

# Joint Waste Core Strategy - Preferred Options Consultation - Response Form

Your comments on every aspect of this document are welcomed. You can write your comments in the spaces provided below; you can continue on additional sheets.

Please return the completed response form to:  
**West of England Partnership, Freepost SEA 12430, Thornton Heath CR7 7XT**  
(no stamp required).

Alternatively you can participate online at [www.westofengland.org/waste](http://www.westofengland.org/waste) or email your response to [wepo@dialoguebydesign.com](mailto:wepo@dialoguebydesign.com)

If you require this response form in a different format please contact **0117 922 2785**.

- **The deadline for receiving responses is 12 March 2009**

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Baker Associates on behalf of LandTrust

- West of England Partnership is working with Dialogue by Design, an independent consultation company, to conduct this consultation. Any personal information you provide will be processed by West of England Partnership and Dialogue by Design, in accordance with the Data Protection Act 1998, to assist in the preparation of the core strategy and related waste-planning issues.

Submissions to this consultation will be made available on a public website. For responses made by individuals, the respondent's name will not be displayed on the website. Responses made on behalf of an organisation will have the organisation name displayed on the website. Full responses including contact details will be available for inspection by the public on request. We are unable to treat submissions as confidential.

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## General comments

### 1. Do you have general comments you would like to make?

Please see comments on separate sheet.

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## Waste minimisation

There are two proposed policies for Waste Minimisation

- To promote the use of Waste Audits

### 2. Do you have any comments on this policy?

- To identify the types of developments for which waste audits would be applicable.

### 3. Do you have any comments on this policy?

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## Recycling and composting

Views expressed to the Issues and Options consultation were strongly in favour of recycling. This planning document has to plan where to locate facilities for recycling or composting material produced by commercial and industrial concerns. These would include recycled aggregate processing facilities, material recycling/waste transfer stations, and open windrow and in vessel composting facilities

The proposed policies for Recycling and Composting are:

- **Inert (construction and demolition) waste recycling facilities** - to provide facilities at existing mineral sites, brown-field or industrial sites in urban or rural locations and existing and former waste sites.

### 4. Do you have any comments on this policy?

- **Non-Inert material (commercial and industrial) recycling/waste transfer facilities** - to keep existing facilities on industrial/brown-field land with an acceptable access on to the primary route network.

### 5. Do you have any comments on this policy?

- **Household waste recycling centres** - to provide facilities to serve Bath, Bristol, Stoke Gifford and North Somerset

**6. Do you have any comments on this policy?**

- **Open windrow composting** - to support proposals for small-scale 'on-farm' facilities

**7. Do you have any comments on this policy?**

- **In-vessel composting facilities** - to locate these facilities on brown-field or industrial sites in urban or rural locations along with existing and former waste sites.

**8. Do you have any comments on this policy?**

## Recovery

Recovery is the process of extracting a product of value from waste materials through recycling, composting and other forms of material recovery. In addition, modern technology enables us to generate valuable 'renewable' energy from waste. They can also make a contribution towards the regional targets set out in the draft Regional Spatial Strategy for renewable heat generation. There is an annual target for almost 800,000 tonnes of waste to be managed through recovery facilities by 2020, and there are no such facilities currently operational in the West of England. There are a number of different ways in which recovery facilities can be spaced out. These are known as spatial options. Three spatial options have been identified:

- **Option A:** Two recovery facilities which would each handle 400,000 tonnes annually.

**9. Do you have any comments on option A?**

Please see comments on separate sheet.

- **Option B:** Eight recovery facilities each handling 100,000 tonnes annually.

**10. Do you have any comments on option B?**

Please see comments on separate sheet.

- **Option C: A combination of different scale facilities suiting the density of the surrounding area** - this is the preferred option of the West of England Partnership. This means providing facilities at:



**11. To what extent do you agree with our preferred option C?**

Please see comments on separate sheet.

**Landfill**

**Non-Inert Waste:**

- Requirement for new non-inert landfill capacity to replace existing facilities as they close, up to a maximum capacity of 265,000 tonnes per annum;
- Identify Areas of Search and adopt a criteria-based policy approach.

**Hazardous Waste**

- No policy required. Waste to be exported to specialist disposal facilities.

**Inert Waste (construction and demolition)**

- No policy required. Each council to make provision for their own area.

**Q12 . Do you have any comments on the policy on landfill?**

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(no stamp required).**

## **Question 1 - general comments**

### **(i) overall waste strategy**

The emerging RSS provides for a mixed use urban extension to accommodate 10,500 dwellings to the south west of Bristol to be delivered by 2026. As well as the additional housing, there will also be new employment, education, retail, open space and community uses.

LandTrust is the controlling landowner promoting the development of the South West Bristol Urban Extension, known as Ashton Park.

LandTrust supports the overall waste strategy put forward by the West of England, which promotes waste minimisation and recycling, whilst recognising the role recovery has in dealing with the residual municipal and commercial waste once efforts have been made to re-use and recycle waste. In particular, energy recovery in the form of combined heat and power (CHP) not only reduces waste sent to landfill, but it has the particular advantage of providing localised heat and power to buildings, significantly reducing carbon emissions from development.

In pursuing a low carbon development and a sustainable solution for heating and powering the homes, schools, community buildings, offices and shops at Ashton Park, LandTrust has been exploring a wide range of potential technologies to provide energy for the development and more detail on our emerging ideas are set out in appendix 1.

### **(ii) Comments on the WCS introduction**

The Waste Core Strategy (WCS) Preferred Options report does not specify the time period the WCS covers. The vision suggests that the WCS goes to 2026, however, para 6.2 (table 2) sets out the indicative annual waste management capacity targets for 2020 only. This is the capacity that the rest of the WCS appears to address and therefore, potentially the plan falls short of making provision to 2026. If the WCS is only making provision in relation to capacity targets in 2020, this is inconsistent with the requirement for the time horizon of core strategies to be at least 15 years from the date of adoption (PPS12, para 4.13).

