



global environmental solutions

**Rivenhall Airfield IWM Facility  
- Justification for Removal of Fuel Sourcing Conditions**

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**Gent Fairhead & Co Limited**

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## APPENDIX

### Appendix 1- Review of RDF Quality in context of SRF Specifications

## 1.0 INTRODUCTION

### 1.1 Background

On behalf of Gent Fairhead and Co Limited (GFC), a review of the justification for removal of fuel and waste paper sourcing conditions attached to the planning permission for the Integrated Waste Management Facility (IWMF) at Rivenhall Airfield in Essex, has been carried out by SLR Consulting Limited (SLR).

The facility will use some of the waste derived fuel products delivered to, and processed at, the site to generate both heat and power and this generation capacity within the IWMF would operate, therefore, as a combined heat and power (CHP) facility. The IWMF will also include a market de-inking pulp (MDIP) facility to process waste paper into a fully recycled pulp that will be sold to paper and tissue mills and made into recycled products.

This report has been prepared to support GFC's application to Essex County Council (ECC) to remove planning condition No 28, relating to the sourcing of fuel for the CHP facility, and planning condition No 30, relating to the sourcing of waste paper for the MDIP facility.

Such waste derived fuel comprises residual (i.e. post-treatment) wastes which are described hereafter as solid recovered fuel (SRF)<sup>1</sup>. Confirmation that the specifications for SRF include a wide range of available residual wastes, some of which is described in the industry as refuse derived fuel<sup>2</sup> (RDF), is set out in Appendix 1. The waste paper will be printing and writing paper as typically recovered from offices and commercial organisations.

### 1.2 The Rivenhall Integrated Waste Management Facility

The CHP and paper recycling facilities at Rivenhall are intended to be developed as part of the IWMF for which planning permission<sup>3</sup> was granted on call-in in March 2010 following a Public Inquiry in 2009. In September 2014, planning permission<sup>4</sup> to extend the latest implementation date for the IWMF, by 12 months, was granted.

The IWMF at Rivenhall was conceived originally during 2007/08, primarily to meet the needs of Essex County Council's (ECC's) municipal waste treatment and disposal contract and to manage commercial and industrial waste. The need for the Rivenhall IWMF was included in the outline business case (OBC)<sup>5</sup> for Private Finance Initiative (PFI) funding, which was submitted to Defra in May 2008, by Essex County and Southend-on-Sea Borough Councils. However, ECC's final OBC, submitted to Defra in July 2009, was based on a reference project involving only the development of a mechanical and biological treatment (MBT) facility at the Council's own site at Courtauld Road in Basildon.

PFI funding worth £100 million was awarded to the councils, to assist in the procurement of a long term waste management contract. The process of appointing a contractor to build and operate a residual waste treatment facility began in November 2009 with a notice being

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<sup>1</sup> SRF is prepared from residual waste streams following recycling and has to comply with specifications set out in BS EN 15359:2011, Solid recovered fuels —Specifications and classes, British Standards Institute, 2011

<sup>2</sup> There is no set of specifications for RDF unlike SRF. It is the case that residual wastes described as RDF will generally meet one of the SRF class criteria set out in BS EN 15359:2011

<sup>3</sup> Planning permission reference APP/Z1585/V/09/2104804, DCLG, 2 March 2010

<sup>4</sup> Planning permission reference ESS/24/14/BTE, Essex County Council, 26 September 2014

<sup>5</sup> Essex Waste Management Partnership PFI, Outline Business Case, July 2009

posted in the Official Journal of the European Union inviting expressions of interest for the waste PFI contract.

Subsequently, on 3 January 2012, the Essex Waste Partnership announced that a joint venture consortium of Urbaser and Balfour Beatty had been named as preferred bidder for the treatment of residual waste in Essex and on 31 May 2012 Essex County and Southend-on-Sea Borough Councils signed a 25 year contract with the consortium.

A resolution to grant the consortium planning permission for the construction of a 417,000 tonnes per annum (tpa) MBT facility at Courtauld Road in Basildon was passed by Essex County Council on 27 July 2012 and a Section 106 agreement between the parties was completed in December 2012. Construction work on the MBT facility commenced in March 2013 and it is expected<sup>6</sup> to be operational during the summer of 2015.

The Courtauld Road MBT facility is designed<sup>7</sup> so as to produce a stabilised output material (which could be sent to landfill) or RDF, which will have to meet SRF Class 4 specifications, which could be used as a fuel in industrial or energy generation applications.

In accordance with its strategy as given to the 2009 Public Inquiry, GFC intends to develop the IWMF at Rivenhall as a “merchant facility” (i.e. a privately financed project not tied to either a Government PFI contract or to a local authority contract) which will be capable, inter alia, of recovering energy from SRF produced by the treatment of municipal and commercial and industrial (C&I) wastes as well as of recovering the waste paper fraction of those same types of wastes into a recycled product.

The fuel for the CHP facility in the IWMF could include almost 200,000 tonnes per annum of SRF from the Basildon MBT facility if appropriate (i.e. assuming that GFC’s Rivenhall Airfield CHP facility is selected as a recovery point through ECC’s process of future competitive tendering for the management of this material).

### 1.3 Purpose of Report

The purpose of this report is to demonstrate that there continues to be a need for the waste treatment, and in particular, energy and waste paper recovery, capacity that the Rivenhall IWMF will provide, at national, regional and local levels. The report also demonstrates that, due to the open and free market within which waste derived fuels and waste paper are marketed and used, it may be necessary, and indeed beneficial, to allow for some of the fuel for the CHP facility, and the waste paper for the pulp mill, to be sourced from outside Essex and Southend-on-Sea, and if appropriate from outside the old regional planning boundaries that no longer exist. This is considered to justify amending the planning conditions in the current permission that affect fuel and waste paper and card sourcing.

The site’s current permission requires, in Condition 28, that:

- (i) SRF shall be sourced internally from the IWMF or within the administrative boundaries of Essex and Southend-on-Sea.
- (ii) If the Waste Planning Authority is satisfied that the operator has used its reasonable endeavours to source SRF from these sources and there remains

<sup>6</sup> <http://www.essex.gov.uk/Environment%20Planning/Recycling-Waste/Waste-Strategy/Pages/Courtauld-Road-Basildon.aspx> accessed on 20 November 2014

<sup>7</sup> Essex Waste Partnership, RDF Disposal Contract (‘RDC’), ECC Tender No: 0000, Draft Descriptive Document for Market Testing, Version: September 2013

capacity within the IWMF, then SRF arising from elsewhere within the East of England may be used up to the available capacity for a period up to three years from the date of the agreement of the Waste Planning Authority.

(iii) No development shall commence until a scheme giving effect to the requirement of clause (i) above of this condition is submitted to and approved in writing by the Waste Planning Authority. The approved scheme shall be implemented as approved.

Condition 30 requires that:

- (i) No more than 50% of the imported waste paper and card (based on a nominal imported tonnage of pre-sorted waste paper and card of 360,000 tpa) shall be sourced from outside the administrative boundaries of the East of England Region.
- (ii) If the Waste Planning Authority is satisfied that the operator has used its reasonable endeavours to source 50% of the imported pre-sorted waste paper and card from within the East of England region, then the imported pre-sorted waste paper and card may be sourced from outside the East of England Region for a period of up to 5 years from the date of written agreement of the Waste Planning Authority.
- (iii) No development shall commence until a scheme giving effect to the requirement of clause (i) above of this condition is submitted to and approved in writing by the Waste Planning Authority. The approved scheme shall be implemented as approved.

Given that the planning regions have now been abolished and that there have been significant structural changes to the waste market since the planning application was made in 2008, particularly the rapid growth in an export market for waste derived fuels such as SRF, it is considered that Conditions 28 and 30 are no longer appropriate and that a more flexible approach to fuel and waste paper and card sourcing would have economic and environmental benefits improving the feasibility of the scheme.

In this context, Government guidance<sup>8</sup> to planning authorities on implementing the Waste Framework Directive stresses, "*in meeting the requirement of the proximity principle, there is no expectation that each waste planning authority will deal solely with its own waste*".

Accordingly, GFC is seeking planning permission to delete Conditions 28 and 30 to allow the facility to source SRF and waste paper and card from an unconstrained area which would be consistent with the approach adopted in relation to other comparable facilities in the UK.

This report demonstrates that this would be in accordance with the requirements of the Waste Framework Directive, as transposed into UK legislation and that it would provide capacity (on the basis of technical feasibility and economic viability) that is necessary to reduce the amount of waste that is being sent to landfill, or exported as fuel, or for paper and card recycling.

Nevertheless, economic viability issues associated with transport costs and the costs of treatment will naturally constrain the area from which waste will be drawn to the IWMF. This is consistent with the view<sup>9</sup> of Essex County and Southend Borough Councils that the

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<sup>8</sup> Guidance for local planning authorities on implementing planning requirements of the European Waste Framework Directive (2008/98/EC)

<sup>9</sup> As stated in the Replacement Waste Local Plan: Capacity Gap Report, Essex County Council and Southend-on-Sea Borough Council, September 2014

Rivenhall IWMF will play a 'vital role' in ensuring that waste management infrastructure meets the waste treatment capacity required in the jurisdiction of these authorities.

#### **1.4 SLR Consulting- Statement of Capability**

SLR Consulting is a leading global provider of services to the waste and recycling sector, delivering advice to clients including waste producers, the waste management industry, its regulators and investors.

In the UK, SLR's waste management team of over 40 professionals provides a wide range of technical advice to private sector waste management companies, public sector waste disposal authorities, at local, former regional and national levels of government, as well as regulators. SLR routinely prepares planning applications, and accompanying environmental statements for major waste infrastructure schemes such as energy from waste and anaerobic digestion facilities.

In November 2014, SLR was identified as being ranked 2nd in the UK, in waste planning matters, in a survey conducted by Planning Magazine.

#### **1.5 Scope of Work and Structure of Report**

The scope of work has involved a review of the requirements for compliance with the waste hierarchy and need for self-sufficiency as set out in the EU Waste Framework Directive and has considered the approach to fuel sourcing that has been followed in permissions for other large energy from waste facilities as well as the approach to waste paper sourcing that has been applied at other paper mills.

The report then considers the availability of fuel for the CHP facility having regard to the amounts of residual waste still being landfilled in England and the volumes of RDF being exported to the continent. This requirement for recovery capacity has been compared to the 'pipeline' of capacity that is either in-build or which has an environmental permit allowing its operation. A similar analysis is completed for the waste paper and card market.

The structure of the remainder of this report is as follows;

Section 2- Waste Hierarchy and Self Sufficiency;

Section 3- Review of Condition 28 Regarding SRF Sourcing

Section 4- Review of Condition 30 Regarding Recycled Paper Sourcing;

Section 5- Summary and Conclusions

## 2.0 WASTE HIERARCHY AND SELF SUFFICIENCY

### 2.1 Introduction

Much of the relevant legislation and policy relating to waste management in the UK has its origin in European directives which take direct effect in EU member states. In that this is of direct relevance to the development of a major facility such as the IWMF at Rivenhall, and in particular to the origin of the waste which it will use as fuel, and as feedstock for its paper mill, this section identifies those parts of the relevant directives and legislation with which the proposals have to be in compliance.

The key directive is the revised Waste Framework Directive<sup>10</sup>, which came into force on 12 December 2008, as it established the overarching framework for the management of waste across the EU. It required Member States to “*bring into force the laws, regulations and administrative provisions necessary to comply with this Directive*”, within two years of its entry into force, i.e. by December 2010. The Directive brought together existing elements of waste legislation and introduced a new approach to waste management which focuses more strongly on the prevention of waste.

### 2.2 Waste Framework Directive

The revised Waste Framework Directive (rWFD) repealed the original Waste Framework Directive (2006/12/EC), the Directive on Hazardous Waste (91/689/EEC) and part of the Directive on Waste Oils (75/439/EEC). Of particular relevance to the Rivenhall IWMF project, the rWFD requires in Article 16(3) that municipal solid waste (MSW) is recovered at “*one of the nearest appropriate installations*”. It is considered that Rivenhall would be such an installation in the context of the SRF to be produced by ECC’s new MBT facility in Basildon that, if not exported overseas, would otherwise need to be landfilled in Essex or sent to a UK recovery facility outside the County.

In addition the rWFD, in Article 4(1), introduced a new five point waste hierarchy, based on the priority order of:

- Prevention (preferred option);
- Preparing for re-use;
- Recycling;
- Other recovery (e.g. energy recovery); and
- Disposal (i.e. landfilling or incineration without energy recovery).

The changes in emphasis in the revised hierarchy were the preference for waste prevention and the confirmation that waste treatment involving energy generation is a recovery operation (subject to it achieving energy recovery efficiency expressed as R1<sup>11</sup> of 0.65 or more).

Member states of the EU are required by Article 4(1) of the rWFD to apply the hierarchy as a priority order “*in waste prevention and management legislation and policy*”.

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<sup>10</sup> Directive 2008/98/EC on waste

<sup>11</sup> The way in which the R1 criterion is calculated is set out in the rWFD. The Rivenhall CHP facility will have an R1 of over 0.65 and will be regarded, therefore, as a recovery facility.

However, the need to observe the principles of the hierarchy is devolved further in that guidance<sup>12</sup> on the interpretation of the rWFD confirms that EU case law has established that the “*waste hierarchy is to be observed and applied by all the relevant administrative levels within a given Member State that are concerned with waste policies and legislation*”.

The rWFD sets out, in Article 11 (2), a minimum target for recycling in that it requires, inter alia, that:

*“Member States shall take the necessary measures designed to achieve the following targets:*

- (a) by 2020, the preparing for re-use and the recycling of waste materials such as at least paper, metal, plastic and glass from households and possibly from other origins as far as these waste streams are similar to waste from households, shall be increased to a minimum of overall 50 % by weight.”*

There are no recovery targets in the rWFD other than a general requirement in Article 10 that “*Member States shall take the necessary measures to ensure that waste undergoes recovery operations, in accordance with Articles 4 and 13*”, which require compliance with the waste hierarchy and with general principles of environmental and amenity protection respectively.

The Rivenhall IWMF will ensure that wastes otherwise destined for landfill or export can be moved up the hierarchy to the highest level of energy recovery (i.e with proven ‘good quality’ CHP).

### **2.3 The Legislative Background in England and Wales**

The rWFD was incorporated into national legislation, in England and Wales, by the Waste (England and Wales) Regulations 2011.

