that one of its primary objectives is:

“...to make Wales a model for sustainable waste management by adopting and implementing a sustainable, integrated approach to waste production, management and regulation (including litter and fly tipping) which minimises the production of waste and its impact on the environment, maximises the use of unavoidable waste as a resource, and minimises where practicable, the use of energy from waste and landfill”

9.3.9 The seven Preferred Options of the RWP Technology Strategy:

- are the best practicable environmental sub-Options;
- maximise the use of unavoidable waste as a resource through high source segregated recycling and composting levels; and therefore
- minimise the use of EfW and landfill.

9.4 Infrastructure Requirements for the Preferred Options

9.4.1 TAN 21⁷⁰ states that “A key element in the RWP will be agreement of the apportionment of facilities to local authorities”.

9.4.2 The modelling undertaken by the EAW for the SA of the Options apportioned the total capacity required at various types of waste management facilities in 2013 to each UA area on the basis of forecast arisings. This apportionment for each of the seven Preferred Options is detailed in Appendix E.

9.5 Non-Landfill Facilities: Indicative New Capacity Required and Indicative Number of New Facilities Required

9.5.1 By comparing the SA data on the total capacity required at waste management facilities in 2013 with data on the maximum licensed capacity at existing waste management facilities⁷¹

⁶⁷ At a meeting between Cllr Richard Parry Hughes (WLGA Spokesperson on Planning and Environment) and Jane Davidson AM (Minister for Sustainability and Rural Development) on the 28th June 2007 the Minister stated that she would not support intermediate technologies (MBT / MHT).

⁶⁸ Preferred Options 3a, 3b, 3c, 3d and 4d.

⁶⁹ Para 1.10 of ‘Welsh Assembly Government, 2002. *Wise About Waste: The National Waste Strategy for Wales*. Cardiff: WAG’

⁷⁰ Para 2.15 of ‘Welsh Assembly Government, 2001. *Planning Policy Wales Technical Advice Note 21: Waste*. Cardiff: WAG.’

⁷¹ In accordance with the principle of regional self-sufficiency, any existing over-capacity in one or more UA areas is used to offset the new capacity required in all other UA areas.

and any ‘in the pipeline’ capacity⁷² it is possible to calculate an indicative new capacity that will be required by 2013⁷³. This is summarised in Figure 18.

Figure 18: Indicative New Capacity Required in 2013 for South East Wales, by Preferred Option (tonnes)

Technology Type	Preferred Option						
	2a	2c	3a	3b	3c	3d	4d
Clean MRF + Transfer Stations	495,770	495,770	495,770	495,770	495,770	495,770	495,770
In-Vessel Compost	268,626	268,626	268,626	268,626	268,626	268,626	268,626
Pyrolysis	739,148		418,326				
Gasification				418,326			
Incinerator		737,307			416,485		
MBT			739,148	739,148	739,148	739,148	
Autoclave							739,148
Civic Amenity	39,011	39,011	39,011	39,011	39,011	39,011	39,011
Open-Windrow Compost							
C&D Exemption	971,013	971,013	971,013	971,013	971,013	971,013	971,013
C&D Recycling	751,013	751,013	751,013	751,013	751,013	751,013	751,013
Total	3,264,580	3,262,739	3,682,905	3,682,905	3,681,064	3,264,580	3,264,580

9.5.2 There are a great number of assumptions that underpin the modelling work used to develop the RWP Technology Strategy. As with any modelling process, the model must be based on a set of working assumptions and will be subject to practical limits. For this reason the figures for the new capacity required and the number of new facilities required must be treated as indicative, for planning purposes only and as representing a snapshot in time. In practice the capacity of new facilities and the number required will depend on many interrelated factors including economics, site sizes and availability, permitted capacity and shift patterns at individual facilities, etc.

9.5.3 By applying the typical facility capacities used by the EAW in the SA to the new capacity required it is possible to calculate an indicative number of new facilities that will be required by 2013. This is summarised in Figure 19.

Figure 19: Indicative Number of New Facilities Required in 2013 for South East Wales, by Preferred Option

Technology Types	Preferred Option						
	2a	2c	3a	3b	3c	3d	4d
Clean MRF + Transfer Stations	7	7	7	7	7	7	7
In-Vessel Compost	12	12	12	12	12	12	12
Pyrolysis	12		7				
Gasification				6			
Incinerator		5			3		
MBT			6	6	8	6	
Autoclave							4
Civic Amenity	8	8	8	8	8	8	8
Open-Windrow Compost							
C&D Exemption	373	373	373	373	373	373	373
C&D Recycling	18	18	18	18	18	18	18
Total	430	424	431	430	430	424	423

⁷² ‘In the pipeline’ capacity is defined as capacity at proposed facilities that have planning permission and are likely to be developed.

⁷³ The forecast and modelled waste arisings include wastes that could be reused rather than being recycled. It is therefore reasonable to assume that reuse capacity could be substituted for some of the front-end recycling capacity.

9.5.4 The indicative new capacity required and indicative number of new facilities required by 2013 in each UA area⁷⁴ for each of the seven Preferred Options and shown, together with much more detailed information on the calculations, in Appendix E.

9.6 Landfill Facilities: Forecast Void in 2013

9.6.1 The modelling undertaken by the EAW for the SA of the Options included apportioning the total capacity required at landfills in 2013 to each UA area on the basis of forecast arisings. In addition, the EAW made forecasts of landfill void in South East Wales in 2013 for each of the Options.

9.6.2 The total capacity required at landfills in 2013 and forecasts of landfill void⁷⁵ in 2013 in the region for each of the seven Preferred Options are shown, together with much more detailed information on the calculations, in Appendix E. The following can be summarised:

- **Non-hazardous waste landfill.** Preferred Options 2a and 2c (EfW-led strategies for residual waste) have the lowest capacity requirement for non-hazardous waste landfill and hence the highest forecast void and longest life for existing non-hazardous waste landfills. The RWP capacity requirement for non-hazardous waste landfill in 2013 is 420,000 tpa for Preferred Options 2a and 2c, 510,000 tpa for Preferred Options 3a, 3b, 3c and 3d (MBT-led strategies for residual waste) and 720,000 tpa for Preferred Option 4d (an Autoclave-led strategy for residual waste). The forecast landfill voids in 2013 are, respectively, 7,190,000 tonnes, 7,140,000 tonnes and 7,040,000 tonnes. The forecast void for 2013 for all seven Preferred Options means that **South East Wales will not need any new non-hazardous waste landfill capacity by 2013.**
- **Hazardous waste landfill.** Preferred Option 2c (an EfW-led strategy for residual waste) has the highest capacity requirement for hazardous waste landfill. The RWP capacity requirement for hazardous waste landfill in 2013 ranges from 30,000 tpa for Preferred Options 3d (residual waste managed by MBT followed by fuel to off-site energy use) and 4d (residual waste managed by Autoclave followed by fuel to off-site energy use) to 90,000 tpa for Preferred Option 2c (residual waste managed by Incineration). South East Wales does not currently have any hazardous waste landfills. This means that **South East Wales has a current need for new hazardous waste landfill capacity.**
- **Inert waste landfill.** The RWP capacity requirement for inert waste landfill for all seven Preferred Options in 2013 is 550,000 tpa and the forecast landfill void in 2013 is 780,000 tonnes. This means that **South East Wales will need new inert waste landfill capacity before the end of this decade.**

⁷⁴ Each LPA would have the responsibility of planning for the arisings that occur within its area regardless of whether or not a RWP existed. The RWP does not tackle the issues of the scale and distribution of facilities – this is not part of the Plan. Instead, in order to identify the ‘need’ that each LPA has the responsibility of planning for, it takes the equitable, simple, default, ‘no plan’ approach of apportioning the required capacity / land area on the basis of the Local Authority area’s proportion of forecast arisings – i.e. those arisings that each LPA would have the responsibility of planning for regardless of whether or not a RWP existed.

⁷⁵ The forecasts of landfill void in March 2013 use the same model as used by the EAW in the SA report, i.e.: the landfill rate for 2006 to 2011 is based on 2005 inputs to landfills in SE Wales; the landfill rate for 2012 is interim figure halfway between the 2005 input and the modelled tonnage for 2013; and it is assumed that void will be filled at the rate of 1t/m³. The starting void is the worst-case scenario (i.e. no further permits are issued) from the EAW survey of landfill void on 31st March 2006.

9.6.3 The forecast of non-hazardous waste landfill void must be treated with some caution as it is based on the assumption that facilities will be commissioned in 2012 and 2013 that will divert waste from landfill. Should the development of such treatment capacity be delayed, the forecast void will be an overestimate. Furthermore, the fact that landfill void will continue to be required for all Preferred Options beyond the assessment year, will mean that South East Wales will ultimately need new non-hazardous waste landfill capacity.

9.7 Hazardous and Unmodelled Waste

9.7.1 The Options were generated and assessed on the basis that, in an integrated recovery and disposal strategy for all waste streams, MSW and wastes within the other principal controlled waste streams that are similar to MSW will be managed together⁷⁶. Wastes not similar to MSW were therefore excluded from the assessment as ‘unmodelled waste’.

9.7.2 On the basis of the Regional Self-sufficiency principle:

- The RWP does not plan for increased capacity for Hazardous Waste treatment, because the existing capacity at Hazardous Waste treatment facilities in South East Wales is greater than current arisings, and far greater than forecast arisings. In 2004 Special / Hazardous Waste Deposits at all facility types⁷⁷ were 263,000 tonnes, while Special / Hazardous Waste Arisings (and, by inference, minimum capacity) were 234,000 tonnes and forecast arisings for 2012/13 are 98,000 tonnes. More details are provided in Appendix E.
- The RWP does not plan for increased capacity at any specific types of treatment facilities for unmodelled waste because the modelling has shown that capacity at existing facilities which are counted against unmodelled waste is far greater than the amount of unmodelled waste. The current capacity at facilities counted against unmodelled waste (which includes Hazardous Waste) is 1,977,000. The amount of unmodelled waste for 2012/13 is 65,000 tonnes. More details are provided in Appendix E.

9.7.3 This must not be interpreted as indicating that no new specific types of treatment facilities for unmodelled waste or Hazardous Waste are required. There are a great number of assumptions that underpin the modelling work used to develop the RWP Technology Strategy. As with any modelling process, the model must be based on a set of working assumptions and will be subject to practical limits

⁷⁶ See Paras 6.6.1, 7.2.2, and 8.2.6.

⁷⁷ This figure excludes ‘Waste Transfer’ and also does not include any amount of Hazardous Waste landfill – as the region had no Hazardous Waste landfills.

PART C:

THE RWP SPATIAL STRATEGY

10. Developing the RWP Spatial Strategy

10.1 Background

- 10.1.1 The second practical reason behind the RWP 1st Review is the need to develop the RWP Spatial Strategy – the influence the RWP exerts over the location of the required waste management / resource recovery facilities.
- 10.1.2 The EU Waste Framework Directive requires Member States to publish waste management plans that include either a geographical map specifying the exact location of waste disposal sites or precise mappable criteria. Having failed to ensure that such plans containing maps or precise mappable criteria are in place within the required time frame, the UK government has negotiated a 3-year delay in infraction proceedings up to July 2010. It is not likely that there will be Wales-wide coverage of adopted LDPs containing such maps or precise mappable criteria by 2010 and therefore the WAG is seeking to achieve an adequate level of detail in the RWP 1st Review documents across Wales in order to meet the EU requirements and avoid infraction fines. Appendix B provides further details on the requirements of the Waste Framework Directive.
- 10.1.3 TAN 21⁷⁸ states that while it would be for individual local authorities to determine actual locations of facilities and make provisions in their development plans, the RWP should specify the approximate location or type of location of new facilities:

“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 local political process and in recognition of existing contractual arrangements, would serve the region.”

- 10.1.4 During the course of the RWP 1st Review process, the WAG indicated⁷⁹ that they wish to see the review include:

“The identification of existing sites and areas of search for new “open air” waste facilities with capacity for greater than one local authority area.”

- 10.1.5 With regard to new in-building facilities serving more than one local authority area, the WAG indicated⁸⁰ that they would like the review to go further than simply including Areas of Search maps. For these facilities they wish to see:

“The identification of a list providing a choice of locations / sites (e.g. named industrial estates, business parks etc) suitable for the location of additional “within building” waste facilities with capacity for greater than one local authority area...Each local authority should identify a list providing a choice of

⁷⁸ Paras 2.15 & 2.16 of ‘Welsh Assembly Government, 2001. *Planning Policy Wales Technical Advice Note 21: Waste*. Cardiff: WAG.’

⁷⁹ Para 8iii) of ‘Welsh Assembly Government, 2006. *The Revision of the Regional Waste Plans*. Cardiff: WAG.’

⁸⁰ Para 8ii) *ibid*.

preferred potential locations or sites for additional waste facilities with capacity for greater than one local authority area for inclusion in the RWP.”

10.2 Scope of the RWP Spatial Strategy

10.2.1 In order to address the requirements of the EU Waste Framework Directive and TAN 21 while retaining adequate flexibility for LDPs and developers, the RWP Spatial Strategy contains two elements:

- Estimates of the total land area required for new in-building facilities, an analysis of the potentially available land area for new in-building facilities on *existing* B2 or major industry sites⁸¹ and B2 sites that have already been allocated in development plans, and a list of these sites.
- ‘Areas of Search’ maps for use in identifying *new* sites for in-building and open-air facilities.

10.2.2 The RWG agreed that the RWP should go no further than dealing with existing B2 or major industry sites and B2 sites that have already been allocated in development plans; it would be inappropriate, and circumventing the due and proper process, for the RWP 1st Review to state that sites other than existing B2 or major industry sites and B2 sites that have already been allocated in development plans are suitable locations for new in-building facilities; this is a policy making exercise that should only be undertaken at the local level through the LDP preparation process.

⁸¹ The term ‘B2 employment sites and major industry sites’ is used here to include other land uses that have similar characteristics such as existing waste management sites, ports, some brownfield sites, and other similar sui generis land uses.

11. New in-building facilities and existing employment sites

11.1 Background

11.1.1 Advances in technology and the introduction of new legislation, policies and practices mean that many modern waste management / resource recovery facilities on the outside look no different to any other industrial building and on the inside contain industrial demanufacturing processes or energy generation activities that are no different to many other modern industrial processes in terms of their operation or impact.

11.1.2 For this reason, many existing land use class B2 ‘general industrial’ employment sites, existing major industry areas⁸², and new B2 sites allocated in development plans will be suitable locations for the new generation of in-building waste management facilities that will be required in accordance with the RWP Technology Strategy.

11.1.3 With these facts in mind, this chapter estimates the total land area required for new in-building facilities, analyses the potentially available land area for new in-building facilities on *existing* B2 or major industry sites and B2 sites that have already been allocated in development plans, and lists these sites.

11.2 Estimated Total Land Area Required for New In-Building Facilities

11.2.1 By applying the typical land takes used by the EAW in the SA to the number of new facilities required calculated in Chapter 9, it is possible to calculate an estimate of the total land area that will be required.

11.2.2 This calculation is not undertaken for open-air facility types because it is considered that, in practice, for many open-air facilities, the size of the site available is likely to determine the size of the facility, rather than vice versa.

11.2.3 Figure 20 shows the types of facilities identified in the SA and indicates whether they are most likely to be ‘in-building’ or ‘open-air’ facilities.

Figure 20: Types of In-Building and Open-Air Waste Management Facilities Identified in the Sustainability Appraisal

In-Building	Open-Air
Transfer Station	Civic Amenity
In-Vessel Composting	Open-Windrow Composting
Pyrolysis	C&D Exemption
Dirty MRF	C&D Recycling
Gasification	Non-Hazardous Waste Landfill
Incinerator	Hazardous Waste Landfill
MBT	Inert Waste Landfill
Autoclave	

11.2.4 There are a great number of assumptions that underpin the modelling work used to develop the RWP Technology Strategy. As with any modelling process, the model must be based on a set of working assumptions and will be subject to practical limits. For this reason the figures for the total land area required for new in-

building facilities must be treated as an estimate, for planning purposes only and as

⁸² The term ‘B2 employment sites and major industry sites’ is used here to include other land uses that have similar characteristics such as existing waste management sites, ports, some brownfield sites, and other similar sui generis land uses.

representing a snapshot in time. In practice the capacity of new facilities, the number required and the land take will depend on many interrelated factors including economics, site sizes and availability, permitted capacity and shift patterns at individual facilities, etc.

11.2.5 The estimate of the total land area required for new in-building facilities by 2013 in each UA area for each of the seven Preferred Options of the RWP Technology Strategy is summarised in Figure 21 and shown, together with much more detailed information on the calculations, in Appendix E^{83 84}. The following can be summarised:

- The estimated total land area required in South East Wales for new in-building facilities for the seven Preferred Options ranges from between 48 hectares to 108 hectares.
- The Preferred Options with a single stage for managing residual waste have the lowest land area requirements for new in-building facilities, i.e. Preferred Options 4d (residual wastes managed by Autoclave followed by fuel to off-site energy use), 3a (residual wastes managed by MBT followed by Pyrolysis) and 2c (residual wastes managed by Incineration with energy recovery) at 48, 50 and 53 hectares respectively.
- The Preferred Options with two stages for managing residual waste have the highest land area requirements for new in-building facilities, i.e. Preferred Options 3d, 3a, 3b and 3c (residual wastes managed by MBT followed by, respectively, RDF to off-site energy use, Pyrolysis, Gasification and Incineration with energy recovery) at 78, 89, 94 and 108 hectares respectively.

Figure 21: Estimate of the total land area required for new in-building facilities in 2013 for South East Wales, by Preferred Option (hectares)

Technology Type	Sub-Option						
	2a	2c	3a	3b	3c	3d	4d
Clean MRF + Transfer Stations	17	17	17	17	17	17	17
In-Vessel Compost	13	13	13	13	13	13	13
Pyrolysis	20		11				
Gasification				19			
Incinerator		23			13		
MBT			47	44	65	47	
Autoclave							18
Total	50	53	89	94	108	78	48

11.3 Existing Land Available for New In-Building Facilities

11.3.1 As noted above, many existing land use class B2 ‘general industrial’ employment sites, existing major industry areas⁸⁵, and new B2 sites allocated in development plans will be suitable locations for the new generation of in-building waste management facilities that will be required in accordance with the RWP Technology Strategy.

⁸³ In order to provide a degree of over-provision, estimates of the total land area required for in-building facility types with potential to serve more than one LA area are increased by 20%. This over provision is necessary in order to provide the waste management industry with choice and flexibility regarding the number and size of sites, in order to facilitate adequate minimum site sizes and because other employment uses may be developed on any identified sites.

⁸⁴ The forecast and modelled waste arisings include wastes that could be reused rather than being recycled. It is therefore reasonable to assume that reuse capacity could be substituted for some of the front-end recycling capacity.

⁸⁵ The term ‘B2 employment sites and major industry sites’ is used here to include other land uses that have similar characteristics such as existing waste management sites, ports, some brownfield sites, and other similar sui generis land uses.

- 11.3.2 An analysis of the potentially available land area on existing B2 or major industry sites and B2 sites that have already been allocated in development plans⁸⁶ has shown that **in each UA area for which data is available there is, at the current time, a clear surplus of developable land with a B2 or similar planning permission or proposed use to accommodate the highest estimate of the total land area required for new in-building waste management facilities.** The potentially available land area on existing and allocated B2 or major industry sites is listed in Appendix G.
- 11.3.3 As noted above, it is estimated that the total land area required in South East Wales in 2013 for new in-building facilities for the seven Preferred Options of the RWP Technology Strategy ranges from between 48 hectares to 108 hectares. A study for the South East Wales Economic Forum (SEWEF) has estimated the requirement for B2 land in the SEWEF region for the period 2005-2016 to be between 127 and 184 hectares⁸⁷. In comparison, in the South East Wales RWP region there is currently a total of 729 developable hectares of land with a B2 or similar planning permission or proposed use.
- 11.3.4 Regarding this analysis of existing land available for new in-building facilities, it should be noted:
- It is possible that the capacity of many existing waste management sites could be increased. Such development would, in effect, serve to reduce the total land area required.
 - New in-building waste management facilities could be developed within vacant existing industrial buildings. This also would, in effect, serve to reduce the total land area required.
- 11.3.5 The above discussion and demonstration of an adequate supply of *existing* employment land to meet the demand for sites for new in-building waste management facilities will assist in the process of demonstrating an adequate choice of locations for the integrated and adequate network of waste facilities as required by the EU Waste Framework Directive.

11.4 Further Planning Considerations

- 11.4.1 In certain circumstances some new in-building waste management facilities could be lawfully developed within vacant existing industrial buildings without the need to submit a planning application to the LPA. The statutory controls of the land-use planning legislation operate in such a way that some developments require applications for planning permission whilst other developments are classed as ‘**permitted development**’ in which case the developer does not need to submit a planning application. The system of ‘permitted development’ recognises that certain developments can take place without increasing environmental or community impacts. The following factors are relevant when considering the need for a developer to submit a planning application:

⁸⁶ Using data from: a) the South East Wales Economic Forum (SEWEF) Land, Property & Urban Regeneration Group April 2007 Land Survey. The SEWEF data is supplied by Economic Development officers in each Local Authority and covers all UAs in the South East Wales RWP region except Powys. The data was filtered to include only sites with “B2 permission / proposed use”. As the principle of B2 or major industry use is already established on each of these existing or allocated sites, the site were not filtered on the basis of whether or not they fall within Area of Search. Further information on the survey can be obtained from sewef@wales.gsi.gov.uk; and b) direct from Local Authorities.

⁸⁷ Pg 29, Table 12 of ‘Harmers, 2007. *Further Analysis of Land Survey Data*. Pontypridd: South East Wales Economic Forum.’

- The existing and proposed land-use class of the site: The relevant business / industry use classes in the Use Classes Town and Country Planning (Use Classes) Order 1987 are: Class B1 – business that can be undertaken in a residential area without detriment to the amenity of the area; Class B2 – general industrial, and; Class B8 – Storage and Distribution. Any development that involves a new use that falls within the same land-use class as the previous use of the site would be classed as ‘not development’⁸⁸. However, any proposal that involves a change to or from a ‘Sui Generis’⁸⁹ land-use would require an application for planning permission if it is considered that there would be a material change of use, which would be likely in most cases⁹⁰.
- Any significant new built development: Any development that involves significant new construction would require planning permission.
- The need for an Environmental Impact Assessment (EIA): Any development for which an EIA is required by the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999, whether automatically under Schedule 1 or after screening by a LPA under Schedule 2, would require planning permission.
- It is a requirement of the WML regime operated by the EAW that, before a WML can be granted, the facility must have planning permission. In the case that a facility could lawfully be developed without the need to submit a planning application to the LPA, the developer would need to demonstrate the lawfulness to the EAW. One way to achieve this would be to apply to the LPA for a ‘Certificate of Lawfulness Of Proposed Use or Development’ (CLOPUD). While the LPA may publicise and consult the wider community on the application, the CLOPUD procedure and decision relates solely to the lawful position and cannot take into account any planning merits or disbenefits arising from the proposal.

11.4.2 Potential developers should always seek clarification from the LPA on each of these factors on a site-by-site, proposal-specific basis. While developers will be required to explain the processes, materials and products involved in what they propose, this could quite properly be approached for many of the new generation of in-building waste management facilities in terms of industrial demanufacturing processes or energy generation.

11.4.3 In 2005 the RWG published a supplement to the first RWP in order to assist developers and LPAs in **planning for Hazardous Wastes facilities**. This ‘Hazardous Waste Supplement’

⁸⁸ In addition, Schedule 2 of the Town and County Planning General Permitted Development Order 1995 (as amended) permits the following changes between land-use classes: from Class B2 or Class B8 to Class B1, or from Class B1 or Class B2 to Class B8 both with the restriction that any change from, or to, Class B8 must not exceed 235 square metres of floor space.

⁸⁹ ‘Sui Generis’ – a development type that is unique / ‘of its own kind’ and one which cannot be placed in any other Use Class.

⁹⁰ Facilities for the disposal of hazardous waste through incineration, chemical treatment or landfill are classified as ‘sui generis’ by the Town and Country Planning (Use Classes) Order 1987 (as amended) (Article 3(6)(j) states that “No [use]class specified in the Schedule includes use... as a waste disposal installation for the incineration, chemical treatment (as defined in Annex 11A to Directive 75/442/EEC under heading D9), or landfill of waste to which Directive 91/689/EEC applies.”). In addition, Regulation 31 of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 states that “A change in use of the land or buildings to... [one of these uses]...involves a material change of use in the use of the land or those buildings for the purposes of paragraph (1) of section 55 (meaning of “development” and “new development”). Waste disposal and waste recovery operations are defined in Annex IIA and Annex IIB of the Council Directive 75/442/EEC (as amended) and Schedule IV of the Waste Management Licensing Regulations 1994 (as amended).

examined the land-use planning considerations for the range of facilities that can handle materials classified as Hazardous Waste and identified appropriate locational criteria for each type of facility. The RWP 1st Review repeats in Appendix F the 'Locational Criteria' and 'Summary of Site Requirements and Considerations' for Hazardous Waste Facilities first published in the Hazardous Waste Supplement.

- 11.4.4 The seven Preferred Options of the RWP Technology Strategy all involve an element of EfW. This presents significant opportunities for **co-locating and networking EfW facilities with energy consuming land uses** such as large industrial energy users or district heating systems in industrial estates – energy users could benefit from lower energy costs, long term energy contracts at fixed prices and the prestige of using an innovative and environmentally friendly source of energy.
- 11.4.5 When considering locations for EfW facilities, local authorities and developers should consider synergies between the EfW plant and proposed or existing developments that could benefit from the heat and/or electricity produced⁹¹.
- 11.4.6 As no database of industrial energy users currently exists, the WAG has undertaken some preliminary work in an effort to identify the largest energy users within Wales. The EAW Pollution Inventory (2004) has been used in order to identify the largest CO₂ producers within Wales – which, by inference, will be the largest energy users⁹². Figure 22 lists the largest industrial energy users in South East Wales⁹³ and highlights that the largest energy users in the region are located in the Newport / Cardiff industrial belt and the Sully chemical complex⁹⁴.

⁹¹ The WAG and the Carbon Trust have entered into discussions to build upon and develop this work in order to broaden the linkages between energy users and potential EfW solutions.

⁹² The largest CO₂ producers will, by inference, be the largest energy users as they will either be producing CO₂ directly from combustion processes on site, or will be importing electricity and will be using a CO₂ conversion factor to make their inventory returns to the Agency. Although the Pollution Inventory is limited in that it only carries data for Part A(1) IPPC processes, experience shows that these constitute the largest industrial processes within Wales, and are likely to also constitute the heaviest industrial energy users. There are many more Part A(1) IPPC processes in Wales than the 38 identified within Figure 17 – however, the lower threshold of >10000 tonnes/annum for CO₂ emission (as used within the inventory) has screened these out. Non-Part A(1) industry is also not represented (PPC Part A(2) and Part B, and non-PPC industry) as no data is available for these smaller users – however, experience shows that these are often clustered around A(1) processes in industrial areas, and the general principles of energy demand apply here also.

⁹³ Source: EA Wales Pollution Inventory 2004.

⁹⁴ Sites indicated with an asterisk are power generating plants in their own right – either electrical, process steam raising or both.

Figure 22: Largest Industrial Energy Users in South East Wales

Operator Name	Site Address	Process Type	CO2 Emission (tonnes)
RWE Power*	Aberthaw Pwr Stn	Combustion	6,335,114
Centrica*	Barry Complex, Sully	Combustion	372,629
Blue Circle Cement	Aberthaw	Cement Manufacture	370,788
Corus Llanwern	Llanwern Works, Newport	Ferrous metals	246,602
Uskmouth Pwr Stn*	Uskmouth, Newport	Combustion	180,031
Npower Cogen*	Barry Complex, Sully	Combustion	161,389
Dow Corning	Barry Complex, Sully	Organic chemicals	23,604
Novelis*	Castle Works, Rogerstone	Combustion	19,970
EVC	Barry Complex, Sully	Organic chemicals	16,348
Novelis	Castle Works, Rogerstone	Non ferrous metals	14,050
Cabot Carbon	Barry Complex, Sully	Organic chemicals	13,875
Alphasteel	Corporation Rd, Newport	Ferrous metals	13,687
BAE Glascoed	Glascoed, Pontypool	Combustion	11,974
Celsa	PO Box 37, Tremorfa	Ferrous metals	54,000
Celsa	PO Box 37, Tremorfa	Ferrous metals	47,500
Celsa	Castle Works, Tremorfa	Ferrous metals	47,500

12. Areas of Search for new facilities

12.1 Background

12.1.1 This chapter sets out the process used to generate and assess 'Areas of Search' for use in identifying *new* sites for in-building and open-air facilities and presents the Areas of Search maps.

12.2 Generating and Assessing the Areas of Search

12.2.1 As with the generation and assessment of the alternative strategic waste management Options, the process of generating and assessing Areas of Search has been approached with the aim of producing RWPs for all of Wales that are based on comparable principles and techniques.

12.2.2 To this end the three regions in Wales jointly commissioned RPS Planning, Transport and Environment to carry out a study⁹⁵ to generate and assess Areas of Search for regional waste facilities across the principality. The key aims of the study were:

- to identify areas of search for regional in-building⁹⁶ facilities across each of the three regions in Wales;
- to identify areas of search for regional open-air⁹⁷ 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 SEA Regulations); and
- to ensure compliance with the Habitats Directive.

12.2.3 As noted earlier, the objective of the SEA Directive is "...to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development, by ensuring that...an environmental assessment is carried out of certain plans and programs which are likely to have significant effects on the environment."⁹⁸

12.2.4 The SEA Directive defines⁹⁹ 'environmental assessment' as a process comprising:

- preparing an Environmental Report in which the likely significant effects on the environment of implementing the plan or programme, and reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme, are identified, described and evaluated;

⁹⁵ RPS, 2007. *Identifying Areas of Search for Regional Waste Facilities in Wales*. Bristol: RPS.

⁹⁶ In-building facilities include: In-Vessel Composting; Thermal Treatment; Mechanical & Biological Treatment; and Materials Recycling Facilities.

⁹⁷ Open-air facilities include: Landfill; Landraise; and Windrow Composting.

⁹⁸ Article 1 of 'Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment'.

⁹⁹ Article 2(b) and Articles 5.1 *ibid*.

- carrying out consultation on the draft plan or programme and the accompanying Environmental Report;
- taking into account the Environmental Report and the results of consultation in decision making; and
- providing information when the plan or programme is adopted and showing how the results of the environmental assessment have been taken into account..

12.2.5 The generation and assessment of Areas of Search has been undertaken through a SA process that incorporated the requirements of SEA, using a Geographical Information System (GIS) to produce Areas of Search maps. This section summarises the SEA / SA process. Much more detailed information is available in the Environmental Report / SA report¹⁰⁰.

12.2.6 In summary, the process for the generation and assessment of Areas of Search involved:

- The identification of SA Objectives.
- The identification of mappable criteria to enable assessment against the SA Objectives – effectively questions about spatial issues that can be answered through a GIS analysis, such as areas with specific designations or features and/or distances from those specific designations or features. These criteria are summarised in Figure 24.
- The application of weightings to each of the criteria to reflect the level of potential or constraint – applying separate weightings for in-building facilities and for open-air facilities. The definitions of the weightings applied to each of the criteria to reflect the level of potential or constraint are set out in Figure 23.
- The production of composite maps based on the weighted criteria using a GIS – producing separate maps for in-building facilities and for open-air facilities.

Figure 23: Weightings Applied to the SA Criteria for the Areas of Search Maps

Weighting Applied		Definition
Level of Constraint	5	Exclusion – where the development of a waste management facility is disqualified on the grounds of sustainability / policy and/or impracticality.
	4	Areas with ‘Regional / National Constraints’.
	3	Areas with ‘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’.

12.2.7 This process allowed sustainability principles to be embedded into the process of area selection, rather than an ‘add-on’ process at the end, and enabled the results of the GIS analysis to be linked directly to the SA Objectives.

12.2.8 The SA Objectives, criteria and weightings used in the generation and assessment of the Areas of Search are set out in detail in Appendix H.

¹⁰⁰ RPS, 2007. *Identifying Areas of Search for Regional Waste Facilities in Wales*. Bristol: RPS.

Figure 24: Areas of Search Sustainability Appraisal – Summary of Objectives & Mapped Criteria

Sustainability Appraisal Objectives	Mapped Criteria
Ensure prudent use of land & resources	<ul style="list-style-type: none"> • Landfill Site • Quarry site • Agricultural Land Classification • Green Wedges • Industrial Land • Existing Non-Landfill Waste Management Facility
Minimise greenhouse gas emissions	<ul style="list-style-type: none"> • Proximity to Ports / Docks • Proximity to Urban Area
Minimise adverse effects on air quality	<ul style="list-style-type: none"> • Air Quality Management Area • Proximity to Residential Development
Protect & enhance the landscape, townscape & cultural heritage of Wales	<ul style="list-style-type: none"> • Proximity to National Parks • Proximity to Areas of Outstanding Natural Beauty • LandMap • Special Landscape Area • Historic Landscape • Proximity to World Heritage Site • Proximity to Scheduled Ancient Monuments • Heritage Coast • Proximity to Historic Park and Garden
Minimise adverse effects on water quality	<ul style="list-style-type: none"> • Minor Aquifer • Proximity to River Quality Objectives • Proximity to Surface Water Protection Zone • Groundwater Source Catchment Area Zones • Major Aquifer • Lakes and Rivers
Avoid increasing flood risk	<ul style="list-style-type: none"> • TAN 15 Layer C1 • TAN 15 Layer C2
Protect biodiversity	<ul style="list-style-type: none"> • Proximity to Special Area of Conservation • Proximity to Special Protection Area • Proximity to Ramsar Site • Proximity to Site of Special Scientific Interest • Proximity to National Nature Reserve • Local Nature Reserve • Proximity to Ancient Woodland
Provide employment opportunities & support long-term jobs & skills	<ul style="list-style-type: none"> • Proximity to Urban Area
Minimise adverse effects on residential property	<ul style="list-style-type: none"> • Proximity to Residential Development
Minimise the increased cost of waste management	<ul style="list-style-type: none"> • Proximity to Urban Area • Proximity to Primary Road Network • Slope
Protect local amenity	<ul style="list-style-type: none"> • Common Land / Open Country • Public Forests • Country Parks
Minimise adverse effects on public health and avoid increasing health inequalities	<ul style="list-style-type: none"> • Proximity to Residential Development

12.2.9 Any given area is likely to have many different weighted criteria applied to it. Therefore different levels of ‘Areas of Search’ were defined to represent different combinations of weighted criteria. In these combinations, higher constraint weightings overlay lower constraint weightings, higher opportunity weightings overlay lower opportunity weightings and the relationship between constraint and opportunity weightings is as follows:

- Areas identified as having a combination of ‘No Constraints’ and ‘High Potential’ were given the 1st Area of Search ranking.
- Areas identified as having a combination of ‘No Constraints’ and ‘Some Potential’ or a combination of ‘Some Constraints’ with ‘High Potential’ were given the same 2nd Area of Search ranking as it was not possible to draw an adequate distinction between these combinations within the scope of the study.
- Areas identified as having a combination of ‘Some Constraints’ and ‘Some Potential’ were given the 3rd Area of Search ranking.
- Areas identified as having any ‘Regional / National Constraints’ were given the 4th Area of Search ranking
- Areas weighted 5 were identified as exclusion areas due to constraining factors of regional, national or international significance.

Figure 25: Combinations of Weightings and Corresponding Levels of ‘Area of Search’

Combination of Weightings	Area of Search
Areas of ‘No Constraint’ & ‘High Potential’	1 st
Areas of ‘No Constraint’ & ‘Some Potential’ Areas of ‘Some Constraint’ & ‘High Potential’	2 nd
Areas of ‘Some Constraint’ & ‘Some Potential’	3 rd
Areas with ‘National or Regional Constraint’	4 th

12.2.10 Figure 25 summarises the different combinations of weightings and their corresponding levels of ‘Area of Search’.

12.2.11 The following limitations and assumptions of the process for the generation and assessment of Areas of Search should be noted:

- To achieve consistency across Wales, the criteria and weightings were developed and agreed at the all-Wales level and the same set of criteria and weightings were applied in all three regions. For this reason, only mappable criteria relating to strategic level spatial issues were included; it was impractical to include local level issues. It is anticipated that the Areas of Search will be subject to more detailed assessments through the local planning process. Examples of local issues to be considered include altitude, access, location of small areas of residential properties or individual dwellings.
- Any large GIS project such as this will be subject to limitations in terms of availability, quality and reliability of GIS data. Where possible, data has been used that is consistent across Wales. It has been assumed that where data has been provided, the quality and suitability of the data has been assessed by the owner / provider and is considered to be ‘fit for purpose’. However, due to a lack of consistent Wales-wide data sets for certain topic areas, development plan data has been substituted where it was found to be robust and fit for purpose.
- The GIS data used represents a snapshot in time. For example, data on residential development is based on existing development and do not take account of allocated housing sites yet to be built.

- Data has not been included for minerals resources – it has been assumed that prior extraction of any resource will be considered prior to any waste development at the local level.
- The Areas of Search maps do not address the appropriateness of, or need for, individual types of waste management facility; they simply bring together various mappable criteria that will influence the location of new waste management facilities falling into two broad categories of either ‘in-building’ or ‘open-air’ facilities.

12.2.12 Further information on the SEA of the RWP 1st Review and how requirements of the regulations have been fulfilled is provided in Chapter 13 ‘Summary – Strategic Environmental Assessment’.

12.3 Principles for the Use of the Areas of Search Maps & GIS Data

12.3.1 The following two broad principles for the viewing and use of the Areas of Search maps and GIS data must be noted:

- The sole purpose of the Areas of Search maps and GIS data is to identify Areas of Search at a strategic level for use by LPAs during the LDP preparation process – as a starting point for more detailed local level assessments to identify appropriate sites for waste management facilities in LDPs.
- Because the sole purpose of the Areas of Search maps and GIS data is to identify Areas of Search at the strategic level, the Areas of Search maps and GIS data must not be used by any organization or individual to determine the appropriateness of proposals for individual waste management facilities. The Areas of Search maps and GIS data must not be used by LPAs as a development control tool.

12.3.2 The following detailed principles for the viewing and use of the Areas of Search maps and GIS data must also be noted.

12.3.3 The locations that have been identified as 2nd, 3rd or 4th Areas of Search must not be excluded from consideration as appropriate areas, for the following reasons:

- Waste management facilities are only one of many types of development which LPAs must consider in their LDPs, and as a result other priorities and pressures may justify selecting 2nd, 3rd or 4th Areas of Search over a 1st Area of Search. The Sustainability Appraisal process undertaken during the preparation of LDPs will be an appropriate mechanism for justifying any such approach.
- Only mappable criteria relating to *strategic* level spatial issues were used to generate the Areas of Search maps. Therefore, more detailed *local* assessments may conclude that, regardless of the Area of Search ranking, a particular site could be developed for waste management facilities with no potential impacts.
- On those particular sites where a greater level of constraint does exist, it must be acknowledged that, in turn, a greater level of operational mitigation may adequately control potential environmental impacts. Waste management facilities can be located almost anywhere if they are appropriately designed, managed and regulated to control any potential impacts.

12.3.4 The Areas of Search maps and GIS data must not be used by LPAs in isolation as the definitive guide to site selection; the ranking of a particular Area of Search effectively establishes the issues that would need to be addressed in more detailed local level assessments during the LDP preparation process to identify appropriate sites for waste management facilities. If a particular type or combination of waste management facility / facilities is proposed for a particular site, these more detailed local assessments may require the quantification of this risk based on the nature of the proposed waste management facility / facilities. These more detailed local assessments must, for each site:

- Address each of the strategic level spatial issues that determined the Area of Search ranking – and in so doing may conclude that, regardless of the Area of Search ranking, a particular site could be developed for waste management facilities with no potential impacts, or that adequate mitigation measures will control any potential impacts, or that a particular site should not be developed for waste management facilities.
- Assess a range of other considerations that need to be assessed when planning for new waste management facilities, including site availability, access, altitude, topography, existing land uses, etc.
- Assess any potential cumulative effects on sensitive receptors of a number of sites within an area being developed for new facilities.