### **(iii) Aims (page 13)**

The WCS Preferred Options report gives preference to brownfield and urban land (aim number 7). Such a sequential approach does not form part of PPS10, nor should it prejudice the strategy and the consideration of specific sites in the WCS. Potentially, this aim leads to the urban extensions treated as inferior locations when they perform very well against proper sustainability criteria such as energy efficiency, renewable energy use, and reducing greenhouse gas emissions as locations for recovery, particularly CHP facilities. In fact, the sustainability appraisal of the WCS Preferred Options notes that newly urbanised sites (ie the urban extensions) compare favourably with urban sites – see comments to questions 8, 9 and 10 below. Therefore, from a sustainability outcomes perspective, this aim prejudices the strategy response, and potentially discounts suitable and sustainable locations for recovery facilities, such as the urban extensions, simply because they are currently greenfield land. The effects of this aim have been particularly significant in the site

assessment process for the WCS, which has effectively discounted the urban extensions from the site assessment process because they are currently in the green belt or on greenfield land – see comments to questions 8, 9 and 10 below.

## Questions 8, 9 and 10 - proposed policy for recovery

Spatial options for recovery in the Preferred Options document are as follows:

- Option A: 2 recovery facilities at 400,000 tonnes per annum each (table 6 identifies specific sites suitable to deliver option A);
- Option B: 8 recovery facilities at 100,000 tonnes per annum each (table 7 identifies specific sites suitable to deliver option B); and
- Option C: a combination of Options A and B (table 8 identifies specific sites suitable to deliver option C).

In terms of recovery facilities, we support the preference for a large network of smaller localised facilities across the plan area because of the way this approach is more likely to accommodate suitable smaller combined heat and power schemes in generating energy close to where it can be used. On this basis, we object to Option A.

Para 5.2 of the Spatial Options Appraisal (ERM, Jan 2008) finds Options B and C to be finely balanced in terms of the sustainability appraisal, although Option B is said to be more difficult to deliver because of political, resource, economies of scale and site availability issues. However, given the political resistance to a large scale recovery facility at Avonmouth, Option C appears to be experiencing delivery issues.

We support the general approach of Option B in that it lends itself to supporting smaller localised facilities across the plan area. However, we object to the site identification process (referred to in para 6.34) that has led to the identification of potential sites for strategic recovery facilities in Table 5 of the WCS Preferred Options report. We also object to the sites considered suitable to deliver Options B and C (table 7 and Table 8) because the spatial options presented are based on an incomplete evidence base.

Urban extensions have a particular advantage in that energy recovery schemes are more likely to be viable because the expensive infrastructure associated with CHP can be planned comprehensively as part of the wider development and be introduced at the same time as other infrastructure required for a new development, thereby sharing the costs. Retrofitting infrastructure for energy recovery in existing urban areas could render CHP schemes unviable in many places.

This is substantiated in table 6.7 of the sustainability appraisal (SA) (ERM Oct 2008) of the WCS Preferred Options which looks at the impacts of promoting waste facilities within the urban extensions. For the sustainability appraisal objectives such as increasing energy efficiency, renewable energy use, reducing greenhouse gas emissions and promoting local innovation, the SA report states that *'promoting waste treatment facilities within urban extensions will help to encourage the use of CHP schemes. This will increase the recovery of energy from waste treatment, so increasing energy efficiency. Similar opportunities may arise for facilities within existing developments but these are less likely to be practicable'*.

Page 15 of the WCS Preferred Options report says that the urban extensions proposed in the South West RSS will become priority areas of search for CHP

schemes. However, this does not follow in what is set out in tables 5, 7 and 8 or on the spatial options maps presented.

Our concern is that despite the advantages offered by CHP in urban extensions, energy recovery schemes as part of the urban extensions were not examined in the site identification and assessment process undertaken by the West of England, and for this reason they do not appear in Table 5 as potential strategic waste management sites for recovery facility or in options B or C. This is despite the areas of search for the urban extensions being well advanced in the South West RSS process at the time the WCS site identification process began in 2007.

The 'Site Selection Methodology' report (SLR May 2007) shows that the South West Bristol Urban Extension (SWBUE) was put forward for consideration and given a reference number NS28. However, despite a comment alongside NS28 that 'urban extensions would be dealt with separately' (page 31), the SWBUE site is not taken any further in this report / shortlisted for further consideration, nor is it dealt with in the subsequent 'Detailed Site Assessment' report (ERM, Oct 2007). It appears that there is a flaw in the methodology for the site assessment process whereby green belt and greenfield sites have been discounted (page 2 of the Site Selection Methodology). However, this ignores the emerging RSS which will remove the urban extensions from the green belt and promotes their development, creating newly urbanised areas. Even the WCS Preferred Options sustainability appraisal makes the 'newly urbanised' distinction in relation to the optimum use of urban land objective (page 80).

## **Amendments sought to the emerging WCS**

LandTrust object to the way the evidence has been collected – that is - discounting greenfield / green belt sites early on in the site identification process which has been used to inform the spatial options. This is a fundamental oversight of the WCS because CHP schemes in these locations could form a very deliverable and sustainable option for accommodating a strategic waste treatment facility, at the same time as recovering heat and energy for use in the new urban areas. These considerations do not feature in tables 5, 7 or 8. Given that the WCS intends to identify strategic waste management sites, this gap in the evidence base needs addressing and the urban extensions need to be considered as part of the spatial options appraisal of identified sites.

LandTrust believe that those locations where it is possible to achieve CHP should be part of the spatial options presented, and therefore, the urban extensions should form areas of search that are mapped and referred to as potential sites (such as in tables 5, 7 and 8) in the proposed submission draft of the WCS. The proposals at Ashton Park are very advanced and a planning application for the development including a CHP scheme will be submitted in the summer 2009. As part of the development framework for the site, provision has been made for an energy centre and the emerging preference is for the use of advanced thermal treatment in the form of gasification to heat and power the development. See appendix 1 for further information.

The Unitary Authorities need to secure recovery facilities as soon as possible and the proposals for the development of land at South West Bristol (Ashton Park) are well advanced to begin to address both the landfill diversion targets and the regional renewable energy targets as soon as 2012. On this basis, land at South West Bristol should take the form of a strategic allocation in the proposed submission draft of the WCS.

