North London Waste Authority

NLWA Outline Business Case Development

Fuel Sites Planning Review

REV B

ARUP

North London Waste Authority

NLWA Outline Business Case Development

Fuel Sites Planning Review

November 2009

Ove Arup & Partners Ltd
13 Fitzroy Street, London W1T 4BQ
Tel +44 (0)20 7636 1531 Fax +44 (0)20 7755 2451
www.arup.com

Job number 124572-06

ARUP

Document Verification

Job title	NLWA Outline Business Case Development	Job number
		124572-06
Document title	Fuel Sites Planning Review	File reference

Document ref

Revision	Date				
Draft 2	08/10/08	Filename	0015Report Fuel Sites Planning Assessment DRAFT 2.doc		
		Description	First draft for client comment		
			Prepared by	Checked by	Approved by
		Name	[redacted]	[redacted]	[redacted]
		Signature	[redacted]	[redacted]	[redacted]
Issue	12/10/08	Filename	0015Report Fuel Sites Planning Assessment ISSUE.doc		
		Description	Issue for inclusion in OBC		
			Prepared by	Checked by	Approved by
		Name	[redacted]	[redacted]	[redacted]
		Signature			
Rev A	12/05/09	Filename	0007Report Fuel Sites Planning Assessment REV A 2009 05 12.doc		
		Description	Additional site assessed (Rugeley) and changes to policy and consents regimes reflected.		
			Prepared by	Checked by	Approved by
		Name	[redacted]	[redacted]	[redacted]
		Signature	[redacted]	[redacted]	[redacted]
Rev B	23/11/09	Filename	0007Report Fuel Sites Planning Assessment REV B 2009 11 23.doc		
		Description	Updates to reflect revised NLWA site strategy and changes to planning policy since May 09.		
			Prepared by	Checked by	Approved by
		Name	[redacted]	[redacted]	[redacted]
		Signature	[redacted]	[redacted]	[redacted]

Issue Document Verification with Document ✓

Contents

1 Introduction

The North London Waste Authority (the Authority) is currently undertaking a process for the procurement of new residual waste treatment and disposal services. As part of that process, the Authority is considering the possible treatment of waste through a mechanical and biological treatment (MBT) process, which would result in a range of material outputs, including a Solid Recovered Fuel (SRF) suitable for use as a solid fuel for power and/or combined heat and power (CHP) applications.

The Authority previously commissioned an exercise to identify potential users of the SRF produced by the Authority's MBT facilities. The purpose of that study was to demonstrate the existence of a demand market for SRF. Arup has been commissioned to review the planning and other consents risks associated with these potential SRF sites (or facilities). The purpose of the planning study is to provide a "reality check" and to inform the potential timetable implications for securing the necessary permissions and works to enable the users to begin to accept SRF from a future NLWA waste treatment facility.

The sites which have been reviewed are:

- Hendon (Brent Cross Cricklewood Regeneration Area within north London)
- Central Leeside (Area Action Plan area within Upper Lee Valley of London)
- Ford Dagenham (Greater London)
- Dubai Ports London Gateway (East of England)
- Tilbury Green Power (East of England)
- Unilever Purfleet (East of England)
- Slough Heat and Power (South East)
- Alyesford Newsprint (South East)
- Kemsley Mill (South East)
- Ineos Runcorn (North West)
- Rugeley (West Midlands)

The two maps below (**Figure 1** and **Figure 2**) identify the location of all of the fuel sites (red) included within this report as well as those of the two waste sites (purple) including the proposed Hendon and BOC/ Harbet Road waste site.

This study has been a high-level desktop exercise and has not involved consultation with outside parties, such as local authorities, statutory agencies or the potential users themselves. It is therefore not a definitive study of the risks associated with particular sites, but instead is intended to confirm whether there is a realistic prospect of such a facility being available within the timescale anticipated for the development of the Authority's new waste treatment facility. A more detailed study, including consultation with a range of authorities and stakeholders, will be necessary to be able to provide more focused advice on the prospects for any particular site.

This report is structured as follows:

- Section 2 reviews the generic consents and main environmental issues associated with the development of a new SRF combustion (or advanced thermal treatment) facility, or the conversion of an existing non-SRF facility;
- Section 3 reviews the relevant regional planning policy context;
- Section 4 presents the potential sites and their potential for treatment of SRF; and
- Section 5 provides a summary conclusion of findings.

1.1 Report Updates

1.1.1 First Refresh, May 2009

This report was refreshed in May 2009 from the earlier Fuel Sites Report and took into account the emerging planning policy at a regional and national level. Table 1 below identifies the main changes to the document at that time.

Table 1. Changes to report, May 2009

Additional Sites	
Rugeley Power Station	The Rugeley Power Plant, Staffordshire, has been identified as a potential fuel site.
Planning Policy	
West Midlands Regional Spatial Strategy (2008)	A policy review of the West Midlands RSS has been included to provide the regional policy context for Rugeley Power Station.
Further Alterations to the London Plan (December 2008)	Provides the details of the further alterations published for initial consultation with the London Assembly and the GLA group
Strategic Growth Areas- Further Consultation on the Preferred Options for the Enfield Core Strategy (2009)	Identifies the Council's preferred option for Central Leeside.
Development Control Regime	
Planning Act 2008	Details have been included of the new consents regime for nationally significant infrastructure projects.

1.1.2 Second refresh, November 2009

A further refresh has now taken place. This reflects three main areas of change:

- Reflecting the progress on the London Plan review and other changed among Regional Spatial Strategies.
- Revising the distance and CO2 impact tables based on SRF production sites being at Pinkham Way (instead of Hendon) and Edmonton (instead of BOC). The change to Pinkham Way adds an additional 9km of road transport to the previous assumptions. The change to Edmonton is assuming to have no effect on travel distances.
- Updates to the status of developments which were identified to have the potential to accept SRF from the Authority's facilities.

