

**Report title: Reducing Waste to Landfill – Short Term Waste Disposal Options**

**Wards affected:** All

**Strategic Director:** Alison Comley – Strategic Director Neighbourhoods

**Report Author:** Pam Jones / Service Manager Environment and Leisure Operations

**RECOMMENDATION for the Mayor’s approval:**

To approve the following recommendations -

- A short term contract to take the waste away from Landfill and treat using RDF bales which can be transported to a District Heating System in Europe
- Review options for future treatment working through scrutiny with a report back to Cabinet during 2015

•

**Key background / detail:**

a. Purpose of report: **To detail the current short term disposal options available to the Council to reduce landfill and for Cabinet to approve one of the potential options.**

b. Key details:

1. This paper gives a brief reminder of the opinions shared at the Waste Inquiry Day held 26th Nov 2014 and reviews current short and longer term landfill diversion options.
2. A Scrutiny Waste Inquiry Day was held by the Neighbourhoods Scrutiny Commission titled ‘What are the current waste disposal technologies and process and how can Bristol best utilise these?’ The day consisted of talks from independent speakers, a Q&A session and a discussion / workgroup exercise. The objective of the day was to inform on various waste technologies and their advantages and disadvantages, to look at options currently available and to identify any opportunities / challenges.
3. The report identifies the current short term options for treating waste that are available to the Council and provides recommendations for consideration.
4. The report identifies the need for further longer term solutions to treat waste to ensure we reach our statutory targets and confirms this will be in a subsequent report that will be submitted to Cabinet later in the year.

**BRISTOL CITY COUNCIL**

**CABINET**

**2 June 2015**

**REPORT TITLE: REDUCING WASTE TO LANDFILL - Short Term Waste Disposal Options**

**Ward(s) affected: All**

**Strategic Director: Alison Comley – Strategic Director Neighbourhoods**

**Report author: Pam Jones / Service Manager Environment and Leisure Operations**

**Contact telephone no. & e-mail address: x 23240  
pamela.jones@bristol.gov.uk**

**Purpose of the report: To achieve reduction of waste to landfill for the next 12 months whilst we look at the options for sustaining reduction of landfill and explore the methods of treatment that meet our needs financially and environmentally in the medium and longer term.**

**RECOMMENDATION for the Mayor's approval:**

To approve the following recommendations -

- Use a short term contract to take the waste away from Landfill and treat using RDF bales which can be transported to a Combined Heat and Power Plant (CHP) in Europe.
- Review options for future treatment (working through scrutiny) with a report back to Cabinet during 2015
- Review the council's waste management strategy with the aim of achieving the following outcomes:
  1. Minimisation of waste production
  2. Maximisation of re-use and repair
  3. Proposing options for future treatment in the light of aims (1) and (2)

A report (working through scrutiny) will come back to cabinet during 2015.

## **1. Summary**

- 1.1. This paper gives an outline of the options open to the council, and recommendations of how to progress to ensure that waste going to landfill is significantly reduced in the short term (i.e. from July). It also covers suggested actions to pursue regarding further options for disposing of our waste.

## **2. Background**

- 2.1. The Council has a legal duty to collect and dispose of any municipal, household waste. The Council is a Unitary Authority; this means it acts as both a Waste Collection Authority and Waste Disposal Authority.
- 2.2. The Council adopted its current Waste Management Strategy in 2009 which sets out our primary goal of moving away from landfill, as well as other goals of maximising the recovery of resources (including the recovery of energy) and reducing its carbon footprint of waste management solutions amongst others. (summary of strategy in Appendix E). A full review of this strategy is being undertaken this year and will report any recommendations for amendments early next year.
- 2.3. The Council itself is fully committed to leading the way in the green agenda. Within its own buildings and vehicles, it has significantly reduced its CO2 emissions, through more sustainable purchasing, investing in green technologies, lower vehicle emissions, lower energy use in our buildings and working with existing contracts to reduce emissions.