## **Appendix 1 Emerging proposals for a CHP scheme at Ashton Park**

### **Background**

In order to meet the Government's stated requirement for new homes to be zero carbon from 2016, the potential for using Low and Zero Carbon (LZC) energy options to supply energy to the Ashton Park development has been considered during the development of the masterplan for the area. It is taken as a given that the buildings, residential and commercial, within the development area will be of the highest energy efficiency standards. However there will remain a need for heat and power within the urban extension and the local generation of both is generally accepted as the most sustainable approach. Therefore, an assessment of LZC energy options has been undertaken to consider the most appropriate options for the provision of energy to the urban extension.

Landtrust believes that an energy centre within the development providing heat and power to Ashton Park from the gasification of municipal waste is emerging as the best way forward, following a three-stage process.

The first stage has been to decide that a centralised, site-wide approach to bringing down carbon emissions associated with the use of energy, combined with building-specific approaches is better than relying on building-specific approaches alone. Individual building solutions include technologies like photo-voltaics and ground or air source heat pumps. Creating development on a large scale, from scratch, presents the opportunity to use technologies that require major investment, and presents the opportunity to plan and install the necessary distribution networks in a very efficient way. A centralised, site-wide approach has particular advantages over individual buildings solutions in being able to ensure that the technology is maintained and hence achieve carbon savings over the long term. Technologies that involve the individual decisions of householders or facilities managers in their upkeep and replacement cannot be relied upon to the same degree because individual householders/facilities managers may chose not to maintain / replace technologies if they break down. Therefore, technologies such as photo-voltaics and ground or air source heat pump may have a contributory role but are not the preferred primary source of carbon savings.

The second stage has been to consider the possible technologies and energy sources.

The Ashton Park development area includes landfill sites which are producing landfill gas. This is a source of power and indeed the gas from Yanley landfill is currently producing about 1.1 MW electrical output (which is being fed to the National Grid) whilst the heat is dumped to the atmosphere. Whilst this output could represent about 5% of the predicted electricity requirement for Ashton Park, this source is running out, and is predicted to halve by 2020.

Wind turbines have been considered as a means of supplying renewable energy to the site. Locations for wind turbines with sufficient generating potential are difficult to find however. In the vicinity of the site a possible location was identified near the Barrow Tanks to the south west of the site. Two 2-MW turbines with a typical size of 80m hub height and 80m diameter rotor (that is, a blade tip height of 120m) would save about 10% of the carbon emissions involved in supplying power to the site. Difficulties in installing sufficient turbines in this area would be the perceived visual

impact with elevated ground around the site, and the possible effect on the local bat population, as well as the proximity of the airport with its reliance on radar systems.

A biomass plant could be used, burning energy crops (from miscanthus or short rotation coppice) or wood waste or forest residues. Supply from the latter source is less predictable than contracts struck with farmers for supplies from the former sources, and the investment would require the certainty of this supply. Studies have indicated that a plant serving Ashton Park would require around 5% of the suitable agricultural land in the sub-region to be planted with energy crops. This is a large area of land that would need to be providing a constant supply of fuel by 2012. Therefore, concerns about this approach relate to securing the fuel supply, particularly given the growing demands on land for food production. Some people also raise concerns about growing energy crops on a mass scale because of the way that it will change the landscape in this country.

CHP using waste as its fuel has emerged as the preferred approach, with the back up of gas burners to ensure continuity of the heat supply alongside a default to the National Grid for power. The development area incorporates an established waste management facility, currently receiving an average yearly input of more than twice the likely annual throughput for a medium energy from waste plant. This approach combines power and heat production with the necessary processing of waste, and so addresses two rather than one fundamental areas of national and regional policy.

The third step therefore has been the identification of a preferred technology for recovering energy from waste. A fuller explanation of the relevant national, regional and local waste and energy context is set out in annex 1.

The remainder of this section considers the various technologies which recover energy from waste material and the merits of each.

### **Examination of different energy recovery technologies**

In looking at energy recovery options, a number of technologies have been explored as follows:

- Small scale incineration
- Mechanical and biological treatment (MBT) producing a solid recovered fuel (SRF) to supply one or more small scale gasification plants on the site
- Anaerobic digestion
- Gasification / pyrolysis

Criteria to assess these options are as follows:

<p>Environmental, covering:</p> <ul style="list-style-type: none"> <li>▪ Climate change</li> <li>▪ Air emissions</li> <li>▪ Sustainability and compatibility with waste hierarchy</li> </ul>	<p>Technological, covering:</p> <ul style="list-style-type: none"> <li>▪ technology risk</li> <li>▪ product outlet risk</li> </ul>	<p>Socio-economic and planning, covering:</p> <ul style="list-style-type: none"> <li>▪ impact on residential amenity</li> <li>▪ transport implications</li> <li>▪ planning risk</li> <li>▪ compatibility with desire of West of England to be self sufficient in dealing with waste</li> </ul>
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These criteria correlate to those used as part of the options appraisal for the Issues and Options consultation on the West of England Waste Core Strategy (see pages 9-10). The performance of each of the options against these criteria is presented below.