Figure 1. Fuel Site Locations – Within London and the Thurrock Thames Gateway

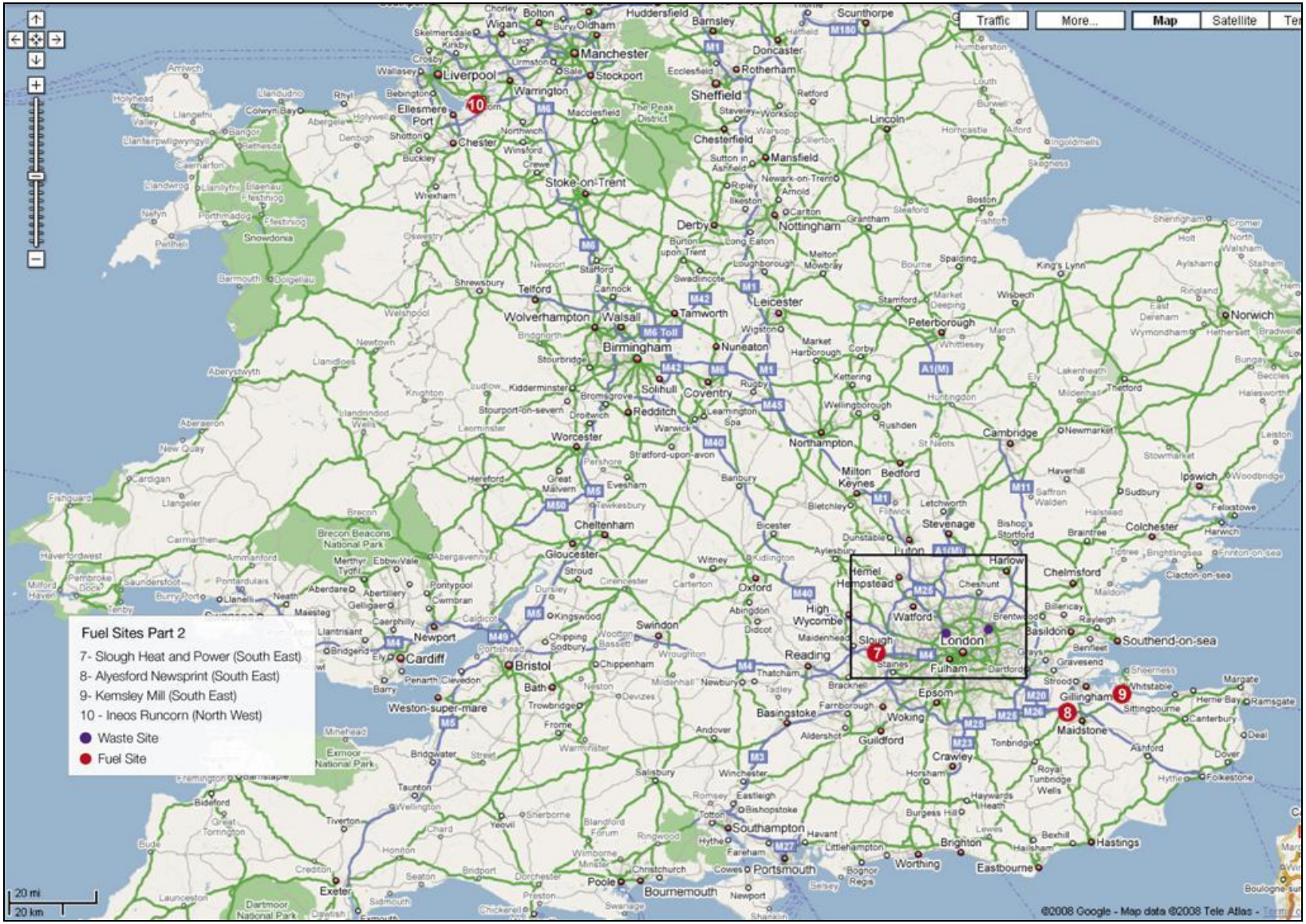

Figure 2. Fuel Site Locations – Outside London and the Thurrock Thames Gateway

2 Consents and Environmental Considerations

2.1 Generic Consents Requirements

The development of power stations, including CHP facilities, requires planning permission and an Environmental Permitting Regulations (EPR) permit. In addition, major facilities – i.e., those with 50MW or greater output – will be subject to the new development consent procedures under the Planning Act 2008. The development consent regime replaces the previous approvals regime under ss.36 and 37 of the Electricity Act 1989.

Under this new system, once a National Policy Statement for the type of infrastructure is published, an application for a NSIP would be determined by the new Infrastructure Planning Commission (IPC). The first applications for development consents are expected to be submitted from 2010. It is expected that the overall timescales for development consents will be similar to those under existing regimes, but the balance of pre-application and consultation time will be greater, while the post-application scrutiny time will be shorter. It can also be expected that the new system will have a period of adjustment and settlement as participants get used to the new rules. This may mean that applications lodged in the first 2-3 years of the new system may take longer to be determined, and carry a higher risk of legal challenge as opponents test the system for weaknesses.

Where an existing power station or CHP facility is being considered for conversion from biomass or fossil fuel combustion to SRF combustion, it is expected that the existing IPPC licence or EPR permit would need to be revisited, and the emissions from the stack re-assessed as a result of the change in fuel source. This is based on the assumption that the initial permit did not include an air dispersion model which considered the effects of SRF and has conditions attached to the permit to authorise its use. It is also understood that the conversion to SRF combustion would have other effects in terms of the provision of different plant and machinery which make up the power station.

In such a scenario, the potential for different environmental effects from those which had been assessed under the original EIA (where EIA was required) would also be expected to give rise to a requirement for a revised EIA and a new planning permission.

It should therefore be assumed that, unless a facility is currently treating SRF, a new planning permission or development consent and EIA will be required, as well as a new environmental permit.

2.2 National Policy Context

National planning policy is now focused on the achievement of sustainable development and on the UK response to climate change. Irrespective of the particular regional and local planning policies, this context will be an important driver for the consideration of any planning application for a new or modified facility using SRF as a fuel source. Relevant government policy on energy and waste is set out briefly below.

2.2.1 Energy Policy

Defra's Waste Strategy 2007 identifies that markets for secondary recovered fuel are expected to handle two million tonnes per annum (tpa) from existing and planned mechanical biological treatment plants from 2009 onwards. The strategy notes that developing such markets has the potential for big benefits for the UK's most energy-intensive industries as well as protecting jobs.

The Supplement to Planning Policy Statement 1- Planning and Climate Change - identifies that new development should be planned to make good use of opportunities for decentralised and renewable or low carbon energy. It notes that planning authorities should promote and not restrict renewable and low-carbon energy, and they would expect a

proportion of the energy supply of new development to be secured from decentralised and renewable or low-carbon energy sources.

The document gives the following descriptions of renewable energy:

Combined Heat and Power / Combined Cooling Heat and Power (CHP / CCHP): "The simultaneous generation of usable heat and power (usually electricity) in a single process, thereby reducing wasted heat and putting to use heat that would normally be wasted to the atmosphere, rivers or seas. CHP is an efficient form of decentralised energy supply providing heating and electricity at the same time. CHP's overall fuel efficiency can be around 70-90% of the input fuel, depending on heat load; much better than most power stations which are only up to around 40-50% efficient." (Pg 5)

Decentralised energy supply: "Energy supply from local renewable and local low-carbon sources (i.e. on-site and near-site, but not remote off-site) usually on a relatively small scale. Decentralised energy is a broad term used to denote a diverse range of technologies, including micro-renewables, which can locally serve an individual building, development or wider community and includes heating and cooling energy." (Pg 5)

Decentralised and renewable or low-carbon energy: "Decentralised renewable energy or decentralised low-carbon energy or a combination of decentralised renewable energy and decentralised low-carbon energy." (Pg 5)

2.2.2 Waste Policy

The Waste Strategy 2007 highlights the increasing the value obtained from the use of different kinds of material recycling facilities (MRFs) and seeks to encourage a variety of energy recovery technologies (including anaerobic digestion) so that unavoidable residual waste is treated in the way which provides the greatest benefits to energy policy (p.71). The document notes that previously there have not been sufficient economic incentives for businesses and individuals to reduce waste, but identifies in its *key policies and actions* to introduce "enhanced capital allowances for investment involving the use of secondary recovered fuel (SRF) for combined heat and power facilities" (p.33).

The strategy also introduces the waste hierarchy and notes that through more sustainable waste management – reduction, re-use, recycling, composting and energy recovery – the Government aims to break the link between economic growth and the environmental impact of waste. This overall objective is encapsulated in Figure 1 above.

Planning Policy Statement 10 – Planning for Sustainable Waste Management – notes that key to the Government's overall objectives for sustainable waste management is to produce less waste and drive waste management up the waste hierarchy through sustainable waste management. Waste is to be used as a resource, and as a source of energy. By managing waste in this way, the Government seeks to break the link between economic growth and the environmental impact of waste. The planning system is pivotal to achieving this "*by providing sufficient opportunities for new waste management facilities of the right type, in the right place and at the right time."*

Relevant to this note, regional and local spatial strategies are required to:

- Help secure the recovery or disposal of waste without endangering human health and without harming the environment, and enable waste to be disposed of in one of the nearest appropriate installations; and
- Reflect the concerns and interests of the communities, the needs of the waste collection authorities, waste disposal authorities and business, and encourage competitiveness.