These regulations require, in Schedule 1, at paragraph 2(1), that the waste hierarchy, as set out in the rWFD, is applied by the appropriate authority as a “priority order” in waste prevention and management policy.

Schedule 1, at paragraph 2(2) requires that when applying the waste hierarchy, the appropriate authority must ensure that it:

- “(a) encourages the options that deliver the best overall environmental outcome, which may require specific waste streams to depart from the hierarchy where this is justified by life-cycle thinking on the overall impacts of the generation and management of such waste;*
- (b) takes into account—*
  - (i) the general environmental protection principles of precaution and sustainability,*
  - (ii) technical feasibility and economic viability,*
  - (iii) protection of resources, and*
  - (iv) the overall environmental, human health, economic and social impacts.”*

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<sup>12</sup> Guidance on the interpretation of key provisions of Directive 2008/98/EC on waste, European Commission, June 2012

The 'appropriate authority' is defined in Regulation 3, in England, as the Secretary of State for the Environment, Food and Rural Affairs.

## **2.4 Application of the Waste Hierarchy**

The hierarchy of waste management methods, and the requirements as to how it should be applied, dictates that the waste feedstock for the energy recovery projects can only be drawn from residual waste which would otherwise be landfilled, or sent to other energy from waste facilities (e.g. by export to the continent) and which is not capable, either technically or from the standpoint of economic feasibility of being recycled. Paragraph 2(2)(b)(ii) of Schedule 2 to the Waste (England and Wales) Regulations 2011 makes it clear that technical feasibility and economic viability are both important criteria in considering whether or not a waste management technique is justified in the content of applying the hierarchy.

One way of determining the inherent propensity of the Rivenhall CHP facility to comply with the waste hierarchy, in the absence of a control such as a planning condition, would be to determine whether there is still sufficient residual waste, which would be suitable for treatment by energy recovery, being sent to landfill within an area from within which it would be technically feasible and economically viable to send the waste to the the facility for recovery (which would allow it to be managed further up the hierarchy).

The SRF feedstock for the Rivenhall CHP facility would include, therefore, residual waste which is either being landfilled at present, or residual waste from which energy is being recovered at other energy from waste facilities, either in the UK or on the continent.

## **2.5 Propensity for Compliance with the Waste Hierarchy**

The propensity of a waste recovery scheme to comply with the waste hierarchy, based on market forces and practical factors alone will be affected by a combination of:

1. The availability of waste which is being treated by methods which are lower in the hierarchy than the recovery proposal; and
2. The financial incentive to use waste which is higher in the hierarchy as feedstock than the recovery scheme.

These inter-related issues are explored below.

### **2.5.1 Availability of Waste Below Recovery in the Hierarchy**

The availability of wastes that are being managed currently below recovery in the hierarchy can be readily quantified by having regard to landfill utilisation statistics which are published by the Environment Agency, as described in detail in Section 4.

At national level, in 2012, the latest year for which statistics<sup>13</sup> are available, a total of 21.3 Mt of non-hazardous waste was landfilled at non-hazardous waste landfills in England. While not all of this waste would have been suitable for energy recovery, this simple statistic demonstrates the overall scale of recovery capacity that is required, at national level, in order to move non-hazardous waste up the hierarchy away from landfill which is at the bottom of the hierarchy.

At the most fundamental level, it demonstrates that there are very significant volumes of waste which are still being managed below recovery in the hierarchy.

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<sup>13</sup> England and Wales: Landfill Inputs 2012, Environment Agency

The future availability of residual waste, which could be used as fuel at the Rivenhall CHP facility, is demonstrated in a recent report<sup>14</sup> regarding municipal<sup>15</sup> solid waste (MSW) arisings and treatment capacity in 2020, in which the Government states that there is a 95% prospect that the 2020 Landfill Directive target<sup>16</sup> will be met. This work took account of a considerable 'pipeline' of energy recovery schemes which are either in construction or in the planning system but which were judged to have good prospects of success.

In this analysis of the prospects of achieving the 2020 landfill diversion target, the government estimated that, to comply with the target, no more than 10.2 Mt of biodegradable municipal waste (BMW) should be sent to landfill by 2020. However, the government estimates, that, even after withdrawal of financial support to three particular municipal waste management projects being pursued by local authorities, there would be a 95% likelihood of there being surplus recovery capacity for 2.4 Mt of BMW after meeting the target.

After allowing for utilisation of this surplus capacity, the government's modelling<sup>17</sup> shows that some 7.8 Mt of BMW would still have to be landfilled in 2020, presumably due to lack of recovery capacity, ie the Government is saying that there will still be a capacity shortfall for energy recovery in 2020. However, the study acknowledges that "*since this biodegradable waste is generally mixed with residual waste (and is treated in this way) the surplus of capacity will be greater*" than that predicted by the modelling.

In that the surplus is only a surplus with respect to the Landfill Directive target, and given that the Government is acknowledging that there will be an overall shortfall of recovery capacity in 2020, this shortfall will be bigger than 7.8 Mt

In the modelling work undertaken, the biodegradable content of MSW was deemed to be 66% which implies that the actual recovery capacity shortfall implied<sup>18</sup> by the government forecast would be in the order of 11.8 Mt, which is about half of the amount of non-hazardous waste which was landfilled in 2012.

Despite this rapid improvement in landfill diversion, these forecasts show that there is likely to be a need for additional energy recovery facilities in the UK, over and above those identified in the government's pipeline of projects, operating in a merchant capacity.

This indicates the short to medium term availability of waste which is being treated by methods which are lower in the hierarchy than the energy recovery operation provided by the Rivenhall CHP facility.

### **2.5.2 Financial Incentive for Recycling**

In addition to the short and medium term abundance of waste which is being treated lower in the hierarchy than recovery, as described above and demonstrated in more detail in Section 4 below, there is often an inherent financial incentive to recycle waste, particularly following the rapid increase in landfill gate fees as a result in escalation of the landfill tax payable on disposal of non-hazardous wastes.

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<sup>14</sup> Forecasting waste arisings and 2020 treatment capacity, Defra, October 2013

<sup>15</sup> Municipal waste includes local authority collected waste as well as commercial wastes with similar characteristics

<sup>16</sup> The target in question was the 2020 target of reducing the amount of MSW landfilled to no more than 35% of that landfilled in 1995

<sup>17</sup> See Table A1 in Appendix A to the 'Waste 2020' Report- Ref 14

<sup>18</sup> The shortfall of capacity for biodegradable waste of 7.8 Mt is just 66% of the total capacity shortfall thus  $7.8/0.66 = 11.8$  Mt

Recent data<sup>19</sup> on the respective costs of landfilling (at the bottom of the hierarchy), energy recovery and recycling, show clearly that gate fees at materials recycling facilities and organic waste treatment facilities (such as anaerobic digestion and composting plants) are significantly lower than gate fees at landfills (if the landfill tax element of disposal costs are taken into consideration) and recovery facilities.

The most recent gate fee data are summarised in Table 2/1 below. It shows that, in 2013, median gates fees for all forms of recycling and recovery were lower than those associated with landfilling of wastes.

This information on relative gate fees for different methods of waste management shows that there is clearly a strong financial, as well as environmental, incentive to divert wastes from landfill to recycling and organic waste recovery facilities. It can be concluded that there must be technical impediments in being able to do so in that the cost of landfilling far exceeds the cost of using these alternative treatment methods which are higher up in the waste hierarchy.

**Table 2/1**  
**Waste Management- Gate Fees 2013/14 (from WRAP Report)**

Waste Management Technology	Median Gate Fee- £/t	Notes
Landfill disposal	102	Inclusive of Landfill Tax of £80/t post April 2014
Energy recovery	94	Post 2000 facilities
Mechanical and biological treatment	84	
Organic waste energy recovery- AD	41	
Organic waste recycling- composting	24-40	Range for open windrow to in-vessel composting systems
Materials Recycling Facility	10	Wide range about median

More recent data than those presented above are obtainable from the website "LetsRecycle.com" which regularly publishes tables of current gate fees that it obtains from its many industry contacts. Its figures<sup>20</sup> for October 2014 indicate that median gates fees for energy recovery have been generally static in 2014 (and were £65-95/tonne in October 2014) while comparative gate fees for landfill continue to rise (to £92-115/tonne including landfill tax in October 2014). In other words, the financial gap between energy recovery and landfill disposal is widening and provides increasing fiscal incentives for new recycling and recovery plants, in addition to the regulatory incentives associated with the requirements to observe the waste hierarchy when managing waste.

This suggests that provision of an additional facility, which could recover energy from some of the residual waste which is still being sent to landfill, would be in compliance with the hierarchy.

### **2.5.3 Conclusions Regarding Compliance with the Waste Hierarchy**

It has been demonstrated that the Government expects that large quantities of suitable waste, from which energy could be recovered, will still be consigned to landfill, which is at

<sup>19</sup> Gate Fees Report, 2013/14. Comparing the cost of alternative waste treatment options, WRAP, August 2014

<sup>20</sup> At <http://www.letsrecycle.com/prices/efw-landfill-rdf-2/> accessed on 20 November 2014

the bottom of the hierarchy, by 2020. Other wastes are being exported in ever increasing quantities to the continent as SRF, as described in more detail in Section 4.3.

Given the current combination of landfill gate fees and landfill tax, or the lower but still appreciable costs of exporting SRF for energy recovery, there is a clear financial imperative already for such waste to be recycled if this were technically possible.

In that this is not taking place, and given that recycling facilities are more easily developed than recovery facilities, it is considered reasonable to assume that these wastes are not readily amenable to being recycled. If large-scale energy recovery facilities, such as that planned at Rivenhall, were available and accessible these residual wastes could be managed higher up the hierarchy.

## **2.6 Application of Self Sufficiency and Proximity Principles**

### **2.6.1 Meaning of Self Sufficiency in WFD**

In that the national strategy has to be, at a minimum, compliant with the requirement that the rWFD places on EU member states, it is relevant to consider how the relevant rWFD requirements have been implemented. In England and Wales, the Waste (England and Wales) Regulations 2011 require, at Regulation 18, that planning authorities must have regard to the provisions of Article 13 (regarding general environmental protection) and to the majority of Article 16 of the rWFD. Those parts of paragraph 1 of Article 16 which are given effect by the Regulation, and which are relevant to the proposed changes to conditions 28 and 30 of the Rivenhall planning permission, require that:

*“Member States shall take appropriate measures to establish an integrated and adequate network of waste disposal installations and of installations for the recovery of mixed municipal waste collected from private households, including where such collection also covers such waste from other producers”.*

Paragraph 2 of Article 16 of the rWFD also requires that the network of disposal and recovery installations referred to in the first paragraph of the article shall be designed to enable the Community as a whole to become self-sufficient in waste disposal as well as in the recovery of the types of waste referred to in paragraph 1 (i.e. municipal wastes and waste collected alongside municipal waste). Paragraph 2 indicates that the network of facilities to be established should *“enable Member States to move towards that aim (i.e. self sufficiency) individually, taking into account geographical circumstances or the need for specialised installations for certain types of waste.”*

Paragraph 3 of Article 16 requires that member states ensure that the network of facilities shall enable waste to be disposed of or waste referred to in paragraph 1 to be *“recovered in one of the nearest appropriate installations, by means of the most appropriate methods and technologies, in order to ensure a high level of protection for the environment and public health.”*

The national objectives, as set out in paragraph 4 of Schedule 1 to the Waste Regulations of 2011, are, therefore, to:

- obtain self sufficiency at the national level; and
- establish a network of facilities from which value can be recovered from municipal waste or waste that is collected together with municipal waste.

There is no regulatory requirement, therefore, beyond that at national level, for self-sufficiency in the provision of waste management infrastructure.

With regard to waste paper, which is collected from municipal and commercial waste in the UK, the national self sufficiency principle set out in Article 16 of the rWFD is also considered to be relevant to the need to create a network of installations capable of recycling waste paper within each Member State, and within the Community.

### **2.6.2 The Proximity Principle**

The proximity principle, set out in Article 16(3) of the rWFD requires Member States to establish an integrated and adequate network of waste disposal installations and installations for the recovery of mixed municipal waste. In particular it requires municipal waste to be recovered in “*one of the nearest appropriate installations, by means of the most appropriate methods and technologies*”.

The rWFD does not require, therefore, waste to be taken to the nearest facility, but to one of the nearest ‘appropriate’ facilities.

Government guidance<sup>21</sup> to planning authorities on implementing the Waste Framework Directive stresses that “*in meeting the requirement of the proximity principle, there is no expectation that each waste planning authority will deal solely with its own waste*” and that “*there could also be significant economies of scale for local authorities working together to assist with the development of a network of waste management facilities to enable waste to be handled effectively*”.

The recently published national planning policy<sup>22</sup> on waste issues, advises waste planning authorities in England that they should:

*“plan for the disposal of waste and the recovery of mixed municipal waste in line with the proximity principle, recognising that new facilities will need to serve catchment areas large enough to secure the economic viability of the plant”.*

### **2.6.3 Conclusions Regarding Compliance with the Self Sufficiency and Proximity Principles**

It is concluded that, at the national level, the development of additional energy recovery capacity would contribute to national self-sufficiency (in terms of energy recovery from waste), and that such facilities would become part of a network of facilities in which value could be recovered from local authority collected waste. Both of these aims are requirements of the EU Waste Framework Directive. These facilities would also be able to recover value from commercial and industrial wastes.

At present, the export of significant volumes<sup>23</sup> of SRF from England to the continent, as described in Section 4.3 below, suggests that national self-sufficiency has not yet been achieved and that there is an urgent need for more indigenous recovery capacity.

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<sup>21</sup> Guidance for local planning authorities on implementing planning requirements of the European Waste Framework Directive (2008/98/EC),

<sup>22</sup> National Planning Policy for Waste, Department for Communities and Local Government, October 2014

<sup>23</sup> A current rate of 2.4 Million tonnes per annum (based on almost 1.2 Mt exported over the first half of 2014, as reported by the Environment Agency at <http://www.geostore.com/environment-agency/WebStore?xml=environment-agency/xml/ogcDataDownload.xml>)

With regard to waste paper, a constituent part of the municipal and commercial waste stream, which is regulated as controlled waste under the rWFD, it is well known that large volumes of waste paper and card are exported every year from the UK, and indeed from the EU. In other words, the UK and EU waste paper recycling industry has not yet achieved self-sufficiency as described in more detail in Section 4.4 below.