12.3.5 The Areas of Search map for in-building facilities does not prejudice the development of new in-building waste management facilities on any existing land use class B2 ‘general industrial’ employment sites, existing major industry areas¹⁰¹, or new B2 sites allocated in development plans whether or not fall the site falls within an Area of Search for in-building facilities – because the principle of B2 or major industry use is already established on these sites.

12.3.6 Within the Areas of Search maps there are a number of existing waste management facilities that have been identified to be in areas that are, by virtue of the surrounding constraints, shown to be excluded. It should be acknowledged 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 LPAs to assess whether the expansion of operations at these locations is appropriate and whether any potential adverse effects can be effectively controlled.

12.4 The Areas of Search

12.4.1 This section summarises the results of the SEA / SA process and the Areas of Search maps. Much more detailed information is available in the Environmental Report / SA report¹⁰².

12.4.2 **The Areas of Search maps for in-building and open-air facilities are presented in Appendix I. Each map comprises:**

¹⁰¹ The term ‘B2 ‘general industrial’ employment sites, existing major industry areas’ is used here to include other land uses that have similar characteristics such as existing waste management sites, ports, some brownfield sites, and other similar sui generis land uses.

¹⁰² Hyder Consulting Ltd, 2007. *Strategic Waste Management Options: Strategic Environmental Assessment*. Cardiff: Hyder Consulting Ltd.

- **1st Areas of Search** – identified as areas appropriate for waste management development due to the presence of appropriate site characteristics (such as proximity to the road network) and few significant environmental constraints;
- **2nd, 3rd and 4th Areas of Search** – identified as those areas that cannot be excluded from consideration as appropriate areas, but where a greater level of constraint or constraints exists; and
- **Exclusion Areas** – identified as those areas that, on the basis of clear planning policy, have been excluded from consideration as appropriate for waste management development.

12.4.3 This generation and assessment of Areas of Search maps for use in identifying *new* sites for in-building and open-air facilities waste management facilities, based on precise mapped criteria relating to strategic level spatial issues, will assist in the process of demonstrating an adequate choice of locations for the integrated and adequate network of waste facilities as required by the EU Waste Framework Directive.

12.4.4 The Areas of Search have been identified through the SEA / SA process using the SA Objectives, criteria and weightings set out in Appendix H. As such, any significant negative effects have been minimised. The following paragraphs outline in more detail how any significant negative effects have been minimised.

12.4.5 **Biodiversity** – 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. The footprint of statutory designated sites, including Special Areas of Conservation, Ramsar sites, Sites of Special Scientific Interest, National Nature Reserves and Special Protection Areas 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. 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. For biodiversity issues, the Areas of Search subsequently reflect areas that are considered to be constrained by virtue of planning policy, reflected at the broad, national level. 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.

12.4.6 **Population** – residential development and urban areas are excluded from the search under objectives linked to residential property, the cost of waste management and greenhouse gas emissions associated with transport. Medium to long-term positive effects on employment are maximised by identifying areas up to 10km from residential areas as having potential. The Areas of Search also highlight areas of local amenity as being generally unsuitable for siting waste management facilities. Therefore, negative effects on local amenity are minimised.

- 12.4.7 **Human Health** – negative, secondary effects on human health are minimised through siting waste facilities outside of areas of residential development and buffer areas surrounding such areas ensures that health impacts from locating facilities nearby to residential developments are also acknowledged.
- 12.4.8 **Soil** – areas of land where soil is of high agricultural potential has been designated as a constraint, although never absolutely excluded from the search. Land that falls under grades 1 and 2 is given a weighting of 4, which is a national or regional constraint and areas under grades 4 and 5 is regarded as being an opportunity rather than a constraint. In essence, the mapping process has identified areas with poor soils as being areas of some potential, and includes these within the definitive search areas accordingly.
- 12.4.9 **Water** – two main objectives to secure the water environment have been identified: objectives to minimise the adverse effects on water quality, and to avoid increasing flood risk. To avoid negative impacts on groundwater, open-air facilities are excluded in Groundwater Catchment Zones 1-3. Similarly, in-building facilities are restricted in Groundwater Catchment Zone 1. Lakes and rivers are excluded and the inclusion of sites within close proximity to rivers with water quality objectives has been limited. Furthermore, the location of both major and minor aquifers has also been included in the Areas of Search. The search also takes account of the risk of flooding. Areas defined by the Environment Agency as TAN Layer C1 and Layer C2 have been weighted appropriately to ensure that the effects on flood risk are minimised.
- 12.4.10 **Air** – 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, as well as areas in close proximity to residential development.
- 12.4.11 **Climatic Factors** – two criteria have been applied to strategically limit the greenhouse gas emissions arising from transporting waste and offer areas of potential rather than constraint. Appropriate weightings have been applied to areas within 5km of a port and locations in close proximity to urban areas that have a population greater than 10,000. Negative climatic effects have therefore been minimised.
- 12.4.12 **Material Assets** – the search has minimised the negative effects on residential property by ensuring that areas close to residential development are not included within the search. In addition, the reuse of particular types of sites, including existing waste sites and quarry sites is encouraged. As such, these have been identified as having potential which enables a positive effect on the prudent use of land.
- 12.4.13 **Cultural Heritage** – the study minimises effects on identified aspects of cultural heritage by showing constraint in areas designated as having value relating to cultural heritage. Appropriate weightings have been applied to 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.

- 12.4.14 **Landscape** – National Parks and Areas of Outstanding Natural Beauty have both been excluded from the search¹⁰³. In addition, locating waste management facilities around these areas has been assessed so that impacts from distant views are eliminated as far as possible.
- 12.4.15 **Interrelationships** – the relationship between the weightings and the criteria has formed the maps, which highlight areas of potential and areas of constraints throughout the region. The combination of all of the criteria that have formed the search fit together without conflict.
- 12.4.16 **The balance between human health, cost of waste management and impacts to the environment** – 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. On the one hand it is necessary to protect humans as far as possible from the health impacts associated with the management of waste and 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. For this reason, appropriate weightings have been applied resulting in the search favouring areas surrounding urban population whilst at the same time protecting areas of residential development.
- 12.4.17 **Cumulative Effects** – 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. Furthermore, proposals for waste management facilities could come forward in areas where other types of developments are also taking place. This could lead to cumulative effects on sensitive receptors. The potential for such effects will need to be considered at the local level.
- 12.4.18 **Habitats Directive** – the SA also addressed the requirements of the EU Habitats Directive. As noted earlier, the Directive requires an Appropriate Assessment to be undertaken where the impacts of land-use plans are likely to have a significant effect on a European site, or, where it cannot be demonstrated that it would not have a significant effect, to assess the implications for the European site in view of the site’s conservation objectives. The Directive states¹⁰⁴:

“Any plan or project not directly connected with or necessary to the management of the site but likely to have 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

¹⁰³ In exceptional circumstances there may be sites on the edge of but within National Parks where facilities with capacity to serve more than one local authority area may be acceptable. Such exceptional circumstances could include, for example, B2 sites that for historical reasons are located on the edge of but within National Parks, or facilities for managing agricultural waste. See also Appendix K, Section K7 ‘National Park Issues’.

¹⁰⁴ Article 6 para (3) of ‘Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora’.

will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.”

- 12.4.19 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 by ensuring 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 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.
- 12.4.20 Through the use of mapped criteria to generate the Areas of Search, the distance from the boundary of a designated area of international importance has been a key consideration in establishing the level of constraint in any given area. The mapped criteria relating to the potential impact upon European sites have therefore adopted the first key stage of the requirements under the Habitats Directive; they have been derived in order to prevent the likelihood of potential impacts of waste management development on European sites of ecological importance.
- 12.4.21 The SA provides relevant information that will assist LPAs, as a Competent Authority, to assess the requirement for an Appropriate Assessment at the appropriate stage when specific land-use allocations and development proposals have been formulated.

PART D:

SUMMARIES & NEXT STEPS

13. Summary – Strategic Environmental Assessment

13.1 What is SEA?

13.1.1 The ‘EU Directive on the Assessment of the Effects of Certain Plans and Programmes on the Environment’ is commonly known as the SEA Directive.

13.1.2 The objective of the SEA Directive is “...to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development, by ensuring that...an environmental assessment is carried out of certain plans and programs which are likely to have significant effects on the environment.”¹⁰⁵

13.1.3 The SEA Directive defines¹⁰⁶ ‘environmental assessment’ as a process comprising:

- preparing an Environmental Report in which the likely significant effects on the environment of implementing the plan or programme, and reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme, are identified, described and evaluated;
- carrying out consultation on the draft plan or programme and the accompanying Environmental Report;
- taking into account the Environmental Report and the results of consultation in decision making; and
- providing information when the plan or programme is adopted and showing how the results of the environmental assessment have been taken into account.

13.1.4 The Directive is implemented in Wales through ‘The Environmental Assessment of Plans and Programmes (Wales) Regulations 2004’.

13.2 Why undertake SEA?

13.2.1 Focusing on the requirements relevant to the RWP, the SEA Directive¹⁰⁷ requires an environmental assessment of plans or programmes if:

- They are subject to preparation by local authorities.
- They are required by administrative provisions.
- They are prepared for waste management, *or* town and country planning, *or* land-use, *and* they set the framework for future development consents of projects listed in Annexes I and II of the EU Environmental Impact Assessment Directive.

13.2.2 The RWP Technology strategy is prepared by local authorities, is required by TAN 21, is prepared for waste management / town and country planning / land-use and it sets the framework for future development consents by setting out a combination of waste management technologies that would enable the region to meet or exceed legislative targets

¹⁰⁵ Article 1 of ‘Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment’.

¹⁰⁶ Article 2(b) and Articles 5.1 *ibid*.

¹⁰⁷ Article 2(a) and Article 3 2(a) *ibid*.

and by apportioning the total capacity required at various types of waste management facilities in 2013 to each UA area.

13.2.3 The RWP Spatial Strategy is prepared by local authorities, is required by TAN 21, is prepared for waste management / town and country planning / land-use and it sets *part* of the framework for future development consents¹⁰⁸ by identifying Areas of Search at a strategic level for use by LPAs during the LDP preparation process as a starting point for more detailed local level assessments when identifying appropriate sites for waste management facilities in LDPs.

13.2.4 TAN 21¹⁰⁹ states that RWPs should be subject to SEA.

13.2.5 For these reasons the SEA process was applied to the RWP 1st Review process.

13.3 The Approach to the SEA

13.3.1 Government guidance advises¹¹⁰ that there are a number of stages in the SEA process:

- Stage A: Setting the context and objectives, establishing the baseline and deciding on the scope.
- Stage B: Developing and refining alternatives and assessing effects.
- Stage C: Preparing the Environmental Report.
- Stage D: Consulting on the draft plan or programme and the Environmental Report.
- Stage E: Monitoring the significant effects of implementing the plan or programme on the environment.

13.3.2 The approach taken to SEA has been to undertake Stages A-C separately for the two separate substantive policy elements – the RWP Technology Strategy and the RWP Spatial Strategy. This approach was considered appropriate, adequate and proper for the following reasons:

- the two elements tackle different issues;
- the two elements have been developed through two different processes;
- the RWP 1st Review presents these two elements separately;
- the RWP 1st Review does not bring the two elements together in order to identify which technologies should be located at which site or in which Area of Search; and
- the process of combing the two elements together in order to identify which technologies should be located at which site or in which Area of Search is a policy

¹⁰⁸ The European Commission guidance on implementing the SEA Directive states that: “*The meaning of ‘set the framework for future development consent’ is crucial to the interpretation of the Directive, although there is no definition in the text. The words would normally mean that the plan or programme contains criteria or conditions which guide the way the consenting authority decides an application for development consent. Such criteria could place limits on the type of activity or development which is to be permitted in a given area; or they could contain conditions which must be met by the applicant if permission is to be granted; or they could be designed to preserve certain characteristics of the area concerned (such as the mixture of land uses which promotes the economic vitality of the area)*”. Para 3.23 of ‘European Commission, 2004. Implementation of Directive 2001/42/EC on the Assessment of the Effect of Certain Plans and Programmes on the Environment’. Brussels: EC.

¹⁰⁹ Paras 2.10, 2.14 and 2.17 of ‘Welsh Assembly Government, 2001. Planning Policy Wales Technical Advice Note 21: Waste. Cardiff: WAG.’

¹¹⁰ Figure 5 of Office of the Deputy Prime Minister, 2005. A Practical Guide to the Strategic Environmental Assessment Directive. London: ODPM.

making exercise that should only be undertaken at the local level through the LDP preparation process – a process which would be subject to a further SEA.

13.3.3 For Stage D the approach taken was to publish the RWP Technology Strategy and RWP Spatial Strategy in one document – the Consultation Draft RWP 1st Review – for formal consultation alongside the two Environmental Reports.

13.3.4 Finally, Stage E for both the RWP Technology Strategy and RWP Spatial Strategy will become an integral part of the continued, wider, monitoring of the RWP.

13.4 The Level of Detail in the SEA

13.4.1 Government guidance states that an SEA need not be done in any more detail, or using any more resources, than is useful for its purpose¹¹¹.

13.4.2 The SEA Directive lists¹¹² the following factors to be considered in deciding what information to include in the Environmental Report:

- information that may reasonably be required, taking into account current knowledge and methods of assessment;
- the contents and level of detail of the plan;
- the objectives and geographical scope of the plan;
- the stage reached in the decision making process; and
- the extent to which it would be more appropriate to assess certain matters elsewhere in the decision-making process.

13.4.3 Accordingly, the approach taken to environmental assessment recognises the following factors:

- The RWP 1st Review is a strategic-level non-statutory plan with a regional geographical scope.
- The RWP 1st Review sits below the NWSW and above LDPs in a hierarchy of plans.
- The RWP Technology Strategy sets the framework for development consents.
- The RWP Spatial Strategy sets part of the framework for future development consents.
- Later stages in the decision making process will include bringing the RWP Technology Strategy and RWP Spatial Strategy together through the LDP preparation process in individual UA areas in order to identify appropriate sites for waste management / resource recovery facilities. The LDP preparation process will include a SEA.
- Later stages in the decision making process may include the development control process for any proposed facilities. Proposed facilities may be subject to a detail EIA.
- Later stages in the decision making process may include licensing / permitting and regulation through the WML or PPC system.

¹¹¹ Para 2.22 *ibid*.

¹¹² Article 5.2 of ‘*Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment*’.

13.5 Meeting the Requirements of the SEA Directive

13.5.1 Appendix J, Table J1, provides an extensive list that signposts where, or details how, all of the requirements of the SEA Directive have been fulfilled during the RWP 1st Review process.

13.5.2 The rest of this section provides an overview of how some of the specific requirements of the SEA Directive have been fulfilled. Much more detailed information is available in the two Environmental Reports¹¹³.

13.5.3 **Objectives and indicators.** The two Environmental Reports have been produced within the context of the same plans / programs / environmental objectives, the same baseline, the same environmental problems and they address the same topics required by the SEA Directive¹¹⁴. For this reason they contain similar objectives and use similar indicators / mapped criteria.

13.5.4 The RWP Objectives and the objectives and indicators / mapped criteria used in the Environmental Reports have been developed through an iterative process:

- Based on a review of the policy context, government guidance on SA¹¹⁵ recommends a set of 12 objectives and 21 indicators. At the outset of the review in 2006 the MSG agreed¹¹⁶ to proceed by using: the set of 12 objectives recommended by the government guidance as the initial objectives of the RWP 1st Review process; the set of 21 indicators recommended by government guidance, plus one extra (dioxin emissions), as the indicators for the SA; and 7 of the recommended objectives and 15 of the recommended indicators, plus one extra (dioxin emissions), as the SEA objectives and indicators for the RWP Technology Strategy.
- During the production of the Environmental Report for the RWP Technology Strategy the SEA objectives and indicators were reviewed and expanded to address potential for indirect and cumulative impacts, and modified to address comments from statutory consultees and as a result of work undertaken to establish the baseline.
- During the production of the Environmental Report for the Areas of Search the initial objectives of the RWP 1st Review process were reviewed and amended as appropriate in light of: the review of relevant plans / programs / environmental objectives; the baseline and environmental issues; and the availability and nature of GIS data.
- The initial objectives of the RWP 1st Review process have been reviewed in light of the two Environmental Reports and developed into the objectives for the RWP 1st Review that are set out in Figure 4.

¹¹³ 'Hyder Consulting Ltd, 2007. *Strategic Waste Management Options: Strategic Environmental Assessment*. Cardiff: Hyder Consulting Ltd.' and 'RPS, 2007. *Identifying Areas of Search for Regional Waste Facilities in Wales*. Bristol: RPS.'

¹¹⁴ The SEA topics are set out in Annex 1(f) of 'Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment'.

¹¹⁵ Para 2.11 of 'Office of the Deputy Prime Minister, 2002. *Strategic Planning for Sustainable Waste Management: Guidance on Option Development and Appraisal*. London: ODPM.'

¹¹⁶ South East Wales Regional Waste Group, 2006. *The Regional Waste Plan 1st Review – Content and Approach*. Pontllanfraith: Caerphilly County Borough Council

- 13.5.5 Appendix J, Table J2 shows the strong correlation between the SEA topics¹¹⁷, the RWP Objectives, the indicators used in the Environmental Report for the RWP Technology Strategy and the mapped criteria used in the Environmental Report for Areas of Search.
- 13.5.6 **Reasonable alternatives.** Government guidance states that only reasonable, realistic and relevant alternatives need to be put forward¹¹⁸. It was considered that the 19 alternative strategic waste management sub-Options were reasonable alternatives for the Environmental Report for the RWP Technology Strategy. The aim of the Areas of Search is to provide alternatives – this situation arises because the RWP Spatial Strategy sets *part*, not all, of the framework for future development consents. Another reasonable alternative is the ‘no plan’ alternative, i.e. no Areas of Search. This alternative would not allow for any strategic, regional level, consideration of the environmental issues before individual UAs identify appropriate sites for waste management / resource recovery facilities through the LDP preparation process.
- 13.5.7 **Assessing effects.** Any likely significant effects on the environment of the alternative strategic waste management Options were identified, described and assessed by forming a judgment on whether or not a predicted effect would be environmentally significant when compared against the baseline conditions. Any likely significant effects on the environment of the Areas of Search were identified, described and assessed in terms of how significant receptors will be avoided as part of the SEA process.
- 13.5.8 **Mitigation.** The measures envisaged to prevent, reduce and as fully as possible off-set any significant adverse effects on the environment of implementing the alternative strategic waste management Options were set out in the Environmental Report and referenced in Section 9.3 ‘Important Caveats Regarding the RWP Technology Strategy’ and Appendix K ‘Guidance on actions for Local Planning Authorities’. Mitigation measures have been built into the process of identifying Areas of Search through the avoidance of highly constrained areas.
- 13.5.9 **Consultation.** The two Environmental Reports were informed by scoping consultations. The Consultation Draft RWP 1st Review document, the two Environmental Reports and the draft strategic HIA were published for consultation in October 2007. The consultation period ran for 10 weeks from 15 October 2007 to 24 December 2007¹¹⁹.
- 13.5.10 **Decision-making.** Environmental considerations have been integrated into the Plan by assessing the alternative strategic waste management Options through a LCA, SA and SEA, by referencing the mitigation measures identified for the Preferred Options¹²⁰ and by generating and assessing Areas of Search through a SA process that incorporated the requirements of SEA, using a GIS¹²¹. The Environmental Reports have been taken into account in identifying the RWP Technology Strategy by referencing the mitigation measures

¹¹⁷ The SEA topics are set out in Annex 1(f) of ‘*Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment*’.

¹¹⁸ Pg 68 of Office of the Deputy Prime Minister, 2005. *A Practical Guide to the Strategic Environmental Assessment Directive*. London: ODPM.

¹¹⁹ See Section 17 ‘Consultation Provisions’ of ‘Hyder Consulting Ltd, 2007. *Strategic Waste Management Options: Strategic Environmental Assessment*. Cardiff: Hyder Consulting Ltd.’ and Chapter 3: Scoping of ‘RPS, 2007. *Identifying Areas of Search for Regional Waste Facilities in Wales*. Bristol: RPS.’ and paras 14.3.1 to 14.3.3

¹²⁰ See para 13.5.8.

¹²¹ See paras 9.2.1, 9.2.2 and 12.2.5 to 12.2.10.

identified for the Preferred Options¹²² and in generating, assessing and publishing the Areas of Search¹²³. The results of the SEA scoping consultations were taken into account in preparing the Environmental Reports¹²⁴ and the results of the consultation on the Consultation Draft RWP 1st Review document and the two Environmental Reports have been reviewed by the RWG and used to inform changes to the Plan¹²⁵. The reasons for choosing the seven Preferred Options of the RWP Technology Strategy in the light of the other reasonable alternatives have been outlined¹²⁶ and it has been explained that the reason for identifying the Areas of Search is to provide alternatives¹²⁷.

13.6 Monitoring

13.6.1 The SEA Directive states that “*Member States shall monitor the significant environmental effects of the implementation of plans and programmes in order, inter alia, to identify at an early stage unforeseen adverse effects and to be able to undertake appropriate remedial action.*”¹²⁸

13.6.2 The RWP 1st Review contains two separate main elements:

- the ‘RWP Technology Strategy’ – which provides strategic information on the types of waste management / resource recovery facilities required in South East Wales; and
- the ‘RWP Spatial Strategy’ – which provides strategic information on the types of locations likely to be acceptable.

13.6.3 The RWP Technology Strategy and RWP Spatial Strategy will be brought together through the LDP preparation process in individual UA areas in order to identify appropriate sites for waste management / resource recovery facilities. However, this alone will not achieve the implementation of the RWP 1st Review and the development of an integrated and adequate network of facilities on the ground. A range of actions and circumstances will be necessary to achieve this. In particular, the RWP 1st Review will be implemented through:

- the LDP land-use policies and development control decisions of individual LPAs;
- the proactive engagement of economic development bodies – especially in the sale or release of appropriate land for new facilities;
- the actions of individual Waste Disposal Authorities (WDAs) in the development and operation of Municipal Waste management / resource recovery facilities; and
- the actions of private and voluntary sector organisations in the development and operation of waste management / resource recovery facilities.

¹²² See para 13.5.8.

¹²³ See paras 9.2.1, 9.2.2 and 12.2.5 to 12.2.10.

¹²⁴ See Section 17 ‘Consultation Provisions’ of ‘Hyder Consulting Ltd, 2007. *Strategic Waste Management Options: Strategic Environmental Assessment*. Cardiff: Hyder Consulting Ltd.’ and Chapter 3: Scoping of ‘RPS, 2007. *Identifying Areas of Search for Regional Waste Facilities in Wales*. Bristol: RPS.’

¹²⁵ See paras 9.2.1 and 14.4.2 to 14.4.4.

¹²⁶ See paras 13.5.6, 9.2.1 and 9.2.2.

¹²⁷ See paras 13.5.6 and 12.2.5 to 12.2.10.

¹²⁸ Article 10.1 of ‘*Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment*’.

13.6.4 The SEA Directive states that existing monitoring arrangements may be used if appropriate¹²⁹. However, given that TAN 21 requires that RWPs are reviewed every 3 years, rather than extending the scope of the AMRs to include SEA monitoring it would be more appropriate for an SEA Monitoring Report to be produced at the outset of the RWP 2nd Review to inform the review. This is further supported by the lengthy timescales inherent in implementing the RWP 1st Review:

- The target and assessment year used for this RWP 1st Review is 2013.
- LDPs must be reviewed every 4 years¹³⁰.
- The process of planning and developing individual facilities can take a number of years.

13.6.5 Appendix J, Table J3, sets out an outline monitoring framework for the SEA Monitoring Report based upon recommendations in the two Environmental Reports. The SEA Monitoring Report should identify any significant effects of implementing the RWP 1st Review by analysing the data gathered for the indicators identified in the outline monitoring framework.

13.6.6 When the SEA Monitoring Report is produced at the outset of the RWP 2nd Review the outline monitoring framework should be reviewed in light of how the implementation of the RWP 1st Review has progressed. It may be appropriate at the time to rationalise the outline monitoring framework to focus on any significant environmental effects arising from the implementation of the Plan. This could include a review of sources of existing data and refining the monitoring indicators to focus on key issues.

13.6.7 A monitoring framework will typically use the SEA objectives and indicators as its basis, as these are developed to be representative of the significant environmental effects anticipated of the Plan. For the outline monitoring framework:

- Indicators have been proposed which provide a possible measurement for each of the SEA objectives. The indicators identified at this stage have been developed on the basis that, when the SEA Monitoring Report is produced, they can be refined and used to establish a causal link between implementation of the RWP 1st Review and the likely significant effects to be monitored.
- The potential influence of external factors has also been considered. This has been difficult for some indicators in that there is a lack of existing data for the potential effects of certain waste management operations.
- In order to set the scene for monitoring the implementation of the RWP 1st Review, it is also proposed that contextual monitoring of environmental change is also continued based on the aspects that were considered within the baseline assessment for the SEA. To avoid excessive data collection, this should also be focused once any significant environmental effects have been identified.

13.6.8 The SEA Monitoring Report is expected to draw heavily on existing or proposed monitoring programmes undertaken centrally by organisations such as the WAG, CCW and EAW¹³¹, rather than set out to collect a full set of plan-specific data.

¹²⁹ Article 10.2 of 'Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment'.

¹³⁰ Para 4.45 of 'WAG, 2005. *Local Development Plans Wales*. Cardiff: WAG.

13.6.9 Future AMRs will provide monitoring information on the how the RWP 1st Review is being implemented through policies in development plans, planning permissions for new facilities and capacity at facilities. This information used in conjunction¹³² with the outline monitoring framework will allow monitoring of any significant environmental effects arising from the implementation of the RWP 1st Review. In particular:

- The Environmental Report for the RWP Technology Strategy found that many of the direct effects that could be anticipated from the technologies could not be fully assessed because the extent of the effects are most likely to be determined by the specific qualities of the receiving environment¹³³.
- The Environmental Report for the Areas of Search recommended monitoring the usefulness of the Areas of Search and monitoring detailed individual sites and their land-use suitability for regional waste facilities¹³⁴.

13.6.10 In addition to identifying any significant effects of implementing the RWP 1st Review by analysing the data gathered for the indicators identified in the outline monitoring framework, the SEA Monitoring Report should also consider issues such as:

- any gaps in the existing monitoring information and proposals for filling any identified gaps;
- whether indicators are still relevant;
- reviewing the relevance of data gathered based on the monitoring information gathered to date;
- any new sources of monitoring information or additional parameters;
- the status of monitoring and any problems encountered;
- criteria or thresholds for remedial action (e.g. what are the conditions that would be regarded as environmentally undesirable or unacceptable);
- steps to be taken for any adverse effects found; and
- any recommendations for the RWP 2nd Review.

¹³¹ These include monitoring under the Environment Strategy for Wales and its associated Action Plans, the National Assembly for Wales Statistics Programme and Key Environmental Statistics for Wales and WasteDataFlow. In addition, information published in the RWP AMRs should be utilised where appropriate.

¹³² Either directly, or indirectly to access further information in associated EIAs or SEAs.

¹³³ Impacts identified that could not be assessed included: effects on sites designated for biodiversity or ecological reasons; effects on specific local communities; effects of specific water courses; effects on the historic environment (including townscapes and the wider historic landscape); effects on the landscape in general; the secondary and cumulative effects likely upon these issues. In addition it was found that: it was difficult to ascertain degree of impact without some indication of the siting of facilities, both relative to each other and relative to sensitive receptors; effects that could be considered in greater detail relate primarily to the land and resource requirements, and the emissions associated with the processes; and there remains potential for a number of cumulative and secondary impacts, largely resulting from regulated emissions and land take.

¹³⁴ Para 8.7.1 of 'RPS, 2007. *Identifying Areas of Search for Regional Waste Facilities in Wales*. Bristol: RPS.'

14. Summary – Consultation

14.1 Background

14.1.1 Inclusive, transparent and consultative working practices are at the heart of the regional waste planning process in South East Wales. The RWG was established at the outset in early 2002 in order to support the work being undertaken by the Coordinating Authority. Participation in the RWG has been open to relevant regional-level stakeholder bodies since early work on the first RWP. Consultation with other stakeholders and the wider public has been undertaken when relevant. The RWP website was established in mid-2003 to provide all interested parties open access to details of the RWG and its work – by identifying and providing contact details of those involved with the RWG, giving access to electronic copies of agreed documents and giving any person or organisation the opportunity to engage in consultation processes.

14.2 Why Consult on the RWP 1st Review?

14.2.1 The need for a new generation of waste management / resource recovery facilities is of interest and concern to everyone. The implementation of the RWP 1st Review will have a significant impact upon individuals, communities and businesses for many years to come and it was therefore important that all those interests had an opportunity to take part in a dialogue about the content of the Plan.

14.2.2 TAN 21 states “*Public consultation on planning issues of public concern, including proposed waste management facilities, is essential at an early stage to raise awareness, public confidence and responsibility in the planning process. Such consultation helps waste planning officers to make good quality decisions that reflect public opinion and absorb public expertise and knowledge*”¹³⁵.

14.2.3 Furthermore, the SEA Directive¹³⁶ requires that both the SEA Consultation Bodies and the public be given an early and effective opportunity within appropriate time frames to express their opinion on the draft plan and the accompanying environmental report before the adoption of the plan and that the opinions expressed are taken into account during the preparation of the plan before its adoption. Legislation requires that the SEA Environmental Reports must be made available together with the draft plan to the SEA Consultation Bodies for a period of not less than 28 days.

14.2.4 For these reasons, the three regions in Wales jointly commissioned Hyder Consulting (UK) Limited to carry out a comprehensive publicity and consultation programme in order to communicate the regional level issues, to explore stakeholder and public opinion on the alternative choices at this strategic level and to meet the statutory requirements.

¹³⁵ F12: Annex F: Planning Policy Wales Technical Advice Note 21: Waste (November 2001).

¹³⁶ Articles 6.2 & 8 of ‘*Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment*’.

14.2.5 This section summarises the consultation methods and the changes made to the Plan in response to the consultation. Much more detailed information is available in the Consultation Report¹³⁷ and the Consultation Addendum Report¹³⁸.

14.3 The Consultation Process

14.3.1 The Consultation Draft RWP 1st Review document, the two Environmental Reports and the draft strategic Health Impact Assessment were published for consultation in October 2007. The consultation period ran for 10 weeks from 15 October 2007 to 24 December 2007.

14.3.2 Regional consultation activities during the consultation period included:

- an official launch and press conference during the Cylch (Wales Community Recycling Network) Conference in Cardiff – including a speech by Jane Davidson AM, Minister for Environment, Sustainability and Housing and Councillor David Poole, Chairman of the Regional Waste Group;
- four press releases – 108 media outlets were contacted and media coverage included a BBC Wales Today News headline story, a BBC Radio Wales interview and a BBC Politics Show interview;
- a further press conference at an Anaerobic Digestion plant;
- availability of a ‘Themes Document’ summarising the main themes of the Plan;
- a website with an on-line survey and consultation documents for download;
- a random postal survey of 3,700 households in the region;
- an industry day for major waste producers and the waste management industry;
- a strategic stakeholder day for representatives of public, private and not-for-profit sector bodies primarily involved in waste, the environment and planning;
- a series of three focus group meetings to which 160 organisations were invited to send a representative;
- partner organisations were asked to publicise the consultation through their websites and other media;
- the offer to each Unitary Authority of one meeting within their area with a group of their choosing - where Hyder attended to make a presentation and receive feedback. Nine meetings were conducted.

14.3.3 These activities amounted to the largest consultation and debate in the region to date on the way forward for selecting and siting the future network of waste management facilities.

14.4 The Consultation Report and Consultation Addendum Report

14.4.1 The Consultation Report produced by Hyder Consulting contained recommendations structured in accordance with the 5 key themes of the ‘Themes Document’:

- Theme 1: The Regional Waste Plan 1st Review
- Theme 2: The Need for Waste Facilities
- Theme 3: Technology Options
- Theme 4: The Appraisal Process

¹³⁷ Hyder Consulting (UK) Ltd, 2008. *South East Wales Regional Waste Plan 1st Review; Consultation Report*. Cardiff: Hyder.

¹³⁸ The Consultation Addendum Report is available on the internet at www.sewaleswasteplan.org.

- Theme 5: The Implications for Planning

14.4.2 The subsequent Consultation Addendum Report produced by the RWG contained agreed responses to the consultation feedback – including each of the recommendations in the Consultation Report – together with the changes to be made to the Plan in light of the feedback and responses.

14.4.3 The Consultation Addendum Report identified that, in order to provide adequate flexibility and choice, all seven sub-Options would be retained and adopted as the ‘Preferred Options’ to form the framework for the sustainable management of wastes and recovery of resources in South East Wales. More details on this can be found in Section 8 ‘Assessing and consulting on the strategic Options’.

14.4.4 The Consultation Addendum Report summarised that the main changes to be made to the Plan in response to the consultation were:

- more references to reuse of waste through the document;
- more references to / increased clarity on Hazardous Waste – including incorporating some of the ‘Hazardous Waste Supplement’ to the first RWP;
- more references to / increased clarity on the issue of ‘unmodelled waste’;
- clarity on the approach to SEA monitoring;
- additions to the ‘Best Practice Statement’ to underline the need for monitoring waste arisings, and recycling and composting rates, etc.;
- the recommendation that that any proposals for larger-scale facilities which require a planning permission and an EIA demonstrate clearly to local communities that any potential health impacts have been addressed – whether through the EIA process, a site-specific Health Impact Assessment or through the Waste Management Licence / Pollution Prevention and Control permit application procedure.

15. Summary – the RWP 1st Review

15.1 Overview of the RWP 1st Review

15.1.1 The RWP 1st Review relates to the following principal ‘controlled’ waste streams:

- MSW;
- Industrial Waste;
- Commercial Waste;
- C&D Waste;
- Hazardous Waste; and
- Agricultural Waste (the proportion requiring external management only).

15.1.2 **This RWP 1st Review contains two separate substantive elements:**

- the ‘**RWP Technology Strategy**’ – which provides strategic information on the types waste of management / resource recovery facilities required in South East Wales; and
- the ‘**RWP Spatial Strategy**’ – which provides strategic information on the types of locations likely to be acceptable.

15.1.3 These two elements have been developed through different processes; they tackle different issues and have been presented separately. **This RWP 1st Review does not bring the two elements together in order to identify which technologies should be located at which site or in which Area of Search.** The process of combining the two elements is a policy making exercise which can only be undertaken at the local level though the LDP preparation process.

15.1.4 The RWP 1st Review is a non-statutory plan prepared through a voluntary joint arrangement of local authorities with the assistance of other key stakeholders. Once endorsed by each of the 11 constituent LPAs in the region and agreed by the WAG, the RWP 1st Review will become a strategic framework for the preparation of LDPs and a material consideration in the development control process.

15.2 In Summary – the RWP Technology Strategy

15.2.1 Four main alternative strategic waste management Options covering the main treatment technologies for residual waste were generated for the RWP Technology Strategy. These were:

- Option 1 – A landfill-led strategy for residual waste. This Option is for high levels of source separated recycling followed by low levels of energy from residual waste – where ‘low’ is interpreted to mean the minimum amount of additional material required to increase the level of BMW diversion to meet 2020 landfill directive targets. All residual Commercial, Industrial and Agricultural Wastes will be disposed of to landfill.
- Option 2 – An EfW-led strategy for residual waste. This Option is for high levels of recycling and composting followed by high levels of energy from residual waste –

where ‘high’ is interpreted to mean the maximum feasible amount of residual waste will go to EfW.

- Option 3 – An MBT-led strategy for residual waste. This Option is for high levels of recycling and composting followed by high levels of MBT – where ‘high’ is interpreted to mean the maximum feasible amount of residual waste will go to MBT.
- Option 4 – An Autoclave-led strategy for residual waste. This Option is for high levels of recycling and composting followed by high levels of treatment using an Autoclave – where ‘high’ is interpreted to mean the maximum feasible amount of residual waste will go to Autoclave.

15.2.2 Each main Option was divided into sub-Options. The 19 sub-Options are considered to represent a sufficient range of choices for dealing with waste in the region.

15.2.3 The Options were assessed using the following techniques:

- Life Cycle Assessment (LCA) – to determine the ‘Best Practicable Environmental Option’ (BPEO);
- Sustainability Appraisal (SA) – developed from BPEO and ‘Sustainable Waste Management Option’ (SWMO);
- Strategic Environmental Assessment (SEA); and
- Strategic Health Impact Assessment (HIA).

15.2.4 After the assessments had been conducted, the views of stakeholders organisations and the wider public on seven of the sub-Options were sought during the Consultation Period.

15.2.5 The RWP Technology Strategy has been identified on the following basis:

- the LCA and SA identified seven top performing sub-Options;
- the SEA concluded that no clear leader emerged from amongst the Options;
- the strategic HIA concluded that while Options 2, 3 and 4 are good from a public health perspective there is no single best Option; and
- the Consultation Report recommended that the seven sub-Options presented in the Consultation Draft RWP 1st Review should be made available for choice at a local level so that local needs can be taken into consideration.

15.2.6 On this basis, and in order to provide adequate flexibility and choice, seven ‘Preferred Options’ have been selected as the RWP Technology Strategy in order to form the framework for the sustainable management of wastes and recovery of resources in South East Wales.

15.2.7 The seven Preferred Options of the RWP Technology Strategy¹³⁹ are high source segregated recycling and composting levels with all remaining residual wastes, where possible, being managed by:

- high levels of Pyrolysis (sub-Option 2a); and/or
- high levels of Incineration with energy recovery (sub-Option 2c); and/or
- MBT followed by Pyrolysis (sub-Option 3a); and/or

¹³⁹ The seven Preferred Options are presented in numerical order. This order does not indicate any order of rank or preference.

- MBT followed by Gasification (sub-Option 3b); and/or
- MBT followed by Incineration with energy recovery (sub-Option 3c); and/or
- MBT followed by RDF to off-site energy use (sub-Option 3d); and/or
- Autoclave followed by RDF to off-site energy use (sub-Option 4d).

15.2.8 All seven Preferred Options of the RWP Technology Strategy:

- have a ‘front end’ recycling and composting rate for MSW set at 50% in 2013 – this exceeds the current maximum NWSW target of achieving at least 40% recycling and composting of Municipal Waste by 2009/10;
- are designed to achieve the 2020 BMW Landfill Directive target by 2013; and
- ensure that targets for the management of the other principal controlled waste streams are also met – i.e. recycling targets for C&D waste and landfill diversion for Industrial and Commercial Waste.

15.2.9 The NWSW¹⁴⁰ states that one of its primary objectives is:

“...to make Wales a model for sustainable waste management by adopting and implementing a sustainable, integrated approach to waste production, management and regulation (including litter and fly tipping) which minimises the production of waste and its impact on the environment, maximises the use of unavoidable waste as a resource, and minimises where practicable, the use of energy from waste and landfill”

15.2.10 The seven Preferred Options of the RWP Technology Strategy:

- are the best practicable environmental sub-Options;
- maximise the use of unavoidable waste as a resource through high source segregated recycling and composting levels; and therefore
- minimise the use of EfW and landfill.

15.2.11 The modelling undertaken by the EAW for the SA of the Options apportioned the total capacity required at various types of waste management facilities in 2013 to each UA area on the basis of forecast arisings. This apportionment for each of the seven Preferred Options is detailed in Appendix E. In addition, the RWP 1st Review calculates the indicative new capacity required and indicative number of new facilities required in 2013 in each UA area for each of the seven Preferred Options and also forecasts the remaining landfill void in 2013.