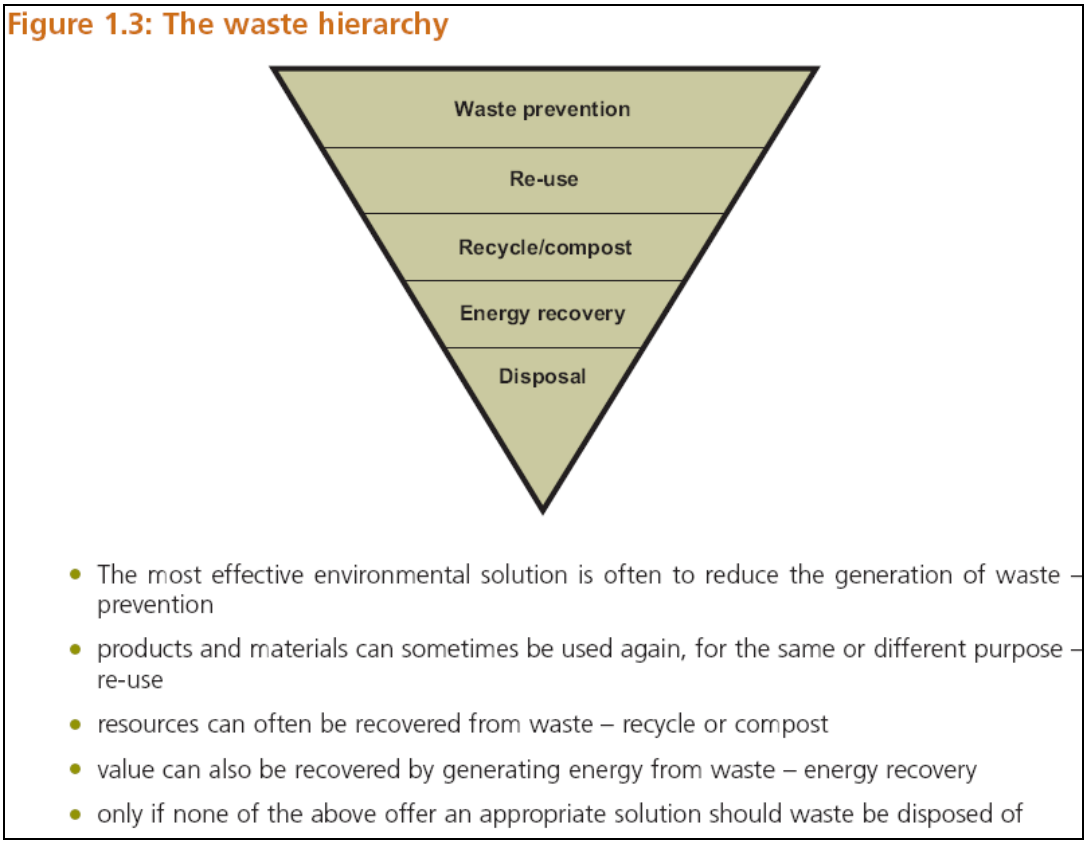

Figure 3: Waste Hierarchy (extracted from Waste Strategy 2007)

PPS10 draws comparisons between pollution controls and planning controls, noting that the two processes are separate yet complementary. The policy identifies the role of planning as follows:

"The Planning system controls the development and use of land in the public interest and should focus on whether development is an acceptable use of land, and the impacts of those uses on the development and use of the land" (para 8.5).

This statement clearly establishes that the control of pollution is the responsibility of the pollution control authorities and not the local planning authority, and identifies that applicants can prepare and submit planning and pollution control applications in parallel to assist in ensuring integrated and timely decisions from each the complementary regimes.

The statement notes that whilst emissions from any new facility and the impact on air quality will be tightly controlled under the pollution control regime, perceptions of waste and its impacts can be an important health issue. Negative perception can lead to stress and feelings of deprivation and isolation. Early open dialogue with the community can alleviate these perceptions, which in turn will provide for a much smoother planning application process.

2.3 Key Environmental Issues

Any proposals involving the development or new or modification of existing power generating facilities will need to consider a range of environmental aspects and mitigation measures. However, for the purpose of this study, it is appropriate to present a brief consideration of the critical risk issues and in particular to identify the relationship between the fuel site and the NLWA's fuel source site (i.e. the MBT facility at Pinkham Way or Edmonton). These are considered below.

2.3.1 Transport

The scenario envisaged for the supply of SRF to the fuel sites involves the production of SRF at one of the Authority's facilities in Pinkham Way or the Edmonton, with transport of the SRF to the fuel site.

The carbon impact of transport is greatly affected by the transport mode for shipment, with the impact of water or rail transport being significantly less than for road transport. Therefore, the ability of the site to accept deliveries by rail or water must be considered as part of the assessment of the suitability of the site as an SRF treatment facility.

2.3.2 Air Quality

It is recognised that air quality impacts may be the most significant environmental risk associated with the development of a new SRF treatment facility, or the conversion of a non-SRF facility to accept SRF. This study has not involved technical air quality assessments, and this work would be appropriate as part of further more detailed studies. At this stage, the assessments are qualitative and will consider only the potential risk in terms of the proximity of residential and other sensitive uses to the potential SRF sites.

3 Regional Policy Context

The sites which were reviewed span across four regions: London, South East, East of England and the North West. Regional policy for these regions are summarised in turn in the following sub-sections.

3.1 The London Plan

The London Plan (Consolidated with Alterations) 2008 provides the Mayor's policy requirements for planning for waste developments and management. Figure 4 Extract from the companion guide to PPS10 (2006): The links between Regional Spatial Strategies and Local Development Documents in Spatial Planning For Waste.Figure 4 illustrates the key connections between the documents which together provide the framework to enable the delivery of sustainable waste management.

The key waste policies of relevance to fuel sites are set out below.

Policy 4A.21 – Waste strategy policy and targets – notes that the Mayor, in partnership with local authorities, the Environment Agency and waste authorities should minimise the amount of energy used, and transport impacts from, the collection, treatment and disposal of waste in line with the Mayor's target of reducing carbon dioxide emissions. The policy also promotes the generation of renewable energy and renewable hydrogen from waste. The policy notes that where waste cannot be recycled, encouragement will be given to the production of energy from waste using new and emerging technologies, especially where the products of waste treatment could be used as fuels (e.g. biofuels and hydrogen). The policy notes:

"Having regard to the existing incineration capacity in London and with a view to encouraging an increase in waste minimisation, recycling, composting and the development of new and emerging advanced conversion technologies for waste, the Mayor will consider these waste management methods in preference to any increase in conventional incineration capacity. Each case however will be treated on its individual merits. The aim is that current incinerator capacity will, over the lifetime of this plan, become orientated towards non-recyclable residual waste. The Mayor will also consider, in preference to incineration, technologies that have the potential to produce renewable hydrogen from waste (p.222)".

Policy 4.22 – Spatial Policies for Waste Management- support treatment facilities to recover value from residual waste; and where waste cannot be dealt with locally, promote waste facilities that have good access to rail transport or the Blue Ribbon Network.