## **3. Scrutiny Inquiry Day**

- 3.1. A Scrutiny Inquiry Day was held by the Neighbourhoods Scrutiny Commission titled 'What are the current waste disposal technologies and process and how Bristol can best utilise these?' The day consisted of talks from independent speakers, a Q&A session and a discussion / workgroup exercise. The objective of the day was to inform on various waste technologies and their advantages and disadvantages, to look at options currently available and to identify any opportunities / challenges.
- 3.2. There was a wide variety of views and opinions expressed on the day. Whilst there were different views on the end processing preferred, one thing was clearly agreed by all attendees; that our first priority is to reduce the amount of waste going to landfill. The current amount of tonnage going to Landfill is 52,000 tonnes. See Appendix A
- 3.3. The figures in Appendix A show that at its lowest level we were sending 43,000 tonnes to Landfill, and that figure has increased in the last 2 years due to the amount of residual tonnage increasing. The Contract we have with SITA should have delivered an alternative method for treatment rather than landfill from 2013/14.

However at the time they have not gone ahead with a gasification plant so we have been looking at the options open to us.

#### 4. Diversion from Landfill & Preferable Technologies

4.1. As mentioned, at the Inquiry day it was widely accepted that the priority is to maximise the diversion from landfill and that the principles of the Waste Hierarchy be adopted where reasonably possible. Currently we landfill 52,000 tonnes of waste p.a. which is 30% of our total waste (total waste includes kerbside recycling).

4.2. For background, as biological waste degrades in landfill it produces harmful gases eg: methane which is 21 times more potent than carbon dioxide in terms of global warming potential. In addition landfill also produces large quantities of potentially polluting liquids which collect at the bottom of the landfill. This liquid (known as leachate) can be harmful to the surrounding wildlife and environment. These reasons are why the Council are committed to reducing the waste we send to landfill and have adopted the principles of the Waste Hierarchy as detailed below, with disposal (to landfill) being our least favourable option.



4.3. In addition, BCC environmental officers reviewed waste treatment options in 2011, and noted that landfill resulted in CO<sub>2</sub> equivalent emissions that were around 25 times higher than producing RDF and sending it to Europe for Combined Heat and Power (CHP) incineration.

4.4. There is a shortage of landfill capacity, and finding new sites is problematic because of the need to protect aquifers and wildlife.

4.5. It was generally accepted that pyrolysis and gasification were preferable waste treatment technologies and EfW with heat capture also had its place as a possible treatment, though less preferred generally by some members.

4.6. There was also general agreement at the enquiry day, that landfill prevention is the biggest priority to be addressed immediately.

4.7. A second scrutiny day has taken place and has discussed broader elements of the waste service. However, due to the importance of timing, this report is focussed specifically on achieving a significant reduction in landfill now (for the next 12 months) whilst we consider and then agree the longer term treatment methods.

This report is therefore the first of a two stage process: stage 1 being the next 12 months, and stage 2 the options appraisal for longer/medium term, which will be subject to a further Cabinet report.

## **5. Current Landfill Diversion Options Identified**

5.1. When considering the immediate options to reduce landfill (for the next 12 months) we have one real option at this stage, aside from continuing to landfill.

5.2. This is to utilise the option within the North Somerset Contract, sending residual waste to Boomeco. They will create a Refuse Derived Fuel (RDF) in Avonmouth and then ship this to Sweden to be converted into heat and energy at a Combined Heat and Power plant (CHP). This will produce a saving of circa £255,000 per annum (based on maximum of 40,000 tonnes being sent). The amount of waste to landfill would go from 30% of our waste to less than 10% (based on current figures). The recycling rate would be marginally increased from metals captured during the process. An Environmental Impact Assessment for that report can be found in Appendix B. The contract is managed by North Somerset but (as with all our contracts) would be closely monitored for performance against agreed quality standards.

5.3. For background, the CHP plant also provides further pre-sorting of the waste to check that no large items which are recyclable, go through the plant. Waste has a relatively good heating value of 3–4.MWh/ton. Both oil and coal have higher heating value than waste or other biofuels, but as they are fossil fuels, they are in scarce supply. Around 75 % of the waste fuel is considered to be renewable.