15.3 In Summary – the RWP Spatial Strategy

15.3.1 In order to address the requirements of the EU Waste Framework Directive and TAN 21 while retaining adequate flexibility for LDPs and developers, the RWP Spatial Strategy contains two elements:

- Estimates of the total land area required for new in-building facilities, an analysis of the potentially available land area for new in-building facilities on *existing* B2 or

¹⁴⁰ Para 1.10 of ‘Welsh Assembly Government, 2002. *Wise About Waste: The National Waste Strategy for Wales*. Cardiff: WAG’.

major industry sites¹⁴¹ and B2 sites that have already been allocated in development plans, and a list of these sites.

- ‘Areas of Search’ maps for use in identifying *new* sites for in-building and open-air facilities.

15.3.2 Advances in technology and the introduction of new legislation, policies and practices mean that many modern waste management / resource recovery facilities on the outside look no different to any other industrial building and on the inside contain industrial demanufacturing processes or energy generation activities that are no different to many other modern industrial processes in terms of their operation or impact. For this reason, many existing land-use class B2 ‘general industrial’ employment sites, existing major industry areas¹⁴², and new B2 sites allocated in development plans will be suitable locations for the new generation of in-building waste management facilities that will be required in accordance with the RWP Technology Strategy.

15.3.3 The estimated total land area required in South East Wales for new in-building facilities by 2013 for the seven Preferred Options ranges from between 48 hectares to 108 hectares. An analysis of the potentially available land area on existing B2 or major industry sites¹⁴³ and B2 sites that have already been allocated in development plans has shown that **in each UA area for which data is available there is, at the current time, a clear surplus of developable land with a B2 or similar planning permission or proposed use to accommodate the highest estimate of the total land area required for new in-building waste management facilities.** In South East Wales there is a total of 729 developable hectares of land with a B2 or similar planning permission or proposed use.

15.3.4 The generation and assessment of Areas of Search has been undertaken through a SA process that incorporated the requirements of SEA, using a GIS to produce Areas of Search maps.

15.3.5 The following two broad principles for the viewing and use of the Areas of Search maps and GIS data must be noted:

- The sole purpose of the Areas of Search maps and GIS data is to identify Areas of Search at a strategic level for use by LPAs during the LDP preparation process – as a starting point for more detailed local level assessments to identify appropriate sites for waste management facilities in LDPs.
- Because the sole purpose of the Areas of Search maps and GIS data is to identify Areas of Search at the strategic level, the Areas of Search maps and GIS data must not be used by any organization or individual to determine the appropriateness of proposals for individual waste management facilities. The Areas of Search maps and GIS data must not be used by LPAs as a development control tool.

¹⁴¹ The term ‘B2 employment sites and major industry sites’ is used here to include other land uses that have similar characteristics such as existing waste management sites, ports, some brownfield sites, and other similar sui generis land uses.

¹⁴² The term ‘B2 employment sites and major industry sites’ is used here to include other land uses that have similar characteristics such as existing waste management sites, ports, some brownfield sites, and other similar sui generis land uses.

¹⁴³ The term ‘B2 employment sites and major industry sites’ is used here to include other land uses that have similar characteristics such as existing waste management sites, ports, some brownfield sites, and other similar sui generis land uses.

15.3.6 The Areas of Search maps for in-building and open-air facilities are presented in Appendix I. Each map comprises:

- **1st Areas of Search** – identified as areas appropriate for waste management development due to the presence of appropriate site characteristics (such as proximity to the road network) and few significant environmental constraints;
- **2nd, 3rd and 4th Areas of Search** – identified as those areas that cannot be excluded from consideration as appropriate areas, but where a greater level of constraint or constraints exists; and
- **Exclusion Areas** – identified as those areas that, on the basis of clear planning policy, have been excluded from consideration as appropriate for waste management development.

16. Next steps

16.1 Overview of the Next Steps

16.1.1 The RWP Technology Strategy and RWP Spatial Strategy will be brought together through the LDP preparation process in individual UA areas in order to identify appropriate sites for waste management / resource recovery facilities. However, this alone will not achieve the implementation of the RWP 1st Review and the development of an integrated and adequate network of facilities on the ground. A range of actions and circumstances will be necessary to achieve this. In particular, the RWP 1st Review will be implemented through:

- the LDP land-use policies and development control decisions of individual LPAs;
- the proactive engagement of economic development bodies – especially in the sale or release of appropriate land for new facilities;
- the actions of individual WDAs in the development and operation of Municipal Waste management / resource recovery facilities; and
- the actions of private and voluntary sector organisations in the development and operation of waste management / resource recovery facilities.

16.2 Actions for Local Planning Authorities

16.2.1 The RWP Technology Strategy and RWP Spatial Strategy will be brought together through the LDP preparation process in individual UA areas in order to identify appropriate sites for waste management / resource recovery facilities. **Each LPA should include in its development plan elements of the RWP that are germane to its area¹⁴⁴ and should determine actual locations of facilities and make provisions in their development plans¹⁴⁵.**

16.2.2 **A high standard of public consultation will be essential.** The Community Engagement Guidance on Waste Infrastructure¹⁴⁶ will be a valuable tool for LPAs during the process of identifying appropriate sites for waste management / resource recovery facilities. This toolkit, produced as a result of a partnership between the Welsh Local Government Association (WLGA), the WAG, the EAW and Waste Awareness Wales, contains extensive guidance on how and when to consult key stakeholders in the planning and delivery of new waste management facilities.

16.2.3 **Appendix K sets out guidelines that individual UAs may wish to follow** in bringing together the RWP Technology Strategy and the RWP Spatial Strategy through the LDP preparation process in their individual UA areas in order to identify appropriate sites for waste management / resource recovery facilities.

16.2.4 **LPAs should consider liaising with the Wales Environment Trust regarding its RAP-ID initiative** in order to hasten site delivery, particularly with respect to initial site identification and with respect to the mutual benefits of co-locating new facilities in Eco-

¹⁴⁴ Para 2.12 of ‘Welsh Assembly Government, 2001. *Planning Policy Wales Technical Advice Note 21: Waste*. Cardiff: WAG.’

¹⁴⁵ Para 2.15 *ibid*.

¹⁴⁶ Hyder Consulting 2007. *Community Engagement Guidance; Waste Infrastructure*. Cardiff: Hyder Consulting Ltd.

Parks alongside other synergistic activities within the Environmental Goods and Services sector. Details on the RAP-ID initiative are given in Appendix L.

16.3 Actions for Economic Development Bodies

16.3.1 Economic development bodies should note the following points:

- The RWP Spatial Strategy estimates that the **total demand for land area for new in-building waste management / resource recovery facilities in South East Wales ranges from between 48 hectares to 108 hectares**.
- The waste management / resource recovery sector presents **job and wealth creation opportunities** – directly in the resource recovery facilities, in downstream industries that reprocess the recovered materials (recyclates) and also when developed alongside other synergistic activities within the Environmental Goods and Services sector as outlined in the Wales Environment Trust RAP-ID initiative. The Treasury has estimated that 100,000 jobs could be created in the Environmental Goods and Services sector in the UK over the next 10 years¹⁴⁷.
- **As the resource recovery sector grows, so too will the markets and competition for the recovered materials** – those regions with the best developed network of upstream resource recovery facilities will have a competitive advantage.
- The seven Preferred Options of the RWP Technology Strategy all involve EfW. This presents significant **opportunities for co-locating and networking EfW facilities with energy consuming land uses such as large industrial energy users or district heating systems in industrial estates** – energy users could benefit from lower energy costs, long term energy contracts at fixed prices and the prestige of using an innovative and environmentally friendly source of energy.
- Advances in technology and the introduction of new legislation, policies and practices mean that **many modern waste management / resource recovery facilities on the outside look no different to any other industrial building and on the inside contain industrial demanufacturing processes or energy generation activities that are no different to many other modern industrial processes in terms of their operation or impact**. For this reason, many existing land-use class B2 ‘general industrial’ employment sites, existing major industry areas¹⁴⁸, and new B2 sites allocated in development plans will be suitable locations for the new generation of in-building waste management facilities that will be required in accordance with the RWP Technology Strategy.
- The costs of waste management will increasingly impact upon the competitiveness of commerce and industry and will be directly related to their proximity to waste management / resource recovery facilities. Enabling an integrated and adequate network of waste management / resource recovery facilities must be viewed as **an issue of enabling the development of infrastructure to aid business competitiveness** – minimising the cost to all business of transporting waste for management.

¹⁴⁷ DEFRA and DTI News Release 21 November 2006, ‘Minister for climate change values UK’s environmental industries’, Ref: 501/06, <http://www.defra.gov.uk/news/2006/061121c.htm> accessed 25/09/07.

¹⁴⁸ The term ‘B2 employment sites and major industry sites’ is used here to include other land uses that have similar characteristics such as existing waste management sites, ports, some brownfield sites, and other similar sui generis land uses.

- **Economic development bodies have an important role to play in enabling South East Wales meets the requirements set in EU and national legislation and policy.**

16.3.2 Economic development bodies must proactively engage with the waste management / resource recovery sector in order to enable the sale or release of appropriate land for new facilities.

16.3.3 An analysis of the potentially available land area on existing B2 or major industry sites¹⁴⁹ and B2 sites that have already been allocated in development plans¹⁵⁰ has shown that in South East Wales there is a total of 729 developable hectares of land with a B2 or similar planning permission or proposed use. **The WAG and UAs own similar amounts of developable land with a B2 planning permission or proposed use and therefore the WAG and UAs equally share the responsibility of enabling the sale or release of appropriate land from within their portfolios for new waste management / resource recovery facilities.** The potentially available land area on existing and allocated B2 or major industry sites is listed in Appendix G.

16.3.4 **Economic developments bodies should consider liaising with the Wales Environment Trust regarding its RAP-ID initiative,** particularly in respect of developing facilities alongside other synergistic activities within the Environmental Goods and Services sector. Details on the RAP-ID initiative are given in Appendix L.

16.4 Actions for Waste Disposal Authorities

16.4.1 **There is an urgent need for new Municipal Waste management / resource recovery facilities to enable South East Wales to meet the EU Landfill Directive requirements for the diversion of BMW from landfill.**

16.4.2 **WDAs will most likely need to work in cooperation to make provision for the new capacity required for Municipal Waste by jointly planning for facilities that serve more than one local authority area** due to the efficiencies associated with larger facilities. Some WDAs may wish, and be able to, make provision within their boundaries for the new capacity required for Municipal Waste. Cooperative working is already underway; three sub-regional groups of local authorities have now emerged for planning and procuring new facilities:

- Powys CC is working with Ceredigion CC in the North of the region¹⁵¹;
- the ‘Heads of the Valleys’ consortium in the centre of the region; and
- ‘Project Gwyrdd’ in the South of the region.

¹⁴⁹ The term ‘B2 employment sites and major industry sites’ is used here to include other land uses that have similar characteristics such as existing waste management sites, ports, some brownfield sites, and other similar sui generis land uses.

¹⁵⁰ Using data from the SEWEF Land, Property & Urban Regeneration Group April 2007 Land Survey. The SEWEF data covers all UAs in the South East Wales RWP region except Powys. The SEWEF data was filtered to include only sites with “B2 permission / proposed use”. As the principle of B2 or major industry use is already established on each of these existing or allocated sites, the site were not filtered on the basis of whether or not they fall within Area of Search. Further information on the survey can be obtained from sewef@wales.gsi.gov.uk

¹⁵¹ Ceredigion falls within the South West Wales RWP area.

- 16.4.3 **If a WDA pursues a local strategy that is different to the RWP Waste Technology Strategy, it is likely that the local strategy would need to be robustly justified at the planning application stage of new facilities by reference to a local BPEO assessment / Sustainability Appraisal / Strategic Environmental Assessment** – because the RWP 1st Review will be a material consideration in the planning process.
- 16.4.4 **A high standard of public consultation will be essential.** The Community Engagement Guidance on Waste Infrastructure¹⁵² will be a valuable tool for WDAs during the process of planning and procuring new waste management / resource recovery facilities. This toolkit, produced as a result of a partnership between the WLGA, the WAG, the EAW and Waste Awareness Wales, contains extensive guidance on how and when to consult key stakeholders.
- 16.4.5 It is recommended that any proposals for larger-scale facilities which require a planning permission and an EIA **demonstrate clearly to local communities that any potential health impacts have been addressed** – whether through the EIA process, a site-specific HIA or through the WML / PPC permit application procedure.
- 16.4.6 The seven Preferred Options of the RWP Technology Strategy all involve an element of EfW. Developers should **consider opportunities for co-locating and networking EfW facilities with proposed or existing energy consuming land uses** that could benefit from the heat and/or electricity produced – such as large industrial energy users or district heating systems in industrial estates.

16.5 Actions for the Waste Management Industry

- 16.5.1 **Individual waste management companies and industry bodies must proactively engage with individual LPAs during the LDP preparation process in order to communicate their needs and interests.** The RWP Technology Strategy and RWP Spatial Strategy will be brought together through the LDP preparation process in individual UA areas in order to identify appropriate sites for waste management / resource recovery facilities – engagement in this process will assist in identifying appropriate sites while taking account of local circumstances.
- 16.5.2 Advances in technology and the introduction of new legislation, policies and practices mean that many modern waste management / resource recovery facilities on the outside look no different to any other industrial building and on the inside contain industrial demanufacturing processes or energy generation activities that are no different to many other modern industrial processes in terms of their operation or impact. For this reason, many existing land use class B2 ‘general industrial’ employment sites, existing major industry areas¹⁵³, and new B2 sites allocated in development plans will be suitable locations for the new generation of in-building waste management facilities that will be required in accordance with the RWP Technology Strategy. **It should be noted that:**

- **At the current time there is a clear surplus of land on existing land use class B2 ‘general industrial’ employment sites, existing major industry areas, and new**

¹⁵² Hyder Consulting 2007. *Community Engagement Guidance; Waste Infrastructure*. Cardiff: Hyder Consulting Ltd.

¹⁵³ The term ‘B2 employment sites and major industry sites’ is used here to include other land uses that have similar characteristics such as existing waste management sites, ports, some brownfield sites, and other similar sui generis land uses.

B2 sites allocated in development plans to accommodate the highest estimate of the total land area required for new in-building waste management facilities.

For further details see Chapter 11 ‘New In-building Facilities and Existing Employment Sites’. The potentially available land area on existing and allocated B2 or major industry sites is listed in Appendix G.

- **Some new in-building waste management facilities could be developed within vacant existing industrial buildings and, in certain circumstances, some of these may be lawfully be developed without the need to submit a planning application to the LPA.** For further details see Chapter 11 ‘New In-building Facilities and Existing Employment Sites’.

- 16.5.3 **A high standard of public consultation will be essential.** The Community Engagement Guidance on Waste Infrastructure¹⁵⁴ will be a valuable tool for waste management companies during the process of planning and developing new waste management / resource recovery facilities. This toolkit, produced as a result of a partnership between the WLGA, the WAG, the EAW and Waste Awareness Wales, contains extensive guidance on how and when to consult key stakeholders.
- 16.5.4 It is recommended that any proposals for larger-scale facilities which require a planning permission and an EIA **demonstrate clearly to local communities that any potential health impacts have been addressed** – whether through the EIA process, a site-specific HIA or through the WML / PPC permit application procedure.
- 16.5.5 The seven Preferred Options of the RWP Technology Strategy all involve an element of EfW. Developers should **consider opportunities for co-locating and networking EfW facilities with proposed or existing energy consuming land uses** that could benefit from the heat and/or electricity produced – such as large industrial energy users or district heating systems in industrial estates.
- 16.5.6 **Individual waste management companies should consider liaising with the Wales Environment Trust regarding its RAP-ID initiative**, particularly with respect to initial site identification, with respect to the mutual benefits of co-locating new facilities in Eco-Parks alongside other synergistic activities within the Environmental Goods and Services sector and regarding the potential to deliver benefits via combined facilities for Commercial, Industrial and Municipal Wastes. Details on the RAP-ID initiative are given in Appendix L.

¹⁵⁴ Ibid.

APPENDICES

Appendix A: Membership of the Regional Waste Group

A1 Membership of the Members Steering Group:

Blaenau Gwent County Borough Council
Brecon Beacons National Park Authority
Caerphilly County Borough Council
Cardiff City Council
Merthyr Tydfil County Borough Council
Monmouthshire County Council
Newport City Council
Powys County Council
Rhondda Cynon Taf County Borough Council
Torfaen County Borough Council
Vale of Glamorgan County Borough Council

A2 Membership of the Regional Waste Technical Group:

A Planning Officer and a Waste Management Officer representative of each of:

Blaenau Gwent County Borough Council
Brecon Beacons National Park Authority
Caerphilly County Borough Council
Cardiff City Council
Merthyr Tydfil County Borough Council
Monmouthshire County Council
Newport City Council
Powys County Council
Rhondda Cynon Taf County Borough Council
Torfaen County Borough Council
Vale of Glamorgan County Borough Council

Representatives of:

Campaign for the Protection of Rural Wales (CPRW)
Confederation of British Industry (CBI)
Countryside Council for Wales (CCW)
Environment Agency Wales (EAW)
Federation of Small Businesses (FSB)
National Association of Waste Disposal Officers (NAWDO)
South East Wales Economic Forum (represented by the WAG DET)
Wales Community Recycling Network (Cylch)
Wales Environment Trust (WET)
Waste and Resources Action Programme (WRAP)
Welsh Assembly Government (WAG) – Planning Division
Welsh Assembly Government (WAG) – Waste Strategy Implementation Branch
Welsh Assembly Government (WAG) – Department for Economy & Transport
Welsh Environmental Services Association (WESA)
Welsh Local Government Association (WLGA)

Appendix B: EU Waste Framework Directive requirements

- B1 The need to construct new infrastructure in Wales in order to be able to meet the EU Landfill Directive (Directive 1999/31/EC) requirements for the diversion of Biodegradable Municipal Waste from landfill – and other targets specified in the NWSW – is one of the major drivers behind the work to develop the spatial side of the RWP 1st Review document and the implementation guidelines.
- B2 The need for Wales to meet the requirements of the Waste Framework Directive is another major driver.
- B3 Article 5 of the Waste Framework Directive (Directive 2006/12/EC) states:
- “Member States shall take appropriate measures, in cooperation with other Member States where this is necessary or advisable, to establish an integrated and adequate network of disposal installations, taking account of the best available technology not involving excessive costs”.*
- B4 Article 7 of the Waste Framework Directive states:
- “In order to attain the objectives referred to in Articles 3, 4 and 5, the competent authority or authorities referred to in Article 6 shall be required to draw up as soon as possible one or more waste management plans. Such plans shall relate in particular to:*
- (a) the type, quantity and origin of waste to be recovered or disposed of;*
 - (b) general technical requirements;*
 - (c) any special arrangements for particular wastes;*
 - (d) suitable disposal sites or installations”.*
- B5 Directive 2006/12/EC on waste is a codified version of Directive 75/442/EEC as amended. The European Court of Justice has ruled¹⁵⁵ that:
- “Article 7 of Council Directive 75/442/EEC of 15 July 1975 on waste, as amended by Council Directive 91/156/EEC of 18 March 1991, must be interpreted to mean that the management plan or plans which the competent authorities of the Member States are required to draw up under that provision must include either a geographical map specifying the exact location of waste disposal sites or location criteria which are sufficiently precise to enable the competent authority responsible for issuing a permit under Article 9 of the Directive to determine whether the site or installation in question falls within the management framework provided for by the plan”.*
- B6 Having failed to ensure that plans containing such maps or precise mappable criteria are in place within the required time frame, the UK government has negotiated a 3-year delay in infraction proceedings up to July 2010.
- B7 It is not likely that there will be Wales-wide coverage of adopted LDPs containing such maps or precise mappable criteria by July 2010. For this reason it is hoped that the three RWP 1st Review documents can contain an adequate level of detail to meet the EU requirements and avoid infraction fines.

¹⁵⁵ On 1 April 2004 in the joined cases of Commune de Braine-le-Château (case C-53/02) and Michel Tillieut and Others (case C-217/02) v Région wallonne, and BIFFA Waste Services SA and Others. See European Court reports 2004 Page I-03251.

Appendix C: Forecast waste arisings

Table C1: Forecasts Used for each of the Principal Controlled Waste Streams

These forecasts were published in the AMR 2006.

Waste Stream	Forecast		Based on
Municipal Solid Waste	2005/06 to 2014/15	+4% per annum	<ul style="list-style-type: none"> Forecast all-Wales population change (+0.4% per annum) Actual change in arisings of Household Waste per household & non-Household waste Likely impact of waste reduction measures in the future
	2015/16 to 2019/20	Linear change towards +1% per annum	
	2020/21 to 2024/25	+1% per annum	
Industrial Waste	2003/04 to 2009/10	-4% per annum	<ul style="list-style-type: none"> Past reductions in arisings Likely future decoupling between economic growth and waste growth due to regulatory and economic measures and cultural factors The decline¹⁵⁶, and likely further decline, in the industrial / manufacturing sector
	2010/11 to 2013/14	Linear change towards -1% per annum	
	2014/15 to 2024/25	-1% per annum	
Commercial Waste	2003/04 to 2009/10	+2% per annum	<ul style="list-style-type: none"> The growth¹⁵⁷, and likely further growth, in the service sector The DEFRA forecasts of Commercial Waste arisings in England Likely future decoupling between economic growth and waste growth due to regulatory and economic measures and cultural factors
	2010/11 to 2013/14	Linear change towards +0% per annum	
	2014/15 to 2024/25	0% per annum	
Construction & Demolition Waste	2004 to 2010	+2% per annum	<ul style="list-style-type: none"> The growth, and likely further growth, in the construction sector Likely future decoupling between economic growth and waste growth due to regulatory and economic measures and cultural factors
	2011 to 2014	Linear change towards 0% per annum	
	2015 to 2025	0% per annum	
Agricultural Waste	1998 to 2025	-1% per annum	<ul style="list-style-type: none"> No time-series data on past arisings and forecasts of future change in the agricultural sector is available. Same forecast as the first RWP used.
Hazardous Waste	2003 to 2004	-20% per annum	<ul style="list-style-type: none"> The change of definition / classification from 'Special' to 'Hazardous'; The introduction of the WEEE producer responsibility regulations; and Waste minimisation / better segregation of Hazardous and Non-Hazardous Wastes.
	2005 to 2015	Linear change from +5% towards -1% per annum	
	2015 to 2025	-1% per annum	

¹⁵⁶ Welsh Economy Research Unit, 2005. *The Welsh Economic Review*. 17.2. Cardiff: Cardiff University.

¹⁵⁷ Ibid.

Table C2: Forecast Controlled Waste Arisings in South East Wales 2003-2025 (tonnes)

These forecasts were published in the AMR 2006.

Year	Municipal	Industrial	Commercial	Construction & Demolition	Agricultural	Hazardous	Total
2003/04	797,975	825,805	465,097	2,747,765	18,172	109,237	4,964,050
2004/05	842,617	792,772	474,399	2,802,720	17,990	87,390	5,017,888
2005/06	876,321	761,061	483,887	2,858,774	17,810	91,759	5,089,613
2006/07	911,374	730,619	493,565	2,915,950	17,632	95,430	5,164,569
2007/08	947,829	701,394	503,436	2,974,269	17,455	98,293	5,242,676
2008/09	985,742	673,338	513,505	3,033,754	17,281	100,259	5,323,879
2009/10	1,025,172	646,405	523,775	3,094,429	17,108	101,261	5,408,150
2010/11	1,066,179	624,427	532,155	3,156,318	16,937	101,261	5,497,277
2011/12	1,108,826	606,943	538,541	3,206,819	16,768	100,249	5,578,145
2012/13	1,153,179	593,590	542,849	3,245,301	16,600	98,244	5,649,763
2013/14	1,199,306	584,093	545,021	3,271,263	16,434	95,296	5,711,413
2014/15	1,247,278	578,252	545,021	3,284,348	16,270	91,484	5,762,654
2015/16	1,289,686	572,470	545,021	3,284,348	16,107	86,910	5,794,542
2016/17	1,325,797	566,745	545,021	3,284,348	15,946	86,041	5,823,898
2017/18	1,354,965	561,077	545,021	3,284,348	15,786	85,181	5,846,378
2018/19	1,376,644	555,467	545,021	3,284,348	15,629	84,329	5,861,437
2019/20	1,390,411	549,912	545,021	3,284,348	15,472	83,486	5,868,649
2020/21	1,404,315	544,413	545,021	3,284,348	15,318	82,651	5,876,065
2021/22	1,418,358	538,969	545,021	3,284,348	15,164	81,824	5,883,684
2022/23	1,432,541	533,579	545,021	3,284,348	15,013	81,006	5,891,508
2023/24	1,446,867	528,243	545,021	3,284,348	14,863	80,196	5,899,538
2024/25	1,461,335	522,961	545,021	3,284,348	14,714	79,394	5,907,773

Appendix D: Existing waste management infrastructure

Table D1: Number and Capacity of Licensed & Permitted Non-Landfill Facilities, 2005/06, by Category, by Local Authority Area¹⁵⁸

Local Authority Area	Chemical Treatment Facility	Civic Amenity	ELV / Scrap yard / Metal reprocessing	Invessel Composting	MBT	Mobile Plants	MRF	Physical Treatment	Physico-Chemical Treatment	Sewage Treatment / Landfarm	Thermal Treatment	Transfer	Windrow Composting	Total
Number of Facilities														
Blaenau Gwent	0	5	5	0	0	0	1	1	0	0	0	3	0	15
Caerphilly	0	5	11	0	0	0	1	0	0	0	0	10	1	28
Cardiff	0	4	11	0	0	24	0	3	1	0	0	14	1	58
Merthyr Tydfil	0	3	4	0	0	0	0	0	2	0	0	4	0	13
Monmouth	0	2	2	1	0	0	0	0	0	0	0	5	0	10
Newport	2	0	5	0	0	0	3	1	0	0	1	7	0	19
Powys (South)	0	0	1	0	0	0	1	0	0	0	1	5	0	8
Rhondda Cynon Taf	0	6	10	0	0	0	5	0	1	0	0	6	0	28
Torfaen	0	0	1	0	0	0	0	0	0	0	1	3	0	5
Vale Of Glamorgan	0	3	6	0	0	0	1	1	0	0	0	6	1	18
Total No	2	28	56	1	0	24	12	6	4	0	3	63	3	202
Capacity of Facilities (tonnes)														
Blaenau Gwent	0	36,999	17,494	0	0	0	3,600	24,500	0	0	0	122,498	0	205,091
Caerphilly	0	65,127	77,565	0	0	0	23,250	0	0	0	0	340,554	34,999	541,495
Cardiff	0	136,599	289,991	0	0	2,517,993	18,250	625,000	40,000	0	0	798,761	8,500	4,435,094
Merthyr Tydfil	0	54,999	35,873	0	0	0	0	0	178,500	0	0	145,535	0	414,907
Monmouth	0	64,279	4,999	24,999	0	0	0	0	0	0	0	167,046	14,999	276,322
Newport	99,998	0	894,598	0	0	0	84,498	14,000	0	0	1,400	335,503	0	1,429,997
Powys (South)	0	0	2,499	0	0	0	4,999	0	0	0	201	192,496	0	200,195
Rhondda Cynon Taf	0	25,694	22,695	0	0	0	87,597	0	75,000	0	0	198,947	20,000	429,933
Torfaen	0	0	12,500	0	0	0	0	0	0	0	240	124,997	0	137,737
Vale Of Glamorgan	0	54,003	14,995	0	0	0	2,499	70,000	0	0	0	123,496	74,999	339,992
Total Capacity	99,998	437,700	1,373,209	24,999	0	2,517,993	224,693	733,500	293,500	0	1,841	2,549,833	153,497	8,410,763

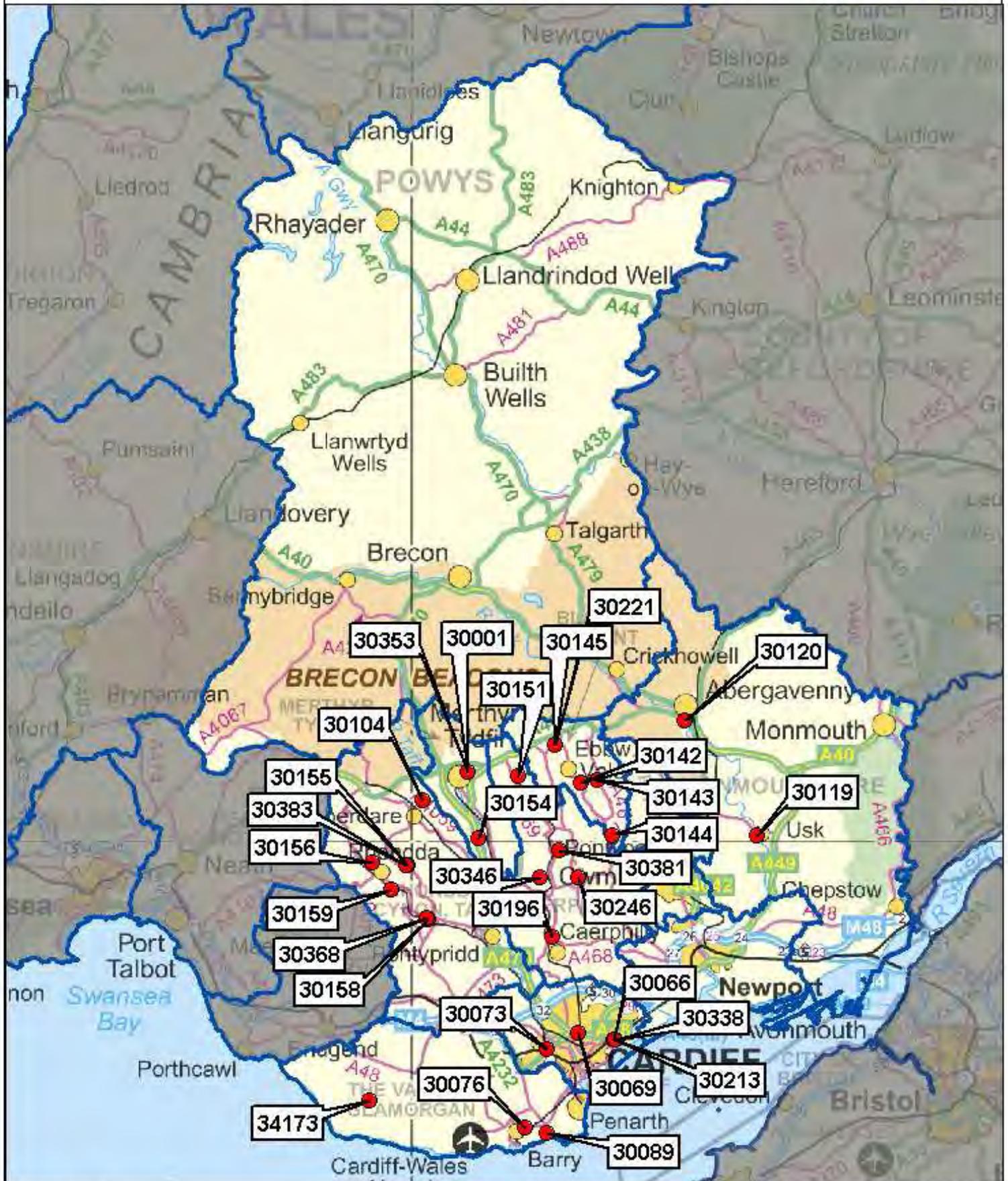
¹⁵⁸ Source: EAW. For further information see AMR 2007 Section 4 and Tables 36, 37 and 38.

Table D2: Total Landfill Capacity, 2006¹⁵⁹

	m3	
	Worst Case Scenario	Best Case Scenario
Hazardous Landfill	0	0
Non-Hazardous Landfill	16,398,281	16,422,281
Inert Landfill	2,133,846	2,133,846
In-House Industrial Landfill	0	500,000
Total Landfill	18,532,127	19,056,127

¹⁵⁹ Source: EAW. Landfill void space summary as on 31st March 2006. Best case scenario: if all PPC permits under determination are issued and all applications for future tranches are granted; does not take into account the outcome of any refused permits being issued following appeal. Worst case scenario: if no further PPC permits are issued. For further information see AMR 2007 Section 4 and Tables 39 and 40.

Licensed civic amenity sites in South East Wales at 31/03/06



Legend

- Civic Amenity Sites
- Authority Boundary selection

The numbers correspond to the waste management licence in force at each facility

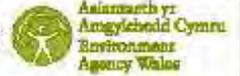


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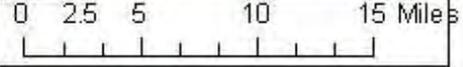
Licensed waste transfer stations in South East Wales at 31/03/06



Legend

- Waste Transfer Stations
- Authority Boundary

The numbers correspond to the permit or licence in force at each facility



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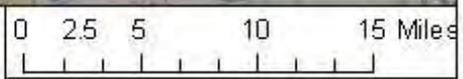
Waste treatment facilities in South East Wales at 31/03/06



Legend

- Thermal Treatment
- In-vessel Composting
- ▲ Windrow Composting
- ▲ MRF
- + Physical Treatment
- + Physico-Chemical Treatment
- Chemical Treatment

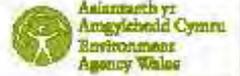
The numbers correspond to the permit or licence enforce at each facility



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Landfill sites receiving or intending to receive waste at 05/04/07



Legend

- PPC Permit Status**
- Refused
 - Closure notice issued
 - ▲ Permitted Void
 - ▲ In Determination

The numbers correspond to the licence or permit in force at each facility

0 2.5 5 10 15 Miles

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Appendix E: RWP Technology Strategy – calculated requirements

E1 Background

E1.1 The following sections set out in detail the methodology used to calculate:

- the indicative new capacity required and indicative number of new non-landfill facilities required by 2013 in each UA area for each of the seven Preferred Options of the RWP Technology Strategy;
- the forecasts of landfill void in 2013 in the region for each of the seven Preferred Options; and
- the estimate of the total land area required for new in-building facilities by 2013 in each UA area for each of the seven Preferred Options.

E1.2 Each LPA would have the responsibility of planning for the arisings that occur within its area regardless of whether or not a RWP existed. The RWP does not tackle the issues of the scale and distribution of facilities – this is not part of the Plan. Instead, in order to identify the ‘need’ that each LPA has the responsibility of planning for, it takes the equitable, simple, default, ‘no plan’ approach of apportioning the required capacity / land area on the basis of the Local Authority area’s proportion of forecast arisings – i.e. those arisings that each LPA would have the responsibility of planning for regardless of whether or not a RWP existed.

E1.3 A great number of assumptions underpin the modelling work that was used to develop the RWP Technology Strategy. As with any modelling process, the model must be based on a set of working assumptions and will be subject to practical limits. For example, the WRATE tool assessed each waste management technology on the basis of a particular facility, or range of facilities, already in existence. In practice the capacity of new facilities, the number required and the land take will depend on many interrelated factors including economics, site sizes and availability, permitted capacity and shift patterns at individual facilities, etc. For these reasons:

- the figures for the new capacity required and the number of new facilities required must be treated as indicative, for planning purposes only and as representing a snapshot in time; and
- the figures for the total land area required for new in-building facilities must be treated as an estimate, for planning purposes only and as representing a snapshot in time.

E2 Step 1 – Identify RWP capacity requirements

E2.1 Identify, for each UA area, the RWP Technology Strategy capacity requirements for each in-building and open-air facility type.

E2.2 Detailed notes:

- Data source: Tables 4 and 32 of the SA report.
- Capacity requirements for the following facility types are common between Preferred Options: Household, Industrial & Commercial Transfer Station; Construction & Demolition Transfer Station; In-Vessel Composting; Civic Amenity;

Open-Windrow Composting; Construction & Demolition Exemption; Construction & Demolition Recycling; and Inert Waste Landfill.

- The SA specifies capacity requirements for ‘Hazardous Waste Landfill’ at the regional level only.
- To avoid false accuracy, the quantity of unmodelled waste is specified at the regional level only.
- The quantity of unmodelled waste is common between Preferred Options.
- The quantity of unmodelled waste is split 69,009 tonnes Hazardous / 445,914 tonnes Non-Hazardous. This step assumed that 50% of the Hazardous unmodelled waste is sent to landfill and therefore 34,505 tonnes is subtracted from the total capacity requirement for unmodelled waste specified in the SA report and is added to the capacity requirement for ‘Hazardous Waste Landfill’.
- On the basis of current practice, this step assumes that in 2013 the ‘Non-Hazardous Combustion Wastes’ in Table 4 of the SA report (415,176 tonnes) will be sent to Restricted User Landfills and therefore 415,176 tonnes is subtracted from the quantity of unmodelled waste.

E3 Step 2 – Identify any existing capacity and the forecast landfill void in 2013

E3.1 Identify, for each UA area, for each in-building and open-air facility type required, any existing capacity.

E3.2 Detailed notes:

- Data source: Table 37 of the AMR 2007.
- Capacity of licensed and permitted non-landfill facilities is the maximum licensed annual capacity from the licence, working plan or licence application.
- To avoid false accuracy, the existing capacity for unmodelled waste is given at the regional level only here.
- The AMR categories of ‘Physical Treatment’, ‘Physico-Chemical Treatment’ and ‘Mobile Plants’ are difficult to count against the categories used for the RWP capacity requirements. The following split has been agreed in discussion with the EAW:
 - Licence / Permit Numbers 30207 is counted with MRF + Transfer.
 - Licence / Permit Numbers 30348 and 34209 are counted as Construction & Demolition Recycling.
 - Licence / Permit Numbers 30006 / JP3231SW, 30071, 30093, 30164, 30178 / SP3531SK are counted against unmodelled waste.
 - Licence / Permit Numbers 30040 (company ceased to exist), 30280 (now covered by another licence), 30374 (licence surrendered), and 30150 (site not operational) are not counted.
- To avoid false accuracy, the forecasts of landfill void are given at the regional level only here.
- The forecasts of landfill void in March 2013 use the same model as used in the SA report, i.e.: the landfill rate for 2006 to 2011 is based on 2005 inputs to landfills in SE Wales; the landfill rate for 2012 is interim figure halfway between the 2005 input and the modelled tonnage for 2013; and it is assumed that void will be filled at the rate of 1t/m³. The starting void is the worst-case scenario (i.e. no further permits are issued) from the EAW survey of landfill void on 31st March 2006.

- Open Gate Non-Hazardous Waste Landfill void on 31st March 2006: 16,398,281 m³
- Open Gate Non-Hazardous Waste Landfill input in 2005: 1,636,297 m³
- Open Gate Inert Waste Landfill on 31st March 2006: 2,133,846 m³
- Open Gate Inert Waste Landfill input in 2005: 196,525 m³
- Data source for landfill void data: Table 40 of AMR 2007.
- Data source for tonnage input to South East Wales landfill sites in 2005: EAW.

E4 Step 3 – Identify any ‘in the pipeline’ capacity

E4.1 Identify, for each UA area, for each in-building and open-air facility type required, any ‘in the pipeline’ capacity. Only capacity at proposed facilities that have planning permission and are likely to be developed should be counted.

E4.2 Detailed notes:

- For transparency, any information regarding ‘in the pipeline’ capacity has been reviewed and agreed by the RWTG as a note alongside the calculations.

E5 Step 4 – Calculate the indicative new capacity required

E5.1 Calculate, for each UA area, for each in-building and open-air facility type required, any indicative new capacity required by subtracting any existing capacity and any ‘in the pipeline’ capacity from the RWP capacity requirements for each UA area.