Representations to the West of England Partnership Waste Core Strategy Preferred Options Consultation Document by Baker Associates on behalf of LandTrust

<b>Technology option</b>	<b>Environmental criteria</b>	<b>Technology criteria</b>	<b>Socio-economic criteria</b>
Small scale incineration	<ul style="list-style-type: none"> <li>▪ Mitigating climate change as providing low carbon energy source to development</li> <li>▪ Air emissions would meet requirements of Waste Incineration Directive (WID)</li> <li>▪ Recovering energy only from residual waste, so no conflict with waste hierarchy</li> </ul>	Proven technology with no product outlet risks	<ul style="list-style-type: none"> <li>▪ Potentially significant planning risk due to negative local perception of incineration</li> </ul>
MBT producing SRF to supply one or more small scale gasification plants on the site	<ul style="list-style-type: none"> <li>▪ Mitigating climate change as providing low carbon energy source to development</li> <li>▪ Gasification plants likely to have lower emissions to air than incineration</li> <li>▪ Recovering energy only from residual waste, so no conflict with waste hierarchy</li> </ul>	<ul style="list-style-type: none"> <li>▪ A proven technology (MBT), but potential concerns about being able to find outlets for SRF in early years</li> <li>▪ Gasification plant, for provider concerned, not sufficiently proven</li> </ul>	<ul style="list-style-type: none"> <li>▪ MBT facilities tend to have a larger land take requirement than is available at Ashton Park and would give the development a greater “waste treatment” focus, that could lead to a greater perception of risk amongst potential residents</li> <li>▪ More transport implications as SRF would need to be transferred to energy centres</li> <li>▪ Need to have separate planning applications for MBT facility and for gasification plants, leading to greater planning risk and cost</li> </ul>
Anaerobic digestion, producing biogas to be burnt in a gas engine	<ul style="list-style-type: none"> <li>▪ Mitigating climate change as providing low carbon energy source to development</li> <li>▪ Likely to have lower emissions to air than incineration</li> <li>▪ Recovering energy only from residual waste, so no conflict with waste hierarchy</li> </ul>	<ul style="list-style-type: none"> <li>▪ Although a relatively proven technology, concern that a food waste supply of sufficient quantity might be difficult to secure</li> <li>▪ Also concern about the identification of long-term markets for stabilised digestate from the process</li> </ul>	<ul style="list-style-type: none"> <li>▪ Concerns about potential odour impacts (and perception of odour risk) in close proximity to a residential development</li> </ul>

<p>Gasification/ Pyrolysis</p>	<ul style="list-style-type: none"> <li>▪ Likely to have lower pollutant emissions than incineration (although both would be WID compliant)</li> <li>▪ More efficient conversion of feedstock to energy</li> <li>▪ Syngas could in future have environmentally beneficial uses other than in steam turbines</li> </ul>	<p>There are examples of gasification technology that have proven reliability and CHP track record at a number of plants in Europe, including in England.</p>	<ul style="list-style-type: none"> <li>▪ Felt to have less planning risk as these technologies do not have the negative perceptions compared with incineration.</li> <li>▪ Enables single facility to process waste and produce CHP</li> <li>▪ Gasification/ pyrolysis option gained highest ranking in options appraisal for issues and options paper for West of England waste core strategy</li> </ul>
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Based on the above assessment, a single on-site gasification facility fuelled by municipal and commercial waste, supplying heat and power to the Ashton Park development is emerging as the preferred solution. This is because this solution has the following advantages:

- Gasification technology is technically and commercially proven
- Gasification likely to have lower emissions to air than a small scale incinerator
- Low odour and pollutant emissions
- Use of heat from the CHP facility will significantly reduce the carbon emissions from the proposed new development at Ashton park
- Use of the heat will also significantly increase the useful energy that can be extracted from the residual waste and therefore increase the carbon savings achieved, compared to sending the waste to landfill, as well as reduce emissions from the transport of waste in the West of England to other parts of the country
- This solution could be accommodated on the site, is compatible in close proximity to residential development and was felt to have the lowest planning risk
- Has the potential to provide an excellent fit with the emerging strategy in the West of England Waste Core Strategy helping the West of England local authorities to meet their targets for recovering energy from residual waste and reducing the amount of residual waste that they send to landfill
- The facility will assist the West of England and the South West region to meet its targets for renewable electricity and heat

### Overview of Gasification Technology

Gasification technology to recover energy from commercial and municipal waste is classed as an Advanced Conversion Technology where the fuel is first gasified (by partial combustion in a reduced air environment) and the resulting synthetic gas (syngas) is then burnt in controlled conditions to raise steam in a boiler. Before going into the gasifier, the fuel is first mechanically treated, which means shredding it and then using a magnet to remove any remaining metals<sup>1</sup>. This metal is then sent for recycling.

<sup>1</sup> i.e. that haven't already been removed at source for recycling

The steam is then used to run a steam turbine to generate electricity. The heat that is produced after the steam has passed through the turbine and condensed is then passed to the district heating network.

The process is fully compatible with recycling as it takes as its fuel only the residual waste that is left over after recyclables have been removed at source (e.g. such as kerbside recycling collection for homes). Using this process, the amount of residual waste that would otherwise go to landfill is reduced by about three quarters. The remaining quarter is made up of ash produced by the facility, some of which can be used as aggregate replacement. Lime which is used as a filter in order to reduce emissions to air can also be reused as a replacement for gypsum. But there will remain some material, mainly metals that was screened out at the front end as being unsuitable to enter the gasifier which will be sent for recycling and a very small amount sent to landfill.

This process is referred to as Option 7 in the West of England Waste Core Strategy Issues and Options paper (Spring, 2007). The analysis that supported that paper **ranked this technology as the number one technology** (out of seven technologies) assessed against a range of quality and cost criteria. The key point is that this technology is **not** mass burn incineration (where the fuel is burnt directly, without being gasified). Compared with incineration, gasification uses advanced conversion technology which gives rise to very low emissions, a much smaller scale of plant and is fully compatible with recycling.

In addition a CHP plant supplying heat and electricity will reduce the carbon emissions from the buildings on the development by:

- Firstly, the development will make use of waste heat that would normally be dispersed into the atmosphere by a more conventional EfW plant.
- Secondly, a proportion of the output of the facility is classed as renewable energy, due to the presence of bio-degradable (or biomass) matter in the waste stream. Renewable energy produces less carbon emissions than burning fossil fuels, so there would be a saving compared to each building burning mains gas in its own gas boiler. It is estimated that this arrangement will reduce the regulated carbon emissions of new dwellings connected to the network by about 70%.