Fuel Heating values:

Oil 10–11 MWh/ton

Coal 7–8 MWh/ton

Waste 3–4 MWh/ton

Peat 3–5 MWh/ton

Biofuel 2–3.5 MWh/ton

5.4. We have investigated the possibility of extending the capacity of the existing NES contract. In the absence of any express provision for the extension of the services, in either the original OJEU notice or tender documents, the scope for extension is very limited. We cannot increase the tonnage overall as we could be challenged for not following the procurement regulations. We will continue to work with the WoE partnership to put as much waste through the NES contract as we are legally permitted to do. For information, currently around 40,000 tonnes of waste is sent as RDF overseas from this contract.

5.5. Continue to landfill the waste already being landfilled. This would not incur any additional costs, it would produce no additional savings and would result in the landfill rate remaining constant.

- 5.6. Procure new contract with clear specification, this would take a minimum of nine months to procure.
- 5.7. Investigate methods of improving performance at kerbside; in particular, collections made from flats, increasing the recycling collected at kerbside and reducing residual waste put out by residents.

## **6. Other Considerations / Future Options**

- 6.1. Consideration will be given to longer term options to help reach statutory targets and will be the subject of a further separate report.
- 6.2 Consideration has been given as to whether the existing SITA disposal contract could offer any alternatives but that has not proved to be the case.

## **7. Statutory Targets**

- 7.1. It is clear from the Inquiry day that Waste Treatments only offer part of the solution in reaching the Councils statutory targets. It could be possible to reach the cities target of 50% by 2020 through just using waste treatment facilities however this does not account for any waste growth or compositional change and so could be marginal just to rely on Disposal to achieve the target.
- 7.2. What is clear is that to reach the proposed EU statutory recycling rate of 70% by 2030 it will have to include increased participation / capturing of recycling from the kerbside by some other means than we are currently using in addition to changing current waste treatment methods. This will form part of the second inquiry day.

## **8. Recommendations**

- 8.1. In order to achieve the greatest environmental impact we therefore need to reduce landfill, which will also achieve a financial savings, it is the recommendation of Officers to:
- a) For the next 12 months use our option within the North Somerset Contract to reduce the landfill:
    - saving estimated £255k
  - b) Review options for future treatment including a procurement process, with a report and options back to cabinet in 2015 (for waste treatment beyond July 2016)
- 8.2. A longer term strategy will be developed to ensure the EU proposed 70% recycling target will be met. This will include the future procurement of waste treatment contracts and working with other departments to deliver what is best for the Council.

## **9. Consultation and scrutiny input:**

**9.1. Internal Consultation:** A Scrutiny Inquiry Day was hosted by the Neighbourhoods Scrutiny Commission on the 26<sup>th</sup> Nov 2014 to which all councillors were invited. The meeting has not been formally reported and there is a second waste enquiry day in March which will help towards looking at the longer term solutions.

The outcomes of the last enquiry day were:

### ***Waste Disposal;***

Members considered the various types of waste disposal and technologies available but did not reach any firm consensus about the preferred options for the future. There was, however, universal agreement that the most pressing priority was to significantly reduce the amount of waste currently being sent to landfill. The following additional observations were made;

- Exporting waste was preferable to landfill but still highly undesirable.
- The preferred waste disposal technologies were; Mechanical Biological Treatment/Anaerobic Digestion and pyrolysis/gasification.
- Reliability of future waste disposal was an important consideration and resilience could be improved if waste was disposed of using a variety of methods.
- The pros and cons of all waste disposal solutions, including those that were local, should be fully explored. It was important to build an evidence base to inform future decisions.
- What is the relationship between waste disposal and the creation of energy?