### **3.0 REVIEW OF CONDITION 28 REGARDING SRF SOURCING**

#### **3.1 Introduction**

As described above, the effect of Condition 28 of the Rivenhall IWMF's planning permission is to restrict the sourcing of SRF that will be imported into the facility for use as fuel in its CHP facility.

In that the CHP facility is an efficient energy from waste facility, the appropriateness of this condition has been reviewed with reference to the approach to fuel sourcing that has been taken at other similar waste management facilities.

#### **3.2 Fuel Sourcing for other Energy from Waste Facilities**

The CHP facility at the Rivenhall IWMF will operate as a merchant waste treatment facility and GFC will conclude contracts to accept SRF for energy recovery with other commercial organisations and local authorities.

The way in which such facilities would source fuel, and the extent of the areas involved, has been subject to consideration at a number of planning inquiries and has also been considered by the Secretary of State, the Infrastructure Planning Commission and by a special parliamentary committee, such that there is now a broadly consistent approach to this issue which is of relevance to the current application.

This section of this report reviews recent planning decisions regarding fuel sourcing for large energy from waste facilities that would operate in a merchant capacity and draws conclusions with regard to the approach that is being taken.

##### **3.2.1 Review of Approach to Fuel Sourcing**

The facilities that have been reviewed (together with the dates of the planning consent in brackets) are as follows:

1. Ardley EfW Facility, Ardley, Oxfordshire ( 2010)
2. Lostock Energy from Waste Facility, Lostock, Cheshire (2012)
3. Rookery Resource Recovery Facility, Bedfordshire (2013)
4. Ferrybridge Multifuel facility, South Yorkshire (2011);
5. Avonmouth Energy from Waste Facility (2011); and
6. Ince Marsh Resource Recovery Facility, Cheshire (2009).

##### *Ardley Energy from Waste Facility, Oxfordshire*

The Ardley EfW facility, in Oxfordshire, was granted permission<sup>24</sup> on appeal in 2010. It has a capacity to recover energy from up to 300,000 tonnes of residual waste per annum. The county council had sought a planning condition, should the Inspector be minded to allow the appeal, similar to that which had been imposed on the Rivenhall facility. Indeed, the "Rivenhall Condition", as it was named because it was a direct copy of the hinterland condition at Rivenhall, was specifically debated at the Inquiry.

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<sup>24</sup> Ardley Landfill Site, Ardley Fields Farm, Ardley Oxfordshire County Council Town and Country Planning Act 1990 Appeal by Viridor Waste Management Ltd. Proposed construction and operation of an Energy from Waste (EfW) facility. Inspector's report

In requesting such a condition, regarding the 'hinterland' from which the site could draw waste for energy recovery, the council indicated that the reason for the condition was in the interest of sustainable development by minimising the number of HGV journeys and ensuring that the facility would be available to treat as much of Oxfordshire's waste as possible.

However, the Inspector stated in his report, at paragraph 15.15, that "*I do not accept that condition 18 suggested by OCC would be enforceable or reasonable*" noting that "*the source of C&I waste could not be ascertained with any degree of certainty given the likely variability of the origins of waste from transfer stations*".

The Secretary of State agreed with the Inspector's findings and granted planning permission in February 2011 with no hinterland condition. Although, as this section demonstrates, Ardley is one of a series of decisions over the past four years that have confirmed that this is the policy that should now be applied to hinterland issues by WPAs in the context of the NPPF and associated guidance, this precedent is particularly important in this case because the condition refused by the Secretary of State was identical, in substantive terms, to planning condition No. 28 of the Rivenhall permission.

#### *Lostock Energy from Waste Facility, Lostock, Cheshire*

The Lostock energy from waste facility, which is a similar scale to the CHP facility in the Rivenhall IWMF, was granted permission<sup>25</sup> on appeal on 2 October 2012. The planning permission does not constrain the sources of waste which would be used as fuel.

When considering the need for a catchment restriction the Inspector found that the proximity principle "*does not require it to go to the NAI [nearest available installation] and therefore there is some degree of flexibility for operators. The cost of the transportation of waste is a significant factor in the choice of destination for treatment and this also effectively limits the distance travelled. As already mentioned, as a merchant facility, it would be expected that the transportation costs would be a significant factor in contracts.*"

The Inspector concluded that "*the proposal would meet national waste policy in terms of national self-sufficiency through the establishment of a network of facilities which move waste up through the hierarchy, as set out in the WR2011. Market forces and the costs of transport would help to ensure that there would not be unsustainable movements of waste and would help to ensure that the proposal would be one of the NAIs for the recovery of waste close to its source.*"

#### *Rookery Resource Recovery Facility, Bedfordshire*

The Rookery Resource Recovery Facility was granted permission by a parliamentary committee issuing an Order<sup>26</sup>, following a special parliamentary procedure (SPP) in February 2013. The SPP followed inspection of the application by the former Infrastructure Planning Commission which produced a Statement of Reasons describing its advice.

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<sup>25</sup> Application For Consent To Construct And Operate An Energy From Waste-Fuelled Generating Station at Land Formerly Occupied by the Lostock Power Station, Lostock, Northwich, Cheshire, DECC 2 October 2012

<sup>26</sup> House of Lords House of Commons Joint Committee on the Rookery South (Resource Recovery Facility) Order 2011 First Special Report of Session 2012–13, 143 February 2013

The Rookery facility is intended to be larger than the CHP facility in the Rivenhall IWMF, in that it would have the capacity to accept 585,000 tonnes of residual waste per annum once commissioned.

The special parliamentary committee rejected a petition from Central Bedfordshire and Bedford Borough Councils, which sought to restrict the source of waste fuel supplies for the facility to the administrative areas of Cambridgeshire, Northamptonshire, Milton Keynes, Bedford Borough, Central Bedfordshire, Luton Borough, Buckinghamshire, Hertfordshire, and the Royal borough of Windsor and Maidenhead.

Although this 'Catchment Area' had been defined by Covanta (the applicant), the parliamentary committee commented in its report that the "*energy from waste facility, to be provided as a national infrastructure project, will bring benefits as regards power generation and that the economic challenge of sourcing waste is a matter for Covanta*".

#### *Ferrybridge Multifuel, Ferrybridge, South Yorkshire*

The Ferrybridge Multifuel power station is being developed by SSE plc on the site of the Ferrybridge coal fired power station in the former South Yorkshire. The facility will have the capacity to recover energy from up to 500,000 tpa of residual waste. It received a deemed planning permission<sup>27</sup> in October 2011 by virtue of Section 36 of the Electricity Act.

The planning permission does not stipulate any source restrictions for the fuel and subsequently, SSE has contracted with waste management organisations to import fuel, in the form of residual waste, from the north west<sup>28</sup> of England and Wales<sup>29</sup>, as well as from more local sources such as Bradford, Doncaster and Rotherham, as well as Wakefield Councils.

#### *Avonmouth Energy from Waste Facility*

Planning permission<sup>30</sup> was granted on appeal for a 350,000 tpa energy from waste facility as part of a resource recovery centre on the former Sevalco site on Avonmouth, in Bristol, in April 2011.

During the appeal, the Inspector heard arguments regarding a disputed planning condition which Bristol City Council wanted imposed on the development in the event that the Inspector was minded to allow the appeal. The disputed condition would have restricted the source of waste used as fuel at the appeal site to that arising in the former County of Avon and Gloucestershire, Somerset and Wiltshire. The council's reason for the imposition of the condition was to ensure that the capacity of the plant would not result in widespread

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<sup>27</sup> Electricity Act 1989 Construction and Operation of a Multi-Fuel Generating Station at Ferrybridge „C“ Power Station, Stranglands Lane, Knottingley, West Yorkshire. Department of Energy and Climate Change, Ref: 12.04.09/24C, 31 October 2011

<sup>28</sup> RDF from Wigan and East Cheshire Councils will be sent to Ferrybridge under the terms of contracts between these councils and FCC. See <http://www.letsrecycle.com/news/latest-news/councils/fcc-set-for-wigan-residual-waste-contract>, accessed 25 June 2014

<sup>29</sup> RDF from Wrexham will be sent to Ferrybridge under a contract between Wrexham BC and waste operator FCC. See <http://www.fccenvironment.co.uk/wrexham-fcc-contract.html> accessed 25 June 2014

<sup>30</sup> Town and Country Planning Act 1990 (Section 78) Appeal By Viridor Waste Management Limited. Application Ref: 09/04470/F, Former Sevalco Site (North), Severn Road, Avonmouth, Bristol, BS11 OYU, Secretary of state for DCLG, 6 April 2011

importation of waste into the sub-region, which could be seen as eroding the ability of surrounding waste markets to be self-sufficient in dealing with their own waste arisings.

However, the Inspector in paragraph 302 of his report found that *“in circumstances where the capacity for the resource recovery remains less than the quantity of the waste needing to be managed, the market is likely to ensure that the majority of the waste closest to the recovery capacity will be managed there”*. Based on this finding, he declined to recommend the inclusion of the disputed condition and the Secretary of State did not disagree with the stance taken by the Inspector, with paragraph 19 of DCLG’s letter stating that *“he agrees that the market is likely to ensure that the majority of the waste closest to the recovery capacity will be managed there and that no hinterland condition is necessary.”*

### *Ince Marsh Resource Recovery Facility*

The Ince Marsh Resource Recovery Facility (RRF) was granted planning consent<sup>31</sup> in 2009 following an Electricity Act application made by Peel Holdings and a subsequent public inquiry. The site’s planning permission does not constrain the sources of waste which could be imported for use as fuel.

In determining that such control would be inappropriate, the Inspector found, at paragraph 11.125 of his report that *“as a merchant facility responding to the market it is clear that it would not be appropriate to seek to control the origins of waste by condition or legal obligation”*.

### **3.2.2 Conclusions with Regard to Fuel Sourcing at other EfW Facilities**

The review of the approach to fuel sourcing at other merchant EfW facilities, that has been set out above, indicates that there is an appreciation that residual waste (and in particular waste that would be classified as SRF) should be viewed as a resource, inasmuch as other conventional fuel sources are, and that there is no planning merit, or reason of over-riding public interest, to seek to constrain the sources from which these facilities can attract their fuel.

In particular, the analysis of the approach taken at Rivenhall, during the Ardley appeal, is considered relevant in that the Inspector considered that such a condition would be neither necessary, nor enforceable.

It is concluded, therefore, that it would be equitable if the merchant CHP facility in the Rivenhall IWMF was allowed to operate with similar flexibility with regard to the source of the fuel from which it would recover energy and that Condition 28 should be deleted from the Rivenhall IWMF permission.

## **3.3 SRF Availability Assessment**

### **3.3.1 Introduction**

To demonstrate that the removal of Condition 28 would not have the effect of driving waste down the waste hierarchy, or of derogation from other requirements of the Waste Framework Directive, and its implementing legislation in the UK, the availability of SRF that could be used as fuel in the CHP facility in the Rivenhall IWMF has been investigated.

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<sup>31</sup> Construction and Operation of a Refuse Derived Fuel Plant & a Resource Recovery Park on Land at Ince Marshes, Cheshire, Consent under Section 36 of the electricity Act 1989, DECC, 11 August 2009

The fuel availability assessment for the CHP facility at the Rivenhall IWMF focuses on two potential sources of fuel derived from residual (i.e. post-treatment) wastes and which would be considered to be SRF.

Waste streams which are currently being landfilled represent a significant source of potential fuel for the CHP facility.

In this respect, account has been taken of the most recent government forecasts for the amounts of such wastes that will still be sent to landfill in 2020.

The second major source of fuel for the CHP facility would be SRF that is currently being exported from the UK (and which is often described as RDF) for use as fuel in energy from waste facilities in continental Europe. The government has recognised<sup>32</sup> concerns that the export of SRF, predominantly through east coast ports, is resulting in the UK economy losing a valuable resource of renewable energy. However, the government has also confirmed<sup>33</sup> that the export of RDF (and thus SRF) “*for energy recovery complies with global market principles*”, i.e. that SRF is just like any other traded commodity including other fuels.

The availability of SRF that is currently being exported to the continent has been explored and is described below.

### **3.3.2 Recent Landfill Disposal of Waste Suitable for use as Fuel**

The availability of wastes that are below recovery in the hierarchy has been quantified by reviewing landfill utilisation statistics which are published by the Environment Agency.

#### *National Level*

In 2012, the latest year for which statistics are available, Environment Agency statistics<sup>34</sup> record that a total of 21.33 Mt of non-hazardous waste was landfilled at non-hazardous waste landfills in England. While not all of this waste would have been suitable for energy recovery, this simple statistic demonstrates the overall scale of recovery capacity that is required, at national level, in order to move non-hazardous waste up the hierarchy away from landfill which is at the bottom of the hierarchy.

Defra statistics<sup>35</sup> indicate that, in 2012, a total of 10.1 Mt of local authority collected waste was landfilled which implies that 11.23 Mt of non-hazardous commercial and industrial waste was disposed of at non-hazardous waste landfills in England in 2012.

#### *Regional Level*

The former planning regions have been abolished since the planning permission for the Rivenhall integrated waste management facility was issued in 2010. In that the site is in Essex, it lay within the former East of England Region. However, the Environment Agency still uses ‘regional areas’ to report statistics relating to landfill utilisation which is why the following analysis must be presented in this format.

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<sup>32</sup> Refuse derived fuel market in England. Call for Evidence. March 2014, Defra

<sup>33</sup> Refuse derived fuel market in England. Defra response to the call for evidence, December 2014, Defra

<sup>34</sup> Landfill deposits by site type, waste type and sub-region 200/1 to 2012, Environment Agency

<sup>35</sup> Quarterly local authority collected waste statistics from 2006 and incorporating October to December 2012, Defra, 8 August 2013

In the East of England Region, and the neighbouring regions of London, the South East and the East Midlands, a significant amount of non-hazardous waste is still being consigned to landfills as shown in Table 3/1.

**Table 3/1**  
**East of England and Adjoining Regions- Non Hazardous Waste Disposal in 2012**

Former Region	Non-Hazardous Waste Inputs to Landfill in 2012/Mt		
	Merchant Landfills	Restricted Landfills	Total Landfilled
East of England	2.58	0	2.58
East Midlands	1.47	0.92	2.39
South East	3.69	0	3.69
London	0.64	0	0.64
<b>Totals</b>	<b>8.38</b>	<b>0.92</b>	<b>9.30</b>

A significant amount of this waste will have been municipal waste (now referred to as local authority collected waste, or LACW) the majority of which, in future, is likely to be sent for energy recovery as local authorities procure waste management contracts.