In order to power the Ashton Park development, the gasification facility would need to process up to 80,000 tonnes of waste per annum. The nominal maximum net power output would be about 5MWe<sup>2</sup>, which would generate about 39,000MWh of electricity annually. This equates to the projected annual electricity demand for Ashton Park, once fully built out. The heat output can be varied, with greater heat output being traded off with electrical output. For example, for a reduction in power output of 30%, down to 3.5MWe, the heat output would be about three times the power output, or about 10.5MWth. In this way, the output of the unit can be tuned to suit the growing heat load as more buildings are built over time and connected to the network.

The energy plant and associated infrastructure will need to be operational during phase 1 of the development of the urban extension in order to provide heat and power to the first dwellings and commercial buildings. This will involve a significant initial investment and in the early days the facility would need to be optimised to maximise its electricity output, with heat output kept to a minimum. The electricity that cannot be used on site will be exported to the grid. However, over time the balance

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<sup>2</sup> Based on municipal solid waste as the fuel.

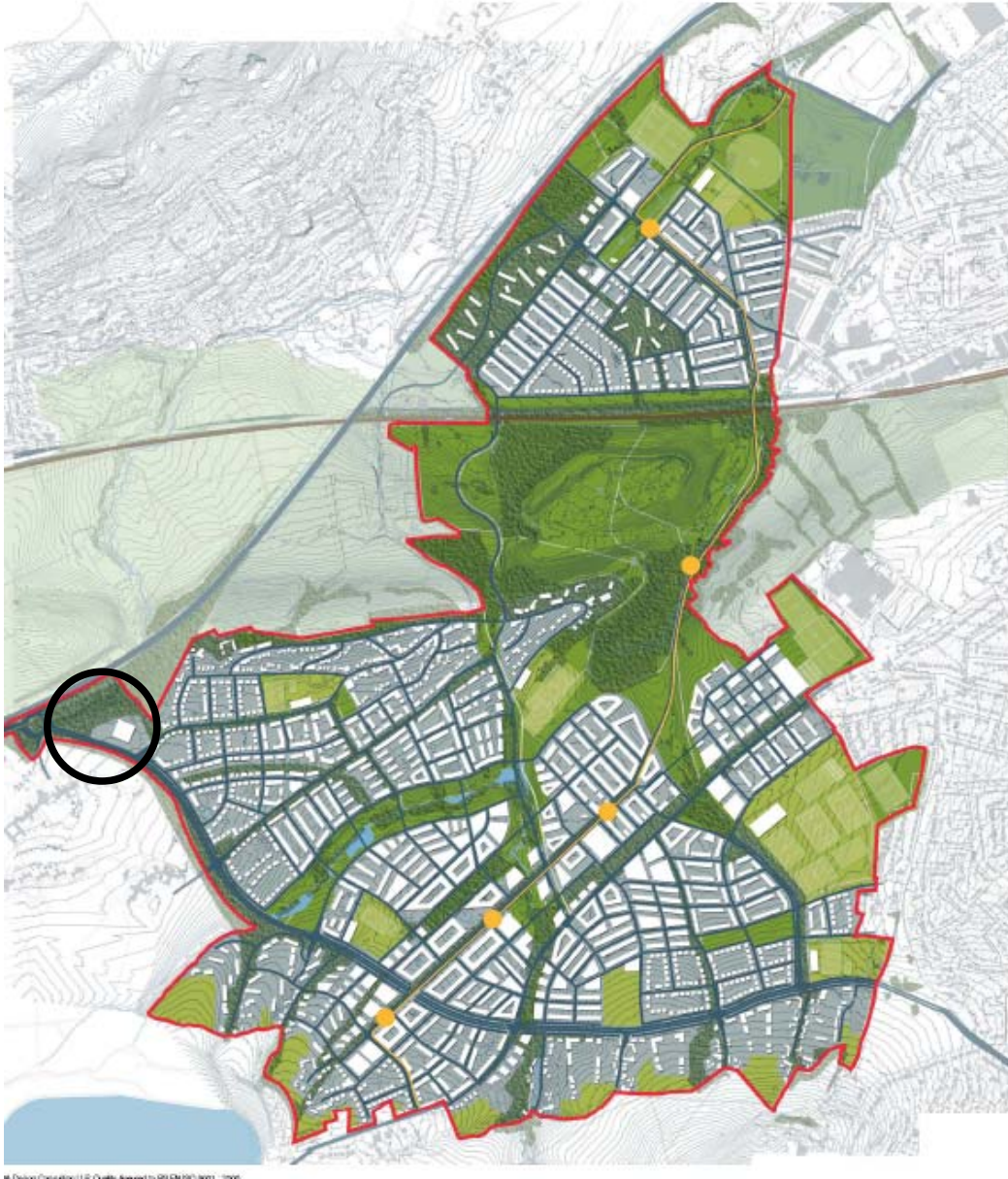
will shift to the provision of heat and power for the urban extension itself as later phases of development are completed.

The facility could be fuelled by the residual fraction of municipal and commercial waste (i.e. after recyclables have been removed) collected by existing waste management companies operating in the West of England area, including that of the Ashton Park development itself. Those companies would pay a gate fee to the facility to take this waste rather than having to pay to send it to landfill. In this way, the facility would directly contribute to targets for secondary treatment of waste and diversion of residual waste away from landfill. A gasification facility would be fully compatible with recycling and recycling targets as it would only deal with the residual part of the waste stream.

As mentioned above, the electricity and heat generated by the facility would be supplied to the development. The heat would be supplied to buildings via a district heating network, which will consist of a network of insulated pipes ("heat mains") buried underground, transporting hot water around the site. The heat and electricity would be sold to residents and tenants on the development. Any shortfall in electricity production would be imported from the electricity grid and any surplus exported. A back up supply of heat would need to be provided by gas boilers located on the site of the gasification facility for those times where the plant needs to be shut down for maintenance.

The heat and power network and energy sales to residents will be managed by a separate joint venture company formed between the Ashton Park management company and an appropriate utility partner (also known as an Energy Services Company, or ESCo). In this way the long term future of the facility and its links to the urban extension can be maintained.

This level of long term involvement by the management company is central to the proposals for the urban extension and has guided the preparation of the masterplan. This masterplan includes an identified site for the energy centre, circled on the plan below.