**9.2. External Consultation:** None

## **10. Other options considered:**

10.1. All options are detailed in this report.

## 11. Risk management / assessment:

<b>FIGURE 1</b>							
<b>The risks associated with the implementation of the (subject) decision :</b>							
No.	RISK  Threat to achievement of the key objectives of the report	INHERENT RISK		RISK CONTROL MEASURES  Mitigation (i.e. controls) and Evaluation (i.e. effectiveness of mitigation).	CURRENT RISK		RISK OWNER
		(Before controls)			(After controls)		
		Impact	Probability		Impact	Probability	
1	Depending on options approved it will result in differing outcomes in terms of performance of landfill diversion, recycling rate and finances when compared to other available options.	High	High	An informed decision is taken by Cabinet having considered the differences in options	High	Low	

<b>FIGURE 2</b>							
<b>The risks associated with <u>not</u> implementing the (subject) decision:</b>							
No.	RISK  Threat to achievement of the key objectives of the report	INHERENT RISK		RISK CONTROL MEASURES  Mitigation (i.e. controls) and Evaluation (i.e. effectiveness of mitigation).	CURRENT RISK		RISK OWNER
		(Before controls)			(After controls)		
		Impact	Probability		Impact	Probability	
1	Not taking an option detailed in this report, resulting in cost being incurred that could be avoided, not diverting waste away from landfill and not recycling waste that otherwise would have been landfilled.	High	Med	Limited mitigation measures – The provision of more detailed information on specific options as the information provided was insufficient to reach a decision.	High	Medium	
2	Not taking an option in the report would fail to give guidance to Officers who need to extend or let finish current contracts (which then would require sourcing a new alternative contract).	High	Med	Limited mitigation measures – The provision of more detailed information on specific options as the information provided was insufficient to reach a decision.	High	Med	
3	Not taking an option in the report would delay developing future waste management practices which would help contribute towards the Council reaching its statutory targets	High	Med	Limited mitigation measures – Officers to progress with strategy without clear details on current practice, contract lengths, performance and costs of service.	High	Med	

### Public sector equality duties:

#### Equalities Impact Assessment

An Equalities Impact Relevance Check has been completed and is attached at Appendix C.

This proposal concerns a process that occurs at the end disposal point of household waste collected from members of the public. This will not result in any changes to the current waste disposal or recycling collections. Neither Bristol City Council nor Kier (previously May Gurney) staff will be affected by the proposal and no impacts on people with protected characteristics are expected. The proposal therefore does not require a Full Impact Assessment.

Anneke Van-Eijkern – Equalities Officer - 7<sup>th</sup> Jan 2015



## **Eco impact assessment**

An Eco Impact Checklist has been conducted and can be found in Appendix D.

Steve Ransom – Environmental Programme Manager – 11 March 2015

## **Resource and legal implications:**

### **Finance**

#### **a. Financial (revenue) implications:**

Annual savings to Revenue budgets will be up to £255k savings from use of Boomeco

**Advice given by** Robert Hamilton, Finance Manager Neighbourhoods & Place  
**Date** 14/01/2015

#### **b. Financial (capital) implications:**

There will be no impact on Capital budgets as a result of this decision

**Advice given by** Robert Hamilton, Finance Manager Neighbourhoods & Place  
**Date** 14/01/2015

#### **c. Legal implications:**

The risks associated with the extension of the existing NES contract are set out at paragraph 5.5. In the absence of any express provision for the extension of the services, in either the original OJEU notice or tender documents, the scope for extension is very limited.

The existing contractual arrangements for waste disposal established by North Somerset (Boomeco) provide for this Council to take advantage of one of the Lots. North Somerset has complied with EU procurement requirements and Bristol City Council were named as a party entitled to utilise the contract, subject to the limitations on annual tonnage (up to 40,000 tonnes per annum).

**Advice given by** Eric Andrews – Senior Solicitor  
**Date** 12<sup>th</sup> Jan 2015

### **HR**

The options and recommendations of this report are focused on external service provisions. There are no HR implications as a result of these proposals.