However, even if it were assumed, on a conservative basis, that none of the LACW that is currently being sent to landfill in the former East of England, and the former adjoining regions, would be available to the Rivenhall CHP facility, a very large quantity of commercial and industrial waste (C&IW) arising in this proximate area is currently being landfilled at non-hazardous waste landfills and a significant fraction of this is of a type from which energy could be recovered.

Data<sup>36</sup> produced by Defra show that waste disposal authorities in the former East of England, East Midlands, South East and London regions consigned a total of just under 3 Mt of LACW to landfill in 2012. It is considered reasonable to assume that the vast majority of this residual LACW would have been sent to landfill in the region in which it originated or in an adjoining region.

This implies that around 6.3 Mt of C&IW, arising in the East of England, and adjoining regions, was consigned to landfills in 2012. The split of LACW and C&IW landfilled is summarised in Table 3/2.

**Table 3/2**  
**East of England and Adjoining Regions- LACW and C&IW Landfill Disposal in 2012**

Region	Total Non-Hazardous Waste Landfilled in 2012/Mt	LACW Landfilled in 2012/Mt	C&IW Landfilled 2012/Mt
East of England	2.58	1.24	2.34
East Midlands	2.39	0.87	1.52
South East	3.69	0.91	2.78
London	0.64	0.96	-0.32*
<b>Totals</b>	<b>9.30</b>	<b>2.98</b>	<b>6.32</b>

Notes \* In reality, residual MSW will have been exported from London for disposal

<sup>36</sup> Local Authority Collected Waste Statistics – Quarterly Statistics Release from 2006 to end 2012, Department for Environment, Food and Rural Affairs (Defra), 8 August 2013

Given the heterogeneous nature of C&IW, it would not be realistic to expect that all of the C&IW being disposed of to landfill in England would be amenable to energy recovery. However, analysis of the properties of C&IW, as established in a report<sup>37</sup> on C&IW in England, issued by Defra in 2011, indicates<sup>38</sup> that 43% of C&IW that was landfilled in England in 2009 would be described as being 'non-metallic waste' and 'animal and vegetable wastes'. Based on the descriptions of these wastes, they would be expected to be suitable for treatment by energy recovery, which would have the effect of lifting such wastes up the hierarchy. It is considered likely that fractions of other C&IW types, which are currently being landfilled, such as chemical wastes, healthcare wastes and discarded equipment would also be suitable for energy recovery such that the assumed suitability of just the non-metallic and animal and vegetable waste fractions is considered conservative.

Use of this recent compositional information on the C&IW that was landfilled at national level, indicates that over 2.7Mt<sup>39</sup> of non-metallic and animal and vegetable C&IW, from which energy could potentially have been recovered, was consigned to landfills in the East of England, and adjoining regions, in 2012. Even if all of the animal and vegetable waste was source-segregated to allow it to be used for energy recovery in anaerobic digestion plants (which is considered to be unrealistic given that such wastes are often co-mingled with other commercial wastes such as catering wastes), the national C&IW composition statistics indicate that a total of just under 2.2 Mt of non-metallic waste (considered similar in composition to MSW or LACW) was landfilled in the East of England, and adjoining regions, in 2012.

In addition to the C&IW which would be suitable for treatment by energy recovery, the vast majority of the LACW that was landfilled in 2012 would also be amenable to energy recovery suggesting that, in 2012, a total of over 5.7 Mt<sup>40</sup> of waste from which energy could have been recovered was consigned to landfills in the East of England and adjoining regions. The fuel requirements of the Rivenhall CHP facility are less than 10% of this total.

It is recognised, of course, that the volume of local authority collected waste being landfilled will decrease as waste treatment facilities such as the EfW facility at Great Blakenham in Suffolk are commissioned. This effect is discussed in Section 3.4.2.

### *Local Level*

At the local level, landfill sites in Essex routinely accept over 2 Mt of waste per annum for disposal. However, a significant proportion of this waste is classified as construction and demolition waste, a significant majority of which is unlikely to be suitable for energy recovery, albeit that a study<sup>41</sup> in 2005 suggested that between 1.5% and 12.5% of construction and demolition waste could be wood.

After allowing for inputs of construction and demolition waste, and small quantities of hazardous waste (deposited as stabilised non-reactive hazardous waste in landfills permitted for acceptance of non-hazardous wastes), the amount of what the EA refer to as HIC

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<sup>37</sup> Commercial and Industrial Waste Survey 2009, Final Report, Jacobs, on behalf of Defra, May 2011

<sup>38</sup> Table 30 of the C&IW Report (Ref: 11) shows that 3.9Mt (34.6%) and 0.95Mt (8.4%) of non-metallic and animal and vegetable wastes were landfilled out of a total of 11.26Mt of C&IW

<sup>39</sup> 43% (34.6% + 8.4%) of 6.32 Mt of C&IW landfilled (see Table 4/2) = 2.72 Mt

<sup>40</sup> Comprising 2.98 Mt of LACW (see Table 4/2 and Ref 10) plus the 2.72 Mt of non-metallic and animal and vegetable C&IW (see footnote 13)

<sup>41</sup> Reference document on the status of wood waste arisings and management in the UK, WRAP, June 2005

(household, industrial and commercial) wastes landfilled in Essex still exceeded 1 Mtpa in 2012 as shown in Table 3/3.

**Table 3/3**  
**Essex- HIC Landfill Disposal in 2012**

Year	Total Deposits at Non-Hazardous Waste Landfills/Mt	C&DW Landfilled/Mt	SNRHW Landfilled/Mt	HIC Landfilled/ Mt
2010	2.41	0.82	0.01	1.59
2011	2.56	1.57	0.01	0.99
2012	2.04	0.92	0.01	1.11

This analysis confirms that significant volumes of HIC, which will contain waste from which energy could be recovered, are still being landfilled in Essex.

In that Essex has a significant 'landbank' of permitted landfill void space, it is considered that a significant proportion of the HIC that was landfilled in the County in 2012 will have been imported from neighbouring authorities (in particular from London). However, in 2012 Essex County Council and Southend on Sea Borough Council are shown by EA statistics<sup>42</sup> to have sent a total of 373,000 tonnes of LACW to landfill.

Once the MBT facility that is being constructed by the Urbaser and Balfour Beatty joint venture at the Courtauld Road site in Basildon is operational in 2015, the landfilling of LACW from Essex and Southend-on-Sea should reduce dramatically as the facility will produce SRF, which could be used as fuel, or a stabilised output material which could be landfilled as a last resort, albeit at much reduced volumes. However, to avoid landfilling of what should be considered as a resource there will then be a need to send the output of the MBT facility to an energy recovery facility. The availability of such facilities in Essex and the wider former East of England region and also at the national level is considered in Section 3.4.2.

This analysis is consistent with the findings of a recent waste treatment 'capacity gap' report<sup>43</sup>, produced by the local councils, which found that, in the Plan area:

*"LACW<sup>44</sup> and C&I (non-hazardous waste) arisings within the plan area are expected to increase slightly during the plan period. By 2031/32, arisings are estimated to range between 2.11 to 2.38 million tonnes"*

The previous Capacity Gap report had, only a year earlier, indicated that

*"Non-hazardous waste arisings are likely to remain broadly constant over the short term at 800,000 tonnes per annum for Local Authority Collected Waste and 1.365 million tonnes per annum for Commercial and Industrial Waste. This gives a total for non-hazardous waste arisings of 2.16 million tonnes per annum."*

The Capacity Gap report indicates that around 800,000 tonnes of non-hazardous waste (net) was also imported into the Plan area in 2011.

<sup>42</sup> Local Authority Collected Waste Statistics - Local Authority data, Defra, November 2013

<sup>43</sup> Replacement Waste Local Plan: Capacity Gap Report, Essex County Council and Southend-on-Sea Borough Council, September 2014

<sup>44</sup> Local Authority Collected Waste, previously referred to as municipal solid waste (MSW)

The 2014 Capacity Gap report indicates that the three planned waste treatment facilities; at Rivenhall, Courtauld Road in Basildon and Stanway will all be required, stating that:

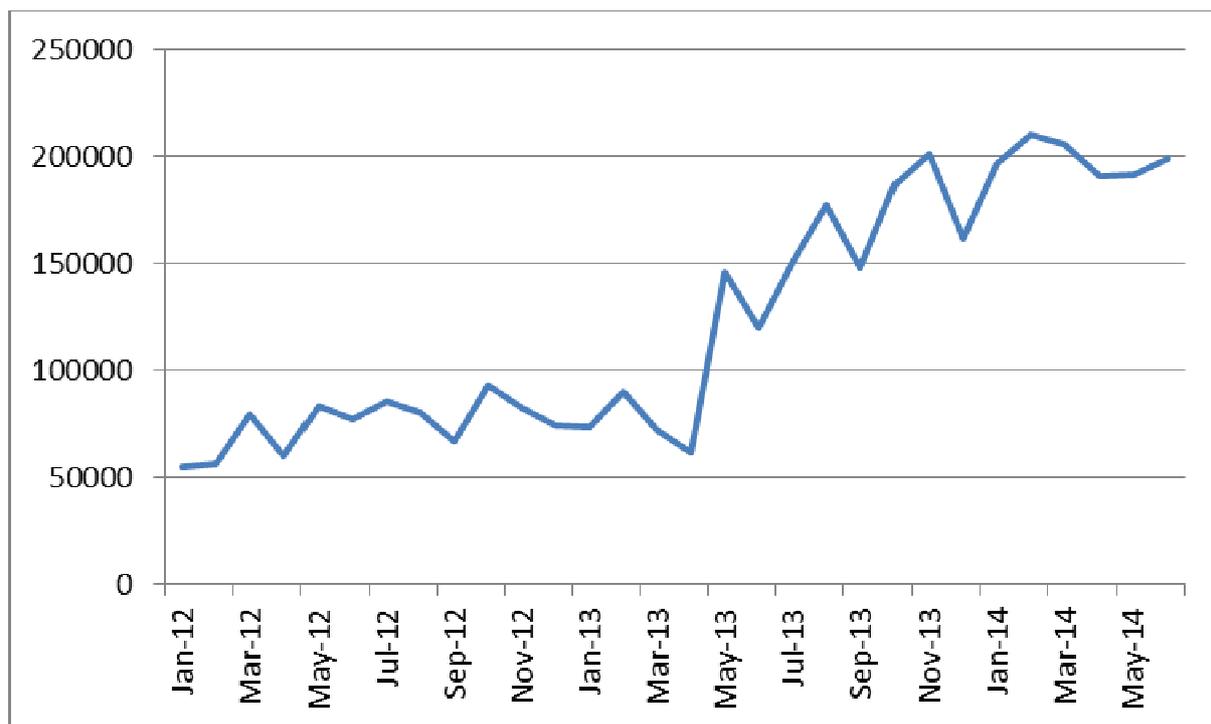
*“The permitted Integrated Waste Management Facilities (at Rivenhall Airfield, Stanway and Basildon) and other significant permissions for landfill have a vital role in ensuring the plan area’s waste management infrastructure meets the required capacity. If one or all of these sites do not become operational, other waste facilities will be required”.*

**3.3.3 Export of Waste for Energy Recovery**

One of the implications of the rapid increase in the cost of landfill disposal of residual waste that has been caused by the escalation of landfill tax, is that considerable volumes of residual waste, which have been subject to pre-treatment, are now being exported from the UK into the continent for energy recovery at energy from waste facilities and cement works. In the industry, such wastes are often referred to as RDF, rather than SRF.

From a virtual standing start in 2009, exports of RDF (that are considered to meet SRF specifications) have risen to around 200,000 tonnes per month, as illustrated in Figure 3-1 to reach an annualised rate of 2.4 million tonnes per annum in the first half of 2014.

**Figure 3-1  
 Exports of Refuse Derived Fuel from the UK**



The majority of this RDF is shipped from ports on the east coast of England.

A report<sup>45</sup> on the issue of waste exports issued by the Associated Parliamentary Sustainable Resource Group commented that a “real sense of strategy when it comes to the UK’s industrial aims is needed to support the ambitions of the waste sector in supplying UK

<sup>45</sup> Exporting Opportunity. Putting UK Waste to Work at Home and Abroad, Associate Parliamentary Sustainable Resource Group, October 2013

*manufacturing, with material from recycle, with fuels, and with low-carbon electricity and heat, which can be produced from the waste-derived fuels we currently export”.*

These exports include commercial and industrial wastes from Essex, and will, in future, be increased by the residues from the Essex County Council's MBT facility at Basildon. In August 2014, it was confirmed<sup>46</sup> that waste management company SITA had been awarded a contract to manage 180,000 tonnes/annum of SRF produced from residual MSW at the Courtauld Road MBT site using its Tilbury Dock SRF export facility which has a potential capacity<sup>47</sup> of 500,000 tpa. The short-term contract, which will involve the SRF being exported to the continent for energy recovery, will run to 2017, which means that UK based energy recovery facilities could recover energy from this SRF thereafter if capacity is available. In this context, it is intended to commission the CHP facility in the Rivenhall IWMF in 2018.

The growth in the export market for RDF has been stimulated by the surplus capacity at some energy from waste facilities on the continent which has led to gate fees being offered which are lower than those seen in the UK (as shown in Table 2/1) which means that export of residual waste, as RDF, for energy recovery may in some instances be more cost effective than local landfill disposal, once landfill tax is factored in. It is estimated that the total costs of preparation of RDF and then export for energy recovery on the continent is in the order of £65 to £80/tonne as quoted in the latest LetsRecycle.com industry-tracking tables.

If the restriction on the source of waste derived fuels for the Rivenhall CHP facility were lifted, it would provide capacity to recover energy from a fraction of the increasing amounts of RDF that are being exported from the UK, and would boost the generation of renewable energy in the UK, from the biodegradable fraction of the RDF. The government has confirmed that it is happy to view RDF (and hence SRF) as a traded commodity and that it does not intend to tax or ban exports of RDF in order to encourage investment in UK based energy recovery facilities. In this context Defra also stated that it *“is of the view that cost effective and efficient domestic facilities should be able to attract feedstock without government intervention”*. However, it must follow, therefore, that it is necessary for such effective and efficient domestic facilities to be unburdened by fuel sourcing restrictions.