E5.2 Detailed notes:

- In accordance with the principle of regional self sufficiency, any existing spare capacity in one or more UA areas, in facility types with potential to serve more than one LA Area, is used to offset any new capacity required in all other UA areas. The spare capacity is apportioned to UA areas on the basis of each UA area’s proportion of the total new capacity required in the region.
- The following facility types are treated as ‘local’ facilities and therefore spare capacity in one LA area does not offset the new capacity required in other LA areas: Clean Materials Recovery Facilities, Transfer Stations, Civic Amenity, and Construction & Demolition Exemption.

E6 Step 5 – Calculate an indicative number of new facilities required

E6.1 Calculate, for each UA area, an indicative number of new facilities required by dividing the new capacity required by the typical facility capacity.

E6.2 Detailed notes:

- Data source: Typical facility capacities from Table 32 of the SA report.
- Different typical facility capacities are used for urban and rural local authority areas. Figure A10 of the SA report identifies Blaenau Gwent, Caerphilly, Cardiff, Merthyr Tydfil, Newport, RCT, and Torfaen as urban authorities and Monmouthshire, Powys and the Vale of Glamorgan as rural authorities.

- An indicative number of new in-building facilities required for unmodelled waste is not calculated because it is not possible to specify a typical facility capacity for this wide range of wastes.

E7 Step 6 – Calculate an estimate of the total land area required for new in-building facilities

E7.1 Calculate, for each UA area, for all in-building facility types required, distinguishing between facility types likely and not likely to serve more than one local authority area, the total land area required:

- a) Calculate, for each UA area, for each in-building facility type required, distinguishing between facility types likely and not likely to serve more than one local authority area, an estimate of the land area required by multiplying the indicative number of new facilities required by the typical land take.
- b) In order to provide a degree of over-provision, estimates of the total land area required for in-building facility types with potential to serve more than one LA area are increased by 20%.
- c) Calculate, for each UA area, for all in-building facility types required, for facility types with potential to serve more than one local authority area, an estimate of the total land area required by totaling the results of ‘b)’ above.

E7.2 A degree of over-provision is necessary for the following reasons:

- To provide the waste management industry with choice and flexibility regarding the number and size of sites.
- Other employment uses may be developed on the identified sites.
- To facilitate adequate minimum site sizes.

E7.3 This calculation is not undertaken for open-air facility types because it is considered that in practice for many open-air facilities the size of the site available is likely to determine the size of the facility, rather than vice versa.

E7.4 Detailed notes:

- Data source: Typical land takes from Appendix 3 of the SA report.
- The following types of facilities identified in the SA are considered most likely to be ‘in-building’ facilities: Transfer Station, In-Vessel Composting, Pyrolysis, Dirty MRF, Gasification, Incinerator, MBT, and Autoclave. The following types of facilities identified in the SA are considered most likely to be ‘open-air’ facilities: Civic Amenity, Open-Windrow Composting, C&D Exemption, C&D Recycling, Non-Hazardous Waste Landfill, Hazardous Waste Landfill, and Inert Waste Landfill.
- Different typical land takes are used for urban and rural local authority areas. Figure A10 of the SA report identifies Blaenau Gwent, Caerphilly, Cardiff, Merthyr Tydfil, Newport, RCT, and Torfaen as urban authorities and Monmouthshire, Powys and the Vale of Glamorgan as rural authorities.
- Over provision is only applied to in-building facility types with potential to serve more than one LA area.
- Amount of over provision: 20%.

E8 Step 7 – Calculate the potentially available land area on existing and allocated B2 or major industry sites for new in-building facilities

E8.1 Calculate, for each UA area, the potentially available land area on existing and allocated B2 or major industry sites for new in-building facilities.

E8.2 Detailed notes:

- The term ‘B2 or major industry sites’ is used here to include other land uses that have similar characteristics such as existing waste management sites, ports, some brownfield sites, and other similar sui generis land uses.
- Using data from: a) the South East Wales Economic Forum (SEWEF) Land, Property & Urban Regeneration Group April 2007 Land Survey. The SEWEF data is supplied by Economic Development officers in each Local Authority and covers all UAs in the South East Wales RWP region except Powys. The data was filtered to include only sites with “B2 permission / proposed use”. As the principle of B2 or major industry use is already established on each of these existing or allocated sites, the site were not filtered on the basis of whether or not they fall within Area of Search. Further information on the survey can be obtained from sewef@wales.gsi.gov.uk; and b) direct from Local Authorities.

E9 Step 8 – Calculate any shortfall in land area for new in-building facilities to be addressed through LDPs

E9.1 Calculate any difference between the estimate of the total land area required for new in-building facilities and the potentially available land area on existing and allocated B2 or major industry sites for new in-building facilities.

Option 2A - Pyrolysis

Step 1 - Identify RWP capacity requirements

Local Authority Area	In-Building Facility Types							
	Household, Industrial & Commercial Transfer Stations - Construction & Demolition Transfer Station	In-Vessel Composting	Pyrolysis	Dirty Materials Recovery Facility	Gasification	Incinerator	Mechanical Biological Treatment	Autoclave
Brimacombe	109,822	12,899	33,448	NA	NA	NA	NA	NA
Cardiff	373,236	32,966	84,038	NA	NA	NA	NA	NA
Cardiff	72,130	67,466	174,233	NA	NA	NA	NA	NA
Merthyr Tydfil	120,060	10,459	26,912	NA	NA	NA	NA	NA
Monmouthshire	197,954	18,051	47,269	NA	NA	NA	NA	NA
Newport	374,762	48,996	107,073	NA	NA	NA	NA	NA
Powys (South)	124,070	14,594	39,733	NA	NA	NA	NA	NA
Rhonda Cymru Taf	510,688	45,263	116,372	NA	NA	NA	NA	NA
Torfaen	198,972	17,597	42,509	NA	NA	NA	NA	NA
Valley of Glamorgan	283,323	27,743	66,463	NA	NA	NA	NA	NA
Total	3,084,191	293,625	739,418	NA	NA	NA	NA	NA

Notes:
Units: Tonnes per annum

Local Authority Area	Open-Air Facility Types							Unmodelled Waste
	Cikc Assembly	Open-Whedrow Composting	Construction & Demolition Exemption	Construction & Demolition Recycling	Non-Hazardous Waste Landfill	Hazardous Waste Landfill	Inert Waste Landfill	
Brimacombe	8,343	3,802	49,234	49,234	21,233	NA	27,799	
Cardiff	20,236	9,442	122,276	122,276	52,729	NA	60,098	
Cardiff	38,417	17,738	228,813	228,813	98,506	NA	129,168	
Merthyr Tydfil	6,684	3,047	39,454	39,454	17,049	NA	22,277	
Monmouthshire	10,574	4,861	62,839	62,839	27,112	NA	35,911	
Newport	16,917	8,284	102,005	102,005	44,397	NA	57,874	
Powys (South)	8,717	4,062	47,175	47,175	20,470	NA	27,527	
Rhonda Cymru Taf	28,109	13,852	166,243	166,243	71,686	NA	93,889	
Torfaen	10,962	5,035	64,831	64,831	27,946	NA	36,612	
Valley of Glamorgan	14,811	6,893	88,136	88,136	38,091	NA	49,163	
Total	164,252	75,929	971,813	971,813	419,236	48,877	556,842	

Step 2 - Identify any existing capacity and the forecast landfill void in 2013

Local Authority Area	MEF + Transfer (tpa)	In-Vessel Composting (tpa)	Thermal Treatment (tpa)	MBT (tpa)
Brimacombe	159,798	0	0	0
Cardiff	363,864	0	0	0
Cardiff	817,093	0	0	0
Merthyr Tydfil	145,533	0	0	0
Monmouthshire	103,060	24,999	1,009	0
Newport	420,000	0	201	0
Powys (South)	197,493	0	0	0
Rhonda Cymru Taf	286,344	0	240	0
Torfaen	124,997	0	0	0
Valley of Glamorgan	206,972	0	0	0
Total	2,769,626	24,999	1,841	0

Notes:

Local Authority Area	Cikc Assembly (tpa)	Widrow Composting (tpa)	Construction & Demolition Recycling (tpa)	Open Gate Non-Hazardous Waste Landfill (m3)	Open Gate Inert Waste Landfill (m3)	EEL / Storage / Metal Processing / Chemical Treatment Facility (tpa)
Brimacombe	36,999	0	0	0	0	0
Cardiff	65,127	34,999	0	0	0	0
Cardiff	136,999	8,700	190,000	0	0	0
Merthyr Tydfil	54,999	0	0	0	0	0
Monmouthshire	64,279	14,999	0	0	0	0
Newport	0	0	0	0	0	0
Powys (South)	25,660	20,000	0	0	0	0
Rhonda Cymru Taf	0	0	0	0	0	0
Torfaen	0	0	0	0	0	0
Valley of Glamorgan	0	0	0	0	0	0
Total	437,760	157,697	228,000	5,189,827	777,949	1,977,207

Step 3 - Identify any 'in the pipeline' capacity

Local Authority Area	In-Building Facility Types							
	Clean Materials Recovery Facilities + Transfer Stations	In-Vessel Composting	Pyrolysis	Dirty Materials Recovery Facility	Gasification	Incinerator	Mechanical Biological Treatment	Autoclave
Brimacombe	0	0	0	NA	NA	NA	NA	NA
Cardiff	0	0	0	NA	NA	NA	NA	NA
Cardiff	0	0	0	NA	NA	NA	NA	NA
Merthyr Tydfil	0	0	0	NA	NA	NA	NA	NA
Monmouthshire	0	0	0	NA	NA	NA	NA	NA
Newport	0	0	0	NA	NA	NA	NA	NA
Powys (South)	0	0	0	NA	NA	NA	NA	NA
Rhonda Cymru Taf	0	0	0	NA	NA	NA	NA	NA
Torfaen	0	0	0	NA	NA	NA	NA	NA
Valley of Glamorgan	0	0	0	NA	NA	NA	NA	NA
Total	0	0	0	0	0	0	0	0

Notes:
Units: Tonnes per annum

Local Authority Area	Open-Air Facility Types							Unmodelled Waste
	Cikc Assembly	Open-Whedrow Composting	Construction & Demolition Exemption	Construction & Demolition Recycling	Non-Hazardous Waste Landfill	Hazardous Waste Landfill	Inert Waste Landfill	
Brimacombe	0	0	0	0	0	0	0	
Cardiff	0	0	0	0	0	0	0	
Cardiff	0	0	0	0	0	0	0	
Merthyr Tydfil	0	0	0	0	0	0	0	
Monmouthshire	0	0	0	0	0	0	0	
Newport	0	0	0	0	0	0	0	
Powys (South)	0	0	0	0	0	0	0	
Rhonda Cymru Taf	0	0	0	0	0	0	0	
Torfaen	0	0	0	0	0	0	0	
Valley of Glamorgan	0	0	0	0	0	0	0	
Total	0	0	0	0	0	0	0	

Step 4 - Calculate the new capacity required

Step 4a - Intermediate step for calculation of adjustment to take account of spare capacity in some LA areas

Local Authority Area	In-Building Facility Types							
	Clean Materials Recovery Facilities + Transfer Stations	In-Vessel Composting	Pyrolysis	Dirty Materials Recovery Facility	Gasification	Incinerator	Mechanical Biological Treatment	Autoclave
Brimacombe	0	12,899	33,448	NA	NA	NA	NA	NA
Cardiff	9,412	32,966	84,038	NA	NA	NA	NA	NA
Cardiff	0	67,466	174,233	NA	NA	NA	NA	NA
Merthyr Tydfil	0	10,459	26,912	NA	NA	NA	NA	NA
Monmouthshire	30,900	48,996	47,269	NA	NA	NA	NA	NA
Newport	0	48,996	107,073	NA	NA	NA	NA	NA
Powys (South)	0	14,594	39,733	NA	NA	NA	NA	NA
Rhonda Cymru Taf	224,148	42,268	116,372	NA	NA	NA	NA	NA
Torfaen	124,997	17,597	42,509	NA	NA	NA	NA	NA
Valley of Glamorgan	137,338	27,743	66,463	NA	NA	NA	NA	NA
Net New Cap Req	495,770	248,826	739,418	NA	NA	NA	NA	NA
Reg Fac Gross New Cap Req	276,605	739,418	NA	NA	NA	NA	NA	NA
Reg Fac Gross Net Cap Req	-218,889	-218,889	NA	NA	NA	NA	NA	NA

Notes:
Units: Tonnes per annum

Local Authority Area	Open-Air Facility Types							Unmodelled Waste
	Cikc Assembly	Open-Whedrow Composting	Construction & Demolition Exemption	Construction & Demolition Recycling	Non-Hazardous Waste Landfill	Hazardous Waste Landfill	Inert Waste Landfill	
Brimacombe	0	3,802	49,234	49,234	21,233	NA	27,799	
Cardiff	0	9,442	122,276	122,276	52,729	NA	60,098	
Cardiff	0	25,557	228,813	228,813	98,506	NA	129,168	
Merthyr Tydfil	0	3,047	39,454	39,454	17,049	NA	22,277	
Monmouthshire	0	10,131	62,839	62,839	27,112	NA	35,911	
Newport	0	8,717	102,005	102,005	44,397	NA	57,874	
Powys (South)	0	2,415	47,175	47,175	20,470	NA	27,527	
Rhonda Cymru Taf	0	10,962	166,243	166,243	71,686	NA	93,889	
Torfaen	0	48,131	64,831	64,831	27,946	NA	36,612	
Valley of Glamorgan	0	27,673	88,136	88,136	38,091	NA	49,163	
Total	39,811	113,373	971,813	971,813	479,791	48,877	556,842	

Step 4b - Now calculate the new capacity required

Local Authority Area	In-Building Facility Types							
	Clean Materials Recovery Facilities + Transfer Stations	In-Vessel Composting	Pyrolysis	Dirty Materials Recovery Facility	Gasification	Incinerator	Mechanical Biological Treatment	Autoclave
Brimacombe	0	12,899	33,448	NA	NA	NA	NA	NA
Cardiff	9,412	32,966	84,038	NA	NA	NA	NA	NA
Cardiff	0	67,466	174,233	NA	NA	NA	NA	NA
Merthyr Tydfil	0	10,459	26,912	NA	NA	NA	NA	NA
Monmouthshire	30,900	48,996	47,269	NA	NA	NA	NA	NA
Newport	0	48,996	107,073	NA	NA	NA	NA	NA
Powys (South)	0	14,594	39,733	NA	NA	NA	NA	NA
Rhonda Cymru Taf	224,148	42,268	116,372	NA	NA	NA	NA	NA
Torfaen	124,997	17,597	42,509	NA	NA	NA	NA	NA
Valley of Glamorgan	137,338	27,743	66,463	NA	NA	NA	NA	NA
Total	495,770	248,826	739,418	NA	NA	NA	NA	NA

Notes:
Units: Tonnes per annum

Local Authority Area	Open-Air Facility Types							Unmodelled Waste
	Cikc Assembly	Open-Whedrow Composting	Construction & Demolition Exemption	Construction & Demolition Recycling	Non-Hazardous Waste Landfill	Hazardous Waste Landfill	Inert Waste Landfill	
Brimacombe	0	0	49,234	49,234	21,233	NA	27,799	
Cardiff	0	0	122,276	122,276	52,729	NA	60,098	
Cardiff	0	0	228,813	228,813	98,506	NA	129,168	
Merthyr Tydfil	0	0	39,454	39,454	17,049	NA	22,277	
Monmouthshire	0	0	62,839	62,839	27,112	NA	35,911	
Newport	0	0	102,005	102,005	44,397	NA	57,874	
Powys (South)	0	0	47,175	47,175	20,470	NA	27,527	
Rhonda Cymru Taf	0	0	166,243	166,243	71,686	NA	93,889	
Torfaen	0	0	64,831	64,831	27,946	NA	36,612	
Valley of Glamorgan	0	0	88,136	88,136	38,091	NA	49,163	
Total	39,811	0	971,813	971,813	479,791	48,877	556,842	

Step 5 - Calculate an indicative number of new facilities required

Step 5a - Intermediate step to specify typical facility capacities

Local Authority Area Type	In-Building Facility Types							
	Clean Materials Recovery Facilities + Transfer Stations	In-Vessel Composting	Pyrolysis	Dirty Materials Recovery Facility	Gasification	Incinerator	Mechanical Biological Treatment	Autoclave
Urban	50,000	20,000	90,000	NA	NA	NA	NA	NA
Rural	11,000	30,000	NA	NA	NA	NA	NA	NA
SE Wales	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Units: Tonnes per annum

Local Authority Area Type	Open-Air Facility Types							Unmodelled Waste
	Cikc Assembly	Open-Whedrow Composting	Construction & Demolition Exemption	Construction & Demolition Recycling	Non-Hazardous Waste Landfill	Hazardous Waste Landfill	Inert Waste Landfill	
Urban	7,000	19,742	2,000</					

Option 2C - Incineration with energy recovery

Step 1 - Identify RWP capacity requirements

Local Authority Area	In-Building Facility Types								Open-Air Facility Types							Unmodelled Waste
	Household, Industrial & Commercial Transfer Station + Construction & Demolition Transfer Station	In-Vessel Composting	Pyrolysis	Diary Materials Recovery Facility	Gasification	Incinerator	Mechanical Biological Treatment	Autoclave	Clock Assembly	Open-Wharf Composting	Construction & Demolition Exemption	Construction & Demolition Recycling	Non-Hazardous Waste Landfill	Hazardous Waste Landfill	inert Waste Landfill	
Blaeuw Gront	149,823	13,099	NA	NA	NA	31,448	NA	NA	8,343	3,802	49,234	49,234	21,278	NA	27,799	NA
Cardiff	272,224	32,908	NA	NA	NA	84,098	NA	NA	20,704	9,442	122,276	122,276	52,729	NA	69,098	NA
Cardiff	72,130	67,448	NA	NA	NA	174,231	NA	NA	38,417	17,738	228,813	228,813	98,550	NA	128,168	NA
Merthyr Tydfil	120,061	10,408	NA	NA	NA	26,912	NA	NA	6,662	3,043	39,454	39,454	17,042	NA	22,277	NA
Monmouthshire	197,954	10,099	NA	NA	NA	47,939	NA	NA	10,174	4,864	62,839	62,839	27,112	NA	35,911	NA
Newport	374,702	46,898	NA	NA	NA	102,077	NA	NA	16,917	8,284	102,005	102,005	44,397	NA	57,614	NA
Powys (South)	154,079	14,908	NA	NA	NA	39,738	NA	NA	8,717	4,062	47,179	47,179	20,473	NA	27,027	NA
Rhonda Cymru Taf	510,489	45,281	NA	NA	NA	116,372	NA	NA	28,109	12,852	166,243	166,243	71,688	NA	91,889	NA
Torfaen	198,872	17,979	NA	NA	NA	45,309	NA	NA	10,962	5,010	64,813	64,813	27,964	NA	36,615	NA
Valley of Glamorgan	281,323	27,843	NA	NA	NA	68,463	NA	NA	14,811	6,899	88,136	88,136	38,091	NA	49,943	NA
Total	3,064,191	255,625	NA	NA	NA	739,149	NA	NA	164,253	75,520	971,813	971,813	419,256	87,692	569,842	65,243

Notes:
Units: Tonnes per annum

Step 2 - Identify any existing capacity and the forecast landfill void in 2013

Local Authority Area	MRF + Transfer (tpa)	In-Vessel Composting (tpa)	Thermal Treatment (tpa)	MBT (tpa)	Clock Assembly (tpa)	Wharf Composting (tpa)	Construction & Demolition Exemption (tpa)	Open Gate Non-Hazardous Waste Landfill (m3)	Open Gate Inert Waste Landfill (m3)	ELN / Scrap yard / Metal reprocessing + Chemical Treatment (tpa)
Cardiff	817,011	0	0	0	48,227	16,199	0	NA	NA	NA
Cardiff	143,578	0	0	0	136,599	8,500	150,000	NA	NA	NA
Merthyr Tydfil	167,090	24,999	0	0	34,999	0	0	NA	NA	NA
Monmouthshire	420,001	0	1,899	0	64,279	14,999	0	NA	NA	NA
Newport	197,493	0	201	0	0	0	0	NA	NA	NA
Powys (South)	286,544	0	0	0	0	0	0	NA	NA	NA
Rhonda Cymru Taf	114,099	0	0	0	25,094	20,000	0	NA	NA	NA
Torfaen	125,995	0	0	0	0	0	0	NA	NA	NA
Valley of Glamorgan	2,789,824	24,999	1,841	0	54,015	24,999	71,000	NA	NA	NA
Total	5,799,824	24,999	1,841	0	497,799	103,497	228,000	7,189,827	777,949	1,977,287

Notes:

Step 3 - Identify any 'in the pipeline' capacity

Local Authority Area	In-Building Facility Types								Open-Air Facility Types							Unmodelled Waste
	Clean Materials Recovery Facilities + Transfer Stations	In-Vessel Composting	Pyrolysis	Diary Materials Recovery Facilities	Gasification	Incinerator	Mechanical Biological Treatment	Autoclave	Clock Assembly	Open-Wharf Composting	Construction & Demolition Exemption	Construction & Demolition Recycling	Non-Hazardous Waste Landfill	Hazardous Waste Landfill	inert Waste Landfill	
Blaeuw Gront	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cardiff	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cardiff	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Merthyr Tydfil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Monmouthshire	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Newport	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Powys (South)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rhonda Cymru Taf	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Torfaen	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Valley of Glamorgan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Notes:
Units: Tonnes per annum

Step 4 - Calculate the new capacity required

Step 4a - Intermediate step for calculation of adjustment to take account of spare capacity in some LA areas

Local Authority Area	In-Building Facility Types								Open-Air Facility Types							Unmodelled Waste	
	Clean Materials Recovery Facilities + Transfer Stations	In-Vessel Composting	Pyrolysis	Diary Materials Recovery Facilities	Gasification	Incinerator	Mechanical Biological Treatment	Autoclave	Clock Assembly	Open-Wharf Composting	Construction & Demolition Exemption	Construction & Demolition Recycling	Non-Hazardous Waste Landfill	Hazardous Waste Landfill	inert Waste Landfill		
Blaeuw Gront	0	13,099	NA	NA	NA	31,448	NA	NA	0	3,802	49,234	49,234	NA	NA	NA	NA	
Cardiff	0	31,787	NA	NA	NA	84,098	NA	NA	-25,557	122,276	122,276	122,276	NA	NA	NA	NA	
Cardiff	0	67,448	NA	NA	NA	174,231	NA	NA	0	9,229	228,813	228,813	NA	NA	NA	NA	
Merthyr Tydfil	0	10,408	NA	NA	NA	26,912	NA	NA	0	3,043	39,454	39,454	NA	NA	NA	NA	
Monmouthshire	30,999	6,099	NA	NA	NA	47,939	NA	NA	0	-10,174	62,839	62,839	NA	NA	NA	NA	
Newport	0	46,898	NA	NA	NA	102,077	NA	NA	16,917	8,284	102,005	102,005	NA	NA	NA	NA	
Powys (South)	0	14,908	NA	NA	NA	39,738	NA	NA	8,717	4,062	47,179	47,179	NA	NA	NA	NA	
Rhonda Cymru Taf	224,144	45,281	NA	NA	NA	116,372	NA	NA	2,515	-7,145	166,243	166,243	NA	NA	NA	NA	
Torfaen	17,979	17,979	NA	NA	NA	45,309	NA	NA	10,962	5,010	64,813	64,813	NA	NA	NA	NA	
Valley of Glamorgan	172,129	27,843	NA	NA	NA	68,463	NA	NA	0	-68,136	88,136	88,136	NA	NA	NA	NA	
Net New Cap Req	495,770	248,625	NA	NA	NA	739,307	NA	NA	39,811	-27,877	971,813	971,813	-6,769,791	87,692	-227,898	-1,911,943	
Reg Fac. Gross New Cap Req	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reg Fac. Gross Spare Cap	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Notes:
Units: Tonnes per annum

Step 4b - Now calculate the new capacity required

Local Authority Area	In-Building Facility Types								Open-Air Facility Types							Unmodelled Waste
	Clean Materials Recovery Facilities + Transfer Stations	In-Vessel Composting	Pyrolysis	Diary Materials Recovery Facilities	Gasification	Incinerator	Mechanical Biological Treatment	Autoclave	Clock Assembly	Open-Wharf Composting	Construction & Demolition Exemption	Construction & Demolition Recycling	Non-Hazardous Waste Landfill	Hazardous Waste Landfill	inert Waste Landfill	
Blaeuw Gront	0	12,099	NA	NA	NA	31,448	NA	NA	0	0	49,234	49,234	NA	NA	NA	NA
Cardiff	0	31,787	NA	NA	NA	84,098	NA	NA	0	0	122,276	122,276	NA	NA	NA	NA
Cardiff	0	67,448	NA	NA	NA	174,231	NA	NA	0	0	228,813	228,813	NA	NA	NA	NA
Merthyr Tydfil	0	10,408	NA	NA	NA	26,912	NA	NA	0	0	39,454	39,454	NA	NA	NA	NA
Monmouthshire	30,999	6,099	NA	NA	NA	47,939	NA	NA	0	0	62,839	62,839	NA	NA	NA	NA
Newport	0	46,898	NA	NA	NA	102,077	NA	NA	16,917	8,284	102,005	102,005	NA	NA	NA	NA
Powys (South)	0	14,908	NA	NA	NA	39,738	NA	NA	8,717	4,062	47,179	47,179	NA	NA	NA	NA
Rhonda Cymru Taf	224,144	45,281	NA	NA	NA	116,372	NA	NA	2,515	-7,145	166,243	166,243	NA	NA	NA	NA
Torfaen	17,979	17,979	NA	NA	NA	45,309	NA	NA	10,962	5,010	64,813	64,813	NA	NA	NA	NA
Valley of Glamorgan	172,129	27,843	NA	NA	NA	68,463	NA	NA	0	-68,136	88,136	88,136	NA	NA	NA	NA
Total	495,770	248,625	NA	NA	NA	739,307	NA	NA	39,811	-27,877	971,813	971,813	-6,769,791	87,692	-227,898	-1,911,943

Notes:
Units: Tonnes per annum

Step 5 - Calculate an indicative number of new facilities required

Step 5a - Intermediate step to specify typical facility capacities

Local Authority Area Type	In-Building Facility Types								Open-Air Facility Types							Unmodelled Waste
	Clean Materials Recovery Facilities + Transfer Stations	In-Vessel Composting	Pyrolysis	Diary Materials Recovery Facilities	Gasification	Incinerator	Mechanical Biological Treatment	Autoclave	Clock Assembly	Open-Wharf Composting	Construction & Demolition Exemption	Construction & Demolition Recycling	Non-Hazardous Waste Landfill	Hazardous Waste Landfill	inert Waste Landfill	
Urban	70,000	20,000	NA	NA	NA	210,000	NA	NA	7,000	19,743	2,600	50,000	200,000	NA	50,000	NA
Rural	70,000	11,000	NA	NA	NA	30,000	NA	NA	2,276	9,677	2,800	29,000	112,000	NA	25,000	NA
SW Wales	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Units: Tonnes per annum

Step 5b - Now calculate an indicative number of new non-landfill facilities required

Local Authority Area	In-Building Facility Types								Open-Air Facility Types							Unmodelled Waste
	Clean Materials Recovery Facilities + Transfer Stations	In-Vessel Composting	Pyrolysis	Diary Materials Recovery Facilities	Gasification	Incinerator	Mechanical Biological Treatment	Autoclave	Clock Assembly	Open-Wharf Composting	Construction & Demolition Exemption	Construction & Demolition Recycling	Non-Hazardous Waste Landfill	Hazardous Waste Landfill	inert Waste Landfill	
Blaeuw Gront	0.0	0.3	NA	NA	NA	0.2	NA	NA	0.0	0.0	0.5	1.9	NA	NA	NA	NA
Cardiff	0.0	1.2	NA	NA	NA	0.4	NA	NA	0.0	0.0	47.6	2.4	NA	NA	NA	NA
Cardiff	0.0	2.9	NA	NA	NA	0.8	NA	NA	0.0	0.0	122.3	122.3	NA	NA	NA	NA
Merthyr Tydfil	0.0	0.4	NA	NA	NA	0.1	NA	NA	0.0	0.0	15.2	0.1				

Option 3A - MBT followed by pyrolysis

Step 1 - Identify RWP capacity requirements

Local Authority Area	In-Building Facility Types								Open-Air Facility Types							Unmodeled Waste
	Household, Industrial & Commercial Transfer Station + Construction & Demolition Transfer Station	In-Vessel Composting	Pyrolysis	Dirty Materials Recovery Facility	Gasification	Incinerator	Mechanical Biological Treatment	Autoclave	Chk Assembly	Open-Windrow Composting	Construction & Demolition Exemption	Construction & Demolition Recycling	Non-Hazardous Waste Landfill	Hazardous Waste Landfill	Inert Waste Landfill	
Blissau Govt	145,421	11,079	18,526	NA	NA	NA	81,448	NA	6,367	4,621	49,234	46,224	25,322	NA	27,776	
Cardiff	721,381	32,911	47,575	NA	NA	NA	84,018	NA	20,788	9,442	122,278	122,278	42,998	NA	49,018	
Merthyr Tydfil	120,060	67,466	96,807	NA	NA	NA	174,211	NA	38,477	17,738	228,811	228,811	119,848	NA	129,165	
Monmouthshire	197,954	18,019	26,916	NA	NA	NA	29,922	NA	6,462	4,045	39,454	39,454	20,300	NA	22,277	
Newport	374,762	46,894	58,219	NA	NA	NA	47,591	NA	10,574	4,864	62,839	62,839	32,930	NA	35,911	
Powys (South)	154,076	14,914	22,464	NA	NA	NA	39,713	NA	16,917	8,284	102,088	102,088	56,916	NA	57,654	
Powys (North)	59,088	45,287	65,882	NA	NA	NA	116,372	NA	8,717	4,062	47,175	47,175	25,330	NA	27,527	
Rhondda Cynon Taf	198,972	17,917	25,464	NA	NA	NA	45,369	NA	20,109	12,852	166,241	166,241	85,911	NA	93,888	
Torfaen	281,372	27,747	38,768	NA	NA	NA	69,461	NA	10,962	7,019	84,811	84,811	31,897	NA	34,612	
Valley of Glamorgan	781,372	27,747	38,768	NA	NA	NA	69,461	NA	14,811	9,389	88,150	88,150	46,459	NA	49,945	
Total	3,084,171	292,620	418,248	NA	NA	NA	739,248	NA	184,232	79,528	971,611	971,611	589,581	43,465	529,842	

Notes:
Units: Tonnas per annum

Step 2 - Identify any existing capacity and the forecast landfill void in 2013

Local Authority Area	MBT + Transfer (t/yr)	In-Vessel Composting (t/yr)	Thermal Treatment (t/yr)		Chk Assembly (t/yr)	Windrow Composting (t/yr)	Construction & Demolition Recycling (t/yr)	Open Gate Non-Hazardous Waste Landfill (m3)	Open Gate Inert Waste Landfill (m3)	ELV / Scrap yard / Metal recycling - Chemical Treatment Facility (t/yr)
			MBT (t/yr)	MBT (t/yr)						
Blissau Govt	18,599	0	0	0	6,367	4,621	49,234	46,224	25,322	NA
Cardiff	361,864	0	0	0	20,788	9,442	122,278	122,278	42,998	NA
Merthyr Tydfil	817,011	0	0	0	38,477	17,738	228,811	228,811	119,848	NA
Monmouthshire	145,315	0	0	0	6,462	4,045	39,454	39,454	20,300	NA
Newport	187,066	24,999	1,489	0	10,574	4,864	62,839	62,839	32,930	NA
Powys (South)	197,491	0	201	0	16,917	8,284	102,088	102,088	56,916	NA
Powys (North)	429,011	0	1,489	0	8,717	4,062	47,175	47,175	25,330	NA
Rhondda Cynon Taf	286,344	0	201	0	20,109	20,000	166,241	166,241	85,911	NA
Torfaen	129,097	0	249	0	10,962	7,019	84,811	84,811	31,897	NA
Valley of Glamorgan	129,995	24,999	1,481	0	14,811	9,389	88,150	88,150	46,459	NA
Total	3,799,824	24,999	1,481	0	477,586	115,487	1,238,688	1,238,688	744,851	977,848

Notes

Step 3 - Identify any 'in the pipeline' capacity

Local Authority Area	In-Building Facility Types								Open-Air Facility Types							Unmodeled Waste
	Clean Materials Recovery Facilities + Transfer Station	In-Vessel Composting	Pyrolysis	Dirty Materials Recovery Facility	Gasification	Incinerator	Mechanical Biological Treatment	Autoclave	Chk Assembly	Open-Windrow Composting	Construction & Demolition Exemption	Construction & Demolition Recycling	Non-Hazardous Waste Landfill	Hazardous Waste Landfill	Inert Waste Landfill	
Blissau Govt	0	0	0	NA	NA	NA	0	NA	0	0	0	0	0	0	0	
Cardiff	0	0	0	NA	NA	NA	0	NA	0	0	0	0	0	0	0	
Merthyr Tydfil	0	0	0	NA	NA	NA	0	NA	0	0	0	0	0	0	0	
Monmouthshire	0	0	0	NA	NA	NA	0	NA	0	0	0	0	0	0	0	
Newport	0	0	0	NA	NA	NA	0	NA	0	0	0	0	0	0	0	
Powys (South)	0	0	0	NA	NA	NA	0	NA	0	0	0	0	0	0	0	
Powys (North)	0	0	0	NA	NA	NA	0	NA	0	0	0	0	0	0	0	
Rhondda Cynon Taf	0	0	0	NA	NA	NA	0	NA	0	0	0	0	0	0	0	
Torfaen	0	0	0	NA	NA	NA	0	NA	0	0	0	0	0	0	0	
Valley of Glamorgan	0	0	0	NA	NA	NA	0	NA	0	0	0	0	0	0	0	
Total	0	0	0	NA	NA	NA	0	NA	0	0	0	0	0	0	0	

Notes
Units: Tonnas per annum

Step 4 - Calculate the new capacity required

Step 4a - Intermediate step for calculation of adjustment to take account of spare capacity in some LA areas

Local Authority Area	In-Building Facility Types								Open-Air Facility Types							Unmodeled Waste
	Clean Materials Recovery Facilities + Transfer Station	In-Vessel Composting	Pyrolysis	Dirty Materials Recovery Facility	Gasification	Incinerator	Mechanical Biological Treatment	Autoclave	Chk Assembly	Open-Windrow Composting	Construction & Demolition Exemption	Construction & Demolition Recycling	Non-Hazardous Waste Landfill	Hazardous Waste Landfill	Inert Waste Landfill	
Blissau Govt	0	11,079	18,526	NA	NA	NA	81,448	NA	6,367	4,621	49,234	46,224	25,322	NA	27,776	
Cardiff	9,412	32,911	47,575	NA	NA	NA	84,018	NA	20,788	9,442	122,278	122,278	42,998	NA	49,018	
Merthyr Tydfil	0	67,466	96,807	NA	NA	NA	174,211	NA	38,477	17,738	228,811	228,811	119,848	NA	129,165	
Monmouthshire	30,908	18,019	26,916	NA	NA	NA	29,922	NA	6,462	4,045	39,454	39,454	20,300	NA	22,277	
Newport	0	46,894	58,219	NA	NA	NA	47,591	NA	10,574	4,864	62,839	62,839	32,930	NA	35,911	
Powys (South)	0	14,914	22,464	NA	NA	NA	39,713	NA	16,917	8,284	102,088	102,088	56,916	NA	57,654	
Powys (North)	234,144	45,287	65,882	NA	NA	NA	116,372	NA	8,717	4,062	47,175	47,175	25,330	NA	27,527	
Rhondda Cynon Taf	73,075	17,917	25,464	NA	NA	NA	45,369	NA	20,109	12,852	166,241	166,241	85,911	NA	93,888	
Torfaen	197,338	27,747	38,768	NA	NA	NA	69,461	NA	10,962	7,019	84,811	84,811	31,897	NA	34,612	
Valley of Glamorgan	491,776	27,747	38,768	NA	NA	NA	69,461	NA	14,811	9,389	88,150	88,150	46,459	NA	49,945	
Total	491,776	292,620	418,248	NA	NA	NA	739,248	NA	184,232	79,528	971,611	971,611	589,581	43,465	529,842	

Notes
Units: Tonnas per annum

Step 4b - Now calculate the new capacity required

Local Authority Area	In-Building Facility Types								Open-Air Facility Types							Unmodeled Waste
	Clean Materials Recovery Facilities + Transfer Station	In-Vessel Composting	Pyrolysis	Dirty Materials Recovery Facility	Gasification	Incinerator	Mechanical Biological Treatment	Autoclave	Chk Assembly	Open-Windrow Composting	Construction & Demolition Exemption	Construction & Demolition Recycling	Non-Hazardous Waste Landfill	Hazardous Waste Landfill	Inert Waste Landfill	
Blissau Govt	0	12,489	18,526	NA	NA	NA	81,448	NA	6,367	4,621	49,234	46,224	25,322	NA	27,776	
Cardiff	9,412	31,761	47,575	NA	NA	NA	84,018	NA	20,788	9,442	122,278	122,278	42,998	NA	49,018	
Merthyr Tydfil	0	65,759	96,807	NA	NA	NA	174,211	NA	38,477	17,738	228,811	228,811	119,848	NA	129,165	
Monmouthshire	30,908	18,019	26,916	NA	NA	NA	29,922	NA	6,462	4,045	39,454	39,454	20,300	NA	22,277	
Newport	0	46,894	58,219	NA	NA	NA	47,591	NA	10,574	4,864	62,839	62,839	32,930	NA	35,911	
Powys (South)	0	14,224	22,464	NA	NA	NA	39,713	NA	16,917	8,284	102,088	102,088	56,916	NA	57,654	
Powys (North)	234,144	44,137	65,882	NA	NA	NA	116,372	NA	8,717	4,062	47,175	47,175	25,330	NA	27,527	
Rhondda Cynon Taf	73,075	17,917	25,464	NA	NA	NA	45,369	NA	20,109	12,852	166,241	166,241	85,911	NA	93,888	
Torfaen	197,338	27,747	38,768	NA	NA	NA	69,461	NA	10,962	7,019	84,811	84,811	31,897	NA	34,612	
Valley of Glamorgan	197,338	27,747	38,768	NA	NA	NA	69,461	NA	14,811	9,389	88,150	88,150	46,459	NA	49,945	
Total	491,776	292,620	418,248	NA	NA	NA	739,248	NA	184,232	79,528	971,611	971,611	589,581	43,465	529,842	

Notes
Units: Tonnas per annum

Step 5 - Calculate an indicative number of new facilities required

Step 5a - Intermediate step to specify typical facility capacities

Local Authority Area Type	In-Building Facility Types								Open-Air Facility Types							Unmodeled Waste
	Clean Materials Recovery Facilities + Transfer Station	In-Vessel Composting	Pyrolysis	Dirty Materials Recovery Facility	Gasification	Incinerator	Mechanical Biological Treatment	Autoclave	Chk Assembly	Open-Windrow Composting	Construction & Demolition Exemption	Construction & Demolition Recycling	Non-Hazardous Waste Landfill	Hazardous Waste Landfill	Inert Waste Landfill	
Urban	70,000	20,000	90,000	NA	NA	NA	160,000	NA	7,000	5,000	2,600	50,000	250,000	NA	50,000	
Rural	70,000	11,000	30,000	NA	NA	NA	60,000	NA	2,200	1,472	2,600	25,000	112,500	NA	25,000	
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

Notes
Units: Tonnas per annum

Step 5b - Now calculate an indicative number of new non-landfill facilities required