Sandra Farquharson, HR People Business Partner, Neighbourhoods 08/01/2015

**Appendices:**

Appendix A – Tonnage of Collected Residual Waste

Appendix B – Eco Assessment for Utilising Boomeco Option

Appendix C – Equalities Impact Relevance Check

Appendix D - Eco Impact Checklist

Appendix E – Summary of Waste Strategy 2009

**Access to information (background papers): BCC Waste Strategy 2009 – full document**

**Tonnage of Collected Residual Waste**

Year	Collected Residual	Landfilled Waste	Waste to NES
2004/ 05	161,995	161,995	0
2005/ 06	147,794	147,794	0
2006/ 07	117,455	117,455	0
2007/ 08	107,032	107,032	0
2008/ 09	106,616	106,616	0
2009/ 10	100,075	100,075	0
2010/ 11	100,803	100,803	0
2011/ 12	98,930	45,330	53,600
2012/ 13	97,057	43,457	53,600
2013/ 14	102,710	49,110	53,600
2014/ 15*	105,791	52,191	53,600

## Appendix B – Eco Assessment for utilising Boomeco Option

Eco Impact assessment

### Eco Impact Checklist

<b>Title of report: Reducing Waste to Landfill</b>				
<b>Report author: Pam Jones</b>				
<b>Anticipated date of key decision (2<sup>nd</sup> June 2015)</b>				
<b>Summary of proposals: To seek approval, as a key decision, to use a waste treatment contract tendered by North Somerset Council which is expected to exceed the £500,000 total contract value threshold. Waste that is currently landfilled will be processed into Refuse Derived Fuel in Avonmouth, and then shipped to Sweden where it will be incinerated to generate electricity and provide district heating.</b>				
Will the proposal impact on...	Yes/ No	+ive or -ive	If Yes...	
			Briefly describe impact	Briefly describe Mitigation measures
Emission of Climate Changing Gases?	Yes	+ive	Diverts waste from landfill, preventing methane emissions and road transport emissions	
		-ve	Material will be shipped to Sweden	Overall net impact is significantly lower than current arrangements
Bristol's resilience to the effects of climate change?	Yes	-ve	The processing plant in Avonmouth and energy from waste plant in Sweden may both be vulnerable to flooding. In addition, access to Avonmouth dock is at risk from flooding	Plans are implemented for alternative treatment of the waste
Consumption of non-renewable resources?	Yes	+ive	The creation and combustion of a fuel from refuse reduces the use of fossil fuels	None
Production, recycling or disposal of waste	Yes	+ive	Will allow the potential diversion of 40,000 tonnes of material away from landfill  Small improvement in recycling – metals,	None

		-ve	<p>glass and wood will be separated at the processing plant.</p> <p>Combustion of material produces ash</p> <p>A contract for incineration could inhibit future initiatives to improve waste minimisation or recycling</p>	<p>All ash is recycled – no material is disposed to landfill</p> <p>Contract commitment is short term (2 years)</p>
The appearance of the city?	No			
Pollution to land, water, or air?	Yes	+ve	Diversion from landfill reduces emissions from road transport	
		-ive	Emissions from shipping and the combustion of waste material produces emissions.	The CHP plant is new, and is filtered to remove particulates and operates in accordance with Swedish regulations
Wildlife and habitats?	No			

**Consulted with: Steve Ransom, Environmental Programme Manager**

**Summary of impacts and Mitigation - to go into the main Cabinet/ Council Report**

Currently, c. 52,000 tonnes of Bristol's residual waste (out of a total of c. 100,000 tonnes) are landfilled. This proposal is for up to 40,000 tonnes of the landfilled fraction to be:

1. Transported by road to a processing plant in Avonmouth
2. Shredded, compressed and baled (with a small amount of recycling, e.g. metal and glass)
3. Transported by ship to Sweden to an energy from waste (EfW) plant with combined heat and power (CHP).
4. Incinerated to produce electricity and heat, with waste ash to be recycled

**The significant impacts of this proposal are:**

1. A significant net reduction in greenhouse gas emissions. Whilst there are additional emissions created from shipping the waste, much greater savings are made through a) the avoidance of methane emissions that occur from disposal to landfill and b) a reduction in the use of fossil fuels because the waste is used to generate heat and electricity. Using central government guidance, and data from North Somerset, it is estimated that the saving compared with current arrangements is c. 300 kg/ CO<sub>2e</sub>/tonne. For 40,000 tonnes of waste, the annual saving would be c.12,000 tonnes CO<sub>2e</sub>.
2. Creation of air pollution from shipping and at the Energy from Waste plant in Sweden. Whilst waste incineration capacity exists in the UK, it is noted that there is

limited capacity for plants with CHP, and none in the Bristol area. Incineration without CHP substantially increases greenhouse gas emissions in comparison with the proposal to ship the processed waste to Sweden. In addition, treatment within the UK would generate increased emissions from road transport.