Policy 4A.23 – Criteria for the selection of sites for waste management and disposal - requires Development Plan Documents such as the North London Waste Plan to identify sites and allocate sufficient land for waste management and disposal, employing the following criteria:

- Proximity to source of waste
- The nature of activity proposed and its scale
- The environmental impact on surrounding areas, particularly noise, emissions, odour and visual impact
- The full transport impact of all collection, transfer and disposal movements, particularly maximizing the potential use of rail and water transport
- Primarily using sites that are located on Preferred Industrial Locations or existing waste management locations

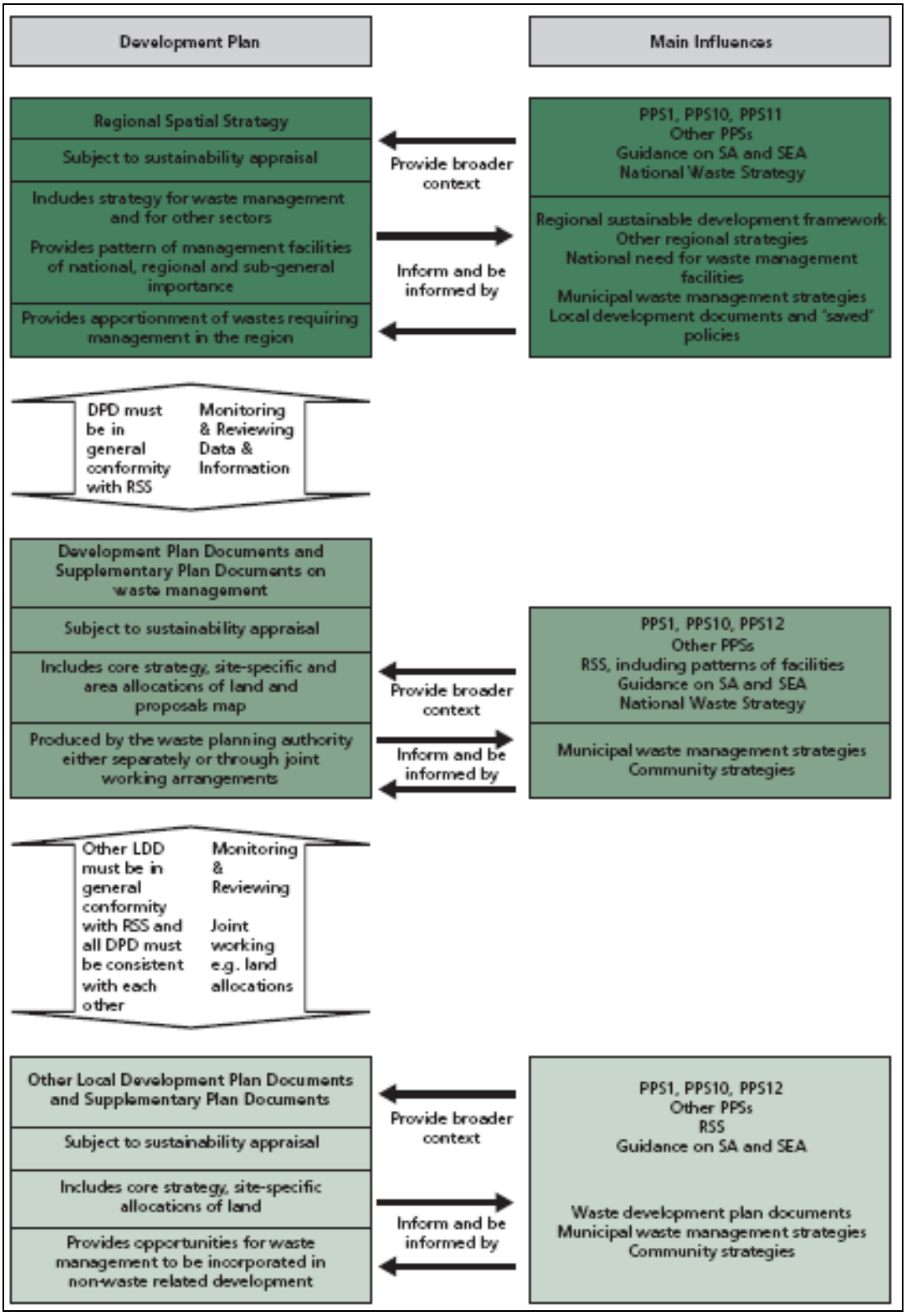

Figure 4 Extract from the companion guide to PPS10 (2006): The links between Regional Spatial Strategies and Local Development Documents in Spatial Planning For Waste.

This policy notes that, wherever possible, opportunities should be taken to include provision for Combined Heat and Power (CHP) or Combined Cooling Heat and Power (CCHP) to accommodate various related facilities on a single site (resource recovery parks / consolidation centres).

3.1.1 Proximity Principle

Throughout the policies of the London Plan, emphasis is placed on proximity of sites to the source of waste, in accordance with the proximity principle. The proximity principle is one of four elements that make up the Mayor's strategic waste management framework based on the Best Practicable Environmental Option (BPEO). The three other aspects of the framework are the waste hierarchy, regional self-sufficiency and social, environmental and economic factors. The transportation and storage of SRF remains as waste until it is burned as fuel and the energy is recovered. As a result, the location of any fuel site will be required to give consideration to the proximity principle.

Commentary within the Mayor's Municipal Waste Management Strategy (2003) states that the aim of the proximity principle is to "avoid passing the environmental costs of waste management on to communities that are not responsible for its generation" and to reduce the environmental costs of transporting waste. The Strategy goes on to state that "waste management facilities should be located locally to avoid unnecessary transportation and improve local self-sufficiency for waste management, thus ensuring that local communities take responsibility for the management of the waste that they produce."

However, there is some flexibility to the proximity principle and the Strategy states that it should not be regarded as an absolute. Other issues such as transportation and land availability will also have to be considered. Should it not be possible to deal with waste within the waste authority area, "an alternative site should be sought as close as reasonably possible." Furthermore it may be more suitable to seek a site which can utilise sustainable transport such as water or rail but which is not located within close proximity. Policy 4A.2 of the London Plan identifies that where waste cannot be dealt with locally, local planning authorities should promote waste facilities that have good access to rail transport or the Blue Ribbon Network (the availability of river transport was a key factor in the Secretary of State's recent approval of the Belvedere EfW plant).

Policy 4A.26 requires that a range of waste management facilities are identified to manage the 13mtpa produced in London over the period 2005-2020. The supporting identifies that "The objective of proximity supports the provision of smaller, more local site provision" (para. 4.10n), but this should be balanced against the efficiencies of scale for larger facilities, as well as local siting, design and environmental impact issues.

3.1.2 Further Alterations to the London Plan

In December 2008, a further set of Alterations to the London Plan was published for initial consultation with the London Assembly and the GLA Group. The consultation on 'Use of planning obligations in the funding of Crossrail' aimed at raising £200m towards the funding of the £16bn Crossrail project. The EIP is scheduled for December 2009 and final publication of the Alterations in 2010.

The following policies are identified as being of importance to the Waste Authority's procurement and site development plans:

Amended Policy 6A.4 Priorities in planning obligations: Requires that affordable housing, supporting the funding of Crossrail and other public transport improvements should, where appropriate, be given the highest importance. Importance should also be given to tackling climate change, learning and skills, health facilities and services and childcare provisions.

Amended Policy 6A.5 Planning obligations: Identifies that the Boroughs should, in their DPD set out a clear framework for negotiations on planning obligations, having regard to central government policy and guidance and local and strategic considerations.

New Policy 6A.5A Community Infrastructure Levy: Seeks to ensure the effective development and implementation of the proposed Community Infrastructure Levy.

Draft Replacement London Plan

The Mayor has published a draft replacement London Plan for public consultation. The document sets out support for waste to energy and highlights the potential of waste as a resource. It is anticipated that the revised Waste Strategy and Climate Change and Energy Strategy will provide further guidance on how the Mayor proposes to deliver the objectives set out in the replacement London Plan.