Local Authority Area	In-Building Facility Types								Open-Air Facility Types							Unmodeled Waste
	Clean Materials Recovery Facilities + Transfer Station	In-Vessel Composting	Pyrolysis	Dirty Materials Recovery Facility	Gasification	Incinerator	Mechanical Biological Treatment	Autoclave	Chk Assembly	Open-Windrow Composting	Construction & Demolition Exemption	Construction & Demolition Recycling	Non-Hazardous Waste Landfill	Hazardous Waste Landfill	Inert Waste Landfill	
Blissau Govt	0.0	0.3	0.2	NA	NA	NA	0.2	NA	0.0	0.0	18	18	1.9	NA	0.2	
Cardiff	0.1	1.2	1.6	NA	NA	NA	0.5	NA	0.0	0.0	88.0	88.0	4.6	NA	0.0	
Merthyr Tydfil	0.0	2.5	3.7	NA	NA	NA	1.1	NA	0.0	0.0	112.0	112.0	58.0	NA	0.0	
Monmouthshire	0.4	0.9	1.3	NA	NA	NA	0.8									

Option 3B - MBT followed by gasification

Step 1 - Identify RWP capacity requirements

Local Authority Area	In-Building Facility Types								Open-Air Facility Types							Unmodelled Waste
	Household, Industrial & Commercial Transfer Station - Construction & Demolition Transfer Station	In-Vessel Composting	Pyrolysis	Dirty Materials Recovery Facility	Gasification	Incinerator	Mechanical Biological Treatment	Autoclave	Civl Assembly	Open-Window Composting	Construction & Demolition Exemption	Construction & Demolition Recycling	Non-Hazardous Waste Landfill	Hazardous Waste Landfill	Inert Waste Landfill	
Bleasau Green	149,821	11,019	NA	NA	18,726	NA	31,449	NA	8,361	3,802	49,234	49,234	25,322	NA	27,795	
Carrilly	271,214	32,901	NA	NA	47,017	NA	84,038	NA	20,784	9,142	122,274	122,274	62,998	NA	69,000	
Cardiff	721,381	67,466	NA	NA	98,407	NA	174,211	NA	38,417	17,738	228,811	228,811	119,848	NA	129,165	
Merthyr Tydfil	120,561	10,403	NA	NA	15,213	NA	26,812	NA	6,082	2,565	39,458	39,458	20,300	NA	22,277	
Monmouthshire	197,954	18,019	NA	NA	26,938	NA	47,919	NA	10,574	4,864	62,839	62,839	32,938	NA	35,911	
Newport	374,302	46,898	NA	NA	58,111	NA	103,071	NA	16,917	8,286	102,005	102,005	56,996	NA	57,674	
Powys (South)	154,070	14,984	NA	NA	22,488	NA	39,733	NA	8,717	4,002	47,175	47,175	23,938	NA	27,027	
Rhondda Cynon Taf	530,488	45,281	NA	NA	65,862	NA	116,372	NA	28,389	12,852	166,241	166,241	85,911	NA	93,888	
Torfaen	198,972	17,973	NA	NA	25,648	NA	43,308	NA	10,962	5,010	64,831	64,831	33,483	NA	36,452	
Valley of Glamorgan	280,127	27,747	NA	NA	38,748	NA	68,461	NA	14,811	6,889	88,138	88,138	46,478	NA	49,943	
Total	3,084,191	295,828	NA	NA	418,326	NA	739,149	NA	184,235	79,520	971,611	971,611	505,500	62,656	589,822	

Notes:
Units: Tonnes per annum

Step 2 - Identify any existing capacity and the forecast landfill void in 2013

Local Authority Area	MRF + Transfer (tpa)	In-Vessel Composting (tpa)	Thermal Treatment (tpa)	MBT (tpa)	Civl Assembly (tpa)	Window Composting (tpa)	Construction & Demolition Recycling (tpa)	Open Gate Non-Hazardous Waste Landfill (m3)	Open Gate Inert Waste Landfill (m3)	ELV / Scrap yard / Metal reprocessing + Chemical Treatment Facility (tpa)
Bleasau Green	150,398	0	0	0	16,399	0	0	NA	NA	NA
Carrilly	360,364	0	0	0	41,227	0	0	NA	NA	NA
Cardiff	817,011	0	0	0	136,399	4,508	0	150,000	NA	NA
Merthyr Tydfil	143,535	0	0	0	16,408	0	0	NA	NA	NA
Monmouthshire	167,046	24,999	0	0	64,279	14,999	0	NA	NA	NA
Newport	430,000	0	1,400	0	0	0	0	NA	NA	NA
Powys (South)	197,495	0	200	0	0	0	0	NA	NA	NA
Rhondda Cynon Taf	286,544	0	0	0	25,694	20,000	0	NA	NA	NA
Torfaen	134,997	0	0	0	0	0	0	NA	NA	NA
Valley of Glamorgan	125,995	0	0	0	54,003	74,999	0	70,000	NA	NA
Total	2,799,624	24,999	1,600	0	437,700	133,497	0	230,000	0	1,977,287

Notes:
Open Gate Non-Hazardous Waste Landfill void on 11st March 2006: 16,396,281 m3
Open Gate Non-Hazardous Waste Landfill input in 2005: 1,636,297 m3
Open Gate Inert Waste Landfill on 11st March 2006: 2,131,846 m3
Open Gate Inert Waste Landfill input in 2005: 190,325 m3

Step 3 - Identify any 'in the pipeline' capacity

Local Authority Area	In-Building Facility Types								Open-Air Facility Types							Unmodelled Waste
	Clean Materials Recovery Facilities + Transfer Station	In-Vessel Composting	Pyrolysis	Dirty Materials Recovery Facility	Gasification	Incinerator	Mechanical Biological Treatment	Autoclave	Civl Assembly	Open-Window Composting	Construction & Demolition Exemption	Construction & Demolition Recycling	Non-Hazardous Waste Landfill	Hazardous Waste Landfill	Inert Waste Landfill	
Bleasau Green	0	0	NA	NA	0	NA	0	NA	0	0	0	0	0	0	0	
Carrilly	0	0	NA	NA	0	NA	0	NA	0	0	0	0	0	0	0	
Cardiff	0	0	NA	NA	0	NA	0	NA	0	0	0	0	0	0	0	
Merthyr Tydfil	0	0	NA	NA	0	NA	0	NA	0	0	0	0	0	0	0	
Monmouthshire	0	0	NA	NA	0	NA	0	NA	0	0	0	0	0	0	0	
Newport	0	0	NA	NA	0	NA	0	NA	0	0	0	0	0	0	0	
Powys (South)	0	0	NA	NA	0	NA	0	NA	0	0	0	0	0	0	0	
Rhondda Cynon Taf	0	0	NA	NA	0	NA	0	NA	0	0	0	0	0	0	0	
Torfaen	0	0	NA	NA	0	NA	0	NA	0	0	0	0	0	0	0	
Valley of Glamorgan	0	0	NA	NA	0	NA	0	NA	0	0	0	0	0	0	0	
Total	0	0	NA	NA	0	NA	0	NA	0	0	0	0	0	0	0	

Notes:
Units: Tonnes per annum

Step 4 - Calculate the new capacity required

Step 4a - Intermediate step for calculation of adjustment to take account of spare capacity in some LA areas

Local Authority Area	In-Building Facility Types								Open-Air Facility Types							Unmodelled Waste
	Clean Materials Recovery Facilities + Transfer Station	In-Vessel Composting	Pyrolysis	Dirty Materials Recovery Facility	Gasification	Incinerator	Mechanical Biological Treatment	Autoclave	Civl Assembly	Open-Window Composting	Construction & Demolition Exemption	Construction & Demolition Recycling	Non-Hazardous Waste Landfill	Hazardous Waste Landfill	Inert Waste Landfill	
Bleasau Green	0	11,019	NA	NA	18,726	NA	31,449	NA	8,361	3,802	49,234	49,234	25,322	NA	27,795	
Carrilly	0	32,901	NA	NA	47,017	NA	84,038	NA	20,784	9,142	122,274	122,274	62,998	NA	69,000	
Cardiff	0	67,466	NA	NA	98,407	NA	174,211	NA	38,417	17,738	228,811	228,811	119,848	NA	129,165	
Merthyr Tydfil	0	10,403	NA	NA	15,213	NA	26,812	NA	6,082	2,565	39,458	39,458	20,300	NA	22,277	
Monmouthshire	0	18,019	NA	NA	26,938	NA	47,919	NA	10,574	4,864	62,839	62,839	32,938	NA	35,911	
Newport	0	46,898	NA	NA	58,111	NA	103,071	NA	16,917	8,286	102,005	102,005	56,996	NA	57,674	
Powys (South)	0	14,984	NA	NA	22,488	NA	39,733	NA	8,717	4,002	47,175	47,175	23,938	NA	27,027	
Rhondda Cynon Taf	234,144	45,281	NA	NA	65,862	NA	116,372	NA	24,635	11,348	166,241	166,241	85,911	NA	93,888	
Torfaen	73,975	17,973	NA	NA	25,648	NA	43,308	NA	10,962	5,010	64,831	64,831	33,483	NA	36,452	
Valley of Glamorgan	197,159	27,747	NA	NA	38,748	NA	68,461	NA	14,811	6,889	88,138	88,138	46,478	NA	49,943	
Net New Cap Req.	497,774	268,626	NA	NA	418,326	NA	739,149	NA	199,046	89,118	971,611	971,611	644,264	62,656	527,800	
Reg Fac Gross New Cap Req.	275,689	NA	NA	NA	418,326	NA	739,149	NA	33,373	0	751,611	751,611	0	0	1,911,262	
Reg Fac Gross Spare Cap.	-6,905	NA	NA	NA	-4	NA	-4	NA	-110,235	0	-110,235	0	0	0	0	

Notes:
Units: Tonnes per annum

Step 4b - Now calculate the new capacity required

Local Authority Area	In-Building Facility Types								Open-Air Facility Types							Unmodelled Waste
	Clean Materials Recovery Facilities + Transfer Station	In-Vessel Composting	Pyrolysis	Dirty Materials Recovery Facility	Gasification	Incinerator	Mechanical Biological Treatment	Autoclave	Civl Assembly	Open-Window Composting	Construction & Demolition Exemption	Construction & Demolition Recycling	Non-Hazardous Waste Landfill	Hazardous Waste Landfill	Inert Waste Landfill	
Bleasau Green	0	11,019	NA	NA	18,726	NA	31,449	NA	8,361	3,802	49,234	49,234	25,322	NA	27,795	
Carrilly	0	32,901	NA	NA	47,017	NA	84,038	NA	20,784	9,142	122,274	122,274	62,998	NA	69,000	
Cardiff	0	67,466	NA	NA	98,407	NA	174,211	NA	38,417	17,738	228,811	228,811	119,848	NA	129,165	
Merthyr Tydfil	0	10,403	NA	NA	15,213	NA	26,812	NA	6,082	2,565	39,458	39,458	20,300	NA	22,277	
Monmouthshire	0	18,019	NA	NA	26,938	NA	47,919	NA	10,574	4,864	62,839	62,839	32,938	NA	35,911	
Newport	0	46,898	NA	NA	58,111	NA	103,071	NA	16,917	8,286	102,005	102,005	56,996	NA	57,674	
Powys (South)	0	14,984	NA	NA	22,488	NA	39,733	NA	8,717	4,002	47,175	47,175	23,938	NA	27,027	
Rhondda Cynon Taf	234,144	45,281	NA	NA	65,862	NA	116,372	NA	24,635	11,348	166,241	166,241	85,911	NA	93,888	
Torfaen	73,975	17,973	NA	NA	25,648	NA	43,308	NA	10,962	5,010	64,831	64,831	33,483	NA	36,452	
Valley of Glamorgan	197,159	27,747	NA	NA	38,748	NA	68,461	NA	14,811	6,889	88,138	88,138	46,478	NA	49,943	
Total	497,774	268,626	NA	NA	418,326	NA	739,149	NA	199,046	89,118	971,611	971,611	644,264	62,656	527,800	

Notes:
Units: Tonnes per annum

Step 5 - Calculate an indicative number of new facilities required

Step 5a - Intermediate step to specify typical facility capacities

Local Authority Area Type	In-Building Facility Types								Open-Air Facility Types							Unmodelled Waste
	Clean Materials Recovery Facilities + Transfer Station	In-Vessel Composting	Pyrolysis	Dirty Materials Recovery Facility	Gasification	Incinerator	Mechanical Biological Treatment	Autoclave	Civl Assembly	Open-Window Composting	Construction & Demolition Exemption	Construction & Demolition Recycling	Non-Hazardous Waste Landfill	Hazardous Waste Landfill	Inert Waste Landfill	
Urban	70,000	30,000	NA	NA	80,000	NA	160,000	NA	7,000	3,500	2,000	50,000	250,000	NA	50,000	
Rural	70,000	11,000	NA	NA	40,000	NA	80,000	NA	2,250	9,872	2,608	25,000	112,500	NA	25,000	
All Wales	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

Notes:
Units: Tonnes per annum

Step 5b - Now calculate an indicative number of new non-landfill facilities required

Local Authority Area	In-Building Facility Types								Open-Air Facility Types							Unmodelled Waste
	Clean Materials Recovery Facilities + Transfer Station	In-Vessel Composting	Pyrolysis	Dirty Materials Recovery Facility	Gasification	Incinerator	Mechanical Biological Treatment	Autoclave	Civl Assembly	Open-Window Composting	Construction & Demolition Exemption	Construction & Demolition Recycling	Non-Hazardous Waste Landfill	Hazardous Waste Landfill	Inert Waste Landfill	
Bleasau Green	0.0	0.3	NA	NA	0.2	NA	0.2	NA	0.0	0.0	15.9	15.9	12.6	NA	12.6	
Carrilly	0.															

Option 3C - MBT followed by incineration with energy recovery

Step 1 - Identify RWP capacity requirements

Local Authority Area	In-Building Facility Types								Open-Air Facility Types							Unmodelled Waste
	Household, Industrial & Commercial Transfer Station - Construction & Demolition	In-Vessel Composting	Pyrolysis	Dirty Materials Recovery Facility	Gasification	Incineration	Mechanical Biological Treatment	Autoclave	Civk Assembly	Open-Window Compositing	Construction & Demolition Exemption	Construction & Demolition Recycling	Non-Hazardous Waste Landfill	Hazardous Waste Landfill	Inert Waste Landfill	
Bleasau Green	149,821	13,019	NA	NA	NA	18,928	33,449	NA	8,361	3,802	49,234	49,234	25,322	NA	27,795	
Carrigilly	273,234	32,303	NA	NA	NA	47,037	84,038	NA	20,784	9,142	122,724	122,724	62,998	NA	69,490	
Cardiff	721,381	67,466	NA	NA	NA	98,407	174,213	NA	38,417	17,778	228,813	228,813	119,847	NA	129,165	
Merthyr Tydfil	120,561	10,410	NA	NA	NA	15,231	26,612	NA	4,682	2,045	39,458	39,458	20,300	NA	22,277	
Monmouthshire	197,954	18,019	NA	NA	NA	26,074	47,919	NA	10,574	4,864	62,839	62,839	32,938	NA	35,911	
Newport	374,302	46,898	NA	NA	NA	58,313	103,071	NA	16,917	8,286	102,005	102,005	56,996	NA	57,674	
Powys (South)	154,070	14,984	NA	NA	NA	22,080	39,733	NA	8,717	4,002	47,719	47,719	25,313	NA	27,827	
Rhonda Cymru Taf	539,688	45,281	NA	NA	NA	65,862	116,372	NA	28,389	12,852	166,241	166,241	85,911	NA	93,888	
Torfaen	198,972	17,977	NA	NA	NA	25,440	45,308	NA	10,962	5,010	64,831	64,831	33,483	NA	36,412	
Valley of Glamorgan	283,127	27,747	NA	NA	NA	38,746	69,461	NA	11,813	6,089	85,158	85,158	44,078	NA	48,943	
Total	3,084,191	293,828	NA	NA	NA	418,320	739,149	NA	144,235	75,526	971,613	971,613	505,597	47,875	550,822	

Units: Tonnes per annum

Step 2 - Identify any existing capacity and the forecast landfill void in 2013

Local Authority Area	MRF + Transfer (tpa)	In-Vessel Compositing (tpa)	Thermal Treatment (tpa)	MBT (tpa)	Civk Assembly (tpa)	Window Compositing (tpa)	Construction & Demolition Recycling (tpa)	Open Gate Non-Hazardous Waste Landfill (m3)	Open Gate Inert Waste Landfill (m3)	ELV / Scrap yard / Metal reprocessing + Chemical Treatment Facility (tpa)
Bleasau Green	150,398	0	0	0	36,999	0	0	0	0	NA
Carrigilly	363,364	0	0	0	61,227	34,999	0	0	0	NA
Cardiff	817,011	0	0	0	136,399	4,508	150,000	0	0	NA
Merthyr Tydfil	143,535	0	0	0	34,909	0	0	0	0	NA
Monmouthshire	167,046	24,999	0	0	64,774	14,999	0	0	0	NA
Newport	430,000	0	1,400	0	0	0	0	0	0	NA
Powys (South)	197,495	0	200	0	0	0	0	0	0	NA
Rhonda Cymru Taf	286,544	0	0	0	25,694	20,000	0	0	0	NA
Torfaen	134,997	0	0	0	54,003	74,999	0	0	0	NA
Valley of Glamorgan	125,995	0	0	0	437,789	133,497	238,000	0	0	1,977,287
Total	2,799,624	24,999	1,840	0	437,789	133,497	238,000	0	0	1,977,287

Notes: Open Gate Non-Hazardous Waste Landfill void on 11st March 2006: 16,396,281 m3
Open Gate Non-Hazardous Waste Landfill input in 2005: 1,636,297 m3
Open Gate Inert Waste Landfill void on 11st March 2006: 2,131,846 m3
Open Gate Inert Waste Landfill input in 2005: 190,325 m3

Step 3 - Identify any 'in the pipeline' capacity

Local Authority Area	In-Building Facility Types								Open-Air Facility Types							Unmodelled Waste
	Clean Materials Recovery Facilities + Transfer Stations	In-Vessel Compositing	Pyrolysis	Dirty Materials Recovery Facility	Gasification	Incineration	Mechanical Biological Treatment	Autoclave	Civk Assembly	Open-Window Compositing	Construction & Demolition Exemption	Construction & Demolition Recycling	Non-Hazardous Waste Landfill	Hazardous Waste Landfill	Inert Waste Landfill	
Bleasau Green	0	0	NA	NA	NA	0	0	NA	0	0	0	0	0	0	0	
Carrigilly	0	0	NA	NA	NA	0	0	NA	0	0	0	0	0	0	0	
Cardiff	0	0	NA	NA	NA	0	0	NA	0	0	0	0	0	0	0	
Merthyr Tydfil	0	0	NA	NA	NA	0	0	NA	0	0	0	0	0	0	0	
Monmouthshire	0	0	NA	NA	NA	0	0	NA	0	0	0	0	0	0	0	
Newport	0	0	NA	NA	NA	0	0	NA	0	0	0	0	0	0	0	
Powys (South)	0	0	NA	NA	NA	0	0	NA	0	0	0	0	0	0	0	
Rhonda Cymru Taf	0	0	NA	NA	NA	0	0	NA	0	0	0	0	0	0	0	
Torfaen	0	0	NA	NA	NA	0	0	NA	0	0	0	0	0	0	0	
Valley of Glamorgan	0	0	NA	NA	NA	0	0	NA	0	0	0	0	0	0	0	
Total	0	0	NA	NA	NA	0	0	NA	0	0	0	0	0	0	0	

Notes: Units: Tonnes per annum

Step 4 - Calculate the new capacity required

Step 4a - Intermediate step for calculation of adjustment to take account of spare capacity in some LA areas

Local Authority Area	In-Building Facility Types								Open-Air Facility Types							Unmodelled Waste
	Clean Materials Recovery Facilities + Transfer Stations	In-Vessel Compositing	Pyrolysis	Dirty Materials Recovery Facility	Gasification	Incineration	Mechanical Biological Treatment	Autoclave	Civk Assembly	Open-Window Compositing	Construction & Demolition Exemption	Construction & Demolition Recycling	Non-Hazardous Waste Landfill	Hazardous Waste Landfill	Inert Waste Landfill	
Bleasau Green	0	13,019	NA	NA	NA	18,928	33,449	NA	0	3,802	49,234	49,234	25,322	NA	27,795	
Carrigilly	0	32,303	NA	NA	NA	47,037	84,038	NA	0	25,557	122,724	122,724	62,998	NA	69,490	
Cardiff	0	67,466	NA	NA	NA	98,407	174,213	NA	0	9,238	228,813	228,813	119,847	NA	129,165	
Merthyr Tydfil	0	10,410	NA	NA	NA	15,231	26,612	NA	0	2,045	39,458	39,458	20,300	NA	22,277	
Monmouthshire	0	18,019	NA	NA	NA	26,074	47,919	NA	0	4,864	62,839	62,839	32,938	NA	35,911	
Newport	0	46,898	NA	NA	NA	58,313	103,071	NA	0	8,286	102,005	102,005	56,996	NA	57,674	
Powys (South)	0	14,984	NA	NA	NA	22,287	39,733	NA	0	4,002	47,719	47,719	25,313	NA	27,827	
Rhonda Cymru Taf	234,144	45,281	NA	NA	NA	65,862	116,372	NA	2,415	12,852	166,241	166,241	85,911	NA	93,888	
Torfaen	73,975	17,977	NA	NA	NA	25,440	45,308	NA	0	5,010	64,831	64,831	33,483	NA	36,412	
Valley of Glamorgan	177,578	27,747	NA	NA	NA	38,746	69,461	NA	0	6,089	85,158	85,158	44,078	NA	48,943	
Net New Cap Req.	493,774	268,626	NA	NA	NA	418,487	739,149	NA	39,811	48,114	971,613	971,613	6,434,264	47,875	327,800	
Reg Fac Gross New Cap Req.	6,980	6,980	NA	NA	NA	416,487	739,149	NA	33,373	110,026	0	0	0	0	3,911,964	

Notes: Units: Tonnes per annum

Step 4b - Now calculate the new capacity required

Local Authority Area	In-Building Facility Types								Open-Air Facility Types							Unmodelled Waste
	Clean Materials Recovery Facilities + Transfer Stations	In-Vessel Compositing	Pyrolysis	Dirty Materials Recovery Facility	Gasification	Incineration	Mechanical Biological Treatment	Autoclave	Civk Assembly	Open-Window Compositing	Construction & Demolition Exemption	Construction & Demolition Recycling	Non-Hazardous Waste Landfill	Hazardous Waste Landfill	Inert Waste Landfill	
Bleasau Green	0	13,019	NA	NA	NA	18,928	33,449	NA	0	3,802	49,234	49,234	25,322	NA	27,795	
Carrigilly	0	32,303	NA	NA	NA	47,037	84,038	NA	0	25,557	122,724	122,724	62,998	NA	69,490	
Cardiff	0	67,466	NA	NA	NA	98,407	174,213	NA	0	9,238	228,813	228,813	119,847	NA	129,165	
Merthyr Tydfil	0	10,410	NA	NA	NA	15,231	26,612	NA	0	2,045	39,458	39,458	20,300	NA	22,277	
Monmouthshire	0	18,019	NA	NA	NA	26,074	47,919	NA	0	4,864	62,839	62,839	32,938	NA	35,911	
Newport	0	46,898	NA	NA	NA	58,313	103,071	NA	0	8,286	102,005	102,005	56,996	NA	57,674	
Powys (South)	0	14,984	NA	NA	NA	22,287	39,733	NA	0	4,002	47,719	47,719	25,313	NA	27,827	
Rhonda Cymru Taf	234,144	45,281	NA	NA	NA	65,862	116,372	NA	2,415	12,852	166,241	166,241	85,911	NA	93,888	
Torfaen	73,975	17,977	NA	NA	NA	25,440	45,308	NA	0	5,010	64,831	64,831	33,483	NA	36,412	
Valley of Glamorgan	177,578	27,747	NA	NA	NA	38,746	69,461	NA	0	6,089	85,158	85,158	44,078	NA	48,943	
Total	493,774	268,626	NA	NA	NA	418,487	739,149	NA	39,811	48,114	971,613	971,613	6,434,264	47,875	327,800	

Notes: Units: Tonnes per annum

Step 5 - Calculate an indicative number of new facilities required

Step 5a - Intermediate step to specify typical facility capacities

Local Authority Area Type	In-Building Facility Types								Open-Air Facility Types							Unmodelled Waste
	Clean Materials Recovery Facilities + Transfer Stations	In-Vessel Compositing	Pyrolysis	Dirty Materials Recovery Facility	Gasification	Incineration	Mechanical Biological Treatment	Autoclave	Civk Assembly	Open-Window Compositing	Construction & Demolition Exemption	Construction & Demolition Recycling	Non-Hazardous Waste Landfill	Hazardous Waste Landfill	Inert Waste Landfill	
Urban	70,000	30,000	NA	NA	NA	50,000	100,000	NA	7,000	3,750	2,000	30,000	30,000	NA	30,000	
Rural	70,000	11,000	NA	NA	NA	50,000	50,000	NA	2,250	9,872	2,000	25,000	112,500	NA	25,000	
All Wales	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

Notes: Units: Tonnes per annum

Step 5b - Now calculate an indicative number of new non-landfill facilities required

Local Authority Area	In-Building Facility Types								Open-Air Facility Types							Unmodelled Waste
	Clean Materials Recovery Facilities + Transfer Stations	In-Vessel Compositing	Pyrolysis	Dirty Materials Recovery Facility	Gasification	Incineration	Mechanical Biological Treatment	Autoclave	Civk Assembly	Open-Window Compositing	Construction & Demolition Exemption	Construction & Demolition Recycling	Non-Hazardous Waste Landfill	Hazardous Waste Landfill	Inert Waste Landfill	
Bleasau Green	0.0	0.3	NA	NA	NA	0.1	0.3	NA	0.0	0.0	15.9	15.9	7.8	NA	8.0	
Carrigilly	0.0	1.2	NA	NA	NA	0.2	0.8	NA	0.0	0.0	47.6	47.6	24.5	NA	26.4	
Cardiff	0.0	2.5	NA	NA	NA	0.3	1.8	NA	0.0	0.0	88.9	88.9	44.9	NA	48.0	
Merthyr Tydfil	0.0															

Appendix F: Hazardardous Waste facilities

F1 Locational criteria for Hazardardous Waste facilities

- F1.1 The following locational criteria for all types of Hazardous Waste facilities were first published in the Hazardous Waste Supplement to the first RWP, which was agreed by the MSG and published in July 2005.
- F1.2 The location of facilities can and should be assessed against a range of agreed criteria that are common to all types of waste management facility.
- F1.3 No research has been identified which supports attaching numeric values to criteria in terms of either quantity or distance. Therefore, because planning is a quasi-judicial process with the potential need to defend decisions at appeal and/or in the courts, and to provide supporting evidence, the criteria that are put forward are necessarily qualitative and not numeric.
- F1.4 Furthermore, because facilities for managing Hazardous Wastes are very varied in both type and size, the potential impacts vary widely in both nature and degree. Therefore, potential impacts cannot be generalised to any purpose. Standardised separation distances for example, are both meaningless and challengeable.
- F1.5 Locational criteria are of two kinds; positive and negative. Each is dealt with in turn below. These locational criteria should be considered alongside the policy and guidance given in TAN 21, and the policy and guidance contained in each LPA's development plan.
- F1.6 Positive criteria are those which are favourable to the development and which represent opportunities. Positive criteria are listed in below together with notes for guidance.

Positive Location Criteria	
Hazardous waste facilities should be located to take positive advantage of the following:	
Criterion	Guidance
Proximity / Accessibility	Sites should not be remote from settlements but should be close enough to be easily reached by employees and to allow 'casual monitoring'.
Geology	In the case of facilities where there is any possibility of contamination of soils or groundwater, sites with natural geological advantages such as clay deposits are to be preferred, as are sites which are inherently seismologically and geologically stable.
Existing land uses	Advantage should be taken of the location of existing land uses which can minimise adverse impacts, for example, sites of heavy industry, sewage works, existing landfill sites.

- F1.7 Negative criteria are those which should be avoided in making decisions on the siting of facilities. These can be used either to advise the preparation of a 'sieve map' to narrow down areas of search or to assess individual development proposals. Negative criteria are listed in below together with notes for guidance.

Negative Location Criteria	
Hazardous Waste facilities should not be located where they would have an adverse effect on, or be adversely affected by, any of the following:	
Criterion	Guidance
The amenity of sensitive uses	Sensitive uses, including, housing, medical facilities, educational establishments, recreation or tourist facilities, should not be so close as to suffer adverse amenity including pollution, dust, noise, gases or smells.
Nature conservation / ecology	Facilities should not be located in, or sufficiently near that they would have an adverse impact on, areas or sites designated for local, national or international protection such as SINC, SSSIs, SACs, RAMSAR sites, nor should they impact adversely on protected species.
Hydrology and hydrogeology	There should be no possibility of run off, spillage or leachate polluting surface or ground waters, whether or not they are used as a potable, agricultural or industrial water supply.
Geology	Facilities should not be located where there may be adverse geological impacts, avoiding, for example, areas of potential subsidence, faultlines and other areas of instability.
Landscape	Facilities should not be located where they will have an adverse impact upon statutorily protected landscapes.
Flood plains	Facilities should not impact on the performance of any flood plain, and neither the facility nor its access be liable to flooding.
Existing land uses	There should be no adverse impacts on existing land uses which cannot be mitigated.
Implementation of development proposals or allocations	Facilities should not be located so close to permitted or allocated sites that they prejudice the development of those sites.

- F1.8 These are criteria that relate generically to all categories of Hazardous Waste facilities. It is essential that each site is assessed on its merits in relation to the nature and scale of the proposed operation and the criteria serve as a checklist. In addition, ‘general planning criteria’ will also apply including visual and landscape impacts, accessibility and traffic impacts, and the requirement for good design.
- F1.9 The choice of location of any Hazardous Waste facility may need to be advised by an EIA - which would include a risk assessment – examining the possible consequences of failure of either procedures or materials. It should take account of both operations and arrangements on the site and movements to the site. The risk assessment will advise decision-making in respect of potential consequences beyond the confines of the site in the event of structural or process failure.
- F1.10 Subject to considerations of practicality, all facilities for managing materials classified as Hazardous Waste should have a recovery / retrieval plan for managing any pollution problems that may manifest themselves in the future.

F2 Summary of Site Requirements and Considerations for Hazardous Waste facilities

F2.1 The following summary of site requirements and considerations for Hazardous Waste facilities was first published in the Hazardous Waste Supplement to the first RWP, which was agreed by the MSG and published in July 2005.

Type of Facility	Typical Capacity Range	Land Requirements m2 if < 80,000 tpa	Land Requirements m2 if > 80,000 tpa	Examples of Wastes	Environmental and Public Health Issues	Visual Considerations	Locational Considerations
Civic Amenity site / Household Recycling Centre	3,000 to 25,000 tpa	1,200 minimum	No info available	Fridges, freezers, fluorescent tubes, batteries, oils, asbestos, household chemicals, LPG containers	<ul style="list-style-type: none"> • Potential for water pollution. • Potential for noise pollution. • Potential for litter. • Potential for traffic pollution from heavy vehicles. 	<ul style="list-style-type: none"> • Split-level facility with at least 10 roll-on/off skips and vehicle parking. 	<ul style="list-style-type: none"> • Should be located near to a centre of population to maximise usage and located to minimise the overall distance travelled by the waste. • Site should be of sufficient size for the circulation and manoeuvring of traffic within the site. • Location should take account of possible noise pollution. • Would increase vehicle traffic movements in the locality - public access and heavy vehicles. Potential for traffic queuing at peak times is a major issue. Should have good access by road to minimise congestion and reduce risk of accidents.
Transfer Station	No info available	Up to 10,000	10,000 upwards depending on throughput	Various	<ul style="list-style-type: none"> • Potential for water pollution. • Potential for odour, should be eliminated through process controls if undertaken within a building. • Potential for noise pollution. should be minimised if undertaken within a building. • Potential for traffic pollution from heavy vehicles. • Safe storage of chemical wastes, depending on size may require COMAH and/or hazardous substances planning regulations. 	<ul style="list-style-type: none"> • For liquid wastes: stacked and palletised drums, and bulk tanks – could be housed in standard industrial type building. • For solid wastes: industrial units with external storage of some segregated waste fractions. Storage arrangements dependant on material type. 	<ul style="list-style-type: none"> • Location should take account of possible odour pollution. • Location should take account of possible noise pollution. • Would increase heavy vehicle traffic movements in the locality. Should have good access by road to minimise congestion and reduce risk of accidents and should be located so as to minimise the overall distance travelled by vehicles. • Where possible, major facilities should be served by alternative modes of transport.
Electronic goods disassembly / refurbishing	No info available	Up to 14,000	14,000 upwards	Everyday household and office items such as TVs, fridges	<ul style="list-style-type: none"> • Potential for ground and water pollution. • Potential for noise pollution. • Potential for dust pollution. • Potential for traffic pollution from heavy vehicles. 	<ul style="list-style-type: none"> • Industrial units with external storage of some segregated waste fractions. Storage arrangements dependant on material type. 	<ul style="list-style-type: none"> • Impacts/considerations common to any manufacturing or demanufacturing operation.
End of Life Vehicle disassembly and recycling	No info available	Up to 10,000	10,000 upwards	Waste motor vehicles and residual wastes such as oils, petrol, antifreeze, tyres, batteries, airbags, etc	<ul style="list-style-type: none"> • Potential for ground and water pollution. • Potential for noise pollution. • Potential for dust pollution. • Potential for traffic pollution from heavy vehicles. 	<ul style="list-style-type: none"> • Modern facilities require industrial buildings to accommodate workshops and storage space in addition to metal processing and sorting equipment. • Vehicle de-pollution sites under ELV Directive likely to look like a modern garage. • Industrial character – could include open crushing, chopping, and stacking of metals. 	<ul style="list-style-type: none"> • Location would need to take account of potential noise pollution. • Location would need to take account of potential dust pollution. • Could increase vehicle movements in the locality. Should have good access by road to minimise congestion and reduce risk of accidents and should be located so as to minimise the overall distance travelled by vehicles.
Other physical treatment to reduce volume	No info available	10,000	No info available	Inorganic chemical process wastes, thermal process wastes, waste packaging, equipment containing asbestos oily wastes, Construction And Demolition Wastes	<ul style="list-style-type: none"> • Potential for water pollution. • Risk of odour but should be eliminated through process controls. • Potential for noise pollution. • Potential for traffic pollution from heavy vehicles. • Possible COMAH requirement depending on quantities stored and/or hazardous substances planning regulations. 	<ul style="list-style-type: none"> • Industrial process plant with palletised drums in stacks and bulk storage tanks. 	<ul style="list-style-type: none"> • Location would need to take account of potential odour pollution. • Location would need to take account of potential noise pollution. • Could increase vehicle movements in the locality. Should have good access by road to minimise congestion and reduce risk of accidents and should be located so as to minimise the overall distance travelled by vehicles.

Soil remediation and recycling	No info available	No info available	No info available	Contaminated soils	<ul style="list-style-type: none"> • Potential for ground and water pollution. • Risk of odour but, if undertaken within a building, should be eliminated through process controls. • Potential for noise pollution. • Potential for dust pollution. • Potential for traffic pollution from heavy vehicles. 	<ul style="list-style-type: none"> • Could include either/both: industrial buildings, silos and plant; and/or external bunded concrete pads. 	<ul style="list-style-type: none"> • May need large areas of land. • Location would need to take account of potential odour pollution. • Location would need to take account of potential noise pollution. • Location would need to take account of potential dust pollution. • Would increase vehicle movements in the locality. Should have good access by road to minimise congestion and reduce risk of accidents and should be located so as to minimise the overall distance travelled by vehicles. • Where possible, major facilities should be served by alternative modes of transport.
Other biological treatment to reduce volume and/or hazardous nature	No info available	10,000	No info available	Liquid, sludge or solid wastes. Oily water mixtures, other organic compounds.	<ul style="list-style-type: none"> • Potential for water pollution. • Risk of odour but should be eliminated through process controls. • Potential for noise pollution. • Potential for traffic pollution from heavy vehicles. • Possible COMAH requirement depending on quantities stored and/or hazardous substances planning regulations. 	<ul style="list-style-type: none"> • Sewage works type installation, tanks both enclosed and open, could be housed in an industrial type building. 	<ul style="list-style-type: none"> • Location would need to take account of potential odour pollution. • Location would need to take account of potential noise pollution. • Could increase vehicle movements in the locality. Should have good access by road to minimise congestion and reduce risk of accidents and should be located so as to minimise the overall distance travelled by vehicles.
Battery recycling	No info available	No info available	No info available	Used batteries	<ul style="list-style-type: none"> • Potential emissions to air. • Potential for ground and water pollution. • Potential for noise pollution. • Potential for dust pollution. • Potential for traffic pollution from heavy vehicles. 	<ul style="list-style-type: none"> • Industrial unit with external storage of some materials. 	<ul style="list-style-type: none"> • Location would need to take account of potential noise pollution. • Location would need to take account of potential dust pollution. • Could increase vehicle movements in the locality. Should have good access by road to minimise congestion and reduce risk of accidents and should be located so as to minimise the overall distance travelled by vehicles.
Oil reprocessing	No info available	No info available	No info available	Used oils	<ul style="list-style-type: none"> • Potential for ground and water pollution. • Potential for noise pollution. • Potential for traffic pollution from heavy vehicles. 	<ul style="list-style-type: none"> • Industrial process plant. 	<ul style="list-style-type: none"> • Location would need to take account of potential noise pollution. • Could increase vehicle movements in the locality. Should have good access by road to minimise congestion and reduce risk of accidents and should be located so as to minimise the overall distance travelled by vehicles.
Metal reprocessing	No info available	No info available	No info available	Used metals	<ul style="list-style-type: none"> • Potential emissions to air. • Potential for ground and water pollution. • Potential for noise pollution. • Potential for dust pollution. • Potential for traffic pollution from heavy vehicles. 	<ul style="list-style-type: none"> • Industrial process plant. 	<ul style="list-style-type: none"> • Location would need to take account of potential noise pollution. • Location would need to take account of potential dust pollution. • Could increase vehicle movements in the locality. Should have good access by road to minimise congestion and reduce risk of accidents and should be located so as to minimise the overall distance travelled by vehicles.
Other chemical treatment to reduce volume and/or hazardous nature	No info available	10,000	No info available	Mineral oils and oily water mixtures, kerosene, diesel, petrol, interceptor wastes, acids, alkalis and other inorganic chemical wastes	<ul style="list-style-type: none"> • Potential for ground and water pollution. • Risk of odour but should be eliminated through process controls. • Potential for noise pollution. • Potential for traffic pollution from heavy vehicles • Possible COMAH requirement depending on quantities stored and/or hazardous substances planning regulations. 	<ul style="list-style-type: none"> • Industrial process plant with palletised drums in stacks and bulk storage tanks. 	<ul style="list-style-type: none"> • Location would need to take account of potential odour pollution. • Location would need to take account of potential noise pollution. • Could increase vehicle movements in the locality. Should have good access by road to minimise congestion and reduce risk of accidents and should be located so as to minimise the overall distance travelled by vehicles.