The selected site is located on the western side of the development, adjacent to the A370 and the proposed link to the A38. This provides the site with excellent local road connections as well as being a site relatively well screened from views by the topography.

Proposals for the plant continue to be developed and discussions with potential operators are ongoing.

## ***Annex 1: National, regional and local waste and energy policy context***

### **A. Policy and Regulatory drivers for Energy and Carbon Reduction**

#### **UK Energy Strategy and the Renewables Obligation**

In May 2007 the Government published its energy strategy in the White Paper Meeting the Energy Challenge. In Section 5.3 on Renewables it considers Energy from Waste and states “Generating energy from that portion of waste that cannot be prevented, reused or recycled has both energy and waste policy benefits. Energy generated either directly from waste or through the use of a refuse-derived fuel has benefits for security of supply. In addition, the biodegradable fraction of waste is a renewable resource.”

In recognition of this fact, the White Paper set out the intention to continue and expand the support provided to new energy from waste installations under the Renewables Obligation (RO). The RO is a mechanism for paying renewable electricity generators an enhanced price for their output and is achieved by obliging electricity suppliers to achieve a target percentage of their supply from renewable sources.

In the Government’s response in January 2008 to its consultation on proposed changes to the RO, it announced that Energy from Waste with good quality CHP or standard gasification will be eligible for one ROC<sup>3</sup>/MWh for the biomass element of the input fuel and that advanced gasification will be eligible for two ROCs/MWh.

#### **Future Building Regulations**

The UK Government, in a policy statement in Dec 2007, committed to requiring all new dwellings in England and Wales to be zero carbon by 2016. This will be achieved through changes to Part L of the Building Regulations. In December, 2008, the Government issued a consultation on a definition for zero carbon homes. In this document, the Government makes clear that:

- It intends to revise Part L in 2010 to require new dwellings to achieve a 25% reduction in regulated carbon emissions, through on-site measures, compared to 2006 Part L
- It intends to introduce a further revision in 2013 to require new dwellings to achieve a 44% reduction in regulated carbon emissions in relation to 2006 Part L, through on-site measures
- In 2016, the Government may require a further carbon reduction on-site of up to 100% reduction in regulated emissions, but the extent of this reduction is being consulted on. In addition, developers will be required to invest in a range of off-site “allowable solutions” to offset the remaining carbon emissions, to achieve a true zero carbon situation.

For non-dwellings, the targets are less clear. In March, 2008, the Government announced its intention for all new non-domestic buildings to be zero carbon by 2019, with earlier targets for schools (2016) and other public buildings (2018). What zero carbon means for non-domestic buildings is still to be defined. However, it is fairly certain that there will be revisions to Part L in 2010 and 2013 which will require

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<sup>3</sup> Renewables Obligation Certificate

reductions in carbon emissions from non-domestic buildings compared to current Building Regulations.

The use of district heating at Ashton Park, fuelled by a gasification facility, would provide a cost effective means for the new dwellings, and non-domestic buildings, to meet their on-site carbon reduction requirements. Providing the gasification facility at the early stage of the development may also make it possible for buildings built in earlier phases to achieve carbon reduction standards in advance of the requirement of Building Regulations. Establishing a district heating network may also facilitate the delivery of carbon reduction requirements for adjacent developments, such as those at Ashton Gate and Barrow Hospital, should other developers wish to connect up. Similarly, the establishment of the district heating network may facilitate, in the future, reducing carbon emissions from existing buildings such as those at the Ashton Vale industrial estate.

**Homes and Communities Agency (HCA) (formerly Housing Corporation and English Partnerships)**

The Design and Quality Standards (D&QS), April 2007, sets out the Housing Corporation's requirements and recommendations for all new developments which receive Social Housing Grant (SHG). These requirements have been carried forward into the HCA since its formation in December, 2008. This states that all grant funded developments for the 2008 to 2011 funding round will need to meet the Code for Sustainable Homes level 3. The mandatory energy component of this is a 25% reduction in regulated carbon emissions, i.e. the proposed change in Building Regulations in 2010 set out above.

The Design and Quality Strategy (also April 2007) recommends that all grant funded development from 2012 to 2015 should conform to the Code for Sustainable Homes Level 4; and any development from 2015 onwards should achieve Code Level 6 (providing that the technology to achieve Code Level 6 is available). The mandatory energy component of Code level 4 is a 44% reduction in regulated carbon emissions, i.e. the proposed change in Buildings in 2010 set out above.

Therefore, as well as the CHP scheme enabling the delivering of future Building Regulations, it will also enable, for the affordable housing element, the delivery of the earlier Code standards being required by HCA.

**The Climate Change Supplement to Planning Policy Statement 1 (PPS1), "The Climate Change PPS"**

The climate change PPS (December, 2007) states, in paragraph 10, that a key decision making principle for local authorities is that (among others), "new development should be planned to make good use of opportunities for decentralised and renewable or low carbon energy".

Paragraph 42 states that when considering planning applications, local authorities should expect new developments to "take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption, including maximising cooling and avoiding solar gain in the summer; and, overall, be planned so as to minimise carbon dioxide emissions through giving careful consideration to how all aspects of development form, together with the proposed density and mix of development, support opportunities for decentralised and renewable or low-carbon energy supply".

Clearly, a CHP gasification scheme at Ashton Park would be consistent with this approach.

### **The Heat and Energy Saving Strategy and the Renewable Heat Incentive**

In the Government's Heat and Energy Saving Strategy consultation, issued in February 2009, an entire chapter is devoted to district heating and another chapter to CHP and surplus heat. The executive summary states "Modern district heating offers the potential to cut energy bills and reduce CO2 emissions, and we want to help district heating networks to develop in those communities where it makes sense". In the Energy Act 2008, the Government gave itself the power to introduce a Renewable Heat Incentive. This will assist in improving the economic effectiveness of district heating networks fed by renewable and low carbon fuels.

The provision of a district heating and CHP network at Ashton Park would be consistent with the latest Government thinking on heat and energy.