With its location close to the east coast, the Rivenhall CHP facility is well placed to ‘intercept’ flows of RDF that are currently being exported from Tilbury, Harwich and Felixstowe. Indeed, it is located in the main A120 trunk road which is one of the preferred strategic continental routes to the Harwich/ Felixstowe port complex.

In the first five months of 2014, substantial quantities of RDF were exported from ports in the vicinity of Rivenhall, as summarised in Table 3/4. As noted above, plans are afoot to expand capacity at Tilbury to 500,000 tpa.

**Table 3/4**  
**Exports of RDF from Eastern Ports January-May 2014**

<b>Ports</b>	<b>Quantity of RDF exported/tonnes</b>	<b>Destinations in Europe</b>
Harwich	112,600	Netherlands
Felixstowe	163,600	Netherlands
Tilbury	160,200	Netherlands, Germany
Kings Lynn	6,500	Sweden
Purfleet	79,800	Netherlands

<sup>46</sup> SITA secures Essex RDF contract, Letsrecycle.com article 29<sup>th</sup> August 2014

<sup>47</sup> SITA to develop Tilbury Port RDF facility. Letsrecycle.com article 14<sup>th</sup> July 2014

Ports	Quantity of RDF exported/tonnes	Destinations in Europe
Sutton Bridge	12,600	Denmark
<b>Total</b>	<b>535,300</b>	

Of this total of over half a million tonnes of RDF, over 350,000 tonnes was exported from ports in Essex alone. If the outputs of RDF from the soon to be commissioned MBT facility at Courtauld Road are added, annualised exports of RDF from Essex could be expected to reach over 1 Mtpa in 2015 once the MBT facility is in operation.

### 3.3.3 Conclusions on Fuel Availability

The analysis of recent waste disposal statistics produced by the Environment Agency shows that at national, regional and local levels, large quantities of residual waste, from which energy could be recovered, are still being consigned to landfill. In the former East of England region, and the adjoining regions of the South East, the East Midlands and London, over 5.7 Mt of residual waste from which energy could be recovered was sent to landfill in 2012.

In addition, large volumes of RDF, which is considered to meet SRF specifications (see Appendix 1), are now being exported from the UK for energy recovery in Europe. The fact that very large quantities of RDF are being exported from the UK, when the Rivenhall facility, that could recover energy from this residual waste, is prevented by planning policy from accepting any such waste from outside the Essex and Southend-on-Sea area, for anything but the short term, is a significant distortion of the market for such fuels.

It is concluded, therefore, that there is still a large amount of residual waste from which energy could be recovered, arising in the area around the Rivenhall IWMF, that is being either landfilled, or exported from the UK from ports in Essex and in the vicinity of the Rivenhall IWMF. In that such wastes are being traded internationally, the maintenance of a strict waste derived fuel sourcing condition at Rivenhall is neither logical nor does it have any energy security or environmental merits given the UK's commitment to increasing the contribution of renewable fuels (including the biomass fraction of residual waste and SRF) to the overall energy supply.

In particular, the UK has a binding target under the European Commission's Renewable Energy Directive to source 15% of its overall energy from renewable sources by 2020.

The government's view<sup>48</sup> is that:

*Bioenergy has the potential to provide about 30% of the 2020 target through:*

- *Biofuels*
- *Biorefineries; and*
- *the recovery of energy from the biomass portion of waste (including anaerobic digestion)*

Given this legally binding commitment, it would appear illogical to maintain a planning condition which effectively restricts the use of a 'biofuel' in the UK and which, indirectly, encourages its export from the UK for use overseas, especially in the context of recent

<sup>48</sup> <https://www.gov.uk/government/policies/increasing-the-use-of-low-carbon-technologies/supporting-pages/bioenergy> accessed 10 September 2014

government advice<sup>49</sup> that it expects effective and efficient domestic energy from waste facilities to be able to compete with overseas energy recovery facilities.

### **3.4 Existing and Future Recovery Capacity for SRF**

#### **3.4.1 Operational Recovery Capacity**

The latest available Environment Agency statistics<sup>50</sup> show that, in 2012, throughput at operational energy recovery facilities, in England, treating local authority collected, and commercial and industrial, wastes was 5.1 Mt and these facilities had total permitted capacity of just under 6.0 Mt.

The existing energy recovery facilities have very limited capacity, therefore, to recover energy from the large amounts of residual waste that are still being landfilled or which are being exported as SRF for energy recovery on the continent.

In 2012, there were no operational facilities to recover energy from residual local authority collected and commercial and industrial wastes in the former East of England region. The only energy recovery capacity in the former region in 2012 was for the incineration of animal carcasses and clinical wastes. In the intervening period the energy from waste facility at Great Blakenham in Suffolk has been commissioned.

#### **3.4.2 Near Future Recovery Capacity**

In addition to capacity at existing operational energy recovery facilities, there is a significant number of prospective energy from waste projects<sup>51</sup> which have a valid permit but which have yet to be developed and which are non-operational.

Although the national policy guidance<sup>52</sup> suggests that waste planning authorities should “*consider the extent to which the capacity of existing operational facilities would satisfy any identified need*” some of the currently non-operational facilities, such as the FM1 project at Ferrybridge and the Ardley EfW facility, mentioned in Section 3.2 above, are in the course of construction so it is reasonable to regard these pipeline projects as having the potential to deliver recovery capacity in the near term.

Other non-operational facilities, which already have an environmental permit, may never be constructed. However, energy recovery facilities, throughout England, which are permitted, have a total permitted capacity of just over 4.1 Mtpa.

In total, therefore, it appears that there may be almost 5 Mtpa of operational or permitted pre-operational capacity available, provided all of the permitted EfW facilities get built. In reality, some of the facilities in this ‘pipeline’, such as the EfW facility at Salt End in Hull, were linked to local authority contracts which are no longer available such that the total operational and near-future operational capacity of 5 Mtpa is likely to be an overestimate.

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<sup>49</sup> Refuse derived fuel market in England. Defra response to the call for evidence, December 2014, Defra

<sup>50</sup> Incineration facilities that accepted waste in England and Wales during 2012: Permitted capacity and tonnage incinerated, Environment Agency, October 2013

<sup>51</sup> Incineration facilities that were pre-operational in England and Wales during 2012: Permitted capacity, Environment Agency, October 2013

<sup>52</sup> Paragraph 3 of the National Planning Policy for Waste, Department for Communities and Local Government, October 2014

In the former East of England region, four non-operational EfW facilities had permitted capacity (in terms of Environmental Permits - EP) of just under 860,000 tpa at the end of 2012. Two of these facilities are in Norfolk<sup>53</sup>, one in Suffolk and one in Peterborough. The facilities at Great Blakenham in Suffolk and in Peterborough are linked to local authority waste management contracts. The Great Blakenham energy from waste facility has been developed by SITA (and was commissioned in 2014) and Viridor is developing the facility at Peterborough. They will have a combined permitted<sup>54</sup> capacity to recover energy from 354,000 tpa of residual waste when both facilities are fully commissioned.

In Norfolk, the Snetterton biomass plant is permitted for biomass incineration and is designed to take straw and other agricultural wastes, rather than local authority collected wastes such that its capacity of 250,000 tpa is not considered relevant to the consideration of capacity to manage local authority and commercial and industrial wastes.

The second energy recovery facility in Norfolk that was permitted (Environmental Permit) at the end of 2012 is the Willows Power facility, which was being promoted by a joint venture involving Cory Environmental Ltd and Wheelabrator Technologies Inc. The JV was appointed as the preferred bidder for the Norfolk County Council waste management contract, but in April 2014 the county council's cabinet decided<sup>55</sup> to terminate the contract negotiations as the facility did not yet have the benefit of planning permission.

Following this decision, the JV partners issued a statement deploring the waste of public and private money, commenting that "*the fact still remains that there is no firm solution for the long-term management of Norfolk's waste*". This calls into serious question the viability of developing this facility.

In the light of the situation in Norfolk, the only near term waste recovery capacity in the former East of England region, that was permitted at the end of 2012, is associated with the SITA and Viridor projects which between them will deliver 354,000 tonnes of capacity.

### **3.4.3 Long Term Future Capacity**

The coalition government's 2011 Waste Policy Review noted that the government expected that the amount of renewable electricity that is generated from thermal treatment of waste would treble by 2020, implying a need for the trebling of thermal treatment recovery capacity compared to the situation in 2010 when this capacity forecast was made.

In 2010, operational energy recovery facilities recovered energy from just under 4 Mt of mostly<sup>56</sup> municipal and small amounts of commercial and industrial waste. This implied that, by 2020 an additional 8Mt of similar wastes should be sent to energy recovery facilities which by 2020 would have a capacity of c 12 Mtpa.

As noted above, Environment Agency statistics show that, in 2012, throughput at operational energy from waste facilities, in England was 5.145 Mt and that these facilities had total permitted capacity of 6.0 Mt.

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<sup>53</sup> The Snetterton Biomass Plant has permitted capacity of 250,000 tpa and the Willows Power and Recycling Centre has permitted capacity of 275,000 tpa.

<sup>54</sup> The EA data on permitted incineration facilities (see Ref 50) indicates that the permitted capacity of the EfW facility in Peterborough is 65,000 tpa whereas Viridor has announced its intention to develop a 85,000 tpa facility. The larger capacity is used in the text.

<sup>55</sup> Norfolk County Council Cabinet Minutes Of The Meeting Held on 7 April 2014 at 2:45pm, Edwards Room, County Hall, Norwich.

<sup>56</sup> Defra records show that 3.868Mt of MSW from England was incinerated in 2010

This capacity available in 2012 implies that the government expects the waste management sector to commission an additional 6.0Mt of energy recovery capacity in the period to 2020, which would be expected to include some of the near term capacity described in Section 5.2 above.

In that over 21 Mt of local authority collected and commercial and industrial wastes were landfilled in England in 2012, and given that 1.5 Mt of RDF was exported in 2013, it is evident that the pipeline of permitted energy recovery facilities is not going to be able to provide adequate capacity to recover value from all of those elements of these waste streams from which energy can be recovered.

This is consistent with the findings of the Government's 'Waste 2020' report<sup>57</sup>, which was prepared as part of the process of deciding to withdraw PFI credits from Norfolk County Council's waste management project (see above) which forecast that by 2020 there would still be an energy recovery capacity shortfall of over 11 Mt, as described in more detail in Section 2.4.1 above.

#### **3.4.4 Non EfW Recovery Capacity**

In addition to the energy from waste capacity discussed above, it is recognised that some councils, such as Cambridgeshire and Essex County Councils and Southend on Sea Borough Council, are procuring recovery capacity at MBT facilities. However, while such facilities may divert waste from landfill there is an ultimate need to have a facility which can recover energy from the RDF or SRF output of the MBT facility.

The lack of adequate capacity at EfW facilities, in both the former East of England region, and indeed at national level, which has been detailed above, is one of the factors which has led to the rapid growth in the exports of RDF for energy recovery on the continent, as described in more detail in Section 3.3.2 above. In Essex, this lack of adequate energy recovery capacity for SRF produced by an in-county MBT facility has been emphasised by the recent decision to export SRF from the Basildon MBT facility to Europe.

### **3.5 Effect of Condition 28**

Notwithstanding the large amount of waste that is still being landfilled in Essex and Southend-on-Sea, and which could be suited to energy recovery as a SRF material, and although a significant amount of this material will have arisen in this area, the effect of Condition 28 on the Rivenhall IWMF could be to present an unnecessary obstacle to potential investment in this facility.

In its far reaching discussion document<sup>58</sup> on the role that energy from waste processes have in the management of waste, the government recognises that investment in such facilities is key to their successful delivery. It notes that 'access to waste' can be a challenging issue for the industry, commenting that:

*"energy from waste infrastructure can take considerable time (up to 10 years or more) and significant financial investment to develop. Access to residual waste for use in energy recovery can also be problematic, particularly for new technologies or less established companies, as local authority collected waste/household waste is often tied up in long-term*

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<sup>57</sup> Forecasting waste arisings and 2020 treatment capacity, Defra, October 2013

<sup>58</sup> Energy from waste. A guide to the debate. Department for Food and Rural Affairs. February 2014 (revised edition)

*waste disposal authority contracts. These complex factors can make it challenging for the waste management industry to respond swiftly to market changes.”*

Any planning condition that inhibits the ability of an energy from waste facility to access fuel supplies will be a disincentive to invest and may lead to a facility with a restrictive fuel supply condition struggling to attract adequate investment.

The government indicates that it intends to “*put significant resources into overcoming barriers to delivering further market driven investment, aimed at optimising the role of energy from waste in the hierarchy and as a source of low carbon energy*”.

### **3.6 Summary and Conclusions with Regard to Review of Condition 28**

The analysis of Condition 28 of the planning permission for the Rivenhall IWMF has indicated that:

1. The condition appears to be at variance with the non-restrictive approach taken to fuel sourcing for other large CHP and EfW facilities that have been permitted in the last four years. In particular, the Inspector at the Ardley EfW enquiry considered whether a condition that was materially the same as Condition 28 should be applied to the permission for that facility and found that it would be unnecessary and unenforceable. The Secretary of State upheld the inspector’s decision to grant permission without a condition restricting the origin of the waste fuel at Ardley;
2. A review of the need for capacity to treat refuse derived wastes (or SRF) has confirmed that at national level there is very limited spare capacity at existing operational EfW facilities and that there are no operational energy recovery facilities for local authority collected and commercial and industrial wastes in the former East of England region. Even by 2020, government forecasts show that there is likely to be a significant energy recovery capacity shortfall, of in excess of 11 Mt of residual waste;
3. The pipeline of viable projects for the delivery of additional energy from waste recovery infrastructure in the East of England will provide additional capacity of just 354,000 tpa when commissioned;
4. The shortfall in available waste recovery capacity has led in recent years to a significant volume of SRF being exported from the UK to energy recovery facilities in Europe which represents a lost business opportunity and the loss of a renewable fuel source for the UK;
5. Waste treatment facilities, such as the MBT facility being developed at Courtauld Road in Basildon, in Essex, will reduce the amount of waste being landfilled but will still require a facility at which energy can be recovered from the SRF that they will produce.