Policy 5.17 of The Mayor's consultation draft replacement plan includes among the evaluation criteria for waste development control decisions "a positive carbon outcome of waste treatment methods and technologies... resulting in greenhouse gas savings, particularly from treatment of waste derived products to generate energy." The current plan's direct references to conventional incineration is removed, but the preference to move away from this type of energy recovery remains clear:

For waste that cannot be recycled or composted (including anaerobic digestion), the Mayor has a preference for advanced conversion waste processing technologies such as gasification and pyrolysis but is keen that proposals for new facilities are evaluated by carbon outcome (end-to-end) to ensure the best possible environmental impact. (para. 5.81)

The consultation draft contains specific guidance on how SRF will be classified:

5.73 For the purposes of meeting self-sufficiency, waste is deemed to be managed in London if:

- *it is used in London for energy recovery (e.g. through anaerobic digestion, pyrolysis/gasification or through existing incinerators)*
- *it is compost or recyclate sorted or bulked in London material recycling facilities for reprocessing either in London or elsewhere*
- *it is solid recoverable fuel (SRF) produced in London, provided the SRF is a 'biomass fuel' as defined in the current Renewable Obligation Order.*

3.2 The South East Plan RSS

The Secretary of State published the final RSS for the South East on 6th May, 2009; this replaces the Regional Planning Guidance for the South East (RPG9).

Policy W3 – Regional Self-Sufficiency – notes that London's waste exports will usually be limited to landfill in line with the Landfill Directive targets, and by 2016, new permissions will only provide for residue of waste that have been subject to recycling or other recovery processes. Furthermore, the policy notes that the provision for recovery and processing capacity for London's waste should only be where there is a proven need, with demonstrable benefits to the region, and where it is consistent with the proximity principle. The policy notes that a net balance in movements of materials for recovery and reprocessing between the region and London should be in place by 2016.

Policy W4 – Sub-Regional Self Sufficiency – notes that waste planning authorities will plan for net self sufficiency, but also identifies that where appropriate and consistent with policy w3, capacity should be provided for waste from London and adjoining sub regions. In addition, the policy also states that waste planning authorities should collaborate in preparation of plans including identifying and making provision for potential flows across regional and sub regional boundaries, and identify site that could be accessed via sustainable modes of transport.

Policy W5 – Targets for diversion from Landfill – identifies targets for diversion from landfill, noting that Waste Planning Authorities should ensure that policies and proposals are in place to ensure these targets are met. The policy notes that the optimal management

solution will vary across according to material resource streams and local circumstances, and identifies a number of processes including Re-use, recycling, MBT processing and thermal treatment.

Policy W9 – New Markets – identifies that the regional assembly along with SEEDA, Waste Resources Action Programme (WRAP) and other partners will work together to establish regional and local programmes to develop markets for recycled and recovered materials and products.

Policy W12 – Other Recovery and Diversion Technologies – notes that the Regional Assembly alongside other partners will promote and encourage the development and demonstration of anaerobic digestion and advanced recovery technologies that will be expected to make a growing contribution towards the delivery of regional targets for recovery, diversion from landfill and renewable energy generation over the period of the plan

Policy W16 – Waste Transport Infrastructure – notes that Waste Development Documents should aim to reduce the transport and associated impacts of waste movements. The policy advocates the use of rail and waterborne transport with appropriate depot and wharf provision encouraged wherever possible.

3.3 The East of England Plan (2008)

The East of England Plan, the Revision to the Regional Spatial Strategy for the East of England, was published in May 2008. Relevant policies include:

Waste Policy WM1 – Waste Management Objectives – sets out *inter alia* to seek community support and participation in promoting responsible waste behaviour and approaches to management, viewing waste as a resource and maximising re-use, recycling, composting and energy recovery. The policy also notes that in determining proposals for planning permission, weight should be given to the particular locational needs of some types of waste management facility, together with the wider environmental and economic benefits of sustainable waste management.

Waste Policy WM3 – Imported Waste – notes that the east of England plan should plan for a progressive reduction in imported waste. However the policy states that allowance should only be made for new non-landfill waste facilities dealing primarily with waste from outside the region where there is a clear benefit, such as the provision of specialist processing or treatment facilities which would not be viable without a wider catchment and which would enable recovery of more locally arising wastes (p.73)".

3.4 North West Regional Policy (2008)

The North West Regional Spatial Strategy was published in September 2008. Relevant waste policies include:

Policy EM11 – Waste Management Principles – identifies that residual waste should be managed at the highest practicable level in the Government's waste hierarchy.

Waste Policy EM12 – Locational Principles – notes that local authorities should ensure that waste management facilities are sited in such a way as to avoid unnecessary carriage of waste over long distances. In addition, the policy notes that waste facilities should take account of the availability of transport infrastructure that will support the sustainable movement of waste, and where possible, utilise rail or water transport.

3.5 West Midlands Regional Spatial Strategy (2008)

The West Midlands Regional Spatial Strategy (formerly RPG 11) was initially published by ODPM in June 2004. Following the publication of the Phase One Revision in respect of the

Black Country sub-region by CLG a revised WMRSS was issued in January 2008. Relevant waste policies include:

Policy EN1 – Energy Generation – identifies that "Local Authorities should encourage proposals for the use of renewable energy resources, including biomass, onshore wind power, active solar systems, small scale hydro-electricity schemes and energy from waste combustion and landfill gas, subject to an assessment of their impact using the criteria in iii) below. Specific policies should be included for technologies most appropriate to the particular area."(p86)

The policy also identifies that "Local Authorities should "facilitate, where proposals come forward, the construction and upgrading of fossil fuel power stations that incorporate clean coal technology, the dual use of fossil and renewable resources, good quality combined heat and power or significant emissions abatement technologies in line with national policies for abatement at source."(p86)

Policy EN2 – Energy Conservation – notes that development plans should "encourage the use of good quality combined heat and power systems and district heating schemes for developments, particularly major new mixed use developments."(p87)

Policy WD2 – The Need for Waste Management Facilities – by Sub Region- identifies that "Where necessary, and in accordance with the principles of best practicable environmental option and proximity, local authorities should seek agreement with neighbouring authorities to make provision in their plans to meet these needs (including those in neighbouring regions)."(p94)

Policy WD3 – Criteria for the Location of Waste Management Facilities – identifies that the appropriate planning authority should include policies and proposals for major waste streams to "guide the location and siting of waste treatment and recycling facilities to appropriate locations, having regard to the proximity principle and other environmental and amenity principles as identified elsewhere in this guidance;"(p96) and "wherever possible and consistent with the principles of Best Practicable Environmental Option and Proximity, encourage the use of rail and water transport in preference to road transport."(p96)

The Phase Two Revision was published in December 2008, followed by publication of the Report of the Panel in September 2009. The following waste policies are included (incorporating Panel recommendations where appropriate):

Policy W1 – Waste Strategy – sets out in the principles that should be taken into account by waste planning authorities in preparing LDDs, including: "promoting waste management up the waste hierarchy by maximising the reduction, re-use, recycling, composting and energy recovery and as a list resort disposal; regarding waste as a resource; adopting the "equivalent self-sufficiency" approach for each WPA in the region." Additionally the policy states "Each waste planning authority should allocate sufficient land or facilities to mange an equivalent tonnage of waste to that arising from all waste streams within its boundary, taking into account the waste hierarchy. LDDs should include policies to secure timely provision of facilities capable of dealing with the tonnages required close to the source of the waste produced, and taking account of cross-boundary flows of particular waste streams. In addition to facilities to reprocess, re-use, recycle and recover energy from waste, provision will need to be made for the transfer and transport of waste and where appropriate for landfill."

Policy W3 – The Need for Waste Management Facilities – identifies "Authorities which have a 'Treatment Gap' in facilities to mange waste should make provision in their LDDs for a pattern of sites and areas suitable for new or enhanced waste management facilities in, or in close proximity to, the MUAs, Settlements of Significant Development, and other large settlements identified in the Broad Locations for Waste Management Facilities Diagram. In addition to meeting local needs, these locations are well placed to accommodate facilities of

a regional and/or sub regional scale to reprocess, re-use, recycle or recover value from waste, allowing for the requirements of different technologies."