### **South West Regional Spatial Strategy (RSS)**

The draft RSS sets a renewable electricity target for the former Avon area of 35-52MWe of installed capacity by 2010. Roughly 50% of the installed capacity of a gasification CHP facility would count towards this target (as this is nominally the bio-degradable fraction of the waste stream). A gasification facility at Ashton Park would make a significant contribution of about 2.5-3MWe towards this target. The Revision 2010 study, which provided the evidence base for these targets, found that energy recovery from waste (using Advanced Conversion Technologies) could make a major contribution to achieving the former Avon target.

The draft RSS also sets a target of 100MWth of installed renewable heat capacity for the region by 2010 and 500MWth by 2020. Again, the renewable heat from CHP at Ashton Park would make a significant contribution to this, in the region of 5-10MWth.

The local **Climate Change Strategies** for Bristol and South Gloucestershire Council include cutting greenhouse gas emissions, reducing waste and encouraging renewable energy development (including energy from waste).

## **B. Policy/ Regulatory drivers for Energy from Waste (EfW)**

National waste policy is primarily driven by a number of European Directives, the aim of which is to move waste management practice away from landfill by reducing waste production and adopting waste management practices which focus on prevention, resource recovery and the management and disposal of waste close to its point of origin.

### **The Landfill Allowance Trading Scheme (LATS)**

This has been introduced to help the UK meet the EU Landfill Directive requirements for the diversion of biodegradable municipal waste (BMW) away from landfill. These requirements are:

- Reduce BMW landfilled to 75% of 1995 level by 2010
- Reduce BMW landfilled to 50% of 1995 level by 2013
- Reduce BMW landfilled to 35% of 1995 level by 2020

The potential impact of LATS is significant, as there are heavy financial penalties where municipal waste targets are not met, and this is acting as a key driver for the development of local authorities' municipal waste strategies.

The National Waste Strategy - Waste Strategy for England 2007 (WSE 2007)  
This includes targets and indicators for waste reduction, recycling and recovery.  
These include:

#### **Household Waste Recycling:**

- 40% by 2010
- 45% by 2015 and
- 50% by 2020

#### **Municipal Waste Recovery:**

- 53% by 2010
- 67% by 2015 and
- 75% by 2020

#### **Household Residual Waste (from 2000 levels):**

- 29% reduction by 2010
- 35% reduction by 2015
- 45% reduction by 2020

#### **Commercial and Industrial Waste Landfilled:**

- Expected 20% reduction from 2004 levels by 2010
- A national target has not yet been set

WSE 2007 considers in Chapter 5 recovering energy from waste. The Government states that its policy, after re-use and valuable materials finding ready markets as recyclables, is that "other wastes have electricity and heat recovered as appropriate" and that there is "provision of local as well as regional facilities, with plant treating both merchant and municipal wastes wherever practicable". A gasification facility at Ashton Park would fit well with both these policies.

It is noted that "recovering energy from waste that cannot sensibly be reused or recycled is an essential component of a well-balanced energy policy". "Recent sharp increases in energy prices, and continuing instability in a number of supplier countries, underline the importance of maximising energy recovery from the portion of waste which cannot be recycled. This means using the most efficient technology for the job and recovering heat as well as electricity where practicable". The Government also states that "a vigorous energy from waste policy is compatible with high recycling rates" and that one of the keys to ensuring both are achieved is "building facilities with an appropriate amount of flexibility built in. This means flexible – e.g. modular- buildings..."

In relation to recovering energy from waste, the Government “wishes to encourage local authorities and businesses to consider anaerobic digestion, particularly for food waste”. Beyond this “the Government does not generally think it appropriate to express a preference for one technology over another”. However it does note that “any given technology (where applicable) is more beneficial if both heat and electricity can be recovered. Particular attention should therefore be given to the siting of plant to maximise opportunities for Combined Heat and Power.” The Ashton Park gasification facility would present an ideal opportunity to provide good quality and renewable CHP from the residual element of the waste stream.

### **The Regional Waste Strategy (RWS)**

The RWS aims to ensure that “by the year 2020 over 45% of waste is recycled and reused and less than 20% of waste produced in the region will be landfilled”. It goes on to add that value should be recovered from the remainder by mechanical, biological or thermal treatment or a combination of these processes (RWS Policy P7.2 for municipal waste and RWS Policy P7.5 for commercial and industrial waste), close to where the waste arises. Two of the most significant challenges of the RWS are for private industry to develop and install new technology and for waste planning authorities to identify suitable sites for them.

An independent BPEO<sup>4</sup> study indicated that around 500 to 600 new facilities of all types will need to be in place by the year 2020. Two of the integrated waste management scenarios tested in this study performed consistently well against agreed evaluation criteria. The findings of the study were further developed resulting in a single preferred option as a basis for the RWS that incorporated the two high performing scenarios. Key elements of this option included the development of facilities to enable further value to be recovered from mixed residual waste through mechanical and biological treatment and/or as much energy as possible should be recovered from residual waste through thermal treatment technologies.

The approach proposed in the RWS tries to incorporate the proximity principle in identifying locations for waste treatment facilities within a reasonable distance of the source of the waste and to move away from the traditional approach of “predict and provide” to an approach of “plan, monitor, manage”. Strategic Policy P2.1 also states that “the environmental technology sector, including the waste industry, will be supported to develop new technologies and to develop new ways of using existing technologies”. A gasification facility at Ashton Park would fit in well with all of these approaches in the timely provision of innovative new technology in advance of new development, in close proximity to waste arisings.

The RWS does not distinguish between the different types of thermal treatment, however it recognises the importance of bearing in mind that electricity produced from some thermal technologies are eligible for Renewable Obligation Certificates (ROCs), and can contribute towards delivering local and regional renewable energy targets set out in the RSS. RWS Policy P7.8 encourages the provision of facilities to deal with waste sourced from more than one waste stream together, particularly when the wastes are of a similar nature. A gasification plant at Ashton Park would be flexible in being able to generate CHP from residual municipal solid waste, commercial and industrial waste and solid recovered fuel/refuse derived fuel (SRF/RDF). These proposals fit with government strategy and will qualify for support

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<sup>4</sup> Best Practicable Environmental Option

through the RO. They will also assist in achieving local and regional renewable energy targets as well as waste from more than one waste stream.