It is considered, therefore, that Condition 28 should be deleted from the Rivenhall IWMF permission in that it fails several of the tests<sup>59</sup> set out in paragraph 206 of the NPPF.

In that the condition is out of step with those of other major EfW and CHP facilities, with regard to flexibility in fuel sourcing it does not comply with the government’s recently issued, web based Planning Practice Guidance<sup>60</sup> which, at paragraph 5 in the section on ‘Use of Planning Conditions’ states that:

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<sup>59</sup> The National Planning Policy Framework sets out, at paragraph 206, six tests which have to be satisfied prior to imposing a planning condition to the effect that it is necessary, relevant to the development to be permitted, enforceable, precise and reasonable in all other respects.

<sup>60</sup> <http://planningguidance.planningportal.gov.uk/blog/guidance/use-of-planning-conditions/what-approach-should-be-taken-to-imposing-conditions/> accessed 04 November 2014

*“Any proposed condition that fails to meet any of the six tests should not be used. This applies even if the applicant suggests it or agrees on its terms or it is suggested by the members of a planning committee or a third party. Every condition must always be justified by the local planning authority on its own planning merits on a case by case basis. Specific circumstances where conditions should not be used include:*

- *Conditions which unreasonably impact on the deliverability of a development: Conditions which place unjustifiable and disproportionate financial burdens on an applicant will fail the test of reasonableness. In considering issues around viability, local planning authorities should consider policies in the National Planning Policy Framework and supporting guidance on viability.”*

On this basis, it is concluded that Condition 28 should be removed from the Rivenhall IWMF permission as it:

- a) Is unnecessary and unenforceable (as indicated by the planning inspector at the Ardley inquiry described in Section 3.2.1)
- b) Refers to the East of England Region, which no longer exists and, therefore, is unenforceable;
- c) Is inconsistent with permissions for other large energy recovery facilities which do not seek to control the source of the fuel they accept, which is considered to be an unreasonable imposition on the ability of the facility to compete in the market place;
- d) Is inconsistent with lack of control over the origin of SRF which is hauled through the area around the Rivenhall facility for export to Europe; and
- e) Inhibits the development of a facility for which there is a local and national need, as evidenced by the decision to export SRF produced in Essex to the continent.

## 4.0 REVIEW OF CONDITION 30 REGARDING PAPER AND CARD SOURCING

### 4.1 Introduction

While some LACW and C&IW can be processed into SRF to allow energy recovery, other discrete fractions of these waste streams can be recycled, which is higher in the waste hierarchy than energy recovery, and which is to be preferred, therefore, subject to it being practically and economically feasible. One of the major barriers to successful recycling is the poor quality of recyclate and the national waste management plan<sup>61</sup> confirms the need for 'high quality recycling' commenting that:

*"In 2012 the Government amended the Waste (England and Wales) Regulations 2011. In effect these require the separate collection of waste paper, metal, plastic and glass from 2015 onwards wherever separate collection is necessary to get high quality recycling, and practicable".*

The pulp mill in the Rivenhall IWMF will be able to accept high quality paper and card recyclate from the LACW and C&IW waste streams. However, at present, Condition 30 of the IWMF's planning permission restricts the area from which such recyclate can be drawn.

In particular, Condition 30 of the Rivenhall IWMF prevents more than 50% of the imported waste paper and card from being sourced from outside the administrative boundaries of the former East of England Region, other than for a temporary period.

In his report that accompanied the permission by the Secretary of State, the Inspector confirmed that the market de-inking pulp (MDIP) facility was a true waste management and recycling process and met with regional and national planning policies. He concluded that it *"would enable the recovery of locally arising wastes together with the higher grade waste paper from outside the region because of the absence of similar facilities in the UK"*.

The need to recycle and recover waste paper is inherent in waste planning policies to maximise recovery and re-use, and to minimise landfill. Historically, as an integral part of the municipal and commercial waste streams discussed above, waste paper has always been one of the first commodities to be extracted from these main waste-streams. It follows that consideration of the planning restrictions for waste paper sourcing should follow exactly the same logic as for SRF and as discussed in Section 3.

It is considered that this condition should be deleted for the same reasons as Condition 28 and as explained further below.

### 4.2 Approach to Resource Sourcing at Paper Mills

The MDIP facility at the Rivenhall IWMF will operate as a merchant waste treatment facility and GFC will conclude contracts to accept paper and card for recycling with other commercial organisations and local authorities, or their appointed waste management contractors. It will compete, therefore, for feedstock with other facilities such as paper mills which source recycled paper and with exporters who transfer large volumes of recycled paper to Europe

The way in which the planning permissions for other paper mill facilities would control the source of their raw material resources, in the form of recycled paper and card, has been reviewed.

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This section of this report reviews recent planning decisions and the way in which they deal with raw material sourcing for large paper mills, that would operate in a merchant capacity and draws conclusions with regard to the approach that has been taken at these facilities.

#### **4.2.1 Palm Paper, Kings Lynn**

In 2007, Palm Paper applied to construct a paper mill on the Saddlebow Industrial Estate, in King's Lynn. The planning application was accompanied by an Environmental Statement which indicated that the facility could produce up to 550,000 tonnes of newsprint per annum from a feedstock of up to 630,000 tonnes of recycled newspapers and magazines. Incidentally, this is a different feedstock to the white mixed office papers that the Rivenhall MDIP facility will accept such that the two operations are complementary rather than competing.

Planning permission<sup>62</sup> for the paper mill was granted by West Norfolk Council in 2007 and the facility was commissioned in 2010.

The production is based entirely on selected, hand sorted recycled fibre pulp. The mill contains one of the world's largest and most powerful newsprint paper machines. The paper machine has a capacity of 400,000 tonnes of newsprint per annum and is fed with hand sorted recycled paper pulp. Since opening on 2010 the facility has produced over one million tonnes of paper from recycled products.

The planning permission is subject to 41 conditions but does not seek to control the origin of the recycled paper and magazines that are the feedstock to the facility such that the facility can draw upon supplies of these recycled raw materials from across the UK, and indeed, if necessary, from imports from overseas.

#### **4.2.2 Partington Paper Mill**

In 2008, SAICA applied to Trafford Borough Council, in Manchester, to develop a 400,000 tonne per annum paper mill on the banks of the Manchester Ship Canal to produce containerboard for the British market using indigenous recycled paper. The environmental statement accompanying the planning application indicated that the feedstock for the mill would comprise a total "*of approximately 450,000 tonnes per annum of baled recovered paper, comprising mainly old corrugated containers (OCC) and some mixed waste papers (MWP) arising from local authorities, recovered paper merchants, from supermarket chains and from other suppliers*".

Planning permission<sup>63</sup> was granted on 30 December 2008 and construction commenced in 2009. The facility was commissioned in 2010.

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<sup>62</sup> Planning permission Ref: 07/01708/FM Erection of paper recycling facility, combined heat and power plant, effluent treatment works, gatehouse, roads, yardage, parking, landscaping and ancillary building works at Ex British Sugar Poplar Avenue King's Lynn Norfolk PE34 3AL, West Norfolk Council, 7 August 2007

<sup>63</sup> Planning permission Ref: H/69865. Partington Wharfside, land off Manchester Road, Carrington. Development of a recycled paper mill including external raw material storage area, raw material preparation and paper making building, finished goods warehouse and loading canopy, workshops and engineering stores, electricity and steam generating plant, water treatment plant, offices and associated buildings and equipment, together with car and lorry parking and revised access to the A6144 Manchester Road. December 2008, Trafford Borough Council

The planning permission is subject to 23 conditions, none of which seek to control the sources of the recycled paper feedstock which supply the mill such that it can also attract recycled paper feedstock from across the UK or even, theoretically by boat via the Ship Canal.

#### **4.2.3 Snodland Paper Mill, Kent**

The Snodland Paper Mill is a long standing paper production site in Kent. In 2012, its operator Smurfitt Kappa, applied to install a new paper making machine to replace existing machines that were inefficient. Planning permission<sup>64</sup> was granted by Tonbridge and Malling District Council in June of 2012 with 7 conditions.

The new paper making equipment will replace two existing container board machines, increasing the site's production of recycled paper by over 8% from 240,000 to 260,000 tonnes per annum. All of the feedstock for the plant is recycled paper.

The planning permission for the new paper making plant does not seek to control the origin of the recycled paper which is its feedstock such that it can attract recycled paper from across the UK.

#### **4.2.4 Conclusions with Regard to Recycled Paper Sourcing at UK Paper Mills**

The review of the approach to raw material sourcing at paper mill facilities in the UK that have been developed to utilise the large quantities of recycled paper which are now available in the UK marketplace, indicates that there is an appreciation that such recycled paper (that would still be classified as a waste) should be viewed as a resource to support an indigenous industry.

The planning authorities involved have clearly concluded that there is no planning merit, or reason of over-riding public interest, to seek to constrain the sources from which these facilities can attract their recycled paper feedstock.

The Inspector who heard the Rivenhall IWMF inquiry recognised that there was a gap in the market for a facility such as the MDIP facility which forms part of the Rivenhall IWMF, commenting on "*the absence of similar facilities in the UK*".

It is concluded, therefore, that it would be equitable if the MDIP facility in the Rivenhall IWMF was allowed to operate with similar flexibility with regard to the source of the recycled paper which it would use as feedstock. On this basis it is considered that Condition 30 should be deleted from the Rivenhall IWMF permission by virtue of it failing the test of reasonableness as set out in Paragraph 206 of the NPPF.

### **4.3 Former East of England Region**

The former East of England Region was abolished in accordance with the requirements of the Localism Act 2011 and the East of England Plan (the Regional Spatial Strategy) was abolished in January 2013.

In that the entity known as the East of England Region no longer exists, it would appear that Condition 30 is no longer capable of enforcement and, as such, fails one of the key six tests,

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<sup>64</sup> Planning permission Ref: 12/00348/FLEA Demolition of former paper machine building and construction of a new paper machine building including a stock preparation area, together with a control room and ancillary facilities, June 2012, Tonbridge and Malling District Council

that of enforceability, for a planning condition as set out in paragraph 206 of the East of England Region.

On these grounds it is also considered that Condition 30 should be deleted from the Rivenhall IWMF permission.

#### 4.4 Relevance of Waste Policy

The review of waste policy, set out in Section 2 above, indicates that conditions that seek to restrict the source of waste materials, for recovery operations, are generally not required in order to comply with the Waste Framework Directive, and its implementing legislation in England, nor do they necessarily lead to compliance with the requirements of the directive.

In particular, where waste paper and card are being exported for recycling overseas, it is illogical to seek to restrict flows of this recyclate within the UK. Recent statistics<sup>65</sup> show that, in 2012, collection of waste paper for recycling in the UK rose by 1.5% to 8.15 million tonnes compared to 2011.

Exports of waste paper from the UK represented 55% (or over 4 Mt) of total UK collections, a 1.1% increase on 2011. Although not all of this material would be of a grade suitable for recovery at the Rivenhall IWMF, this demonstrates the scale of the international flows of such materials which are not controlled or constrained by planning conditions. Similar collection and recycling rates were seen in 2013 as indicated by the Confederation of European Paper Industries (CEPI), which recorded<sup>66</sup> that 7.9 Mt of waste paper was collected for recycling in the UK in that year, of which 4.3 Mt was exported (the majority to non-European locations) equivalent to 54% of the waste paper collected.

Within Europe, other CEPI statistics<sup>67</sup> showed that the UK exported 689,000 tonnes of paper for recycling in 2013 and that it imported just 33,000 tonnes of waste paper for recycling, from European countries, in the same period.

At the EU level, there is evidence<sup>68</sup> of continuing growth in the amounts of waste paper being exported outside the EU for recycling which suggests that the EU is far from being self-sufficient in capacity for the recycling of this important waste stream. The trend in recent years is illustrated in Figure 4-1 overleaf.

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<sup>65</sup> Waste Paper, <http://www.letsrecycle.com/prices/waste%20paper>

<sup>66</sup> Annual Statistics European Pulp and Paper Industry, 2013. Confederation of European Paper Industries, 2013

<sup>67</sup> CEPI Recycling and Product Committee Trade of Paper for Recycling, Imports by country of origin. Exports by country of destination, CEPI 2013

<sup>68</sup> Eurostat.  
[http://epp.eurostat.ec.europa.eu/statistics\\_explained/index.php/File:Trade\\_volume\\_of\\_paper\\_waste\\_in\\_EU27\\_according\\_to\\_trade\\_flows.PNG](http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/File:Trade_volume_of_paper_waste_in_EU27_according_to_trade_flows.PNG)

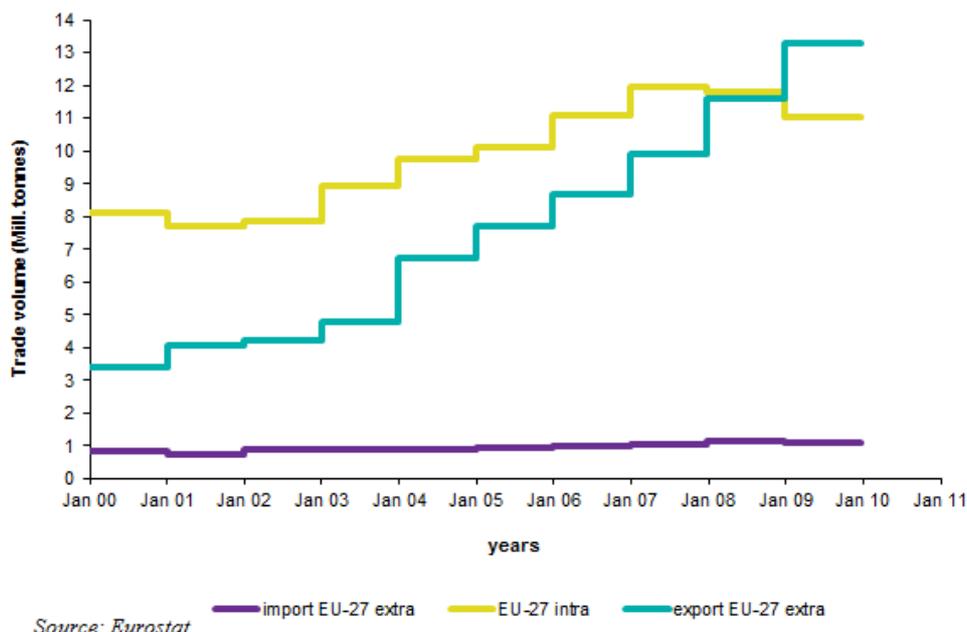


Figure 4-1 Trade Volume of Paper Waste in EU27 According to Trade Flows

#### 4.5 Summary and Conclusions with Regard to Review of Condition 30

The review of Condition 30 of the planning permission for the Rivenhall IWMF has indicated that:

1. The condition appears to be at variance with the non-restrictive approach taken to recycled paper feedstock sourcing for other large paper mill facilities that have been permitted recently and which are allowed to access their supplies of recycled paper from across the UK, subject to market forces, and is thus considered to be unreasonable having regard to guidance in the Planning Practice Guide;
2. The condition references a former region of England which no longer exists such that it is unenforceable; and
3. The condition is unnecessary in order to comply with the requirements of the waste Framework directive and its implementing legislation in England.