4 Site Summaries

4.1 Brent Cross Cricklewood

The Brent Cross Cricklewood (BXC) Regeneration Area is located within the London Borough of Barnet which is one of the constituent boroughs of the North London Waste Authority. London Borough of Barnet has resolved to grant planning permission (subject to conditions, informatives and a S106 agreement) for a regeneration scheme comprising:

- up to 420,000m² of business space, primarily comprising office accommodation
- In the region of 10,000 new homes of mixed type and tenure
- 27,000 m² of leisure space
- 55,000 m² of comparison retail
- 20,000 m² of convenience shopping
- two new hotels
- community facilities (quantum and nature to be defined)
- freight facility
- a replacement waste handling facility
- combined heat and power plant.

The proposal envisages the fuel produced by the waste handling facility will be utilised by the CHP to generate on-site renewable energy for the development. The CHP site is proposed to the east of the rail line and a conveyor belt has been proposed to enable delivery of SRF from the waste handling facility. The sustainable development performance of the scheme will be critical to it being granted planning permission. Consequently, on-site renewable energy facilities capable of supplying possibly up to 20% of on-site demand (in carbon terms), together with a potentially integrated combined heat and power (CHP) system, must form a key element of the site infrastructure to be included in the development.

4.1.1 Current Use and Status of Facility

The CHP is proposed as a part of the BXC regeneration proposals.

4.1.2 Planning and Consent Status

On 19 November London Borough of Barnet resolved to grant outline planning permission for the BXC regeneration scheme. The planning permission will be subject to planning conditions, informatives and legal agreements.

Delivery of the CHP facility is proposed as a part of Phase 1 of the development and the planning committee report refers to the conversion of waste into a fuel to power the CHP being the preferred option. The outline scheme does not define the technology that will be adopted, but it is anticipated that advanced thermal technologies (gasification/pyrolysis) will be adopted. The scheme establishes a series of parameters for the CHP including: separate dedicated building accepting and thermally converting approximately 150,000tpa of floc or RDF pellets to produce synthesised gas; maximum height of 60m, width of 60m and length of 60m, with a maximum stack height of 140m with a diameter of 1.5m In line with the draft planning conditions and obligations it will be necessary to complete a RDF feasibility study prior to submission of any reserved matters application; and submission and approval of full details of the CHP prior to the commencement of any residential development.

Figure 5: Location of Proposed CHP Site (highlighted by red ring)

The site therefore has the benefit of a resolution to grant outline planning permission; and is supported by the adopted development plan. Further work is clearly required to develop detailed proposals for the CHP.

4.1.3 Transport Aspects

The Brent Cross Cricklewood Regeneration Area can be accessed via both road and rail. Major roads include the North Circular which runs through the northern section of the site, while the A5 Edgeware Road forms the western boundary, and the A41 forms the eastern boundary. The Cricklewood rail sidings form part of the midland mainline.

4.2 Central Leeside

The Central Leeside is located in the Upper Lee Valley within the London Borough of Enfield. The area is dominated by a waste incinerator and elevated highway, and is located at a crossroads between the North Circular and Meridian Way. In terms of this study, the proposed regeneration of the Central Leeside Area provides a real opportunity utilise SRF to generate heat and power through an on-site CHP system.

4.2.1 Current Use and Status of Facility

The area is currently in a state of significant development and change, as the Council pursues its vision to transform the area through the provision of significant infrastructure investment the conversion of a portion of the area's extensive industrial employment zones and retail warehouse parks into finer-grained, higher-quality mixed use communities.

4.2.2 Planning and Consents Status

The Strategic Growth Areas- Further Consultation on Preferred Options for the Core Strategy (2009) identifies that "the majority of the wider Central Leeside Area will retain its industrial and employment character, continuing to provide sufficient industrial land for continuing industrial purposes and a vital source of jobs for North London, allowing for the quality and choice of jobs to develop over time…"(p8)

In terms of waste management, the preferred approach identifies that "the area will continue to play a key role in the management of North London's waste, and the Edmonton Incinerator site will be promoted as a location for new eco waste management facilities. As the way in which London deals with its own waste changes, new forms of waste

management facilities utilising modern technologies, carefully designed and integrated with adjoining uses, will be suitable new uses for existing waste management sites." (p8)

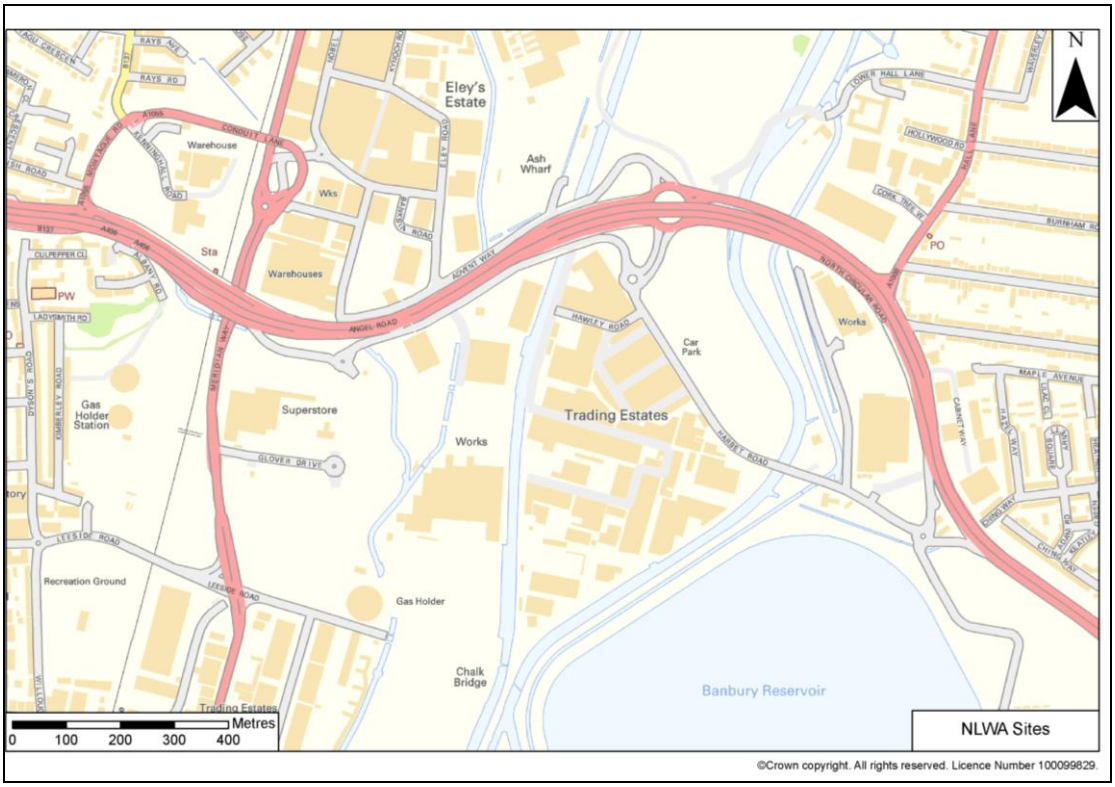

Figure 6: Central Leeside

The Enfield Core Strategy preferred option (2008) for Central Leeside notes the following:

> *"The Council's preferred area strategy for Central Leeside is to work with our partners to transform the area into a series of vibrant and sustainable communities in the heart of the Upper Lee Valley, maximizing the benefits of the regional park on the doorstep, consolidating its commercial role, developing new employment opportunities and embracing new technologies. We want to create a high quality environment that will attract investment and new residents and improve the life of existing residents. Development will be coordinated to ensure a successful relationship between different land uses. Significant development in parts of Central Leeside will provide the opportunity to secure major community infrastructure and sustainable travel. We want Central Leeside to be an exemplar eco community respecting its environmental constraints and maximizing opportunities for new communities and waterside living."* (p.101; emphasis added)

The Central Leeside area is also the subject of an Area Action Plan, through which the Council is exploring possible future redevelopment and regeneration scenarios, with a number of designated employment areas being considered for reclassification to mixed use or residential development. The Issues and Options Report (Enfield and Haringey, 2008) notes that locating a waste facility in Central Leeside area could provide a number of benefits, including "economic prosperity through job creation, potential energy generation and re-use of by-products (particularly for manufacturing)" (p.15). In addition, it notes "that with the current shift from traditional method of disposing waste i.e. landfills, new waste management technologies mean that facilities do not necessarily constitute bad neighbour uses" (p.15).