**The proposals include the following measures to mitigate the impacts ...**

1. The waste management plant in Avonmouth and in Sweden are subject to environmental regulations. Evidence of operating permits/ licences will be obtained prior to contract commencement, and the contractor will be obliged to provide evidence of on-going compliance.
2. The contractor will provide plans for managing the waste should the plants in Avonmouth or Sweden be affected by flooding.
3. Investigate options for improving recycling of waste prior to processing.

**The net effects of the proposals are positive**

**Checklist completed by:**

Name:	Steve Ransom
Dept.:	Energy Service
Extension:	24478
Date:	30/4/14
Verified by Sustainable City Group	

**Bristol City Council Equality Impact Relevance Check**

This tool will identify the equalities relevance of a proposal, and establish whether a full Equality Impact Assessment will be required. Please read the guidance prior to completing this relevance check.

<b>What is the proposal?</b>	
Name of proposal	Reducing Waste to Landfill
Please outline the proposal.	This EqIA screening accompanies a report to Cabinet which outlines a number of options for waste treatment processes suitable to use in the short term, while the current contract is under review.
What savings will this proposal achieve?	Various depending on option taken £0 - £255K
Name of Lead Officer	Pam Jones

<b>Could your proposal impact citizens with protected characteristics?</b> (This includes service users and the wider community)
Please outline where there may be significant opportunities or positive impacts, and for whom.
This proposal is unlikely to impact on citizens. The options presented for short term waste treatment concern a process that occurs at the end disposal point of household waste collected from members of the public.  There will be no changes to the current waste disposal or recycling collections, no increase in vehicles transporting waste through the city and no additional land or infrastructure required to dispose of the waste.  There will be indirect positive impacts in the sense that some of the options will reduce demand for landfill
Please outline where there may be significant negative impacts, and for whom.
As outlined above, there should be no impacts on citizens.

<b>Could your proposal impact staff with protected characteristics?</b> (i.e. reduction in posts, changes to working hours or locations, changes in pay)
Please outline where there may be significant opportunities or positive impacts, and for whom.
The use of this new process will not affect Council staff or Kier staff.
Please outline where there may be negative impacts, and for whom.
As above

**Is a full Equality Impact Assessment required?**

<p>Does the proposal have the potential to impact on people with protected characteristics in the following ways:</p> <ul style="list-style-type: none"> <li>• access to or participation in a service,</li> <li>• levels of representation in our workforce, or</li> <li>• reducing quality of life (i.e. health, education, standard of living) ?</li> </ul>	
<p>Please indicate yes or no. If the answer is yes then a full impact assessment must be carried out. If the answer is no, please provide a justification.</p>	<p>No – there will be no change to services to the public and working terms and conditions for BCC and Kier staff will remain unchanged.</p>
<p>Service Director sign-off and date:</p>	<p>Equalities Officer sign-off and date:  Anneke van Eijkern   7<sup>th</sup> January 2015</p>