On this basis, it is concluded that Condition 30 should be removed from the Rivenhall IWMF permission as it fails several of the tests set out in Paragraph 206 of the NPPF.

## **5.0 SUMMARY AND CONCLUSIONS**

### **5.1 WFD Waste Hierarchy, Self Sufficiency and Proximity Principles**

Notwithstanding improvements in recycling rates, Environment Agency statistics show that over 21 Mt of local authority collected, commercial and industrial wastes were still landfilled in England in 2012. A significant proportion of these wastes would be suitable for energy recovery. The latest Government forecast indicates that large quantities of suitable waste, from which energy could be recovered, will still be consigned to landfill, which is at the bottom of the hierarchy, by 2020 while other wastes are being exported in ever increasing quantities to the continent as refuse derived fuel.

Given the current combination of landfill gate fees and landfill tax, or the lower but still appreciable costs of exporting RDF for energy recovery, or as paper for recycling, there is a clear financial imperative already for such waste to be recovered and/or recycled if this were technically possible.

In that this is not taking place, and given that recycling facilities are more easily developed than recovery facilities, it is considered reasonable to assume that these wastes are not readily amenable to being recycled. If large-scale energy recovery facilities, such as that planned to be part of the Rivenhall IWMF, were available and accessible these residual wastes could be managed higher up the hierarchy.

With regard to the Waste Framework Directive's self-sufficiency and proximity principles, it is concluded that, at the national level, the development of additional energy recovery and paper recycling capacity at Rivenhall would contribute to national self-sufficiency in terms of energy recovery from waste and paper recycling. The CHP facility at the Rivenhall IWMF would become part of a network of recovery facilities in which value could be recovered from local authority collected waste. Both of these aims are requirements of the EU Waste Framework Directive and the Rivenhall IWMF project is demonstrated, therefore, to be compliant with, and supportive of, these aims.

At present, the export of significant volumes of refuse derived fuel from England to the continent, as described in Section 3.3.2 above, suggests that national self-sufficiency has not yet been achieved and the analysis of the pipeline of future energy recovery capacity in both the former East of England region, as well as in the rest of the country indicates that self-sufficiency will not be obtained in the foreseeable future. A similar situation occurs in the waste paper industry where there are insufficient facilities for recycling paper waste in the UK such that large quantities are exported overseas.

The Rivenhall IWMF could play an important role in moving towards such self-sufficiency if its restrictive waste derived fuel and waste paper sourcing conditions are removed.

### **5.2 Review of Feedstock Sourcing Arrangements at other EfW and Paper Mill Facilities**

A review of the approach to fuel sourcing at six other large scale, merchant EfW facilities, that have been the result of recent planning decisions, many of them by Inspectors or the Secretary of State, indicates that residual waste and RDF is now viewed as a fuel resource. Recent decisions have not resulted in the imposition of planning conditions seeking to control the origin of this fuel resource.

Similarly, review of three recent permissions for paper mills that are using recycled paper as a feedstock has shown that these facilities have planning permissions that do not constrain the source of waste paper which they can attract to the mill.

The analysis, by a planning inspector, of the applicability of Condition 28 of the Rivenhall IWMF planning permission, during the appeal regarding the Ardley EfW facility in Oxfordshire, indicated that such a condition should not be imposed because it was neither reasonable nor enforceable.

In another case, regarding an energy recovery facility in Avonmouth, the Secretary of State has indicated that, *“he agrees that the market is likely to ensure that the majority of the waste closest to the recovery capacity will be managed there and that no hinterland condition is necessary”*

It is concluded, therefore, that the merchant CHP and MDIP facilities at the Rivenhall IWMF should be allowed to operate with similar flexibility with regard to the sources of the fuel, and recycled paper, from which they would recover energy, and produce recycled, de-inked paper pulp respectively.

### **5.3 Fuel and Waste Paper Availability Analyses**

Analysis of recent waste disposal statistics produced by the Environment Agency shows that at national, regional and local levels, large quantities of residual waste, from which energy could be recovered, are still being consigned to landfill. At national level, over 21 Mt of local authority collected, commercial and industrial wastes were landfilled in 2012.

In the former East of England region, and the adjoining former regions of the South East, the East Midlands and London, analysis of EA statistics indicates that over 5.7 Mt of residual waste, from which energy could be recovered, was sent to landfill in 2012.

In addition, large volumes of RDF, which are considered to meet SRF specifications, are now being exported from the UK for energy recovery in Europe.

It is concluded, therefore, that there is still a large amount of waste from which energy could be recovered by the CHP facility at the Rivenhall IWMF which is being either landfilled, or exported from the UK. In that such wastes are being traded internationally, the maintenance of a strict waste derived fuel sourcing condition at Rivenhall is neither logical nor does it have any energy security or environmental merits.

With regard to waste paper, including newspapers, magazines and printings and writing paper, analysis of recent statistics demonstrate that more than 50% of segregated and collected volumes of paper collected in the UK for recycling are sent overseas, demonstrating that the UK is not yet self-sufficient in its waste paper processing and recycling industry.

### **5.4 Capacity Shortfall**

#### **5.4.1 Waste Recovery Capacity**

A review of existing and future operational capacity to recover energy from residual waste has shown that there is currently no capacity in the East of England and that at national level there is less than one million tpa of surplus capacity as at the end of 2012.

Review of the pipeline of future capacity indicates that there is only modest permitted capacity, of just over 350,000 tpa, likely to come on stream in the East of England in the foreseeable future (for municipal contracts at Peterborough and Ipswich, Suffolk), which is less than 13% of the amount of household, industrial and commercial waste landfilled in the former East of England region in 2012.

At national level, the Government has forecast a significant capacity shortfall by 2020 which, together with the increasing quantity of RDF being exported for energy recovery, points to a need for additional capacity, such as that which would be provided by the CHP facility at the Rivenhall IWMF, to be made available and to be allowed to be sufficiently flexible to recover energy from residual waste from outside its immediate waste planning authority boundary.

#### **5.4.2 Paper Recycling Capacity**

The imbalance, in 2013, between imports and exports of paper from recycling to give a net export volume of over 650,000 tonnes to European recycling facilities, illustrates the capacity gap inherent in the UK paper market.

#### **5.5 Overall Conclusion**

There is a continuing need to provide capacity in England, to recover energy from residual waste that would be either landfilled or exported for energy recovery on the continent, and to recycle paper that would otherwise be exported. Recovery of energy and production of de-inked paper pulp, from these wastes at the CHP and MDIP facilities at the Rivenhall IWMF would be compliant with the Waste Framework Directive's waste hierarchy, self sufficiency and proximity principles if the facility was allowed to accept SRF and paper and card wastes that originated outside Essex and Southend-on-Sea, and the former region of East of England, where such recovery was technically feasible and economically viable.

It has been shown that Condition 28 of the Rivenhall IWMF's planning permission, which controls the origin of fuel that the CHP facility can accept, may be both unnecessary and unenforceable and that it is considered to place an unreasonable imposition on the ability of the facility to compete in the market place for SRF, large quantities of which are being exported without any planning controls. The government has recently confirmed that it will not ban or tax such exports and that it expects UK based facilities to compete for this fuel on an open-market basis which means that competing facilities should not have to compete for such fuel supplies with a restriction on their origin in place.

Similarly, it has been shown that Condition 30 of the Rivenhall IWMF's planning permission, which controls the origin of recycled paper that the site's MDIP can accept, is incapable of enforcement, as it refers to a non-existent former region, and that is unnecessary in order to achieve compliance with national and European waste management policy.

It is concluded, therefore, that the Rivenhall IWMF's Planning Conditions 28, as it affects the sourcing of fuel, and 30, as it affects the sourcing of waste paper and card, should both be deleted as they each fail several of the tests for planning conditions as set out in Paragraph 206 of the National Planning Policy Framework.

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**APPENDIX 1-**  
**Review of RDF Quality in Context of SRF Specifications**

## APPENDIX 1

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## 1.0 INTRODUCTION

On behalf of Gent Fairhead and Co Limited (GFC), a review of the quality of residual wastes, and in particular residual wastes that are often described as refuse derived fuels (RDF), has been carried out by SLR Consulting Limited (SLR).

The quality of such wastes has been considered in the context of the specifications for different classes of solid recovered fuel (SRF) as defined in the relevant British Standard<sup>1</sup>, BS EN 15359:2011. The British Standard is the UK implementation of the European Standard EN 15359:2011.

### 1.1 Definition of SRF

BS EN 15359 confirms, in its introduction, that:

*“SRF are produced from non hazardous waste. The input waste can be production specific waste, municipal solid waste, industrial waste, commercial waste, construction and demolition waste, sewage sludge etc. It is thus obvious that SRF are a heterogeneous group of fuels.”*

The definition of SRF is set out in Section 3.12 of BS EN 15359, which states that it is:

*“solid fuel prepared from non-hazardous waste to be utilised for energy recovery in incineration or co-incineration plants and meeting the classification and specification requirements laid down in this European Standard”*

### 1.2 Definition of RDF

The government has confirmed<sup>2</sup> that there is no definition or standard for RDF in British Standards, domestic legislation or in European legislation. In the European Waste Catalogue, RDF is given EWC Code 19.12.10 (combustible waste) and falls under the classification description: *“wastes from the mechanical treatment of waste (pelletising) not otherwise specified”*.

Despite this lack of formal definition, the term RDF is used commonly to describe residual wastes that are to be used as fuel, either in the UK, or on the continent after export from the UK, and the government has recently requested<sup>3</sup> information from the waste industry about the RDF market in England.

In this call for evidence, the government indicated, at paragraph 8, that:

*“Refuse Derived Fuel (RDF) is a generic term used to describe fuel produced from waste that has undergone some sort of process, from minimal sorting and bailing to more complex mechanical treatments”*.

### 1.3 Purpose of the Document

The purpose of this document is to present a review of information on the quality of RDF which demonstrates that the majority of RDF that is either used as fuel in the UK, or which is

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<sup>1</sup> BS EN 15359:2011, Solid recovered fuels —Specifications and classes, British Standards Institute, 2011

<sup>2</sup> Paragraph 20, Refuse derived fuel market in England. Defra response to the call for evidence, December 2014, Defra

<sup>3</sup> Refuse derived fuel market in England. Call for evidence, Defra, March 2014

exported to the continent to be used as fuel, would comply with one of the sets of class criteria for SRF, in accordance with the requirements of BS EN 15359:2011.

## 2.0 SPECIFICATIONS FOR SOLID RECOVERED FUEL

### 2.1 Introduction

BS EN 15359:2011 identifies five classes of SRF, as determined by the following parameters:

- Net calorific value (NCV);
- Chlorine content; and
- Mercury content (the higher of the median and 80<sup>th</sup> percentile values).

In addition, the British Standard specifies that SRF can only be prepared from non-hazardous waste and that untreated municipal solid waste is not in the scope of the standard.

It is clear, therefore, that SRF has to be “prepared”, ie it is a post-treatment waste, rather than a waste that has not been subject to any treatment or preparation.

It is confirmed, in a note to Section 3.12 of the British Standard that, in this context, ‘prepared’ indicates that the waste is “*processed, homogenised and up-graded to a quality that can be traded amongst producers and users*”. The degree of treatment, or preparation is not specified, but it is necessary that the treated waste has to be at a standard where it is traded between producer and user.

The growth in the UK RDF export market over the past few years has been explained in section 4.3 of the main report. Clearly, there are now many companies who are manufacturing RDF and trading it on the continental market. In June 2014, LetsRecycle.com showed how over 2 M tonnes per annum was being exported and its commercial competition graph indicated the volumes being traded by the top ten companies<sup>4</sup>. One of these major companies, SITA UK, has recently won the contract to manage Essex County Council’s ‘RDF’ from its MBT facility at Basildon, such that the export volumes will be increased accordingly as SITA trades this RDF on the continent on behalf of ECC over the next 3 years.

### 2.2 SRF Classes

Based on the measured NCV and chlorine and mercury contents of post-treatment, ie residual, waste, or RDF, it may meet one of the five sets of criteria for SRF. These are set out in Table 2-1.

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<sup>4</sup> <http://www.letsrecycle.com/news/latest-news/waste-management/rdf-export-market-looks-set-to-grow-in-2014>

**Table 2-1 SRF Classification**

Classification Characteristic	Statistical Measure	Unit	Classes				
			1	2	3	4	5
Net calorific value (NCV)	Mean	MJ/kg (ar)	≥25	≥20	≥15	≥10	≥3
Chlorine (Cl)	Mean	% (d)	≤ 0.2	≤ 0.6	≤ 1.0	≤ 1.5	≤ 3
Mercury (Hg)	Median	mg/MJ (ar)	≤ 0.02	≤ 0.03	≤ 0.08	≤ 0.15	≤ 0.5
	80 <sup>th</sup> %ile	mg/MJ (ar)	≤ 0.04	≤ 0.06	≤ 0.16	≤ 0.3	≤ 1.0

The classification is made by determining the class which satisfies all of the relevant characteristics of the waste or RDF being classified. This means that a high CV waste (NCV >25 MJ/kg) would be regarded as a Class 5 SRF if it had a high chlorine content of between 1.5 and 3%.

Class 5 criteria are the minimum quality standards that a residual waste or RDF has to achieve to be regarded as a SRF.

### 3.0 COMPLIANCE WITH SRF CRITERIA

#### 3.1 Introduction

Section 2 confirms that in addition to waste having to meet certain minimum compositional and energy content standards to be regarded as SRF it must also be 'prepared' by treatment.

This section sets out information to confirm that the majority of municipal and commercial and industrial waste that is landfilled, and RDF that is used for energy recovery in the UK, or which is exported overseas, would be classified as SRF.