Thermal treatment of soils	No info available	No info available	No info available	Contaminated soil	<ul style="list-style-type: none"> • Potential emissions to air. • Potential for ground and water pollution. • Risk of odour but should be eliminated through process controls. • Potential for noise pollution. • Potential for dust pollution. • Potential for traffic pollution from heavy vehicles 	<ul style="list-style-type: none"> • Industrial building with stack 	<ul style="list-style-type: none"> • Location would need to take account of potential odour pollution. • Location would need to take account of potential noise pollution. • Location would need to take account of potential dust pollution. • Would increase vehicle movements in the locality. Should have good access by road to minimise congestion and reduce risk of accidents and should be located so as to minimise the overall distance travelled by vehicles.
Vitrification	No info available	No info available	No info available	Materials with high mineral content such as asbestos, sludges, sediments and soils.	<ul style="list-style-type: none"> • Potential for water pollution • Potential emissions to air. • Risk of odour but should be eliminated through process controls. • Potential for noise pollution. • Potential for dust pollution. • Potential for traffic pollution from heavy vehicles. 	<ul style="list-style-type: none"> • Industrial building with stack. 	<ul style="list-style-type: none"> • Location would need to take account of potential odour pollution. • Location would need to take account of potential noise pollution. • Location would need to take account of potential dust pollution. • Could increase heavy vehicle traffic movements in the locality. Should have good access by road to minimise congestion and reduce risk of accidents and should be located so as to minimise the overall distance travelled by vehicles • Should be located to maximise Combined Heat and Power opportunities
Gasification / Pyrolysis	< 100,000 tpa	4,500 – 7,500	15,000 upwards	No info available	<ul style="list-style-type: none"> • Air emissions well inside Waste Incineration Directive standards. • Risk of odour but should be eliminated through process controls. • Potential for noise pollution, though good design and noise reduction features should ensure that noise levels can be kept to acceptable levels. • Potential for traffic pollution from heavy vehicles. • Potential for water pollution. • Residuals can be treated as aggregate. 	<ul style="list-style-type: none"> • Small/medium industrial buildings with stack (of a notably smaller scale than Mass Burn Incineration). • If the site is prominent and visually sensitive, the applicant should consider the overall design concept as a landmark building and be sensitive to the local vernacular and local architectural and cultural styles. 	<ul style="list-style-type: none"> • Location would need to take account of potential odour pollution. • Location would need to take account of potential noise pollution. • Could increase heavy vehicle traffic movements in the locality. Should have good access by road to minimise congestion and reduce risk of accidents and should be located so as to minimise the overall distance travelled by vehicles. • Should be located to maximise Combined Heat and Power opportunities.
Secondary blended fuel combustion plant powering another industrial process	No info available	No info available	No info available	Oils, solvents	<ul style="list-style-type: none"> • Emissions to air are treated by the Environment Agency in the same way as incineration and therefore the same criteria apply. • Potential for ground and water pollution. • Potential for noise pollution. • Potential for traffic pollution from heavy vehicles. 	<ul style="list-style-type: none"> • (Would be ancillary to another industrial use.) 	<ul style="list-style-type: none"> • (Would be ancillary to another industrial use.)
High temperature incineration with energy recovery	No info available	10,000	No info available	Hazardous healthcare wastes (e.g. cytotoxic medicines), oils, solvents	<ul style="list-style-type: none"> • Air emissions well inside Waste Incineration Directive standards. • Controlled releases: Waste Incineration Directive requires most stringent EU control of releases to air and water. • Risk of odour but should be eliminated through process controls. • Potential for water pollution. • Potential for noise pollution, though good design and noise reduction features should ensure that noise levels can be kept to acceptable levels. • Potential for traffic pollution from heavy vehicles. • Possible COMAH requirement depending on quantities stored and/or hazardous substances planning regulations. 	<ul style="list-style-type: none"> • Industrial plant, either looks like a chemical plant or can be housed in industrial type building, with stack. • If the site is prominent and visually sensitive, the applicant should consider the overall design concept as a landmark building and be sensitive to the local vernacular and local architectural and cultural styles. 	<ul style="list-style-type: none"> • Location would need to take account of potential odour pollution. • Location would need to take account of potential noise pollution. • Would increase heavy vehicle traffic movements in the locality. Should have good access by road to minimise congestion and reduce risk of accidents and should be located so as to minimise the overall distance travelled by vehicles. • Should be located to maximise Combined Heat and Power opportunities. • Where possible, major plants should be served by alternative modes of transport.

Landfill for Stable Non-Reactive Hazardous Wastes	No info available	No info available	No info available	Asbestos	<ul style="list-style-type: none"> • Potential for noise pollution. • Potential for dust pollution. • Potential for traffic pollution from heavy vehicles. 	<ul style="list-style-type: none"> • Similar to quarries. 	<ul style="list-style-type: none"> • Location would need to take account of potential noise pollution. • Location would need to take account of potential dust pollution. • Site should take advantage of existing topography so as to reduce the visual impact. • Would increase vehicle movements in the locality. Should have good access by road to minimise congestion and reduce risk of accidents. The necessity to locate these facilities in remote areas increases distance travelled by vehicles.
Landfill	No info available	Dependant on depth of fill and length of anticipated life	Dependant on depth of fill and length of anticipated life	Contaminated soil, filtercakes	<ul style="list-style-type: none"> • Potential for water pollution. • Landfill gas. • Potential for odour. • Potential for noise pollution. • Potential for dust pollution. • Potential for traffic pollution from heavy vehicles. 	<ul style="list-style-type: none"> • Similar to quarries. 	<ul style="list-style-type: none"> • Location would need to take account of groundwater issues • Location would need to take account of potential odour pollution. • Location would need to take account of potential noise pollution. • Location would need to take account of potential dust pollution. • Specialised geological requirements will restrict the areas suitable for landfill sites. • Site should take advantage of existing topography so as to reduce the visual impact. • Would increase vehicle movements in the locality. Should have good access by road to minimise congestion and reduce risk of accidents. The necessity to locate these facilities in remote areas increases distance travelled by vehicles. • Where possible, major sites should be served by alternative modes of transport.

Appendix G: Potentially available land area on existing and allocated B2 or major industry sites

The term ‘B2 employment sites and major industry sites’ is used here to include other land uses that have similar characteristics such as existing waste management sites, ports, some brownfield sites, and other similar sui generis land uses.

Local Authority Area	Name of site	Location	Owner	Developable Area (hectares)
Blaenau Gwent	Bryn Serth Road	Ebbw Vale	Private	14.0
	Rhyd-y-Blew	Ebbw Vale	WAG	12.1
	Rassau Extension (West)	Ebbw Vale	Private	11.4
	Rassau Extension (East)	Ebbw Vale	Private	7.4
	Rassau Industrial Estate	Ebbw Vale	Private	5.6
	Waun-y-Pound	Ebbw Vale	Local Authority	4.4
	Rising Sun Upper	Blaina	WAG	4.0
	Rassau Platform H	Ebbw Vale	Local Authority	3.6
	Marine Colliery	Ebbw Vale	Local Authority	2.4
	Silent Valley Landfill Site	Ebbw Vale	Local Authority	2.4
	Garden Festival Site -Development C	Ebbw Vale	Local Authority	2.0
	Cwmcraehen Lower	Nantyglo	Local Authority	1.8
	Crown Business Park Platform G	Tredegar	Local Authority	1.6
	Tafarnaubach (North)	Tredegar	Private	1.0
	Tafarnaubach (West)	Tredegar	Private	0.9
	Tafarnaubach (East)	Tredegar	Private	0.8
	Waun y Pound (North & Central)	Ebbw Vale	Joint Ownership	0.8
	Crown Business Park Platform B	Tredegar	WAG	0.7
	Tafarnaubach (Central)	Tredegar	Private	0.6
	Tafarnaubach (South)	Tredegar	Private	0.6
	Garden Festival Site -Development A	Ebbw Vale	Local Authority	0.5
	Crown Business Park Platform D	Tredegar	WAG	0.4
	All Sites			79.3
Caerphilly	Land at Oakdale Business Park (Plateau 1)	Oakdale	Local Authority	30.5
	Land at Hawtin Park (South parcel)	Pengam	Private	8.9
	Land at Oakdale Business Park (Plateau 2)	Oakdale	Local Authority	7.2
	Land at Dyffryn Business Park (South parcel)	Ystrad Mynach	Private	5.6

	Land at Heads of the Valleys	Rhymney	WAG	5.1
	Land at Dyffryn Business Park (North parcel)	Ystrad Mynach	Private	4.6
	Land at Hawtin Park (North parcel)	Pengam	Private	4.4
	Land at Oakdale Business Park (Plateau 3)	Oakdale	Local Authority	3.6
	Land at Trecenydd Industrial Estate	Caerphilly	Private	2.3
	Land at Oakdale Business Park (Plateau 4)	Oakdale	Local Authority	2.0
	Land at Western Industrial Estate	Caerphilly	Private	1.2
	Land at Nine Mile Point	Cwmfelinfach	Local Authority	1.1
	All Sites			76.5
Cardiff	Capital Business Park	Wentloog	Local Authority	10.1
	Brindley Road	Grangetown	Local Authority	9.5
	Prairie Site	Cardiff Docks	Private	8.1
	Wentloog Corporate Park	Wentloog	Joint Ownership	7.3
	Land Adjacent to Freight Terminal	Wentloog	Private	6.1
	Texaco Tank Farm	Cardiff Docks	Private	6.1
	Trident Park	Cardiff Bay	Private	4.6
	Land adjacent to Acer Building	Wentloog	WAG	4.5
	Pengam Green	Cardiff Bay	WAG	2.4
	Pacific Business Park	Cardiff Bay	Private	1.6
	Cardiff Business Park	Llanishen	Private	1.2
	Roath Basin/Junction Lock	Cardiff Bay	Private	1.0
	Tremorfa Industrial Estate	Cardiff Bay	Private	0.4
	Tyndall Street	Cardiff Bay	WAG	0.2
	All Sites			63.1
Merthyr Tydfil	East Merthyr	Goatmill Road	Local Authority	9.9
	Willows South	Abercanaid	Private	2.1
	Georgetown Plateau	Georgetown	Local Authority	1.8
	Willows North	Abercanaid	Private	1.7
	Dragonparc	Abercanaid	Private	1.7
	Willows North	Abercanaid	Private	1.2
	Dragonparc	Abercanaid	Private	0.6
	Former Button factory site	Goatmill Road	Private	0.5
	Goatmill Road	Goatmill Road	Local Authority	0.4
	All Sites			19.9
Monmouthshire	Quaypoint	Magor	Private	16.3
	Grove Farm	Llanfoist, Abergavenny	Private	4.2

	Mamhilad	Pontypool	WAG	2.1
	Wonastow Road Phase 1	Monmouth	WAG	2.0
	Ross Road	Abergavenny	Private	1.3
	All Sites			25.9
Newport	Llanwern	Llanwern, Newport	Private	39.5
	Queensway Meadows East	Queensway Meadows, Newport	WAG	35.4
	Solutia	Traston Road, Newport	Private	28.3
	Sites 3& 4 Solutia	Traston Road, Newport	Private	28.3
	Queensway Meadows	Tatton Road, Newport	WAG	17.2
	Site 1 Solutia	Traston Road, Newport	Private	4.0
	Nash Mead South	Queensway Meadows, Newport	Private	2.1
	Rogerstone Railway sidings (2)	Wern Ind. Estate, Rogerstone	Private	0.9
	Site 2 Solutia	Traston Road, Newport	Private	0.8
	Freshwater	Queensway Meadows, Newport	Private	0.7
	Newport Docks (NV3)	Newport Docks, Newport	Private	0.7
	Newport Business Centre	Corporation Rd, Newport	Private	0.6
	Site 3 Solutia	Traston Road, Newport	Private	0.6
	Site 4 Solutia	Traston Road, Newport	Private	0.4
	Clearwater Road	Queensway Meadows, Newport	Private	0.4
	Land adj unit 22	Maesglas Industrial Est., Newport	Private	0.3
	Stephenson St Ind. Estate	Stephenson st, Newport	Local Authority	0.2
	Newport Docks	Newport Docks, Newport	Private	0.2
	Orb Industrial Estate	Stephenson St, Newport	Local Authority	0.2
	Longditch Road	Queensway Meadows, Newport	WAG	1.3
	All Sites			162.1
Powys (South)	All Sites			
Rhondda Cynon Taf	Parc Eirin (B,C,D,E,G,H)	Tonyrefail	Private	30.5
	Coed Ely	Tonyrefail	WAG	18.0
	Former Phurnacite Land	Abercwmbi	Private	16.3
	Cwm (*No Noxious Processes)	Beddau	Private	8.5
	Garth Business Park	Talbot Green	Private	6.4
	Pirelli Cables	Trecynon	Private	5.2
	Llantrisant Business Park	Llantrisant	Private	4.9

	Parc Nantgarw 2 and 5B	Taffs Well	Private	4.9
	Aberaman Park Industrial Estate Sites A,B,E,F,G,H	Aberaman	Private	4.8
	Hirwaun Industrial Estate Sites A, B, D, E	Hirwaun	Private	4.4
	Ynysallan extension	Llantrisant	Private	4.4
	North of Fifth Avenue Hirwaun Industrial Estate	Hirwaun	Private	4.4
	Rear of Staedtler	Pontyclun	Private	4.2
	Dinas Isaf	Tonyrefail	Private	4.1
	N.W. of CPL Ansit Plant Aberaman Industrial Estate	Aberaman	Private	3.8
	CEM Gilfach Road	Tonyrefail	Private	3.3
	Ynysyplwm F	Llantrisant	Private	2.9
	Gelli Isaf	Trecynon	Private	2.9
	South of Main Avenue Hirwaun Industrial Estate	Hirwaun	Private	2.4
	Canal Road/Cardiff Road	Cwmbach	Private	1.6
	Gellihirion South	Pontypridd	Private	1.5
	Hetty	Pontypridd	Private	1.5
	Cwm Cynon	Mountain Ash	Private	1.2
	Robertstown Industrial Estate	Aberdare	Private	0.9
	Pontycynon Industrial Estate extension	Abercynon	Private	0.7
	West of Bryngelli Industrial Estate	Hirwaun	Private	0.7
	All Sites			143.8
Torfaen	Kays & Kears	Blaenavon	WAG	7.1
	Uskvale Park	Pontypool	WAG	5.7
	Mamhilad Technology Park	Pontypool	WAG	5.2
	South Pontypool Industrial Estate	Pontypool	Private	2.4
	Gwenallt	Pontypool	Local Authority	2.0
	Panteg	Pontypool	Private	1.2
	Fibreglass,Pontyfelin(A)	Pontypool	Private	0.8
	Gilchrist Thomas North	Blaenavon	Local Authority	0.8
	Lower Mill(C)	Pontypool	Private	0.4
	All Sites			25.6
Vale of Glamorgan	Land to South East of Junction 34, M4(Miskin)	Miskin	Private	54.2
	Cardiff International Airport Business Park	Rhoose, Barry	Joint Ownership	20.0
	Vale Business Park	Llandow, Cowbridge	Private	10.5
	Cardiff International Airport Business Park	Rhoose, Barry	Joint Ownership	10.4
	Barry Docks	Barry	Private	9.0
	Llandow Trading Estate	Llandow, Cowbridge	Private	7.3

	Cardiff International Airport Business Park	Rhoose, Barry	Local Authority	5.7
	Sully Moors Road	Barry	Private	4.9
	Wimbourne Road, Barry Docks	Barry	Private	4.1
	Rhoose Quarry (south of Airport)	Barry	Private	2.9
	Marley Tile Site	St. Mary Hill, Cowbridge	Private	0.8
	Vale Business Park	Llandow, Cowbridge	Private	0.8
	Vale Business Park	Llandow, Cowbridge	Private	0.8
	Atlantic Trading Estate	Barry	Local Authority	0.6
	Atlantic Trading Estate	Barry	Local Authority	0.5
	All Sites			132.5
SE Wales			All WAG	123.4
			All Local Authority	105.0
			All Private	461.8
			All Joint Ownership	38.5
	All Sites			728.7

Appendix H: Areas of Search – SA objectives, criteria and weightings.

Sustainability Appraisal Objectives	GIS Analysis Criteria	Weighting Open-Air facility	Weighting In-Building facility
Ensure prudent use of land & resources	Landfill Site – Receiving / intending to receive waste	1	1
	Quarry site	1	1
	Agricultural Land Classification Grade 4-5	2	2
	Landfill Site – Ceased receiving waste / not reached definitive closure	3	2
	Green Wedges	3	3
	Agricultural Land Classification Grade 3	3	3
	Industrial Site (classified as B2)	4	1
	Agricultural Land Classification Grade 1-2	4	4
	Existing Waste Management Facility (non-landfill) (REGIS)	n/a	1
Minimise greenhouse gas emissions	Ports / Docks <5km	2	2
	Urban Area: <10km (i.e.>10,000 pop)	2	2
	Urban Area: 10-50km (i.e. <10,000 pop)	2	2
	Urban Area: >50km (i.e. <10,000 pop)	3	3
Minimise adverse effects on air quality	Air Quality Management Area	4	4
	Residential Development: <250m	4	3
Protect & enhance the landscape, townscape & cultural heritage of Wales	National Parks: <1km	3	3
	AONB: <1km	3	3
	LandMap: Visually Outstanding	3	3
	LandMap: High Quality	3	3
	Special Landscape Area (or equivalent)	3	3
	Historic Landscape: Special	3	3
	World Heritage Sites: arc of view	4	4
	Scheduled Ancient Monuments: 100-500m (to accommodate setting)	4	4
	Heritage Coast	4	4
	Historic Landscape: Outstanding	4	4
	World Heritage Sites	5	5
	National Parks	5	5
	Areas of Outstanding Natural Beauty (AONB)	5	5
	Scheduled Ancient Monuments & within 100m	5	5
	Historic Park and Garden and within 100m	5	5
	Historic Park and Garden: 100-250m	5	4
Minimise adverse effects on water quality	Minor Aquifer	3	n/a
	River Quality Objectives RE 1 & 2: 250-500m	3	3
	River Quality Objectives RE 3 & 4: 100-250m	3	3
	Surface Water Protection Zone: <500m	4	4
	River Quality Objectives RE 1 & 2: <250m	4	3
	River Quality Objectives RE 3 & 4: <100m	4	3
	Groundwater Source Catchment Area Zones I	5	5
	Groundwater Source Catchment Area Zones II	5	4
	Groundwater Source Catchment Area Zones III	5	3
	Major Aquifer	5	3
	Lakes and Rivers: Exclude	5	5
Avoid increasing flood risk	TAN 15 Layer C1	3	3
	TAN 15 Layer C2	4	4
Protect biodiversity	SAC: 1-2km	3	3
	SAC: 2-10km	3	n/a
	SPA: 1-2km	3	3
	SPA: 2-10km	3	n/a
	Ramsar Site: 1-2km	3	3
	Ramsar Site: 2-10km	3	n/a
	SSSI: 500m-1km	3	3
	SSSI: 1-2km	3	3
	NNR: 1-2km	3	3
	Local Nature Reserve	3	3
	SAC: <100m	4	4
	SAC: 100m-1km	4	3
	SPA: <100m	4	4
	SPA: 100m-1km	4	3
	Ramsar Site: <100m	4	4
	Ramsar Site: 100m-1km	4	3
	SSSI: <100m	4	4
	SSSI: 100-500m	4	3
	NNR: <100m	4	4
	NNR: 100m-1km	4	3
	Ancient Woodland: <250m	4	4
	Special Area of Conservation (SAC)	5	5
	Special Protection Area (SPA)	5	5
	Ramsar Site	5	5
	Site of Special Scientific Interest (SSSI)5	5	5
	National Nature Reserve (NNR)	5	5
	Ancient Woodland	5	5
Provide employment opportunities & support long-term jobs & skills	Urban Area: <10km (i.e. >10,000 pop)	2	2
Minimise adverse effects on residential property	Residential Development: 251-500m	3	n/a
	Residential Development: <250m	4	3
	Residential Development	5	5
Minimise the increased cost of waste management	Primary Road Network (A road / Motorway): <1km & <10km from Urban Area (i.e. >10,000 pop)	1	1
	Urban Area: <10km (i.e. >10,000 pop)	2	2
	Urban Area: 10-50km (i.e. >10,000 pop)	2	2
	Primary Road Network (A road / Motorway): <1km	2	2
	Urban Area: >50km (i.e. >10,000 pop)	3	3
	Slope 1:3 – 1:4	3	3
	Slope >1:3	4	4
Protect local amenity	Common Land / Open Country	3	3
	Public Forests	3	3
	Country Parks	4	4
Minimise adverse effects on public health and avoid increasing health inequalities	Residential Development: 251-500m	3	n/a
	Residential Development: <250m	4	3
	Residential Development	5	5

Appendix I: Areas of Search maps

I1 Principles for the Use of the Areas of Search Maps & GIS Data

I1.1 The following two broad principles for the viewing and use of the Areas of Search maps and GIS data must be noted:

- The sole purpose of the Areas of Search maps and GIS data is to identify Areas of Search at a strategic level for use by LPAs during the LDP preparation process – as a starting point for more detailed local level assessments to identify appropriate sites for waste management facilities in LDPs.
- Because the sole purpose of the Areas of Search maps and GIS data is to identify Areas of Search at the strategic level, the Areas of Search maps and GIS data must not be used by any organization or individual to determine the appropriateness of proposals for individual waste management facilities. The Areas of Search maps and GIS data must not be used by LPAs as a development control tool.

I1.2 The following detailed principles for the viewing and use of the Areas of Search maps and GIS data must also be noted.

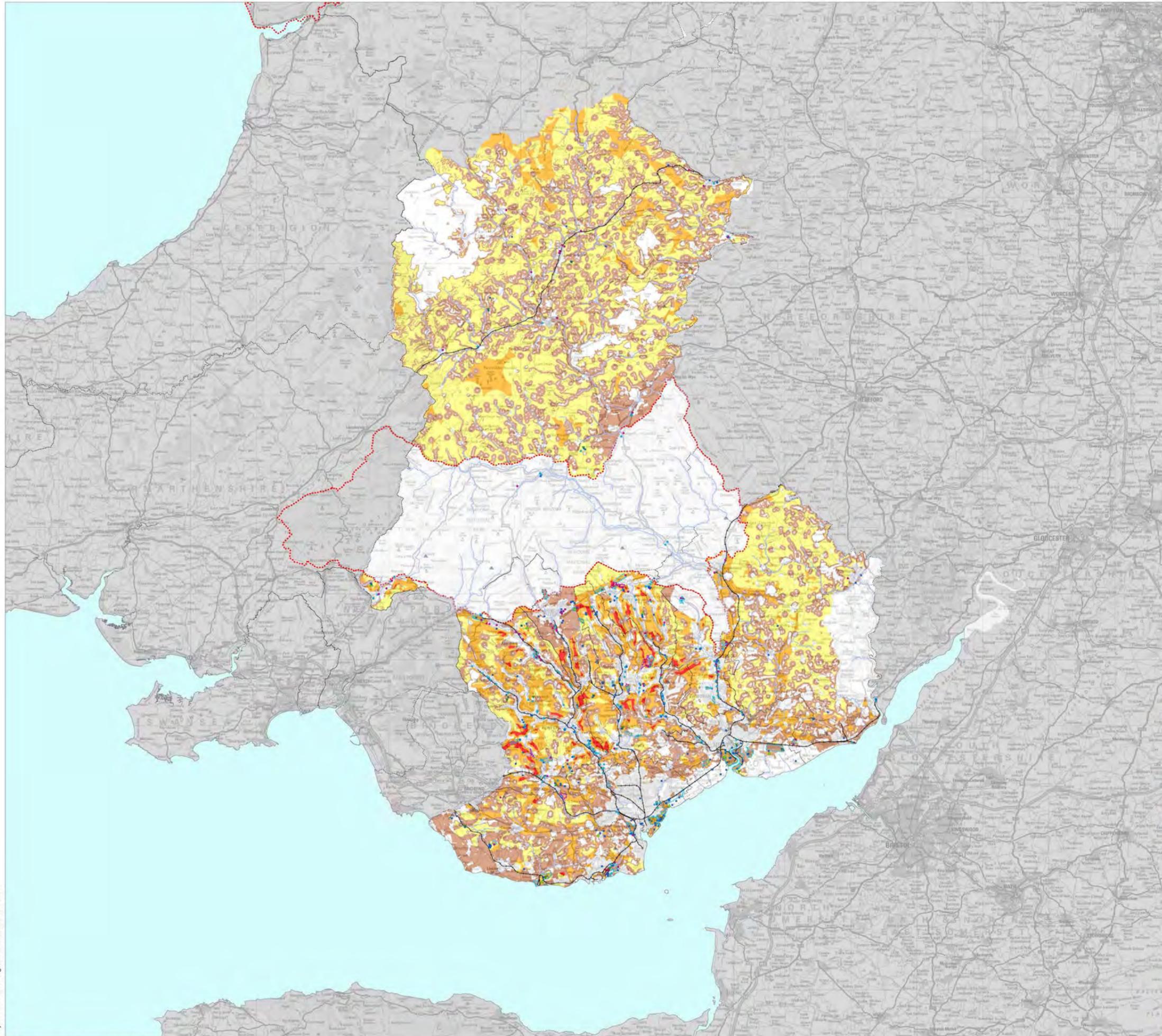
- The locations that have been identified as 2nd, 3rd or 4th Areas of Search must not be excluded from consideration as appropriate areas.
- The Areas of Search maps and GIS data must not be used by LPAs in isolation as the definitive guide to site selection; the ranking of a particular Area of Search effectively establishes the issues that would need to be addressed in more detailed local level assessments.
- The Areas of Search map for in-building facilities does not prejudice the development of new in-building waste management facilities on any existing land use class B2 ‘general industrial’ employment sites, existing major industry areas¹⁶⁰, or new B2 sites allocated in development plans.
- Within the Areas of Search maps there are a number of existing waste management facilities that have been identified to be in areas that are, by virtue of the surrounding constraints, shown to be excluded. It should be acknowledged that in some circumstances the associated impacts of a waste management facility are being appropriately mitigated against at these sites.

I1.3 More detail on the above principles is set out in section 12.3 ‘Principles for the Use of the Areas of Search Maps and GIS Data’.

¹⁶⁰ The term ‘B2 employment sites and major industry areas’ is used here to include other land uses that have similar characteristics such as existing waste management sites, ports, some brownfield sites, and other similar sui generis land uses.

I2 Areas of Search for In-Building Facilities

- I2.1 The Area of Search maps were created for printing and viewing at A0 size. The maps have been reproduced at A4 or A3 size here within the body of the RWP 1st Review to provide only an indication of their contents. Files for printing A0 size can be downloaded from the RWP website and hard copy A0 sized prints may be requested from the Lead Authority.



Legend

- 1st Areas of Search
- 2nd Areas of Search
- 3rd Areas of Search
- 4th Areas of Search
- Railways
- Rivers
- ⋯ National Park Boundary
- ⋯ County Boundary
- T Ports and Docks
- ▲ Landfill - Receiving/Intending to Receive Waste
- ▼ Landfill - Ceased Receiving Waste - Not reached definitive closure
- ⚡ Quarry
- Existing Waste Management Facility (REGIS)

B2 Employment Land Site Boundary (>20Ha)

- ⬜ Allocated
- ⬜ Existing

B2 Employment Land Site Centroid (<20Ha)

- Allocated
- Existing

NOTES:

A) Industrial land is shown and symbolised as either a site relating to 'existing' or 'allocated' industrial land. Both 'existing' and 'allocated' industrial land may offer potential for the locating of sub-regional waste facilities and are weighted as 1 in the schedule, this being the highest level. The weighting of other underlying and surrounding constraints will determine the final Area of Search ranking.

It should be noted that in due course all 'allocated' industrial land will be considered again through the Local Development Plan process in order to review its continued allocation and suitability in light of current planning policy and guidelines.

B) The hardcopy maps are indicative. Please use the digital maps and data for more detail.

C) Categorisation of landfills: For the purposes of the project, EA Wales has re-categorised the licensed/permitted landfill sites in Wales according to the following 3 categories:

1. Licensed/permitted landfills which are actively receiving (or intending to receive) waste
2. Licensed/permitted landfills which have closed but are not yet fully restored
3. Licensed/permitted landfills which are fully restored

Approach:
Adapted from the standard polygon layer held on the Agency's GIS system, the layer has been trimmed to Wales' political boundary. It includes the following additional fields:

- 'Actv_Clo' identifies the status of each landfill as either 1, 2, 3 or 4 in accordance with the definitions below.
- 'Notes' - provides an explanation of some apparent anomalies in the data set

1. This applies to landfill sites which are currently receiving or intending to receive waste this includes:
 - a) sites which now operate under a Pollution and Prevention Control (PPC) permit
 - b) sites whose PPC permit application is currently under determination
 - c) sites whose PPC permit was refused but have not yet reached the deadline to cease tipping under a closure notice
 - d) sites that did not make a PPC permit application but have not yet reached the deadline to cease tipping under a closure notice
2. This applies to landfill sites which have ceased receiving waste but have not yet reached definitive closure in accordance with the Landfill (England and Wales) Regulations 2002, as amended
3. This applies to landfill sites which have reached definitive closure in accord with Regulation 15 (4) of the Landfill (England and Wales) Regulations 2002, but have not yet reached the end of the closure and aftercare period enabling the licence holder to surrender their licence. This category is a proxy for fully restored but actually refers to definitive closure which has the meaning stated in regulatory guidance note 7

For the purposes of determining definitive closure, restoration shall mean the installation of the cap, drainage layer and such restoration soils as are required to protect the cap, i.e. the pollution prevention structures. It need not include full restoration, planting and contouring as may be required by any planning permission.

4. This applies to a number of landfill sites on the layer that should be excluded from the GIS for reasons explained in the notes field.

Recommendation: This layer be used for the areas of search project and displayed in accordance with the 'Active_Clo' field whereby:

- polygons in category 1 are identified as 1st areas of search for in building and open air facilities.
- polygons in category 2 as 3rd areas of search for open air and 2nd areas of search for in-building facilities.
- no additional weight is applied to polygons in either category 3 and 4.

(weightings agreed with Regional Waste Groups)

b	01/06/07	Re-modelling	RN	
b	16/01/07	General amendments	RN	
a	05/01/07	4th Area Search & National Park added	RN	
Rev:	Date:	Amendment:	Name:	Checked:

■ Data Source: RPS 2007, WAG, EA, LAs, OS,
Status: FINAL

RPS

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■ Client: Regional Waste Groups
Project: Mapping Areas of Search for Sub-Regional Waste Sites

Title: **Areas of Search, In Building Facility, South East**

Scale: A0 @ 1:200,000

0 10 20 km

N

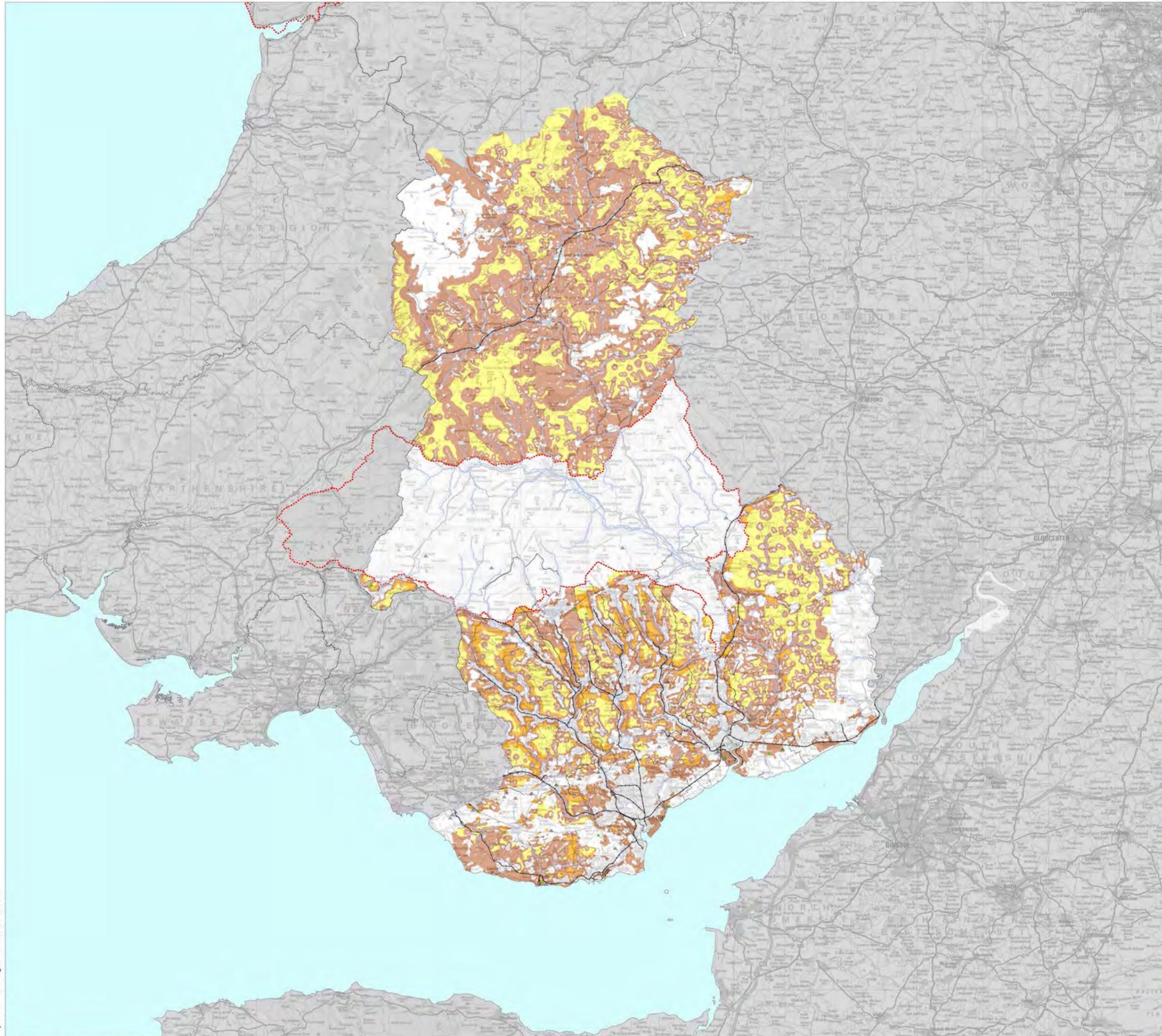
Date: 05/06/07 Datum: OSGB36 Projection: BNG
Drawn: R Northam Checked: Job Ref: JER7167

■ Figure No: **JER7167-014** Revision: **c**

Project Ref: J:\Drawings\JER7167\JER7167-014c

I3 Areas of search for Open-Air Facilities

- I3.1 The Area of Search maps were created for printing and viewing at A0 size. The maps have been reproduced at A4 or A3 size here within the body of the RWP 1st Review to provide only an indication of their contents. Files for printing A0 size can be downloaded from the RWP website and hard copy A0 sized prints may be requested from the Lead Authority.



Legend

- 1st Areas of Search
- 2nd Areas of Search
- 3rd Areas of Search
- 4th Areas of Search
- Railways
- Rivers
- National Park Boundary
- County Boundary
- T Ports and Docks
- Landfill - Receiving/Intending to Receive Waste
- Quarry

NOTES:

A) Industrial land is shown and symbolised as either a site relating to 'existing' or 'allocated' industrial land. Both 'existing' and 'allocated' industrial land may offer potential for the locating of sub-regional waste facilities and are weighted as 1 in the schedule, this being the highest level. The weighting of other underlying and surrounding constraints will determine the final Area of Search ranking.

It should be noted that in due course all 'allocated' industrial land will be considered again through the Local Development Plan process in order to review its continued allocation and suitability in light of current planning policy and guidelines.

B) The hardcopy maps are indicative. Please use the digital maps and data for more detail.

C) Categorisation of landfills: For the purposes of the project, EA Wales has re-categorised the licensed/permitted landfill sites in Wales according to the following 3 categories:

1. Licensed/permitted landfills which are actively receiving (or intending to receive) waste
2. Licensed/permitted landfills which have closed but are not yet fully restored
3. Licensed/permitted landfills which are fully restored

Approach:
Adapted from the standard polygon layer held on the Agency's GIS system, the layer has been trimmed to Wales' political boundary. It includes the following additional fields:

- 'Active_Clo' - identifies the status of each landfill as either 1, 2, 3 or 4 in accordance with the definitions below.
- 'Notes' - provides an explanation of some apparent anomalies in the data set

1. This applies to landfill sites which are currently receiving or intending to receive waste this includes:
 - a) sites which now operate under a Pollution and Prevention Control (PPC) permit
 - b) sites whose PPC permit application is currently under determination
 - c) sites whose PPC permit was refused but have not yet reached the deadline to cease tipping under a closure notice
 - d) sites that did not make a PPC permit application but have not yet reached the deadline to cease tipping under a closure notice
2. This applies to landfill sites which have ceased receiving waste but have not yet reached definitive closure in accordance with the Landfill (England and Wales) Regulations 2002, as amended
3. This applies to landfill sites which have reached definitive closure in accord with Regulation 15 (4) of the Landfill (England and Wales) Regulations 2002, but have not yet reached the end of the closure and aftercare period enabling the licence holder to surrender their licence. This category is a proxy for fully restored but actually refers to definitive closure which has the meaning stated in regulatory guidance note 7

For the purposes of determining definitive closure, restoration shall mean the installation of the cap, drainage layer and such restoration soils as are required to protect the cap, i.e. the pollution prevention structures. It need not include full restoration, planting and contouring as may be required by any planning permission.

4. This applies to a number of landfill sites on the layer that should be excluded from the GIS for reasons explained in the notes field.

Recommendation: This layer is used for the areas of search project and displayed in accordance with the 'Active_Clo' field whereby:

- polygons in category 1 are identified as 1st areas of search for in building and open air facilities.
- polygons in category 2 as 3rd areas of search for open air and 2nd areas of search for in-building facilities.
- no additional weight is applied to polygons in either category 3 and 4.