4.2.3 Transport Aspects

The Central Leeside Issues and Options Report Identifies that “at a strategic level, Central Leeside is has relatively good transport links – the North Circular provides good east-west connections, whilst the Lee Valley railway line provides fast services between Stansted and central London”. The document also notes: “!the area also has some good strategic walking and cycling connections running north-south through the Lee Valley Regional Park” (p.34).

4.3 Ford Dagenham

The Ford Dagenham plant is located on Thames Avenue and is included within the London Borough of Barking and Dagenham.

Figure 7: Ford Dagenham Site

4.3.1 Current Use and Status of Facility

The site is currently used as an assembly plant for Ford Motor Company. There is an onsite power station included within the site.

4.3.2 Planning and Consents Status

Planning permission was granted in September 2006 for a new technology treatment plant- more commonly known as East London Sustainable Energy Facility - that will process about 13 tonnes of SRF every hour. Prior to planning approval, objections were raised during the committee hearing on the basis that the plant would be used to process waste from the rest of London. However, according to local planning officers, the plant will only be used to treat waste from the East London Waste Authority area only. 1

4.3.3 Transport Aspects

The site fronts onto the River Thames and has on site docking facilities for waterborne transport. Other sustainable transport options include rail freight facilities to the north of the

[1] http://www.letsrecycle.com/do/ecco.py/view_item?listid=37&listcatid=233&listitemid=7961 accessed on 25/09/2008

site. In terms of vehicular access, the site is located close to Choats Manor Way (A13) which provides access to the wider motorway network.

4.4 Dubai Ports London Gateway

Figure 8: Dubai Ports

4.4.1 Location

The site is located at the entrance of the Thames Estuary between the towns of Canvey Island and Stanford-le-Hope. The site falls within the administrative boundary of Thurrock Council which is a unitary local authority along the East Thames Corridor in the southeast of England.

4.4.2 Current Use and Status of Facility

The London Gateway project includes the building a new international deep water port with seven container vessel berths located over 2.3 km of quayside on the Thames. The associated logistics and commercial centre is expected to bring economic benefits to the wider Thames Gateway, generating further positive inward investment to the region

4.4.3 Planning and Consents Status

A Harbour Empowerment Order, a Transport and Works Order and planning permission were granted in 2007 for the development (and related works).

4.4.4 Planning Policy

The site is located within the administrative boundary of Thurrock Council, which provides the backdrop for local policy. The current Core Strategy for Thurrock is at the preferred options stage and sets out a spatial vision for the Thurrock area. At a regional level the site is covered by the East of England Plan.

Core Strategy and Policies for Control of Development Preferred Options (2007) identifies a number of relevant policies including Core Strategy Thematic Policy (CSTP) SS016 which aims to achieve a reduction of imported waste into the borough in accordance with regional apportionment. The policy gives allowance for new non- landfill waste facilities, dealing primarily with waste from outside where there is a clear benefit to the region, such as

provision of specialist processing or treatment facilities which would not be viable without a wider catchment and which would enable recovery of more locally arising wastes.

4.4.5 Transport Aspects

The Manorway (A1014) provides the main egress point to the site and is located to the northern boundary of the site. This provides access to the wider trunk road network via A13. Waterborne transport can be achieved through on-site access to the River Thames, while rail access can be gained via rail freight facilities located at Thames Haven.

Being both on the river and right next to London, Thurrock Council is served with excellent communication links. The M25 London Orbital Motorway is located approximately 16km to the west of the site.

The Essex Sustainable Distribution Strategy: Consultation Draft identifies that the proposed port is likely to generate 35 additional container trains operating to and from the existing rail linked distribution facility.

4.5 Slough Heat and Power

The Slough Heat and Power Station is located within the Slough Trading Estate. The southern boundary of the site is defined by the railway line, while the eastern boundary of the site fronts onto Wrexham Road. The site falls within the administrative boundary of Slough Borough Council.

4.5.1 Current Use and Status of Facility

The Slough Heat and Power Station currently utilises biomass fuel to generate energy which can then be distributed to the national grid. The power station also generates hot water and steam to local businesses on the trading estate via a CHP distribution network. The power station originally used coal and gas up until 2001/02 after which it started experimenting with the use of biomass.

4.5.2 Planning and Consents Status

Planning permission was granted in March 1999 under Section 36 of the Electricity Act to Slough Heat and Power Ltd's application for the construction of a 11 MW extension to its existing 80MW Combined Heat and Power station.[2]

4.5.3 Planning Policy

The site falls within the boundary of Slough Borough Council.

The adopted Slough Core Strategy provides a vision up until 2026 and addresses many of the issues and challenges that face the town of Slough. The strategy, which has been found sound, makes several references to Slough Trading Estate – the location of Slough Power Station - and raises the possibility of a comprehensive redevelopment. The document notes: "Developers will be encouraged to prepare Master Plans for the comprehensive redevelopment of areas such as the Heart of Slough, Queensmere/Observatory shopping centres and Slough Trading Estate."

The document highlights that the trading estate is the largest existing business area in Slough, providing around a quarter of all of the jobs in the Borough. The document identifies "its continued success as an employment centre is of great importance to the local economy and the prosperity of the town as a whole. There has been rolling program of refurbishment and redevelopment in the Trading Estate in recent years in order to ensure that it is able to accommodate modern business needs and continues to attract inward investment. This has been aided by the designation of the Trading Estate as a Simplified Planning Zone with its integrated transport strategy."

[2] http://hansard.millbanksystems.com/written_answers/1999/mar/29/slough-heat-and-power

The document recognises that “the Trading Estate will need to continue to evolve to serve the needs of knowledge-based industries”, and notes that “SEGRO are in the process of producing a Master Plan for the area which it is intended to achieve this. The success of the Trading Estate is important to the Borough’s sustainable development as it has the potential to retain and attract businesses, create jobs and offer opportunities for improving skills and training to local people. As a result it is proposed that Slough Trading Estate should be treated as a special case within the Core Strategy.” (p.33)

In terms of policy, Core Policy 5 of the Core Strategy identifies that “B1(a) offices may be allowed in the proposed new hub within the Trading Estate, as an exception to the Spatial Strategy, in order to facilitate the comprehensive regeneration of the Estate. The policy notes that this “will be partly delivered through a subsequent Local Development Order which will replace the Simplified Planning Zone.”(p.34)