#### 3.2 Preparation Requirement

Waste, in the form of RDF, which is either being used in the UK for energy recovery, or which is being exported to the continent for energy recovery, has clearly been 'prepared' for use in that the waste will have been sorted, possibly shredded and possibly shrink wrapped make its handling more straightforward.

Waste that is being landfilled in the UK has to be treated before it is disposed of, in order to comply with the requirements of the EU Landfill Directive<sup>5</sup>.

Article 6 (a) of the Directive requires that:

*(a) only waste that has been subject to treatment is landfilled. This provision does not apply to inert waste for which treatment is not technically feasible, nor to any other waste for which such treatment does not contribute to the objectives of this Directive, as set out in Article 1, by reducing the quantity of the waste or the hazards to human health or the environment;*"

The Landfill Directive defines treatment as:

*'the physical, thermal, chemical or biological processes, including sorting, that change the characteristics of waste in order to reduce its volume or hazardous nature, facilitate its handling or enhance recovery'.*

In that SRF can not be prepared from hazardous waste the treatment processes relevant to SRF are:

- reduction in volume;
- improving handling characteristics; and
- enhancing recovery.

All of these treatment processes are considered to be appropriate to the preparation requirements for SRF in that reducing the volume of waste will tend to improve the prospects for it to be traded, as will processes that improve its handling characteristics or enhance its susceptibility to recovery.

It follows, therefore, that non-hazardous wastes which are being consigned to landfill must have been treated in a fashion that would also be commensurate with the requirement for SRF to have been prepared for it to be traded.

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<sup>5</sup> Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste

### 3.2.1 Availability of Suitably Treated Waste

Analysis of the Environment Agency's Waste Data Interrogator (WDI) statistics<sup>6</sup> regarding waste disposed of at landfills that are permitted to accept non-hazardous wastes in England and Wales show that, in 2012, these landfills accepted a total of 19.85 Mt of non-inert wastes as summarised in Table 3-1.

**Table 3-1**  
**Wastes Deposited at Non-Hazardous Waste Landfills**  
**in England and Wales 2012**

<b>EWC Chapter</b>	<b>Tonnes Received</b>	<b>Percentage</b>
01 - Mine and Quarry Wastes	70,883	0.4%
02 - Agriculture and Food Processing Wastes	65,592	0.3%
03 - Furniture, Paper and Cardboard Manufacturing Wastes	140,297	0.7%
04 - Leather, Fur and Textile Industry Wastes	1,367	0.0%
05 - Petroleum, Gas and Coal Processing Wastes	49	0.0%
06 - Inorganic Chemical Process Waste	263,249	1.3%
07 - Organic Chemical Process Waste	27,627	0.1%
08 - Paints, Adhesives, Sealants and Ink Manufacturing Waste	8,823	0.0%
09 - Photographic Industry Wastes	1	0.0%
10 - Thermal Processes Waste	906,837	4.6%
11 - Chemical Surface Treatment and Coating of Metals Waste	15,228	0.1%
12 - Shaping And Physical Treatment of Metals and Plastics	9,484	0.0%
15 - Waste Packaging; Absorbents , Wiping Cloths Etc	56,007	0.3%
16 - Wastes Not Otherwise Specified in the List	26,110	0.1%
18 - Human and Animal Health Care Waste	113,847	0.6%
19 - Waste and Water Treatment Wastes	9,361,012	47.1%
20 - Municipal Wastes	8,787,386	44.3%
<b>TOTAL</b>	<b>19,853,798</b>	<b>100.0%</b>

This shows that over 90% of the waste received at merchant non-hazardous waste landfills in 2012 was either municipal waste or waste that was sent to landfill, from a waste treatment facility, with an EWC code in Chapter 19 of the European Waste Catalogue which was implemented in England by the List of Waste Regulations<sup>7</sup>

Schedule 1 to these regulations confirms that Chapter 19 wastes are “wastes from waste management facilities, off-site waste water treatment plants and the preparation of water intended for human consumption and water for industrial use”.

Further analysis of outputs from the WDI show that in 2012, over 81% of all landfill inputs of Chapter 19 wastes to non-hazardous waste merchant landfills was with EWC code 19 12 12.

<sup>6</sup> Waste Data Interrogator and Reporting Tool, 2012 Data, Environment Agency, 2013

<sup>7</sup> The List of Wastes (England) Regulations 2005, Schedule 1, List of wastes pursuant to Article 1(a) of Directive 75/442/EEC on waste and Article 1(4) of Directive 91/689/EEC on hazardous waste

Wastes that are given EWC Code 19 12 12 are described as “*other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11*”. EWC Code 19 12 11 refers to hazardous treated wastes which are not relevant to a discussion on SRF as it has to be prepared from non-hazardous material.

The mechanical treatment of waste to produce a residual waste which is given EWC code 19 12 12 will generally involve shredding and/or sorting of the waste which will have the effect of reducing its volume, improving its handling characteristics and making it more suited to [energy] recovery such that it is considered that the vast majority of the commercial and industrial wastes that are currently being landfilled with EWC 19 12 12 would meet the SRF criteria in terms of their treatment/ preparation.

The other major source of RDF, from the treatment of municipal wastes (MSW) in mechanical and/or biological treatment facilities, such as the one being constructed at Basildon in Essex, to manage the residual MSW arisings in Essex and Southend-on-Sea, involves similar treatment of MSW that involves its reduction in volume and enhancement of its potential for energy recovery by removal of non-combustible fractions such as metals, glass and rubble.

However, to be regarded as SRF these residual wastes or RDF will also have to meet the specifications set out in Table 2-1 above.

### **3.3 Compliance with SRF Specifications**

There is a relative paucity of data on the composition and properties of RDF and residual wastes, such as those sent to landfill with EWC code 19 12 12. However, SLR has conducted a literature review and has used information it holds in order to provide the information set out below.

#### **3.3.1 Calorific Value**

The lowest criterion for residual waste and/or RDF to be regarded as SRF is that it has a net calorific value (CV) of 3 MJ/kg, or more.

Defra reports<sup>8</sup> that ‘raw’ MSW has a CV of 8-11 MJ/kg and that RDF prepared from MSW has a higher CV of 12-17 MJ/kg.

Research<sup>9</sup> carried out by SLR for the Environment Agency Wales demonstrates that the ‘mixed’ commercial and industrial waste (C&IW) stream, which was being landfilled with EWC code 19 12 12, is similar in composition to municipal waste.

This indicates that RDF produced from MSW or mixed C&IW has a CV that would render it having the potential to be regarded as Class 3 or 4 SRF, subject to chemical composition.

It is concluded that RDF being exported from the UK for energy recovery on the continent, or residual C&IW that is being landfilled with EWC 19 12 12, will have a net CV well in excess of 3 MJ/kg which means that these materials comply with the minimum energy content SRF criterion and that they will probably comply with energy criteria for higher SRF classes.

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<sup>8</sup> Incineration of Municipal Solid Waste, Defra, February 2013

<sup>9</sup> Determination of the Biodegradability of Mixed Industrial and Commercial Waste Landfilled in Wales, SLR Consulting Ltd., November 2007, SLR Ref: 402-0341-00011

### 3.3.2 Chlorine Content

The maximum mean chlorine content that residual waste or RDF can have, whilst being compliant with the SRF criterion, is 3%.

WRAP reports<sup>10</sup> that chlorine in what they described as ‘waste derived fuels’ can originate from:

- organic food waste which contain salts such as sodium chloride (NaCl) and potassium chlorides (KCl);
- plastic bags which are halogenated;
- polyvinyl chloride (PVC) which are present in pipes, insulation cables, and as a substitute for painted wood, films etc.;
- paper and wood pulp which have been bleached; and
- industrial solvents (e.g. degreasers, cleaning solutions, paint thinners, pesticides, resins and glues).

The propensity for these sources of chlorine to be present in residual waste and RDF is reducing due to initiatives such as the source segregation of food waste (to allow energy recovery by anaerobic digestion) and the taxing of plastic bags. Wastes such as paper pulp and industrial solvents are not normally present in mixed MSW or C&IW.

Recent research<sup>11</sup> regarding the origins and fate of chlorine in RDF prepared from MSW has indicated a chlorine content of between 0.6% and 0.8%.

This is consistent with SLR’s knowledge of the chlorine content of RDF prepared from residual MSW. Data on properties of RDF from a variety of waste treatment facilities throughout the UK are held by SLR and are reproduced in Table 3-2 below.

**Table 3-2  
 Properties of RDF from Waste Treatment Facilities**

Property	Origin of RDF			
	South West	North West	South East	East Midlands
Net calorific value	>11 MJ/kg	16.8 MJ/kg	14-18.2 MJ/kg	20.1 MJ/kg
Chlorine	<1%	0.33-0.4%	0.2-1.05%	0.32%
Sulphur	<1%	0.2-0.3%		
Lead	< 500 ppm	30 mg/kg	30-105 ppm	
Zinc	< 1000 ppm	<1 mg/kg		
Cadmium	< 5 ppm	3.3 mg/kg	1-7 ppm	
Chromium	< 1000 ppm	27 mg/kg	15-80 ppm	
Copper	< 500 ppm	215 mg/kg	180-400 ppm	
Mercury	< 2 ppm	< 1 mg/kg		
Arsenic	< 20 ppm	<1 mg/kg	1-18 ppm	
Nickel	< 1000 ppm	8.3 mg/kg	8-38 ppm	
Thallium	< 2 ppm	<1 mg/kg	0-1 ppm	

<sup>10</sup> A Classification Scheme to Define the Quality of Waste Derived Fuels, Waste Resources Action Programme (WRAP)

<sup>11</sup> Origin and fate of chlorine in RDF production processes. In Proceedings Sardinia 2007, Eleventh International Waste Management and Landfill Symposium S. Margherita di Pula, Cagliari, Italy; Schirmer, M; Ma, W.; Hoffmann, G.; Rotter, S.1 - 5 October 2007

The data in Table 3-2 confirm that RDF produced in a number of waste treatment facilities from across the UK has chlorine contents that comply with all but the most stringent SRF class specifications.

With regard to residual commercial and industrial waste, it is considered that such wastes that are being landfilled with EWC Code 19 12 12 would have similar properties to RDF derived from MSW although it may contain slightly more PVC which could lead to an increase in chlorine content.

However, compositional data<sup>8</sup> for C&IW assayed in Wales indicate that after treatment, landfilled residues had a plastics content of around 12%. PVC accounts for about 20% of plastic manufacture<sup>12</sup> which suggests that the PVC content of such residual commercial and industrial wastes will be in the order of 2-3%. The chlorine content of PVC with a formula of  $(C_2H_3Cl)_n$  is 56.7% which indicates that the chlorine content of commercial and industrial wastes is likely to be in the order of 1-2% and well within the least demanding SRF specification of 3% w/w.

### **3.3.3 Mercury Content**

WRAP<sup>8</sup> advises that mercury is typically found in the following types of wastes:

- industrial sludge and filter cake; and
- Waste Electrical and Electronics Equipment (WEEE).

The SRF criteria for mercury are expressed at the median and 80<sup>th</sup> %ile in terms of mg/MJ (ar). This means that residual wastes and RDF with high net CVs will, other things being equal, be more likely to be compliant with the SRF specification for mercury than low CV wastes.

In SLR's experience, there are relatively sparse data on mercury content of wastes and RDF. It is considered that, as the sources of mercury in waste, such as WEEE are removed from the waste stream, mercury contents should be negligible.

The recorded mercury contents of two of the samples of RDF, set out in Table 3-2 above, can be converted into mg/MJ using information on the net CV of these wastes. This indicates mercury contents of 0.18 and 0.06 mg/MJ for the RDFs from the South West and North West MBT facilities respectively.

While the SRF specifications require mercury to be determined at the median and 80<sup>th</sup> %iles, the indicated mercury contents are well below the median level specification for SRF and almost an order of magnitude below the 80<sup>th</sup> %ile values. This indicates a strong probability that wastes that are being used and exported, and being described as RDF, would meet with the specifications for SRF.

However, C&IW should contain less WEEE than MSW as commercial organisations are required to segregate WEEE at source in their waste streams in accordance with the requirements of the Waste Electrical and Electronic Equipment (WEEE) Regulations 2013.

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<sup>12</sup> [http://www.bpf.co.uk/Press/PVC\\_Explained.aspx](http://www.bpf.co.uk/Press/PVC_Explained.aspx)

### **3.4 RDF Specifications**

The quality of RDF is sometimes set out in contractual obligations relating to large municipal waste management contracts. For instance, Essex and Southend-on-Sea Councils have specified<sup>13</sup> that the RDF produced in the MBT facility which is being constructed as part of the waste management contract between the councils and the Urbaser Balfour Beatty (UBB) joint venture has properties which would enable it to meet the SRF specifications for Class 4 SRF in respect of net CV, chlorine and mercury contents.

It is the case, therefore, that the operator of an energy from waste recovery facility can specify the quality of the fuel that it will use in order to ensure that it meets the SRF specifications.

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<sup>13</sup> Essex Waste Partnership RDF Disposal Contract ('RDC'), ECC Tender No: 0000, Draft Descriptive Document for Market Testing. Version: September 2013

## **4.0 SUMMARY AND CONCLUSIONS**

### **4.1 Summary**

A review of the quality of residual wastes, that are being landfilled, and refuse derived fuel (RDF), that is being used in the UK or exported for energy recovery on the continent, has been carried out by SLR. The review has been carried out in the context of the compliance of these fuel types with the specifications for solid recovered fuel (SRF) which are set out in British Standard BS EN 15359:2011.

The British Standard identifies five classes of SRF based on the waste's calorific value, and its mercury and chlorine contents.

Review of the typical quality of RDF being produced in various regions in England has indicated that such RDF would comply with the SRF specification criteria. It has also been demonstrated that residual commercial and industrial waste, that is landfilled, post treatment, with an EWC code 19 12 12, would be expected to have similar properties and composition to residual municipal waste (MSW) from which the majority of RDF is currently prepared.

### **4.2 Conclusions**

It is concluded that the majority of commercial and industrial waste, that is landfilled with an EWC code 19 12 12, and RDF, that is either used in the UK or which is exported to the continent for energy recovery, would comply with one of the SRF class specifications and could be properly regarded as SRF in accordance with the requirements of BS EN 15359:2011.

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