(weightings agreed with Regional Waste Groups)

b	01/06/07	Re-modelling	RN	
b	16/01/07	General amendments	RN	
a	05/01/07	4th Area Search & National Park added	RN	
Rev:	Date:	Amendment:	Name:	Checked:

Data Source: RPS 2007, WAG, EA, LAs, OS,
Status: FINAL



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Client: Regional Waste Groups
Project: Mapping Areas of Search for Sub-Regional Waste Sites

Title: Areas of Search, Open Air Facility, South East

Scale: A0 @ 1:200,000
 0 10 20 km

Date: 05/06/07 **Datum:** OSGB36 **Projection:** BNG
Drawn: R Northam **Checked:** Job Ref: JER7167

Figure No: JER7167-011 **Revision:** c

Appendix J: SEA issues

Table J1: Fulfillment of SEA Directive Requirements

SEA Directive Requirements	Where / How Fulfilled
Preparation of an environmental report in which the likely significant effects on the environment of implementing the plan, and reasonable alternatives taking into account the objectives and geographical scope of the plan, are identified, described and evaluated.	
a) An outline of the contents, main objectives of the plan, and the relationship with other relevant plans and programmes;	<p>SEA of the Strategic Waste Management Options (Hyder, 2007)</p> <ul style="list-style-type: none"> • Section 2: The RWP 1st Review • Section 4: Links to other relevant Policies, Plans and Programmes <p>Identifying Areas of Search for Regional Waste Facilities (RPS, 2007)</p> <ul style="list-style-type: none"> • Section 2.1: Preamble • Section 2.2: Overview of the Project • Section 4.1: Background • Section 5.2: Review of other plans and programmes • Section 5.3: Sustainability Issues
b) The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan;	<p>SEA of the Strategic Waste Management Options (Hyder, 2007)</p> <ul style="list-style-type: none"> • Section 5: SEA Objectives, Baseline and Context <p>Identifying Areas of Search for Regional Waste Facilities (RPS, 2007)</p> <ul style="list-style-type: none"> • Section 5.1: Baseline Information • Section 5.3: Sustainability Issues
c) The environmental characteristics of the areas likely to be significantly affected;	<p>SEA of the Strategic Waste Management Options (Hyder, 2007)</p> <ul style="list-style-type: none"> • Section 5: SEA Objectives, Baseline and Context <p>Identifying Areas of Search for Regional Waste Facilities (RPS, 2007)</p> <ul style="list-style-type: none"> • Section 5.1: Baseline Information • Section 5.3: Sustainability Issues • Section 7.1: Data sources and Explanation • Section 8.3: Description of Environmental Effects
d) 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 Directives 79/409/EEC and 92/43/EEC;	<p>SEA of the Strategic Waste Management Options (Hyder, 2007)</p> <ul style="list-style-type: none"> • Section 5: SEA Objectives, Baseline and Context <p>Identifying Areas of Search for Regional Waste Facilities (RPS, 2007)</p> <ul style="list-style-type: none"> • Section 5.1: Baseline Information • Section 5.3: Sustainability Issues
e) The environmental protection objectives, established at International, Community, or national level, which are relevant to the plan and the way those objectives and any environmental considerations have been taken into account during its preparation;	<p>SEA of the Strategic Waste Management Options (Hyder, 2007)</p> <ul style="list-style-type: none"> • Section 4: Links to other relevant Policies, Plans and Programmes • Section 5: SEA Objectives, Baseline and Context <p>Identifying Areas of Search for Regional Waste Facilities (RPS, 2007)</p> <ul style="list-style-type: none"> • Section 5.2: Review of other plans and programmes • Section 5.3: Sustainability Issues • Section 6.2: Key Components of the Sustainability Appraisal Framework • Section 6.3: The Sustainability Appraisal Framework
f) The likely significant effects on the environment, including on issues such as	<p>SEA of the Strategic Waste Management Options (Hyder, 2007)</p> <ul style="list-style-type: none"> • Section 6: Plan Options and Assessment

biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors;	<p>Identifying Areas of Search for Regional Waste Facilities (RPS, 2007)</p> <ul style="list-style-type: none"> Section 8.3: Description of Environmental Effects.
g) The measures envisaged to prevent, reduce and as fully as possible off-set any significant adverse effects on the environment of implementing the plan or programme;	<p>SEA of the Strategic Waste Management Options (Hyder, 2007)</p> <ul style="list-style-type: none"> Section 6: Plan Options and Assessment.
	<p>Identifying Areas of Search for Regional Waste Facilities (RPS, 2007)</p> <ul style="list-style-type: none"> Outline Mitigation for Detailed Stage Areas of Search Maps
h) An outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the required information;	<p>SEA of the Strategic Waste Management Options (Hyder, 2007)</p> <ul style="list-style-type: none"> Section 3: SEA Appraisal Methodology Section 6: Plan Options and Assessment.
	<p>Identifying Areas of Search for Regional Waste Facilities (RPS, 2007)</p> <ul style="list-style-type: none"> Section 2.4: Sustainability Appraisal Process Section 4.2: Options / Alternatives. Section 6.1: Overall Approach Section 6.2: Key Components of the Sustainability Appraisal Framework Section 6.3: The Sustainability Appraisal Framework Section 6.4: Limitations and Assumptions Section 8.1: Detailed Results Section 8.2: Definitive Areas of Search
i) A description of measures envisaged concerning monitoring in accordance with Article 10;	<p>SEA of the Strategic Waste Management Options (Hyder, 2007)</p> <ul style="list-style-type: none"> Section 7: Monitoring Framework
	<p>Identifying Areas of Search for Regional Waste Facilities (RPS, 2007)</p> <ul style="list-style-type: none"> Section 8.7: Monitoring
j) A non-technical summary of the information provided under the above headings.	<p>SEA of the Strategic Waste Management Options (Hyder, 2007)</p> <ul style="list-style-type: none"> Provided at the beginning of the document
	<p>Identifying Areas of Search for Regional Waste Facilities (RPS, 2007)</p> <ul style="list-style-type: none"> Provided at the beginning of the document
Consultation	
<ul style="list-style-type: none"> authorities with environmental responsibility, when deciding on the scope and level of detail of the information to be included in the environmental report 	<p>SEA of the Strategic Waste Management Options (Hyder, 2007)</p> <ul style="list-style-type: none"> Section 17: Consultation Provisions
	<p>Identifying Areas of Search for Regional Waste Facilities (RPS, 2007)</p> <ul style="list-style-type: none"> Chapter 3: Scoping
<ul style="list-style-type: none"> authorities with environmental responsibility and the public shall be given an early and effective opportunity within appropriate time frames to express their opinion on the draft plan or programme and the accompanying Environmental Report before the adoption of the plan or programme 	<p>The Consultation Draft RWP 1st Review and the two Environmental Reports were the subject of consultation 15 October 2007 to 24 December 2007 and during this time were available for download from the website.</p>
Decision making	
Taking the environmental report and the results of the consultations into account in decision-making	<p>Paras 9.2.1, 12.2.5 to 12.2.10, and 14.4.2 to 14.4.4 summarise how the Environmental Report and the results of consultations have been taken into account in decision making.</p>

Provision of information on the decision	
<p>When the plan or programme is adopted, the public and any countries consulted shall be informed and the following made available to those so informed:</p> <ul style="list-style-type: none"> • the plan or programme as adopted; • a statement summarising how environmental considerations have been integrated into the plan or programme and how the Environmental Report and the results of consultations have been taken into account in decision making, and the reasons for choosing the plan or programme as adopted, in the light of the other reasonable alternatives dealt with; and • the measures decided concerning monitoring 	<ul style="list-style-type: none"> • Para 13.5.10 of the RWP 1st Review document contains a statement summarising how environmental considerations have been integrated into the plan or programme and how the Environmental Report and the results of consultations have been taken into account in decision making, and the reasons for choosing the plan or programme as adopted, in the light of the other reasonable alternatives dealt with • Section 13.6 ‘Monitoring’ and Appendix J, Table J3, of the RWP 1st Review sets out the measures decided concerning monitoring. <p>After RWP 1st Review is endorsed by each of the LPAs and agreed by the WAG the public will be informed through the RWP website at www.sewaleswasteplan.org.</p>

Table J2: SEA objectives and indicators / criteria

SEA topic	RWP Objective	SEA of the Strategic Waste Management Options (Hyder, 2007)	Identifying Areas of Search for Regional Waste Facilities (RPS, 2007)
		Indicators	Mapped Criteria
Biodiversity, Fauna and Flora	Protect biodiversity and valuable sites	<ul style="list-style-type: none"> • Number of sites in favourable condition • Number of sites in unfavourable condition as a result of waste management • Number of priority species/habitats stable or increasing • Number of priority species / habitats declining as a result of waste management operations 	<ul style="list-style-type: none"> • Special Area of Conservation (SAC) • Special Protection Area (SPA) • Ramsar site • Site of Special Scientific Interest (SSSI) • National Nature Reserve (NNR) • Local Nature Reserve • Ancient woodland
Population and human health	<p>Minimise adverse impacts on air quality and public health</p> <p>Minimise local transport impacts</p> <p>Provide employment opportunities</p> <p>Protect local amenity</p>	<ul style="list-style-type: none"> • Emissions which are injurious to public health • Dioxin emissions • Total waste kilometres • Transport along roads other than motorways • Number of jobs likely to be created • Extent of noise, litter and vermin problems • Extent of odour problems • No. of odour complaints recorded by the Environment Agency and local authorities • Extent of dust problems 	<ul style="list-style-type: none"> • Air quality management area • Residential development • Common land / open country • Country parks • Public forests
Soil	<p>Ensure prudent use of land and other resources</p> <p>Safeguard soil quality</p>	<ul style="list-style-type: none"> • Landtake • Emissions contributing to soil acidification • Percentage of new facilities on brownfield sites • Percentage of geological SSSI and RIGS in favourable condition • Number of geological SSSI and RIGS in unfavourable condition as a result of waste management operations 	<ul style="list-style-type: none"> • 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 • Green wedges
Water	<p>Minimise adverse effects on water quality</p> <p>Minimise requirements for water use</p>	<ul style="list-style-type: none"> • Emissions contributing to eutrophication • Extent of water pollution • Water requirements • Amount of water recycled within processes 	<ul style="list-style-type: none"> • Groundwater catchment Area Zones • Zone of special interest • Surface water protection zone • Major aquifer • Minor aquifer • Lakes and rivers • River with water quality objectives RE 1, 2, 3 & 4
Air	Minimise adverse impacts on air quality and public health	<ul style="list-style-type: none"> • Emissions which are injurious to human health • Emissions contributing to air acidification • Emissions contributing to the depletion of the Ozone layer 	<ul style="list-style-type: none"> • Air quality management area • Residential development

		<ul style="list-style-type: none"> • Dioxin emissions • Extent of odour problems 	
Climatic Factors	<p>Minimise greenhouse gas emissions</p> <p>Adapt to the effects of climate change</p> <p>Avoid increasing flood risk</p>	<ul style="list-style-type: none"> • Greenhouse gases emitted • Number of new facilities constructed on Indicative Flood Zone areas or other areas identified as vulnerable to inundation by the Environment Agency 	<ul style="list-style-type: none"> • Distance from port • Distance from urban area • TAN 15 'Development and Flood Risk' Zone C1 • TAN 15 'Development and Flood Risk' Zone C2
Material Assets – use of resources	<p>Ensure prudent use of land and other resources</p> <p>Conform to waste legislation and policy</p>	<ul style="list-style-type: none"> • Depletion of resources such as wood, water, fuels and ores • Percentage of waste composted • Percentage of waste recycled • Percentage of waste landfilled • Energy generated / source of energy supply • Percentage of construction materials from sustainable sources 	<ul style="list-style-type: none"> • Distance from port • Distance from urban area • Distance from an urban area • Distance from primary road network
Cultural heritage	Conserve landscapes, townscapes and cultural heritage	<ul style="list-style-type: none"> • Extent of visual and landscape impacts 	<ul style="list-style-type: none"> • World heritage sites • Scheduled Ancient Monuments • Heritage Coast • Locations within a historic landscape (outstanding or special) • Historic Parks and Gardens
Landscape	Conserve landscapes, townscapes and cultural heritage	<ul style="list-style-type: none"> • Extent of visual and landscape impacts 	<ul style="list-style-type: none"> • National Parks • Area of Outstanding Natural Beauty • Locations within a landscape identified on Landmap (high quality or visually outstanding) • Locations within a Special Landscape Area (or equivalent) • Slope

Table J3: Outline SEA Monitoring Framework

Theme/Objectives	Indicator	Effect / Issue to be Monitored	Remarks
Biodiversity			
<p>To protect and enhance protected or valuable sites.</p> <p>To protect and enhance BAP habitats.</p>	<p>Number of sites in favourable condition.</p> <p>Number of sites in unfavourable condition as a result of waste management operations.</p> <p>Number of priority species/habitats stable or increasing.</p> <p>Number of priority species/habitats declining as a result of waste management operations.</p>	<p>Condition of designated sites potentially affected by waste facilities.</p> <p>Possible data source: CCW</p>	<p>Evaluation of condition data should:</p> <ul style="list-style-type: none"> • Consider the impact of waste facilities on SAC, SPA, SSSI, Nature Reserves and protected species. • Consider the cumulative and secondary effects of waste management facilities associated with atmospheric emissions and deposition to soil and water. • Consider any positive contributions towards achievements of BAP targets.
Population & Human Health			
To minimise adverse effects on public health	Emissions which are injurious to public health Dioxin Emissions	<p>Emission monitoring data from waste facilities, where available, in relation to achievement of air quality standards (e.g. monitoring required for Pollution, Prevention, Control (PPC) permits).</p> <p>Possible data sources: Facility operator, local authority, Environment Agency.</p> <p>Number of areas containing waste facilities where the levels of identified pollutants breach Air Quality Standards.</p>	Evaluation of emission data should consider the cumulative and secondary effects of waste management facilities associated with atmospheric emissions.
To protect local amenity	<p>Number of odour complaints recorded by Local Authorities.</p> <p>Extent of dust problems.</p> <p>Extent of noise, litter and vermin problems</p>	<p>Number of complaints resulting from waste management facility operation at local level.</p> <p>Possible data source: local authority.</p>	-
To minimise local transport impacts	Total waste km Transport along roads other than motorways	Any available data for km travelled in the movement of waste; the mode of	-

Theme/Objectives	Indicator	Effect / Issue to be Monitored	Remarks
		transport used and transportation routes (e.g. from waste disposal licences or permits, waste transfer notes, special waste consignment notes, waste management licences). Possible data sources: facility operator, local authority.	
To provide employment opportunities	Number of jobs likely to be created	Employment generated during construction and operation of facilities	Facility construction company and operator
Soil			
To ensure prudent use of land	Land take	Land take associated with new waste management facilities. Possible data sources: planning consents.	
To safeguard soil quality	Emissions contributing to soil acidification	Emission monitoring data from waste facilities, where available, relating to achievement of relevant air quality standards (e.g. monitoring required for Pollution, Prevention, Control (PPC) permits). Possible data sources: Facility operator, local authority, Environment Agency.	Review to consider cumulative & secondary effects of waste management facilities associated with atmospheric emissions and deposition to soil and water.
To promote appropriate re-use of brownfield land	Percentage of new facilities on brownfield sites	Percentage of treatment facilities on brownfield sites. Possible data source: planning consents, local authority, Environment Agency.	
To protect and enhance geological SSSI and RIGS.	Percentage of geological SSSI and RIGS in favourable condition Number of geological SSSI and RIGS in unfavourable condition as a result of waste management operations	N/A	Review of available condition data in relation to location of waste management facilities. Possible data source: CCW.
Water			
To minimise adverse effects on water quality	Emissions contributing to eutrophication. Extent of water pollution.	Monitoring data for discharges to water from waste management facilities in relation to water quality standards (e.g. monitoring undertaken for discharge consents, PPC permits). Possible data sources: Environment Agency, local authority, facility	Review of General Quality Assessment data for main rivers potentially affected by waste management facilities. Review should consider cumulative & secondary effects of waste management facilities

Theme/Objectives	Indicator	Effect / Issue to be Monitored	Remarks
		operator.	associated with atmospheric emissions and deposition to soil & water.
To minimise requirements for water use	Water requirements Amount of water recycled within process.	Water usage requirements for construction and operation of facilities. Review of water meter records, abstraction licences in relation to demand requirements. Possible data sources: facility operator, Environment Agency.	Review to consider water recycling opportunities for construction and operation.
Air			
To minimise adverse effects on air quality	Emissions which are injurious to human health Emissions contributing to air acidification Emissions contributing to the depletion of the ozone layer Extent of odour problems Dioxin emissions	Number of AQMA potentially affected by emissions from waste management facilities. Number of areas containing waste facilities where the levels of identified pollutants breach Air Quality Standards Emission monitoring data from waste facilities, where available, relating to achievement of relevant air quality standards (e.g. monitoring required for Pollution, Prevention, Control (PPC) permits). Possible data sources: facility operator, local authority, Environment Agency.	Local Authorities/ Review should consider cumulative & secondary effects of waste management facilities associated with atmospheric emissions.
Climatic Factors			
To reduce greenhouse gas emissions	Greenhouse gases emitted	Number of areas containing waste facilities where the levels of identified pollutants breach Air Quality Standards. Emission monitoring data from waste facilities, where available, relating to achievement of relevant air quality standards (e.g. monitoring required for Pollution, Prevention, Control (PPC) permits). Possible data sources: facility operator, local authority, Environment	Facility Operator

Theme/Objectives	Indicator	Effect / Issue to be Monitored	Remarks
		Agency.	
To adapt to the effects of climate change.	Number of new facilities constructed on Indicative Flood Zones or other areas identified as vulnerable to inundation.	Number of new waste facilities constructed within flood risk areas. Possible data source: planning consents, Environment Agency.	
Material Assets (Use of Resources)			
To ensure prudent use of resources	Depletion of resources such as wood, water, fuels and ores Energy generated/ source of energy supply	Available records for resources used in operating facilities (e.g. fuel, water consumption – meters, abstraction licences) Amount of recycled/ recovered materials produced. Amount of energy generated from thermal treatment facilities and collection from landfill gas. Possible data source: facility operator.	
To conform with waste policy	Percentage composted Percentage recycled Percentage of waste landfilled	Percentage of waste composted/recycled/to landfill. Possible data source: local authority (WasteDataFlow)	
To promote use of recycled aggregates and sustainable resources	Percentage of construction materials from sustainable sources	Promotion of sourcing construction materials from sustainable sources. Possible data source: facility operator.	
Cultural Heritage			
To conserve townscapes and historic landscape context	Extent of visual and landscape impacts	Number of planning consents for waste management facilities containing conditions associated with protection of townscapes and historic landscapes. Possible data source: planning consents.	
Landscape			
To conserve landscapes	Extent of visual and landscape impacts	Number of planning consents for waste management facilities in designated landscape areas. Possible data source: planning consents.	

Appendix K: Guidance on actions for Local Planning Authorities

K1 Background

K1.1 TAN 21 states¹⁶¹ that a key element in the RWP will be agreement of the apportionment of facilities to local authorities, that each UA should include in its development plan elements of the RWP that are germane to its area, and that it will be for the individual local authorities to determine actual locations of facilities and make provisions in their development plans.

K1.2 During the course of the RWP 1st Review process, the WAG indicated¹⁶² that in the preparation of LDPs they seek the following outcome:

“...each local authority identifies in their Unitary or Local Development Plans several choices of locations or sites suitable for facilities with capacity for greater than one local authority area ensuring that there is an over-provision of locations / sites to provide market flexibility for the private sector”

K1.3 To this end, the WAG indicated that they also seeking the following outcomes for the RWP 1st Review:

“The inclusion of an implementation plan within the RWP that includes the steps that will be taken by each local authority to ensure that the necessary land is identified in their Unitary and Local Development Plans for all types of waste facilities, including those that only serve an individual local authority”¹⁶³; and

“The inclusion of a set of detailed criteria for the identification of suitable locations or sites that can be used by each constituent Local Planning Authority when identifying a choice of locations and sites for waste facilities in their local developments plans. The detailed criteria can be devised at an all Wales level in consultation with the Welsh Assembly Government”¹⁶⁴.

K1.4 This appendix therefore sets out guidelines that individual UAs may wish to follow in bringing together the RWP Technology Strategy and the RWP Spatial Strategy through the LDP preparation process in their individual UA areas in order to identify appropriate sites for waste management / resource recovery facilities.

K1.5 For development plan preparation purposes, it should be noted that while the capacity requirements in the RWP Technology Strategy are for 2013. The performance provided by RWP Technology Strategy will satisfy all current targets until 2020.

K2 Guidance from the WAG

K2.1 The WAG has given the following advice and example text for documents produced as part of the LDP preparation process.

¹⁶¹ Paras 2.12 and 2.15 of ‘Welsh Assembly Government, 2001. *Planning Policy Wales Technical Advice Note 21: Waste*. Cardiff: WAG.’

¹⁶² Para 9 of ‘Welsh Assembly Government, 2006. *The Revision of the Regional Waste Plans*. Cardiff: WAG.’

¹⁶³ Para 8(vi) *ibid*.

¹⁶⁴ Para 8(iv) *ibid*.

LDP Stage	LDP Regulations	Content	WAG Advice
Preferred Strategy Document	14 / 15	Objective	An example objective: <i>“To ensure that the LPA has adequate provision for facilities to meet its waste management needs for X types of waste for a range of sites in accord with the in-principle preferred locations identified in the RWP 1st Review.”</i>
Preferred Strategy Document	14 / 15	Strategic Policy	A strategic policy will need to: <ul style="list-style-type: none"> • Set out how much additional capacity or additional waste sites will be required within the LA area during the plan period • Include a clear indication of how locational choices will be made (e.g. the issues listed in paragraph K4.6). An example policy: <i>“A range of facilities are proposed at Y types of locations to ensure adequate provision of Z capacity.”</i> This policy gives a range of potential sites to fulfil the capacity requirements, gives flexibility to industry and is supported by clear assessment criteria identified in the RWP 1 st Review. It would need to be clarified that there are likely to be more sites allocated than required to facilitate the implementation of the RWP. Over-provision is necessary in order to give flexibility to the industry to ensure the level of investment facilities required to meet needs and achieve targets.
Preferred Strategy Document	14 / 15	Spatial Option	Potential locations for strategic facilities (i.e. those with capacity to serve more than one authority area) should be informed by reference to the RWP and could be identified on a key diagram and/or a list. If spatial options are not considered as part of the Preferred Strategy Proposals Document then there will need to be a fall-back reference to the RWP and the Strategic Policy.
Deposit LDP	17 – 21	Deposit Policy	Deposit Policies should include site specific allocations for both facilities with capacity to serve more than one authority area and for local facilities where possible These will be allocated with reference to a local assessment using criteria identified in the RWP 1 st Review and should demonstrate adequate provision or choices in accordance with the highest indicative new capacity required / estimate of total land area required for the seven Preferred Options.

K3 Guidance on Identifying a Choice of Location or Sites

K3.1 Taking account of the RWP Technology Strategy and the RWP Spatial Strategy:

- identify a choice of locations or sites for in-building facilities suitable for all waste streams (including Hazardous Waste) – including facilities with capacity to serve only the local area and with capacity to serve more than one local authority area; and
- identify a choice of locations or sites for open-air facilities (including landfills for inert, non-inert and Hazardous Waste) – including facilities with capacity to serve only the local area and with capacity to serve more than one local authority area.

K3.2 Advances in technology and the introduction of new legislation, policies and practices mean that many modern waste management / resource recovery facilities on the outside look no different to any other industrial building and on the inside contain industrial

demanufacturing processes or energy generation activities that are no different to many other modern industrial processes in terms of their operation or impact. For this reason, many B2 employment sites and major industry areas¹⁶⁵ will be suitable locations for the new generation of in-building waste management facilities that will be required in accordance with the RWP Technology Strategy.

K3.3 Given that B2 employment sites and major industry areas are likely to be suitable locations for most new in-building facilities, and given that PPW¹⁶⁶ requires that development plans should “*identify a range and choice of sites to meet different economic and employment needs*” and “*contain appropriate policies in support of the development of innovative business or technology clusters and eco-industrial networks*”, the following sequential approach could be used to identify a choice of locations or sites for in-building facilities:

1. First, examine whether the B2 and major industry sites¹⁶⁷ within the area could adequately accommodate all new in-building waste management facilities (as one specific part of the wider range of employment land requirements).
2. If there is found to be a shortfall in B2 and major industry sites suitable for accommodating new in-building waste management facilities, then, having regard to the Areas of Search maps and having considered the issues listed in paragraph K3.10, search for other suitable locations or sites.

K3.4 The following two broad principles for the viewing and use of the Areas of Search maps and GIS data must be noted:

- The sole purpose of the Areas of Search maps and GIS data is to identify Areas of Search at a strategic level for use by LPAs during the LDP preparation process – as a starting point for more detailed local level assessments to identify appropriate sites for waste management facilities in LDPs.
- Because the sole purpose of the Areas of Search maps and GIS data is to identify Areas of Search at the strategic level, the Areas of Search maps and GIS data must not be used by any organization or individual to determine the appropriateness of proposals for individual waste management facilities. The Areas of Search maps and GIS data must not be used by LPAs as a development control tool.

K3.5 The following detailed principles for the viewing and use of the Areas of Search maps and GIS data must also be noted.

K3.6 The locations that have been identified as 2nd, 3rd or 4th Areas of Search must not be excluded from consideration as appropriate areas, for the following reasons:

- Waste management facilities are only one of many types of development which LPAs must consider in their LDPs, and as a result other priorities and pressures may justify selecting 2nd, 3rd or 4th Areas of Search over a 1st Area of Search. The

¹⁶⁵ The term ‘B2 employment sites and major industry sites’ is used here to include other land uses that have similar characteristics such as existing waste management sites, ports, some brownfield sites, and other similar sui generis land uses.

¹⁶⁶ Para 7.5.2 of ‘WAG, 2006. *Planning Policy Wales Companion Guide*. Cardiff: WAG.’

¹⁶⁷ The term ‘B2 employment sites and major industry sites’ is used here to include other land uses that have similar characteristics such as existing waste management sites, ports, some brownfield sites, and other similar sui generis land uses.

Sustainability Appraisal process undertaken during the preparation of LDPs will be an appropriate mechanism for justifying any such approach.

- Only mappable criteria relating to *strategic* level spatial issues were used to generate the Areas of Search maps. Therefore, more detailed *local* assessments may conclude that, regardless of the Area of Search ranking, a particular site could be developed for waste management facilities with no potential impacts.
- On those particular sites where a greater level of constraint does exist it must be acknowledged that, in turn, a greater level of operational mitigation may adequately control potential environmental impacts. Waste management facilities can be located almost anywhere if they are appropriately designed, managed and regulated to control any potential impacts.

K3.7 The Areas of Search maps and GIS data must not be used by LPAs in isolation as the definitive guide to site selection; the ranking of a particular Area of Search effectively establishes the issues that would need to be addressed in more detailed local level assessments during the LDP preparation process to identify appropriate sites for waste management facilities. If a particular type or combination of waste management facility / facilities is proposed for a particular site, these more detailed local assessments may require the quantification of this risk based on the nature of the proposed waste management facility / facilities. These more detailed local assessments must, for each site:

- Address each of the strategic level spatial issues that determined the Area of Search ranking – and in so doing may conclude that, regardless of the Area of Search ranking, a particular site could be developed for waste management facilities with no potential impacts, or that adequate mitigation measures will control any potential impacts, or that a particular site should not be developed for waste management facilities.
- Assess a range of other considerations that need to be assessed when planning for new waste management facilities, including site availability, access, altitude, topography, existing land uses, etc.
- Assess any potential cumulative effects on sensitive receptors of a number of sites within an area being developed for new facilities.

K3.8 The Areas of Search map for in-building facilities does not prejudice the development of new in-building waste management facilities on any existing land use class B2 'general industrial' employment sites, existing major industry areas¹⁶⁸, or new B2 sites allocated in development plans whether or not the site falls within an Area of Search for in-building facilities – because the principle of B2 or major industry use is already established these sites.

K3.9 Within the Areas of Search maps there are a number of existing waste management facilities that have been identified to be in areas that are, by virtue of the surrounding constraints, shown to be excluded. It should be acknowledged 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 LPAs to assess whether the

¹⁶⁸ The term 'B2 employment sites and major industry areas' is used here to include other land uses that have similar characteristics such as existing waste management sites, ports, some brownfield sites, and other similar sui generis land uses.

expansion of operations at these locations is appropriate and whether any potential adverse effects can be effectively controlled.

K3.10 It may be appropriate to take into consideration the following local issues when identifying a choice of locations or sites for facilities:

- site suitability;
- site / building vacancy and availability – including opportunities for re-using vacant industrial sheds, existing buildings in the countryside and quarries and for redeveloping brownfield sites, industrial areas and ports;
- site infrastructure (including electricity grid connections for EfW facilities);
- site ownership;
- existing and proposed neighbouring land uses;
- the nature of existing businesses / waste facilities on the location / site;
- the presence of existing Planning Permissions / Waste Management Licences / Pollution Prevention & Control permits;
- opportunities to expand existing in-building and open-air facilities or to site a new type of facility alongside an existing facility;
- the need for sites for smaller-scale community based reuse and recycling activities¹⁶⁹;
- opportunities for co-locating and networking EfW facilities with proposed or existing energy consuming land uses such as district heating systems or large industrial energy users;
- planning-in opportunities for the future expansion of facilities;
- existing and proposed transport infrastructure – including opportunities for integrated multi-modal road, train, canal and sea connections;
- opportunities for co-locating waste management / resource recovery / reprocessing / re-manufacturing facilities, and other synergistic activities within the Environmental Goods and Services sector, to form environmental technology clusters – the concept of such Eco-parks is endorsed by TAN 21¹⁷⁰;
- the cumulative effect of waste management facilities and other development on sensitive environmental receptors;
- the cumulative effect of waste management facilities and other development on the well-being of the local community, including any significant adverse impacts on environmental quality, social cohesion and inclusion or economic potential; and
- the relevant measures envisaged to prevent, reduce and as fully as possible off-set any significant adverse effects on the environment of implementing the Preferred Options set out in the Environmental Report¹⁷¹;
- the EU Habitats Directive requirements for Habitat Regulation Assessment – the two Environmental Reports produced during the RWP 1st Review process provide relevant information that will assist LPAs, as a Competent Authority, to undertake tests of significance at the appropriate stages when specific land-use allocations and development proposals are being formulated. If it cannot be demonstrated that

¹⁶⁹ The forecast and modelled waste arisings include wastes that could be reused rather than being recycled. It is therefore reasonable to assume that reuse capacity could be substituted for some of the front-end recycling capacity.

¹⁷⁰ Para 4.14 of ‘Welsh Assembly Government, 2001. *Planning Policy Wales Technical Advice Note 21: Waste*. Cardiff: WAG.’

¹⁷¹ Volume 2 Assessment Tables of ‘Hyder Consulting Ltd, 2007. *Strategic Waste Management Options: Strategic Environmental Assessment*. Cardiff: Hyder Consulting Ltd.’

proposals will not have a significant effect, alone and in combination, the local authority are required to make an appropriate assessment of the implications for the European site in view of its conservation objectives.

K3.11 It may be appropriate to liaise with the Wales Environment Trust regarding its RAP-ID initiative in order to hasten site delivery – particularly with regard to initial site identification and with regard to any potential for co-locating facilities in Eco-Parks alongside other synergistic activities within the Environmental Goods and Services sector. Details on the RAP-ID initiative are given in Appendix L. Synergistic activities may include:

- remediation and reclamation of land;
- pollution control;
- resource efficiency;
- carbon offsetting;
- environmental consultancy;
- industrial consumption of process by-products (heat, power etc);
- sustainable resource usage;
- renewable energy;
- bio-fuels.

K3.12 When identifying a choice of locations or sites for both in-building and open-air facilities, it may be desirable to allocate specific sites for specific Municipal Waste management facilities. Planning officers should liaise with UA waste managers regarding any site requirements arising from collaborative arrangements for procuring Municipal Waste management facilities. On this issue, the following points should be noted:

- The RWP Technology Strategy provides strategic direction for those UAs that require it. It does not prejudice any existing progress and facilities either where a UA has in good faith gone about its procurement process in line with the first RWP or where a UA has for sound reasons made other plans which have been developed and justified through a process of a local BPEO assessment / Sustainability Appraisal / Strategic Environmental Assessment.
- Some authorities may wish, and be able to, make provision within their boundaries for the new capacity required for Municipal Waste. Some authorities may wish to work in cooperation with neighbouring authorities to make provision for the new capacity required for Municipal Waste.
- Whether authorities make provision within their boundaries or jointly, the procurement arrangements for Municipal Waste facilities will be at different stages.

K3.13 A great number of assumptions underpin the modelling work that was used to develop the RWP Technology Strategy. As with any modelling process, the model must be based on a set of working assumptions and will be subject to practical limits. The figures for the new capacity required and the number of new facilities required must be treated as indicative, for planning purposes only and as representing a snapshot in time. The figures for the total land area required for new in-building facilities must be treated as an estimate, for planning purposes only and as representing a snapshot in time. In practice the capacity of new facilities, the number required and the land take will depend on many interrelated factors including economics, site sizes and availability, permitted capacity and shift patterns at

individual facilities, etc. For these reasons, individual UAs may justify differing from the regional apportionment by undertaking more detailed modelling to take account of more detailed information on local circumstances and cross boundary arrangements, etc.

K3.14 As a general guide to typical site sizes, LPAs may wish to note that the following mean typical facility capacities and mean typical land takes for in-building facility types likely to serve more than one local authority area can be calculated from data used by the EAW in the SA¹⁷²:

- Urban authorities¹⁷³ – mean typical facility capacity of 180,000tpa and mean typical land take of 6ha;
- Rural authorities¹⁷⁴ – mean typical facility capacity of 80,000tpa and mean typical land take of 3ha.

K4 Guidance on Drafting LDP Policies

K4.1 TAN 21 states that development plans should include a balance of site-specific and criteria-based policies to provide as much information as possible on the locations likely to be acceptable for development of waste treatment and disposal facilities¹⁷⁵.

K4.2 LDPs should include a policy identifying a choice of locations / sites for new in-building and for new open-air facilities for all waste streams, including Hazardous Waste. The spatial extent of these locations / sites should be shown on the proposals maps.

K4.3 LDPs may also include a policy that makes specific allocations of land for specific new waste management / resource recovery facilities. Local Development Plans Wales¹⁷⁶ states that “*the identification of sites for specific uses...should be founded on a robust and credible assessment of the suitability and availability of land for particular uses or a mix of uses and the probability that it will be developed*”.

K4.4 LDPs are also likely to include topic-based policies that set out the general criteria against which planning applications for new waste management / resource recovery facilities will be considered.

K4.5 It should be noted that, in regard to the strategic level issues tackled by the RWP, the PPW Companion Guide¹⁷⁷ states that national development control policy on the following matters is set out in PPW and should therefore only be referenced in LDPs rather than repeated as local policy:

- The waste hierarchy, the proximity principle and regional self-sufficiency¹⁷⁸;

¹⁷² Environment Agency Wales, 2007. *Sustainability Appraisal and Life Cycle Analysis of Strategic Waste Management Options; Report for the first review of SE Wales Regional Waste Plan*. Cardiff: EAW.

¹⁷³ The EAW identify Swansea, Neath Port Talbot and Bridgend as urban authorities in Figure A10 of ‘Environment Agency Wales, 2007. *Sustainability Appraisal and Life Cycle Analysis of Strategic Waste Management Options; Report for the first review of SE Wales Regional Waste Plan*. Cardiff: EAW.’

¹⁷⁴ The EAW identify Ceredigion, Carmarthenshire and Pembrokeshire as rural authorities in Figure A10 *ibid*.

¹⁷⁵ Para 5.1 of ‘Welsh Assembly Government, 2001. *Planning Policy Wales Technical Advice Note 21: Waste*. Cardiff: WAG.’

¹⁷⁶ Para 2.16 of ‘WAG, 2005. *Development Plans Wales*. Cardiff: WAG.’

¹⁷⁷ Para 12.16 of ‘WAG, 2006. *Planning Policy Wales Companion Guide*. Cardiff: WAG.’

¹⁷⁸ Para 12.5.3 of ‘WAG, 2002. *Planning Policy Wales*. Cardiff: WAG.’

- Ensuring that waste is recovered or disposed of without harming the environment, without endangering human health, without risk to water, air, soil, plants or animals, without causing a nuisance through noise or odours and without adversely affecting the countryside or places of special interest, including areas of acknowledged importance in relation to the natural and cultural heritage¹⁷⁹; and
- Encouraging any necessary movement of waste by rail and water rather than by road wherever economically feasible¹⁸⁰.

K4.6 LPAs may consider it appropriate to draft topic-based policies to address one or more of the following issues:

- planning applications for facilities within the identified choice of locations / sites;
- planning applications for facilities that fall outside the identified choice of locations / sites;
- the suitability of B2 and major industry sites¹⁸¹ for in-building facilities;
- opportunities for re-using vacant industrial sheds, existing buildings in the countryside and quarries and for redeveloping brownfield sites, industrial areas and ports;
- the suitability of farm / countryside locations for open-air composting and in-building anaerobic digestion facilities;
- opportunities to expand existing in-building and open-air waste facilities or to site a new type of facility alongside an existing facility;
- the different land-use impacts of in-building facilities and open-air facilities;
- planning applications for smaller-scale community based reuse and recycling activities;
- the need for inert, non-inert and hazardous waste landfills;
- the need for facilities to manage different waste streams (including Hazardous Waste);
- transport infrastructure, including minimising road traffic impacts and maximising opportunities for integrated multi-modal road, train, canal and sea connections;
- opportunities for co-locating and networking EfW facilities with proposed or existing energy consuming land uses such as district heating systems or large industrial energy users;
- minimum efficiencies for EfW facilities in the production of heat and electricity;
- opportunities for co-locating waste management / resource recovery / reprocessing / remanufacturing facilities to form environmental technology clusters. The concept of such Eco-parks is endorsed by TAN 21¹⁸², further information can be obtained from the Wales Environment Trust;
- opportunities for new facilities to deliver community benefits;
- minimising visual impact and local concerns through high quality design (architectural and landscaping); and

¹⁷⁹ Para 12.5.1 *ibid.*

¹⁸⁰ Para 12.5.4 *ibid.*

¹⁸¹ The term 'B2 employment sites and major industry sites' is used here to include other land uses that have similar characteristics such as existing waste management sites, ports, some brownfield sites, and other similar *sui generis* land uses.

¹⁸² Para 4.14 of 'Welsh Assembly Government, 2001. *Planning Policy Wales Technical Advice Note 21: Waste*. Cardiff: WAG.'

- requiring site-specific HIAs to be undertaken for proposed waste management facilities that require both planning permission and an EIA.

K5 Guidance on Drafting LDP Supporting Text

K5.1 In regard to the strategic level issues tackled by the RWP, TAN 21 states that development plans should include text which:

- demonstrates that proper account has been taken of the RWP¹⁸³;
- explains how the RWP impacts upon the development plan policies and proposals and how the proposals and policies in the development plan help to facilitate implementation of the RWP¹⁸⁴;
- demonstrates the authority's place in the development of regional networks of waste management facilities, and will need to consider future needs and potential new demands within the regional framework¹⁸⁵;
- demonstrates the waste hierarchy, proximity and self-sufficiency principles in all strategic waste planning¹⁸⁶;
- makes explicit the capacity of the area to deal with waste, and also make accurate and quantified assessments about their own waste arisings, with reference to EAW data that is available at the time of plan preparation¹⁸⁷; and
- demonstrates that there is adequate provision for waste management facilities to meet the targets in EU Directives¹⁸⁸.

K5.2 Supporting text should be drafted in a way that is mindful of the need to demonstrate the soundness of the LDP against the 10 criteria set out in Local Development Plans Wales¹⁸⁹ for assessing soundness, particularly in regard to the following criteria:

- Consistency Test C1: *“It is a land use plan that has regard to other relevant plans, policies and strategies relating to the area or to adjoining areas”*;
- Consistency Test C2: *“It has regard to national policy”*;
- Coherence & Effectiveness Test CE2: *“The strategy, policies and allocations are realistic and appropriate having considered the relevant alternatives and are founded on a robust evidence base”*; and
- Coherence & Effectiveness Test CE4: *“It is reasonably flexible to enable it to deal with changing circumstances”*.

K6 Guidance on Consultation

K6.1 The Community Engagement Guidance on Waste Infrastructure¹⁹⁰, produced as a result of a partnership between the Welsh Local Government Association (WLGA), the WAG, the EAW and Waste Awareness Wales, contains extensive guidance on how and when to consult key stakeholders in the planning and delivery of new waste management facilities. This toolkit considers the different stages of consultation; from awareness raising and strategic evaluation, through to the understanding of the need for change; to choice of technology; decisions on site search criteria and ultimately planning and licensing

¹⁸³ Para 5.2 *ibid.*

¹⁸⁴ Para 5.4 *ibid.*

¹⁸⁵ Para 5.4 *ibid.*

¹⁸⁶ Para 5.3 *ibid.*

¹⁸⁷ Para 5.5 *ibid.*

¹⁸⁸ Para 5.5 *ibid.*

¹⁸⁹ Para 4.35 of ‘WAG, 2005. *Development Plans Wales*. Cardiff: WAG.’

¹⁹⁰ Hyder Consulting 2007. *Community Engagement Guidance; Waste Infrastructure*. Cardiff: Hyder Consulting Ltd.

applications for specific facilities. The toolkit provides indicative timings and costs for running campaigns, along with detailed facts and images of all types of waste treatment technologies to help explain these issues to the widest of stakeholder groups.

K6.2 LPAs should consider approaching the following organisations for information / assistance / contact details in consulting with the waste management / resource recovery industry in their area:

- The Chartered Institution of Wastes Management (CIWM) Cymru Wales Centre;
- The Welsh Environmental Services Association (WESA);
- The WAG Waste Strategy and Implementation Unit;
- The EAW Waste Policy and Regulatory teams;
- The Wales Environment Trust;
- The RWP Coordinating Authority; and
- Environmental health and waste management colleagues within the authority.