## Appendix D

### Eco Impact Checklist

<b>Title of report: Reducing Waste to Landfill</b>				
<b>Report author: Pam Jones</b>				
<b>Anticipated date of key decision: 2 June 2015</b>				
<p><b>Summary of proposals:</b> To approve the recommendations that Boomeco is utilised as a short term measure to treat waste while talks continue with SITA to review current indicative pricing and that should the SITA offer not be acceptable that a new procurement process is conducted to treat the waste using processes with guaranteed performance levels.</p> <p>Waste that is currently landfilled will be processed into Refuse Derived Fuel in Avonmouth, then shipped to Sweden where it will be incinerated to generate electricity and provide district heating.</p>				
Will the proposal impact on...	Yes/ No	+ive or -ive	If Yes...	
			Briefly describe impact	Briefly describe Mitigation measures
Emission of Climate Changing Gases?	Yes	+ive	Reduces landfill rate from 30% to less than 6%, preventing methane emissions and road transport emissions	Overall net impact is significantly lower than current arrangements
		-ve	Material will be shipped to Sweden	
Bristol's resilience to the effects of climate change?	Yes	-ve	The processing plant in Avonmouth and energy from waste plant in Sweden may both be vulnerable to flooding. In addition, access to Avonmouth dock is at risk from flooding	Plans are implemented for alternative treatment of the waste
Consumption of non-renewable resources?	Yes	+ive	The creation and combustion of a fuel from refuse reduces the use of fossil fuels	None
Production, recycling or disposal of waste	Yes	+ive	Will allow the potential diversion of 40,000 tonnes of material away from landfill	None
			Small improvement in recycling – metals,	

		-ve	<p>glass and wood will be separated at the processing plant.</p> <p>Combustion of material produces ash</p> <p>A contract for incineration could inhibit future initiatives to improve waste minimisation or recycling</p>	<p>All ash is recycled – no material is disposed to landfill</p> <p>Contract commitment is short term</p>
The appearance of the city?	No			
Pollution to land, water, or air?	Yes	+ve	Diversion from landfill reduces emissions from road transport	
		-ive	Emissions from shipping, and the combustion of waste material produces emissions.	The CHP plant is new, and is filtered to remove particulates and operates in accordance with Swedish regulations. Ships will use low-sulfur fuel
Wildlife and habitats?	No			

**Consulted with: Steve Ransom, Environmental Programme Manager**

**Summary of impacts and Mitigation - to go into the main Cabinet/ Council Report**

(Please note that this assessment considers the Boomeco proposal only: impacts from the SITA proposal will be considered once more detail is available.)

Currently, c. 53,000 tonnes of Bristol’s residual waste (out of a total of c. 103,000 tonnes) are landfilled. This proposal is for up to 40,000 tonnes of the landfilled fraction to be:

5. Transported by road to a processing plant in Avonmouth
6. Shredded, compressed and baled (with a small amount of recycling, e.g. metal and glass), turning it into Refuse Derived Fuel.
7. Transported by ship from Avonmouth to Vasteras in Sweden, and transferred to an energy-from-waste (EfW) plant with combined heat and power (CHP). The dock is adjacent to the EfW plant so there is no additional road transport.
8. Incinerated to produce electricity and heat, with waste ash to be recycled

**The significant impacts of this proposal are:**

**Carbon Impact:**

Currently, the 40,000 tonnes of residual waste are landfilled. Using central government guidance, and waste composition details for north Somerset, we have compared current

arrangements with those proposed:

Landfill: 335.47 kg CO<sub>2e</sub>/ tonne

(the above figure includes methane emissions expressed as equivalent CO<sub>2</sub>)

The carbon impact of transporting residual waste by road to a local landfill site is estimated at around 5 kg CO<sub>2e</sub>/ tonne

Combustion: 21 kg CO<sub>2e</sub>/ tonne

The carbon impact of transporting the RDF by sea to Sweden is estimated at around 22 kg CO<sub>2e</sub>/ tonne

**For an annual estimated tonnage of 40,000, the total impact of transport and disposal is:**

Combustion: 1720 tonnes CO<sub>2e</sub>

Landfill: 13619 tonnes CO<sub>2e</sub>

Therefore, the net annual saving is 11899 tonnes CO<sub>2e</sub>. In reality, the savings are greater than stated, because:

- i) Central government guidance does not take account of the heat recovered from the EfW plant, which is used for district heating, further reducing the use of fossil fuels.
- ii) The waste is being sent to a new plant which was commissioned in 2014

Using the EfW company's own data, based on performance for the Vasteras plant, the annual saving would be 23120 tonnes CO<sub>2e</sub>

**Other impacts:**

3. Creation of air pollution from shipping: burning of marine gas oil produces sulphur dioxide and oxides of nitrogen. Annual SO<sub>2</sub> emissions are estimated at 580 kg.
4. Creation of air pollution from combustion of RDF, which will include particulates and dioxins, and production of ash.
5. Reduction in landfill impacts: reduced risk of water pollution from leachate. It is not possible to quantify this impact as it depends on the performance of individual sites.