RWS Action A7.3 encourages waste disposal authorities, regional and national bodies to work together to encourage advanced energy conversion technology demonstrators in the region. A gasification plant at Ashton Park would qualify as an advanced energy conversion technology. The development also complies with RWS Policy P10.1 which requires waste to be managed close to its place of production, and the provision of new waste management facilities located at or in close proximity to major planned areas of population growth.

#### South West Regional Spatial Strategy (RSS)

The indicative waste management capacities for each sub region set out in the RWS are translated into targets in the draft RSS. The size of facilities for secondary treatment that former Avon (now referred to as West of England) should provide for by 2020, are set out in policy W1 as follows:

- 370 ktonnes per annum for MSW
- 430-470 ktonnes per annum for Commercial and Industrial waste

Together, this gives a total requirement of 800-840ktonnes per annum.

Paragraph 7.4.3 states “Proposals should consider opportunities to provide treatment facilities for multiple waste streams and the need to accommodate new treatment technologies, including those offering recovery through Mechanical and Biological Treatment (MBT) and/or advanced energy conversion (waste to energy), to meet recovery targets”. A gasification scheme for Ashton Park would meet this requirement in terms of being a form of advanced energy conversion as well as being able to take multiple waste streams.

Policy W2 states “Proposals for the provision of new waste management facilities should accord with the following sequential approach:

- Accommodate the management of waste on the site where it arises, wherever possible (waste minimisation); and then
- In order to minimise the distance waste is transported, particularly by road, waste should be managed as close as practicable to where it arises.”

The location of new ‘strategic’ waste management or disposal facilities should accord with the following sequential approach:

- They should be at SSCTs<sup>5</sup>, as follows:
- Within, or if that is not practicable;
- On the edge of, or if that is not practicable;
- In close proximity to the urban area primarily served by the facility.

The Ashton Park gasification scheme would certainly meet these criteria. The policy goes on to state:

Identification of sites for the provision of new waste facilities will take account of the following:

- Established and proposed industrial sites, in particular those that have scope for the co-location of complementary activities, such as proposed resource recovery parks;

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<sup>5</sup> Strategically Significant Cities and Towns

- Other previously developed land, including use of mineral extraction and landfill sites during their period of operation for the location of related waste treatment activities.
- Opportunities for connection to the rail network and
- Opportunities to maximise efficiency through use of by-products of the waste management process in other processes, e.g. waste heat and/or materials.

The proposed technology meets bullet points two and four in this list.

### **West of England Joint Waste Strategy - Overview**

A Joint Waste Strategy designed to minimise the amount of waste that arises and increase recycling is being prepared by the West of England Councils. This, together with the waste minimisation and recycling strategies prepared by each Unitary Authority, will focus on achieving and where practicable improving on the targets relating to household waste. The joint strategy translates the targets and principles set out in the draft RSS and the Regional Waste Strategy into actual options and locational principles for the sub-region.

Arrangements for the collection of MSW from the proposed Ashton Park urban extension will be the responsibility of the local authority as the Waste Collection Authority. It is assumed that North Somerset Council will provide a kerbside recycling scheme (as it does in other parts of North Somerset) to enable people to recycle their waste and to reduce the residual household waste in accordance with the targets set out in the National Waste Strategy.

A gasification facility for Ashton Park would be able to take commercial and industrial waste, as well as residual municipal solid waste from Ashton Park. This, however, will be dependent on the contractual arrangements put in place by the local authority for the collection and disposal of residual municipal solid wastes from Ashton Park.

A gasification facility would significantly reduce the amount of localised commercial and industrial waste disposed of to landfill and therefore help to achieve the targets for commercial and industrial waste set in the National Waste Strategy. Residual municipal waste from Ashton Park treated at the facility would also significantly reduce the amount of residual household waste from Ashton Park disposed of to landfill and therefore help achieve the LATS targets for the diversion of biodegradable municipal waste from landfill as well as the municipal waste recovery targets identified in the National Waste Strategy.

### **West of England Joint Waste Strategy – Core Strategy**

The Joint Waste Core Strategy Development Plan Document (DPD) is being prepared and will set out the planning strategy for waste within the West of England (WoE) and identify where the large-scale waste management facilities required by the strategy should be located. Once adopted, the Waste Core Strategy will thereafter form part of each of the four Unitary Authorities' Local Development Framework, and when adopted will replace relevant strategic waste policies in the current development plans.

The emerging Waste Core Strategy recognises the need to be in general conformity with the draft RSS as well as European, National and local policy. It sets out the following vision for waste in the West of England by 2026:

- Less waste going to landfill

- An integrated network of waste management facilities to meet identified residual waste needs
- Less waste miles (reduction of the distances and/or volumes of waste transported)
- Substantial self-sufficiency in the management of waste generated in the sub-region
- The commitment to the “3 Rs” – reduce, reuse, recycle – will continue

General principles and approaches that will be developed in the Joint Waste Core Strategy have been outlined to ensure a consistent approach across the West of England to selecting waste sites and preparing policies for waste management.

The strategy identifies an annual target for almost 800,000 tonnes of non-inert waste to be managed through recovery facilities by 2020 but notes that there are no such facilities currently operational in the West of England.

The proposed Ashton Park development fits well with the vision for waste in the West of England by 2026 set out in the Joint Waste Core Strategy, in that the provision of residual waste management facilities locally reduces the dependence on landfill and the transport of waste, and enables sub-regional self-sufficiency. A recovery facility at Ashton Park would also fit well, in terms of location and capacity, with either Option B or C set out in the WCS Preferred Options report.

The issues and options consultation on the core strategy, issued in Spring 2007, identified seven potential technology solutions for dealing with residual waste in the West of England. The technical options appraisal process which supported that consultation identified that the highest scoring option, against a range of quality and cost criteria, was Option 7, Gasification/ Pyrolysis. This is emerging as the preferred technology option being considered for Ashton Park.