K7 National Park Issues

K7.1 UAs and National Park Authorities (NPAs) are Waste Planning Authorities. However, only UAs are Waste Collection Authorities and Waste Disposal Authorities for Municipal Waste.

K7.2 In the course of the RWP 1st Review process the following situation has emerged regarding National Parks and the two principal elements of the RWP:

- For the RWP Technology Strategy the capacity requirements are broken down by UA area and therefore no capacity requirements are presented for NPAs;
- National Parks are automatically identified as exclusion areas in the maps showing Areas of Search for facilities serving more than one local authority area¹⁹¹.

K7.3 Given this situation, NPAs have the following two options for planning for new facilities for the management of National Park waste arisings:

- NPAs may plan for new facilities serving only the National Park area to be sited within the National Park area¹⁹²; and/or
- NPAs and UAs that cover the same area may work closely together to plan for new facilities serving both the NPA and UA areas to be sited outside the National Park. The provision of data on capacity requirements broken down by UA area facilitates this arrangement.

¹⁹¹ Para 5.5.6 of 'WAG, 2002. *Planning Policy Wales*. Cardiff: WAG.' states that "In National Parks or AONBs, special considerations apply to major development proposals which are more national than local in character. Major developments should not take place in National Parks or AONBs except in exceptional circumstances." and accordingly, for the Areas of Search maps, both in-building and open-air facilities were allocated a weighting of 5 to reflect their significance for conservation.

¹⁹² This may be approached by undertaking a rough set of calculations to split the Appendix E 'RWP Technology Strategy – calculated requirements' for the UA areas by proportion of population falling within the National Park area. In terms of the RWP Technology Strategy capacity requirements, the following facility types are likely to be 'local' facilities serving only the National Park area: Clean Materials Recovery Facilities, Transfer Stations, Civic Amenity, and Construction & Demolition Exemption (see para E5.2).

K7.4 In exceptional circumstances¹⁹³ there may be sites on the edge of but within National Parks where facilities with capacity to serve more than one local authority area may be acceptable.

K8 Sources of Further Information on Planning for Waste Management Facilities

K8.1 The following documents give further information and guidance about planning for waste management facilities:

- Department for Environment, Transport and the Regions, 2000. *Controlling Environmental Effects – Recycled & Secondary Aggregate Production*. London: DETR;
- Department of Communities and Local Government, 2006. *Planning for Sustainable Waste Management: Companion Guide to Planning Policy Statement 10*. London: DCLG;
- Office of the Deputy Prime Minister, 2004. *Planning for Waste Management Facilities: A Research Study*. London: ODPM;
- Office of the Deputy Prime Minister, 2005. *PPS 10: Planning for Sustainable Waste Management*. London: ODPM;
- Sustainable Transport for Resources and Waste, 2006. *Spatial Planning for Integrated Waste Transport*. Glasgow: EnviroCentre Ltd;
- Welsh Assembly Government, 2001. *Planning Policy Wales Technical Advice Note 21: Waste*. Cardiff: WAG;
- Welsh Assembly Government, 2004. *Policy Clarification Note Unitary Development Plans – Waste Policies Hazardous Waste Planning Applications*. Cardiff: WAG; and
- Welsh Assembly Government, 2006. *The Revision of the Regional Waste Plans*. Cardiff: WAG.

¹⁹³ Such exceptional circumstance could include, for example, B2 sites that for historical reasons are located on the edge of but within National Parks, or facilities for managing agricultural waste.

Appendix L: The Wales Environment Trust RAP-ID Initiative

- L1 The Wales Environment Trust's, Resource Aggregation Plan and Infrastructure Development (RAP-ID) initiative will run from 2007 to 2010 with the aim of laying the foundation for, and aiding the delivery of, the waste management / resource recovery infrastructure necessary to serve the requirements of existing and future business development in Wales.
- L2 If this new infrastructure is not put in place some existing businesses with high waste generation may have to re-locate due to high waste transport and treatment costs and, for the same reason, new inward investment opportunities may choose not to locate in Wales.
- L3 Over the last decade, the Wales Environment Trust has undertaken considerable work promoting the concept of resources within wastes, and the capture and realization of that resource value within Eco-Parks or Resource Recovery Parks. Typically an Eco-Park would take the form of an industrial estate / business park situated in the vicinity of a resource recovery facility whereby the tenants of the park either produce reprocessed resources, including energy and water, or use them in their manufacturing process.
- L4 The Wales Environment Trust reports that economic and legislative drivers have converged to create an environment where Eco-Parks are now viable on a commercial basis. Interest from the private sector has significantly increased, with landowners and technology companies as well as developers expressing a desire to work with the Wales Environment Trust to help deliver Eco-Parks. Landowners include existing businesses with increasing energy and waste costs who consider they would benefit from development of an on-site EfW plant and which could also serve to take in compatible waste-streams from external sources.
- L5 A new company – Eco-Parks (Europe) Ltd – will be created to identify and collate a portfolio of land suitable for the development of Eco-Parks, either in the form of large business parks or as single plots within a cluster development. The suitability of the land will (without prejudice to the planning process), be assessed at a high level by Eco-Parks (Europe) Ltd on the basis of location, transport links, services, costs of development, previous usage, etc.
- L6 Eco-Parks (Europe) Ltd will also search out, investigate and validate appropriate, commercially proven treatment technologies from Europe and elsewhere, focusing initially on solutions for waste from industrial and commercial businesses. In the case of private land identified as suitable for Eco-Park development, it may well be that partnerships between land owners and technology providers may arise in order to share the financial risk associated with planning applications of this nature. As a means of progressing the urgent requirement for the necessary waste / resource infrastructure, and where such a partnership is essential to progress, the Eco-Parks (Europe) Ltd would aid the land owner to broker such an arrangement.
- L7 While the RAP-ID initiative will focus initially on solutions for waste from industrial and commercial businesses, the early development of Industrial and Commercial Waste facilities will have the potential to deliver financial savings and the reduction of the risk / cost of fines to WDAs through combined facilities for Commercial, Industrial and Municipal Wastes.

Appendix M: Contribution statement

M1 Background

M1.1 TAN 21 requires the RWP to contain a statement setting out how the plan contributes to efforts to meet UK and European targets including the general waste management targets in the Landfill Directive and the Wales Waste Strategy.

M2 Contribution Statement: The RWP Technology Strategy

M2.1 The RWP Technology Strategy sits between the NWSW and LDPs in a hierarchy of plans. From this position in the hierarchy, the RWP Technology Strategy contributes to establishing the integrated and adequate network of waste management facilities required by Article 5 of the EU Waste Framework Directive and contributes to the waste management plan required by Article 7 of the Directive by setting out the type, quantity and origin of waste to be managed and the technical requirements for managing this waste.

M2.2 All seven Preferred Options of the RWP Technology Strategy:

- have a ‘front end’ recycling and composting rate for MSW set at 50% in 2013 – this exceeds the current maximum NWSW target of achieving at least 40% recycling and composting of Municipal Waste by 2009/10;
- are designed to achieve the 2020 BMW Landfill Directive target by 2013; and
- ensure that targets for the management of the other principal controlled waste streams are also met – i.e. recycling targets for C&D waste and landfill diversion for Industrial and Commercial Waste.

M2.3 The NWSW¹⁹⁴ states that one of its primary objectives is:

“...to make Wales a model for sustainable waste management by adopting and implementing a sustainable, integrated approach to waste production, management and regulation (including litter and fly tipping) which minimises the production of waste and its impact on the environment, maximises the use of unavoidable waste as a resource, and minimises where practicable, the use of energy from waste and landfill”

M2.4 The seven Preferred Options of the RWP Technology Strategy:

- are the best practicable environmental sub-Options;
- maximise the use of unavoidable waste as a resource through high source segregated recycling and composting levels; and therefore
- minimise the use of EfW and landfill.

M2.5 TAN 21¹⁹⁵ states that “A key element in the RWP will be agreement of the apportionment of facilities to local authorities”.

¹⁹⁴ Para 1.10 of ‘Welsh Assembly Government, 2002. *Wise About Waste: The National Waste Strategy for Wales*. Cardiff: WAG’.

M2.6 The modelling undertaken by the EAW for the SA of the Options apportioned the total capacity required at various types of waste management facilities in 2013 to each UA area on the basis of forecast arisings. This apportionment for each of the seven Preferred Options of the RWP Technology Strategy is detailed in Appendix E. In addition, the RWP 1st Review calculates the indicative new capacity required and indicative number of new facilities required in 2013 in each UA area for each of the seven Preferred Options and also forecast the remaining landfill void in 2013.

M3 Contribution Statement: The RWP Spatial Strategy

M3.1 Article 7(4) of the EU Waste Framework Directive requires Member States to publish waste management plans that include either a geographical map specifying the exact location of waste disposal sites or precise mappable criteria. Appendix B provides further details on the requirements of the Waste Framework Directive.

M3.2 TAN 21¹⁹⁶ states that while it would be for individual local authorities to determine actual locations of facilities and make provisions in their development plans, the RWP should specify the approximate location or type of location of new facilities: “*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 local political process and in recognition of existing contractual arrangements, would serve the region.*”

M3.3 The RWP Spatial Strategy addresses and fulfils these requirements in the following two ways:

- it demonstrates an adequate supply of *existing* sites for new *in-building facilities* on existing B2 or major industry sites¹⁹⁷ and B2 sites that have already been allocated in development plans to meet the demand for sites for new in-building waste management facilities; and
- it identifies Areas of Search for use in identifying *new* sites for both *in-building and open-air facilities* waste management facilities, based on precise mapped criteria relating to strategic level spatial issues.

¹⁹⁵ Para 2.15 of ‘Welsh Assembly Government, 2001. *Planning Policy Wales Technical Advice Note 21: Waste*. Cardiff: WAG.’

¹⁹⁶ Paras 2.15 & 2.16 *ibid*.

¹⁹⁷ The term ‘B2 employment sites and major industry sites’ is used here to include other land uses that have similar characteristics such as existing waste management sites, ports, some brownfield sites, and other similar *sui generis* land uses.

Appendix N: Best practice statement

N1 Background

N1.1 TAN 21 requires the RWP to contain any relevant statements of best practice, to share experiences, successes, challenges and opportunities for future revisions, or for other decision making in LPAs.

N2 Successes

N2.1 **Partnership.** The RWP 1st Review is the outcome of an ambitious three-year program of partnership working. The eleven local planning authorities in South East Wales have worked jointly to develop and steer the project, all the time benefiting from the close collaboration, and invaluable input, of a wider range of stakeholder organisations. For consistency across Wales, the three lead authorities have pursued common project management and technical approaches and have let four all-Wales contracts for consultancy services. This partnership working has delivered the following benefits:

- Building mutual understanding of the different positions that partners hold.
- Outcomes that all partners can sign up to.
- Collaboration between local authority planning departments and waste management departments.
- Partnership between the three lead authorities has strengthened the plans and shared the workload.

N2.2 **The RWP Technology Strategy** has been reviewed by conducting a wider range of more detailed assessments of more technologies.

N2.3 **The RWP Spatial Strategy** has been developed by demonstrating an adequate supply of existing sites for new in-building facilities and identifying robust Areas of Search for new sites. This will assist in the process of demonstrating an adequate choice of locations for the integrated and adequate network of waste facilities as required by the EU Waste Framework Directive.

N2.4 **Consultation.** The 25 local authorities in Wales, together with the WAG and Hyder, worked together to run the largest consultation to date on the way forward for selecting and siting the future network of waste management facilities. This is a significant step forward for Wales. All consultation documents were made available to anyone in Wales via the website, high-level media interest was generated and the industry day was possibly the largest such waste planning workshop ever run in Wales.

N2.5 **Councillor training.** In partnership with the WAG and the WLGA, the Lead Authorities organised the delivery of training workshops on 'Waste Management Technologies and their Land-Use Planning Issues' to Councillors in 21 of the 22 Unitary Authorities in Wales. Developing a new generation of waste management facilities is one of the most important and contentious issues that Councillors in Wales currently face. These high quality and impartial training workshops aimed to enable Councillors to feel confident in making difficult decisions on this sensitive issue.

N3 Challenges

- N3.1 **Time.** Partnership working requires dialogue, dialogue takes time.
- N3.2 **Commitment by partners.** In a partnership focused process, partners need to be prepared to allocate appropriate resources and take the appropriate actions in a timely manner. Delays and misunderstandings can occur when partners do not take appropriate actions or take them too late.
- N3.3. **Governance.** The RWPs are the product of an odd governance arrangement. Waste is a very sensitive issue and the consequences of not meeting the requirements of various EU Directive are great, yet the RWPs are non-statutory plans prepared through a voluntary joint arrangement of Local Planning Authorities. Meanwhile the WAG is policy makers, paymaster, partner and final judge.
- N3.4 **Lack of robust capacity data.** The challenge of planning for waste management and resource recovery facilities should be undertaken with a sound information base; it is important to have comprehensive, accurate, timely, and consistent information. However, data on the capacity of existing waste management / resource recovery infrastructure is drawn from Waste Management Licences (WMLs) / Pollution Prevention & Control (PPC) permits. This data has to be treated with some caution as the capacities identified are the legislative maximum throughput allowed under the terms of the license or permit. In reality there may be other limiting factors that restrict the site from operating up to the licensed maximum and therefore the capacity information obtained from the WML may be an overestimate.
- N3.5 **Lack of Hazardous Waste data.** In July 2005 the Hazardous Waste (England and Wales) Regulations and the List of Wastes (Wales) Regulations come into force, replacing the Special Waste Regulations. These new regulations had the effect of increasing the number of wastes classified as ‘hazardous’ – they include waste TVs, computer monitors and some other waste electrical and electronic equipment, fluorescent tubes, and pesticides. While the term ‘Special Waste’ effectively became obsolete in July 2005, all data about the arisings and management of Special / Hazardous Waste available at the time of Plan preparation was collected before July 2005 and therefore only actually referred to Special Waste. It therefore did not indicate any change in arisings or management that may have occurred as a result of the new regulations.
- N3.6 **Focus on Municipal Waste.** The alternative strategic waste management Options were generated on the basis that, in an integrated recovery and disposal strategy for all waste streams, MSW and wastes within the other principal controlled waste streams which are similar to MSW will be managed together and should therefore be modelled and assessed together. In any future reviews it may be desirable or necessary to develop the modelling and assessment of Industrial and Commercial waste in more detail.
- N3.7 **The relationship between SWMO and SEA.** TAN 21 requires that the alternative strategic waste management Options are assessed using the techniques of: LCA / BPEO, SWMO / SA, SEA and strategic HIA. The government guidance ‘Strategic Planning for Sustainable Waste Management’ (ODPM, 2002) on LCA / BPEO and SWMO / SA was published before the SEA Directive was implemented in Wales through ‘The Environmental Assessment of Plans and Programmes (Wales) Regulations 2004’. Detailed discussions

between Hyder Consulting and the EAW concluded that the output of the LCA was not suitable for use as part of the SEA. This resulted in delay in the RWP 1st Review process and the duplication of effort.

- N3.8 **Use of different categories.** EAW data on the capacity of existing facilities is presented using quite different categories to the data on the capacity requirements from the EAW WRATE tool. This presented significant challenges in ‘mapping’ between categories.
- N3.9 **Identifying sites for new facilities.** The RWG agreed that it would be inappropriate, and circumventing the due and proper process, for the RWP 1st Review to state that sites other than existing B2 or major industry sites and B2 sites that have already been allocated in development plans are suitable locations for new in-building facilities; this is a policy making exercise that should only be undertaken at the local level through the LDP preparation process.

N4 Recommendations

- N4.1 In order to inform the RWP 2nd Review, future AMRs should:
- monitor the rates of growth / reduction of the individual waste streams;
 - monitor growth in reuse, recycling and composting, monitoring the reduction in residual waste and its change in composition, and monitoring policy changes regarding future reuse, recycling and composting levels; and
 - compare these with the forecasts of arisings and modelling of reuse, recycling, composting and residual waste used in the RWP 1st Review.
- N4.2 The WAG and EAW should work together to ensure that adequate statutory reporting mechanisms and/or surveys supply comprehensive, accurate, timely, and consistent capacity data on the full range of permitted, licenced and exempt facilities.
- N4.3 In order to allow the RWP 2nd Review to specify the capacity and land take requirements for National Park Authorities as Local Planning Authorities, the EAW and WAG must supply data on waste arisings, waste management and waste facilities and any future modelling / assessment data ‘cookie cut’ on the basis of LPAs rather than UAs – i.e. to include National Parks.
- N4.4 It is recommended that prior to the commencement of the RWP 2nd Review a significant amount of time, consideration and consultation is given to reviewing the process to be used, in particular to:
- avoid an undue focus on Municipal waste in any modelling and assessment;
 - ensure Hazardous Wastes are adequately modelled and assessed;
 - minimise any ‘unmodelled’ wastes;
 - maximise the compatibility of categories between data on waste arisings, waste management facilities and modelled waste flows;
 - enable the suite of assessments (WRATE / SA / SEA / HIA / GIS) to be undertaken concurrently and overseen by a joint working party to facilitate dialogue and disseminate ongoing findings.
- N4.5 At the outset of the RWP 2nd Review the SEA Monitoring Report should be produced.

- N4.6 It is recommended that at the outset of the RWP 2nd Review a full ‘issues and options’ analysis and consultation is undertaken in order to scope the *policy* content of the review – particularly that which would be over and above the requirements of TAN 21 or beyond a simple refinement of the RWP 1st Review. Such issues might include:
- Policies on the scale and distribution of facilities.
 - Policies on co-locating and networking EfW facilities with proposed or existing energy consuming land uses such as district heating systems or large industrial energy users.
 - Policies on minimum efficiencies for EfW facilities in the production of heat and electricity.
 - Policies on Actions for Local Planning Authorities – i.e. to elevate the guidance in Appendix K to policy in the main body of the Plan, and consequently to subject it to SEA.
- N4.7 The WAG must acknowledge there is a limit to what can be achieved by a non-statutory plan prepared by body without statutory duties and powers– particularly regarding the identification of sites for highly sensitive land uses.
- N4.8 The RWP 2nd Review should take account of any new technologies and refinement of, or new available data for, technologies assessed in the RWP 1st Review. This should include assessing AD as an alternative to IVC for front end recycling composting – rather than only as a residual waste treatment technology.
- N4.9 The Strategic HIA process for the RWP 2nd Review should give consideration to how weighting of health impacts could be undertaken and which stakeholders should feed into such a process.
- N4.10 The RWP 2nd Review should include a detailed assessment of the requirements for the disposal of VLLW including SOLA, should be undertaken as part of any subsequent review.
- N4.11 Any future Areas of Search maps should include more information including the location of existing waste facilities, proximity to the National Grid / grid capacity / substation proximity and capacity / local energy users, transport links and any areas identified by LDPs is being suitable or allocated for waste facilities.
- N4.12 As part of the RWP 2nd Review process, consideration should be given to whether to continue double counting dioxin emissions by including as a separate indicator – particularly in light of the limits now imposed on dioxin releases under the WID.
- N4.13 So as to ensure that Wales does not miss any energy supply / sustainability opportunities provided by the current drive to develop infrastructure for residual waste, the WAG should give consideration to publishing national policies on:
- co-locating and networking EfW facilities with proposed or existing energy consuming land uses such as district heating systems or large industrial energy users; and
 - minimum efficiencies for EfW facilities in the production of heat and electricity.

GLOSSARY OF TERMS

Agricultural Waste	Waste produced at agricultural premises as a result of an agricultural activity. Manure and slurry is not classified as waste when used as a fertiliser.
Anaerobic Digestion	A resource recovery process where biodegradable waste is treated by means of bacterial action in the absence of oxygen to produce digestate and biogas .
Animal By-products	The EU Animal By-Products Regulation (1774/2002) states that animal by-products are the entire bodies or parts of animals, or products of animal origin, not intended for human consumption.
Autoclave	A pressurised steam treatment process.
Best Practicable Environmental Option	The BPEO procedure establishes the waste management option, or mix of options, that provides the most benefits or the least damage to the environment as a whole, at acceptable cost, in the long-term as well as in the short-term.
Biological Mechanical Treatment	A generic term for a resource recovery process which integrates several processes commonly found in other waste management facilities such as MRFs , and composting facilities. BMT/MBT facilities can incorporate a number of different processes in a variety of combinations and can be built for a range of purposes. A common aspect of all BMT/MBT plant used for MSW management is to sort mixed waste into different fractions using mechanical means and to recover materials for recycling .
Biodegradable Waste	Waste that is capable of being broken down by plants (including fungi) and animals (including worms and micro-organisms).
Biogas	Gas produced by biodegradable waste as it breaks down by biological and chemical reaction. The gas can be used as a fuel and/or in a Combined Heat and Power system.
Biological Treatment	Any biological process that changes the properties of waste (e.g. anaerobic digestion , composting). Biological treatment includes landspreading activities that are licensed.
Bring Recycling	Recycling schemes where the public bring material for recycling to centralised collection points, (e.g. bottle and can banks) at civic amenity sites , supermarket car parks and similar locations.
Civic Amenity Site	A generic term for a facility provided by the local authority that receives household waste delivered by the public. Wastes handled include bulky items such as furniture, white goods, garden waste and general household wastes as well as recyclables. Some CA sites have facilities to receive certain

	hazardous household wastes, e.g. lead acid batteries and oil. Also called Household Waste Recycling Centres .
Clinical Waste	Healthcare waste such as blood, tissue, needles, soiled dressings, drugs etc. that is infectious or could cause harm in some other way. It may be produced from hospitals, medical, nursing, dental, veterinary, pharmaceutical or similar practices or from home treatment, e.g. diabetes.
Combined Heat and Power	The use of a power station to simultaneously generate both heat and electricity. The steam or hot water generated in the process is utilized either in industrial processes or in community heating.
Commercial Waste	Waste arising from premises used wholly or mainly for trade, business, sport, recreation or entertainment, excluding Municipal Waste and Industrial Waste .
Composting	A resource recovery process where biodegradable waste (such as garden and kitchen waste) is converted, in the presence of oxygen from the air, into a stable granular material which, applied to land, improves soil structure and enriches the nutrient content.
Construction and Demolition Waste	Waste arising from the construction, repair, maintenance and demolition of buildings and structures, including roads. It consists mostly of brick, concrete, hardcore, subsoil and topsoil, but it can also contain quantities of timber, metal, plastics and (occasionally) Hazardous Waste materials.
Controlled Waste	The UK term for wastes controlled under the Waste Framework Directive. Controlled waste includes household waste, Commercial Waste, Industrial Waste and Agricultural Waste .
Development Plan	A land-use planning document required by Act of Parliament to set the policies and framework for making decisions on planning applications
Digestate	The solid and/or liquid residue produced by Anaerobic Digestion . Can be used as a fertiliser/compost.
Dioxins	A family of chemicals produced by, among other ways, the burning of PVC plastics at low temperatures (less than 700°C). Some are known to be carcinogenic.
Disposal	According to the waste hierarchy the final disposal of waste through landfill, landraise or incineration without energy recovery is the least preferred way of managing waste.
Diversion	A term used to refer to avoiding disposal of waste in landfill and instead diverting it into other waste management methods, especially reuse, recycling,

	composting and Mechanical Biological Treatment and thermal treatment.
End of Life Vehicles	Scrap cars and other vehicles.
Energy from Waste	A resource recovery process where energy in the form of heat and/or power is recovered from burning waste. Energy can be produced from waste through incineration, gasification, pyrolysis , the combustion of refuse derived fuel , the combustion of biogas produced during anaerobic digestion , and the combustion of landfill gas.
Environment Agency Wales	The principal environmental regulator in Wales. Established in April 1996 to combine the functions of former waste regulation authorities, the National Rivers Authority and Her Majesty's Inspectorate of Pollution. Intended to promote improved waste management and consistency in waste regulation across England and Wales.
Environmental Impact Assessment	A procedure for considering the potential environmental effects of land-use change. EIA helps to inform decision-making and enables decisions on land-use change to be taken with full knowledge of the likely environmental consequences.
Epidemiology	The medical and scientific study of the causes of disease and ill health.
EU Directive	A European Union legal instruction, binding on all Member States but which must be implemented through national legislation within a prescribed time-scale.
Exempt facility	A waste management / resource recovery facility registered with, but not licensed by, the Environment Agency . Exempt facilities are subject to general rules (e.g. on the types and quantities of wastes received).
Fly tipping	The illegal disposal of waste on land.
Gasification	A resource recovery process. Gasification can be seen as between pyrolysis and incineration in that it involves the partial oxidation of a substance. This means that oxygen is added but the amounts are not sufficient to allow the fuel to be completely oxidised and full combustion to occur. The temperatures employed are typically above 750°C. The main product is a syngas, which contains carbon monoxide, hydrogen and methane. The other main product produced by gasification is a solid residue of non-combustible materials that contains a relatively low level of carbon.
Geographical Information System	A computer system for collecting, managing, analyzing and displaying geographically referenced information.

Hazardous Waste	A broad term for a wide range of waste materials that present different levels of risk. Some present a serious and immediate threat to the population and the environment, for example those that are toxic, could cause cancer or infectious disease. Others, such as fluorescent tubes or cathode ray tubes in televisions, pose little immediate threat but may cause long-term damage over a period of time.
Household Waste	It includes domestic waste from household collection rounds, waste from services such as street sweepings, bulky waste collection, litter collection, hazardous household waste collection and garden waste collection, waste from civic amenity sites and wastes separately collected for recycling or composting through bring recycling schemes and kerbside recycling schemes. Household waste is a sub-group of Municipal Solid Waste .
Household Waste Recycling Centre	A term for a facility provided by the local authority that receives household waste delivered by the public. Wastes handled include bulky items such as furniture and, white goods, garden waste and general household wastes as well as recyclables. Some HWRCs have facilities to receive certain hazardous household wastes, e.g. lead acid batteries and oil. Also called Civic Amenity sites .
Incineration	The burning of waste at high temperatures in the presence of sufficient quantity of oxygen to fully combust / oxidise the waste. Typically, incineration temperatures are in excess of 850°C. The waste is converted into carbon dioxide and water. Any non-combustible materials (e.g. metals, glass) remain as a solid, known as bottom ash, which contains a small amount of residual carbon. Incineration is used either to reduce the volume of the waste (in the case of MSW) or its toxicity (e.g. for organic solvents and PCBs). Most modern incinerators are a resource recovery process where energy in the form of heat and/or power is recovered from burning waste – see Energy from Waste .
Industrial Waste	Waste from any factory or industrial process (excluding mines and quarries).
Inert Waste	Chemically inert, non-combustible, non- biodegradable waste and non-polluting waste defined in the EU Directive on the Landfill of Waste.
Integrated Pollution Prevention & Control	The European Integrated Pollution Prevention and Control applies an integrated environmental approach to the regulation of certain activities. Emissions to air, water and land, plus a range of other environmental effects, must be considered

together. Regulators must set permit conditions so as to achieve a high level of protection for the environment as a whole. These conditions are based on the use of the 'best available techniques' that balances the costs to the operator against the benefits to the environment. **IPPC** aims to prevent emissions and waste production and where that is not practicable, reduce them to acceptable levels.

In-vessel Composting

A term used to cover a wide range of **composting** systems all of which enclose the activity and therefore allow a higher degree of control over the temperature, oxygen and moisture than is possible with **windrow composting**.

Kerbside Recycling

Collection of recyclable or compostable wastes usually from the pavement (hence the name), outside premises, including collections from commercial or industrial premises as well as from households.

Landfill

Licensed facilities where waste is permanently deposited for **disposal** into land. According to the **waste hierarchy** the final **disposal** of waste through landfill is the least preferred way of managing waste.

Landfill Allowance Scheme

The Landfill Allowances Scheme (Wales) Regulations were made by the National Assembly for Wales on 8 June 2004. They were made under powers conferred by the Waste and Emissions Trading Act 2003. This Act implements in the UK Article 5 of the **EU Directive** on the **landfill** of waste (1999/31/EC). The purpose of the LAS is to require waste **disposal** authorities in Wales to limit the quantities of **BMW** that they landfill in accordance with an allowance allocated to them by the **WAG** in accordance with Section 4 of the Act.

Landfill Tax

A tax that applies to **inert** and non-inert waste, **disposed** at a **licensed landfill** site. The aim of the tax is to send a tough signal to waste managers to switch to less environmentally damaging alternatives to **disposal**.

Landraise

Licensed facilities where waste is permanently deposited for **disposal** on to land. According to the **waste hierarchy** the final **disposal** of waste through landfill is the least preferred way of managing waste.

Land-Use Planning

The development planning system that regulates the development and use of land in the public interest.

Leachate

The liquid run-off carrying polluting chemicals from waste deposited in **landfill** / **landraise** sites.

Life Cycle Assessment

The systematic identification and evaluation of all the environmental benefits and disbenefits that result, both directly and indirectly, from a product or function throughout its entire life from extraction of raw materials to its eventual **disposal** and

assimilation into the environment. LCA helps to place the assessment of the environmental costs and benefits of these various options, and the development of appropriate and practical waste management policies, on a sound and objective basis.

Mass Burn Incineration

Incineration of the complete **waste stream** without any further sorting, **treatment** or removal of materials for **recycling** and **composting**. Most modern **incinerators** are a **resource recovery** process where energy in the form of heat and/or power is recovered from burning waste – see **Energy from Waste**.

Materials Recovery Facility

A **resource recovery** process of varying scale where materials that can be recycled or composted are separated out of unsorted waste.

Mechanical Biological Treatment

A generic term for a **resource recovery** process which integrates several processes commonly found in other waste management facilities such as **MRFs**, and **composting** facilities. **MBT/BMT** facilities can incorporate a number of different processes in a variety of combinations and can be built for a range of purposes. A common aspect of all **MBT/BMT** plant used for **MSW** management is to sort mixed waste into different fractions using mechanical means and to **recover** materials for **recycling**.

Mechanical Heat Treatment

A term used to describe configurations of mechanical and thermal, including steam, based technologies. The most common system being promoted for the treatment of **MSW** using **MHT** is **autoclave**.

Members Steering Group

The **WAG** has given the responsibility of preparing, monitoring and revising the **RWP** to the South East Wales **Regional Waste Group**. This group is led by a Members Steering Group of councillors from the 11 Local Planning Authorities in the region with a **Regional Waste Technical Group** of officers from local government, the **WAG**, Environment Agency Wales and other government bodies, and representatives from the waste industry and environmental groups.

Municipal Solid Waste

Household waste and other wastes collected by a **waste collection authority** or its contractors, such as municipal parks and gardens waste, beach cleansing waste and any **Commercial Waste** and **Industrial Waste** for which the collection authority takes responsibility.

Open-gate landfill

A **landfill** run as a commercial operation that receives waste from many waste producers.

PAS 100

A publicly available specification for **compost**

Permitted Development	materials prepared and published by the British Standards Institution. Permission to carry out certain limited forms of development without the need to make a planning application to a LPA , as granted under the terms of the Town and Country Planning (General Permitted Development) Order.
Pollution Prevention & Control	Pollution Prevention and Control is a regime for controlling pollution from certain industrial activities. Operators must use the best available technique to control pollution from their industrial activities. The aim of the best available techniques is to prevent, and where that is not practicable, to reduce to acceptable levels, pollution to air, land and water from industrial activities while balancing the cost to the operator against benefits to the environment.
Polychlorinated Biphenyls	Highly persistent bioaccumulative pollutants that are immuno suppressive. Their accumulation through the food chain results in them being a serious threat to health, particularly in communities with a large dietary intake of fish.
Primary Resources	Virgin materials that have been extracted from the Earth.
Proximity Principle	Requires that waste should generally be disposed of as near to its place of production as possible.
Pyrolysis	A resource recovery process. In contrast to incineration , pyrolysis is the thermal degradation of a substance in the absence of oxygen. This process requires an external heat source to maintain the temperature required. Typically, relatively low temperatures of between 300°C to 800°C are used during pyrolysis of materials such as MSW . The products produced from pyrolysing materials are a solid residue and a synthetic gas (syngas). The solid residue (sometimes described as a char) is a combination of non-combustible materials and carbon. The syngas is a mixture of gases (combustible constituents include carbon monoxide, hydrogen, methane and a broad range of other volatile organic compounds). A proportion of these can be condensed to produce oils, waxes and tars. If required, the condensable fraction can be collected by cooling the syngas, potentially for use as a liquid fuel.
Recovery	The recovery of valuable materials and energy from waste. The waste hierarchy states that the recovery of resources is more favourable than their final disposal . Reduces the need for primary resources – and thus also reduces costs.

Recycling	A resource recovery process that involves the reprocessing of wastes, either into the same material (closed-loop) or a different material (open-loop recycling). Reduces the need for primary resources – and thus also reduces costs.
Reduction	Reducing the quantity or the hazard of a waste produced from a process. Reduces the need for primary resources – and thus also reduces costs.
Refuse Derived Fuel	Fuel, often in pellet form, which is produced from combustible elements of household waste and Commercial Waste , and used in industrial boilers to produce energy from waste .
Regional Waste Group	The WAG has given the responsibility of preparing, monitoring and revising the RWP to the South East Wales Regional Waste Group. This group is led by a Members Steering Group of councillors from the 11 Local Planning Authorities in the region with a Regional Waste Technical Group of officers from local government, the Welsh Assembly Government, Environment Agency Wales and other government bodies, and representatives from the waste industry and environmental groups.
Regional Waste Technical Group	The WAG has given the responsibility of preparing, monitoring and revising the RWP to the South East Wales Regional Waste Group . This group is led by a Members Steering Group of councillors from the 11 Local Planning Authorities in the region with a Regional Waste Technical Group of officers from local government, the Welsh Assembly Government, Environment Agency Wales and other government bodies, and representatives from the waste industry and environmental groups.
Residual Waste	Waste remaining to be disposed of after re-use, recycling , composting and recovery of materials and energy.
Resource Recovery	The recovery of valuable materials and energy from waste. The waste hierarchy states that the recovery of resources is more favourable than their final disposal . Reduces the need for primary resources – and thus also reduces costs.
Restricted-User Landfill	Sometimes known as “factory-curtilage landfill ” sites within ownership of the waste producer or restricted to specific users.
Reuse	Using materials or products again. Reduces the need for primary resources – and thus also reduces costs.
Source Separation	The separation of materials suitable for re-use , recycling and composting from waste at the point where it is produced by households and businesses.
Special Waste	Defined by the Environment Protection (Special

	<p>Waste) Regulations 1996 (as amended). In July 2005 the Hazardous Waste (England and Wales) Regulations and the List of Wastes (Wales) Regulations come into force, replacing the Special Waste Regulations.</p>
Stabilised Biowaste	Biodegradable waste which is treated so that it is biologically stable and therefore no longer reacts to produce either leachate or landfill gas.
Stabilised Waste	Waste that has been treated so that it is chemically stable.
Strategic Environmental Assessment	A procedure which centres around the production of an 'Environmental Report' in which the likely significant effects on the environment of implementing the plan or programme, and reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme, are identified, described and evaluated.
Sustainable Waste Management	Using material resources efficiently to cut down on the amount of waste produced. And, where waste is generated, dealing with it in a way that actively contributes to the economic, social and environmental goals of sustainable development. The concepts of the waste hierarchy and resource recovery are central to sustainable waste management.
Sustainable Waste Management Option	An assessment technique that supplements the technique of Best Practicable Environmental Option to ensure that social and economic, as well as environmental, issues are taken into account in the consideration of waste management options.
Thermal Treatment	The treatment of waste using elevated temperatures as the primary means to change the chemical, physical, or biological character or composition of the waste. Examples of thermal treatment processes are gasification , incineration , and pyrolysis .
Transfer Station	A waste management facility to which waste is delivered for separation or bulking up before being removed for resource recovery , treatment or disposal .
Treatment	A catch-all term for a very wide range of physical, thermal, chemical or biological processes that change the nature of waste in some way.
Waste Arisings	The amount of waste generated in a given locality over a given period of time.
Waste Collection Authority	A local authority responsible for the collection of Municipal Solid Waste in its area.
Waste Disposal Authority	A local authority responsible for the management of the waste collected and delivered to it by constituent collection authorities. The processing and/or final disposal of the waste is usually contracted to the

Waste Electrical & Electronic Equipment	private sector waste management industry. Electrical or electronic equipment that is waste, including all components, subassemblies and consumables that are part of the product at the time of discarding.
Waste Hierarchy	Hierarchical ranking of waste management options based on their relative environmental benefits: reduction, reuse, recovery (resource recovery of materials through recycling and composting and energy from waste) disposal.
Waste Management Licence	A waste management / resource recovery facility licensed under the Environmental Protection Act.
Waste Management Licensing	The system of permits operated by the Environment Agency under the Environmental Protection Act to ensure that activities authorised to recover or dispose of waste are carried out in a way which protects the environment and human health.
Waste Stream	A way of classifying waste according to its source and nature.
Windrow Composting	A resource recovery process where composting of biodegradable waste is undertaken in elongated piles called windrows. The windrows are monitored throughout the composting process to ensure that the optimum temperature, oxygen concentration and moisture content are maintained. The windrows are turned periodically, to introduce fresh air, and watered to maintain the ideal conditions for composting.

GLOSSARY OF ACRONYMS

AD	Anaerobic Digestion
AMR	Annual Monitoring Report
AONB	Area of Outstanding Natural Beauty
AQMA	Air Quality Management Area
ATT	Advanced Thermal Treatment
BAP	Biodiversity Action Plan
BMT	Biological Mechanical Treatment
BMW	Biodegradable Municipal Waste
BPEO	Best Practicable Environmental Option
C&D	Construction & Demolition
CA	Civic Amenity
CHP	Combined Heat and Power
CLOPUD	Certificate of Lawfulness Of Proposed Use or Development
COMAH	Control Of Major Accident Hazards
DEFRA	Department for Environment, Food and Rural Affairs
EAW	Environment Agency Wales
EfW	Energy from Waste
EIA	Environmental Impact Assessment
ELV	End of Life Vehicle
EU	European Union
GIS	Geographical Information System
HIA	Health Impact Assessment
HWRC	Household Waste Recycling Centre
IBA	Incinerator Bottom Ash
IPPC	Integrated Pollution Prevention and Control
IVC	In-Vessel Composting
LAS	Landfill Allowance Scheme
LCA	Life Cycle Assessment
LDP	Local Development Plan
LPA	Local Planning Authority
MBT	Mechanical Biological Treatment
MHT	Mechanical Heat Treatment
MRF	Materials Recycling Facility
MSG	Members Steering Group
MSW	Municipal Solid Waste
NPA	National Park Authority
NWSW	National Waste Strategy for Wales
ODPM	Office of the Deputy Prime Minister
ONS	Office of National Statistics
PAS	Publicly Available Specification
PCB	Polychlorinated Biphenyls
PPC	Pollution Prevention & Control
RDF	Refuse Derived Fuel
REGIS	REGulation Information System
RWG	Regional Waste Group
RWP	Regional Waste Plan
RWTG	Regional Waste Technical Group

SA	Sustainability Assessment
SAC	Special Area of Conservation
SEA	Strategic Environmental Assessment
SEWEF	South East Wales Economic Forum
SINC	Site of Importance for Nature Conservation
SOLA	Substances Of Low Activity
SSSI	Site of Special Scientific Interest
SWMO	Sustainable Waste Management Option
TAN	Technical Advice Note
TPA	Tonnes Per Annum
UA	Unitary Authority
VLLW	Very Low Level radioactive Waste
WAG	Welsh Assembly Government
WCA	Waste Collection Authority
WDA	Waste Disposal Authority
WEEE	Waste Electrical & Electronic Equipment
WID	Waste Incineration Directive
WISARD	Waste: Integrated Systems Analysis for Recovery and Disposal
WML	Waste Management Licence
WRATE	Waste and Resources Assessment Tool for the Environment