**The proposals include the following measures to mitigate the impacts ...**

4. a) The waste management plant in Avonmouth is regulated by the Environment Agency  
b) The Swedish EfW plant is subject to the Europe-wide IPPC pollution control regime  
c). Evidence of operating permits/ licences will be obtained prior to contract commencement, and the contractor will be obliged to provide evidence of on-going compliance.
5. The ships used for transport use marine gas oil, which limits sulphur content to 0.1%.
6. All ash produced from combustion is recycled.
7. The contractor will provide plans for managing the waste should the plants in Avonmouth or Sweden be affected by flooding.
8. Investigate options for improving recycling of waste prior to processing.

**The net effects of the proposals are positive**

References

[http://ec.europa.eu/environment/archives/air/pdf/chapter3\\_end\\_ship\\_emissions.pdf](http://ec.europa.eu/environment/archives/air/pdf/chapter3_end_ship_emissions.pdf)

<http://www.ukconversionfactorscarbonsmart.co.uk/>

**Checklist completed by:**

Name:	Steve Ransom
Dept.:	Energy Service
Extension:	24478
Date:	11/03/15
Verified by Energy Service	

## Appendix E - A Summary of Bristol's Waste Strategy

Adopted in 2009 by full Council, the Strategy has the following Vision Statement which sets out the overall objective of the policy –

*Bristol will work together with local residents and other stakeholders to develop a range of services and facilities for the management and treatment of waste. These will deliver significant reductions in the amount of untreated waste being sent to landfill. They will also maximise the efficient recovery of resources and encompass environmental, social and economic factors.*

*The City Council will maintain a long-term commitment to increase waste reduction, reuse, recycling and composting, and will move towards a longer term aim of achieving zero waste.*

*The waste management strategy will be sensitive to local needs and will provide services to help support Bristol in becoming the cleanest and greenest major city in the UK. Where there is malpractice or deliberate misuse of any service, this will be dealt with efficiently and effectively to maintain a clean, safe and healthy environment for businesses, citizens and visitors*

The Strategy adopts numerous Policy Statements on various aspects of waste management which are too numerous to cover in any detail here, as well as committing to the following principle objectives that overarch the entire strategy.

- To move waste management up the waste hierarchy (reduce, reuse, recycle), with a particular focus on waste prevention, diversion from landfill and resource recovery.
- To manage waste in a manner which protects human health and the environment:
  - Without risk to water, air, soil, flora and fauna;
  - Without causing nuisance;
  - Without adversely affecting the countryside or places of special landscape, townscape, archaeological and historic interest.
- To treat and dispose of waste at the nearest appropriate facility, by means of the most appropriate methods and cleanest technologies commensurate with 'best value', and to promote local and sub-regional self-sufficiency.
- To reduce the 'carbon footprint' of waste management solutions and services wherever feasible and practicable.
- To develop and procure waste management and street scene services that are flexible, effective and affordable.
- To meet statutory and local 'stretched' recycling and composting targets.
- To maximise the recovery of resources from municipal waste, including the recovery of energy.
- To stimulate long-term and certain markets for outputs from all waste management solutions in order to promote local and regional self-sufficiency
- To improve community cohesion by recognising the links between crime and the environment and improving access to services based on local need.
- To improve the quality of the local environment
- To encourage partnership working where this can deliver improved and more cost effective solutions and where it can enhance communities' understanding of sustainable waste management.
- To educate the public, particularly children and young people, using publicity and direct education methods in order to create a sustainable culture of waste reduction.
- To tackle and reduce the incidents of environmental crime by the proportionate use of the Council's enforcement powers.