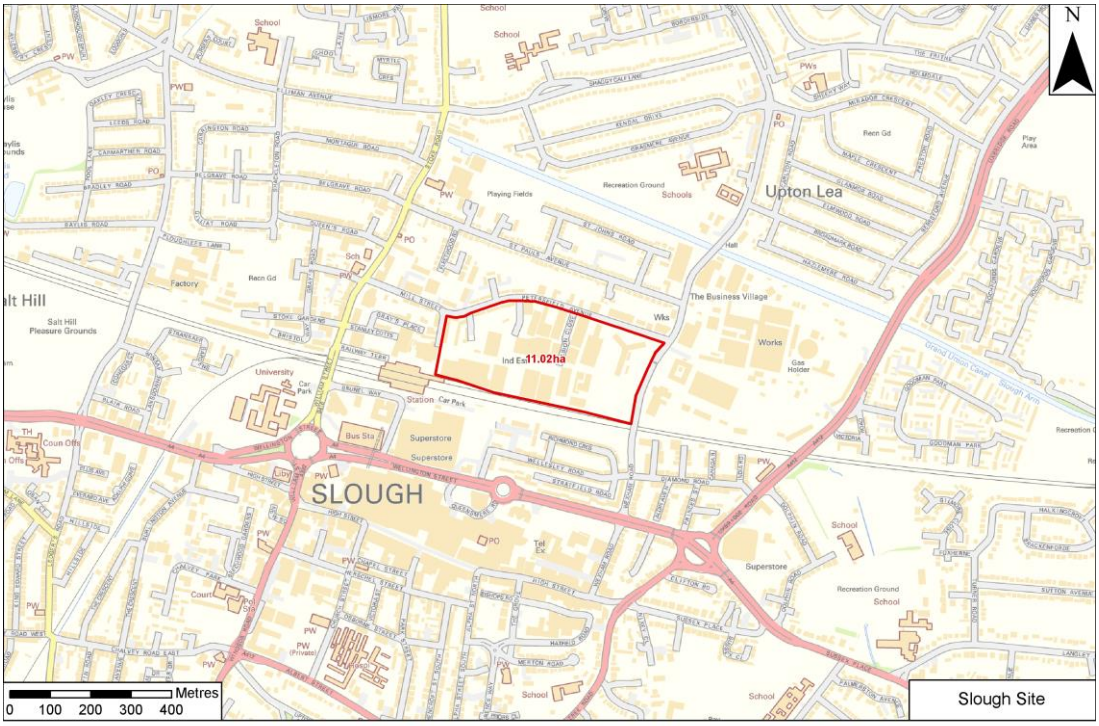

Figure 9: Slough Heat and Power

4.5.4 Transport Aspects

Petersfield Road provides the main egress points to the site and provides access to the wider road network. The site has good access to the M4 which is located approximately 1.5 km to the south of the site. There is a railway line located along the southern boundary of the site however it is unclear whether it could be utilised for transport of rail freight.

4.6 Aylesford Newsprint

The Aylesford Newsprint is located on the outskirts of Aylesford, which is located to the south east of London, close to the M20 Motorway. Beddow Way provides access to the site and is located close to the M20 Motorway. There is an inland waterway located to the south of the site. It is unclear at this stage whether this could be used for waterborne freight movement.

Figure 10: Aylesford Newsprint

4.6.1 Current Use and Status of Facility

Aylesford Newsprint produces recycled paper for the UK and European markets, operating a large gas fired co-generation steam and electricity generating plant. The Aylesford newsprint website notes that the Mill operates a co-generation plant to produce electricity for the mill and other customers.

The website notes: “Part of the energy plant assets are owned by Npower Cogen on mill land. The mill owns and operates the process residue combustor which produces steam by burning process residue from the recycling process. The steam is used for electricity generating before being used in the paper making process.” (www.aylesford-newsprint.co.uk)

The Combined Heat and Power Association notes the mill has a “combustor to convert 16 tonnes per hour of process paper waste into steam which is then available for power production. The CHP plant consists of two gas turbines, two fired heat recovery boilers and one back pressure pass out steam turbine.” (http://www.chpa.co.uk/about_us/profiles/aylesford.shtml)

4.6.2 Planning and Consents Status

The Aylesford newspaper plant in Maidstone received consent in March 1993 for a 74MW CHP facility. A small extension was granted in January 1994.

4.6.3 Planning Policy

The local planning authority for the site is Tonbridge and Malling Borough Council, but the waste planning authority is Kent County Council.

4.6.4 Transport Aspects

The site can be accessed by New Hythe Road to the west and Mill Hall Road to the east. The M20 which runs along the southern boundary of the site can be accessed approximately 1.5 km from the site. A railway line bisects the site, while there is a river

located on the eastern boundary of the site. At this stage it is unclear whether either of these could be used for freight purposes.

4.7 Kemsley Mill

Kemsley Mill is located on the outskirts of Kemsley, near Sittingbourne, within the Swale Borough Council in the South East of England. The site, which is surrounded by Greenfield site, covers a surface area of approximately 30 ha, and is located within close proximity to the Swale Estuary. Ridham Avenue to the east of the site provides the main egress point and gives access to the wider road network. The site appears to be quite isolated in terms of other industrial uses.

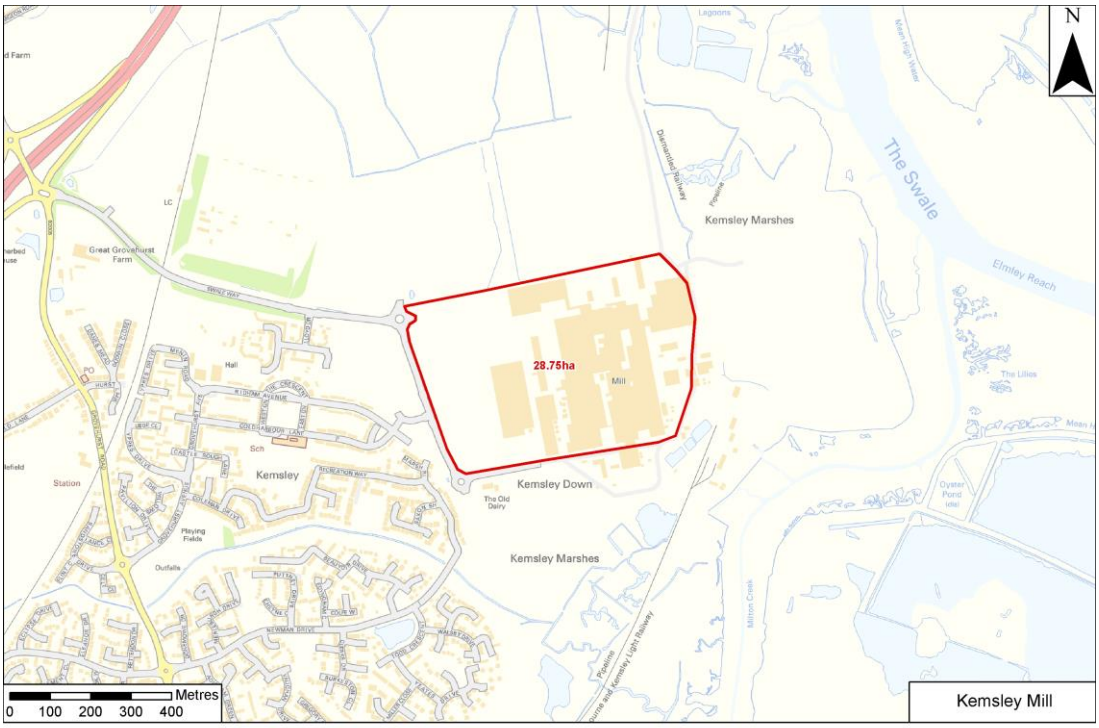

Figure 11: Kemsley Mill

4.7.1 Current Use and Status of Facility

The Kemsley Mill is one of the largest recycled paper mills in Europe and produces a number of specialist grades, including cardboards and plasterboards. A £104 million investment programme has recently been announced to install a new paper machine and stock preparation plant.

4.7.2 Planning and Consents Status

It is understood that there are currently plans for a new SRF fired plant, but no application has been submitted as yet.

4.7.3 Planning Policy

The site area falls within the boundary of Swale Borough Council and is identified as part of the Thames Gateway Planning Area. The waste planning authority is Kent County Council.

The site is not designated in the local plan; however the land surrounding the site is identified as part of the Ridham and Kemsley Employment Site. This is identified within the local plan as being “committed for employment purposes.”

Policy 11 of the local plan notes: “Outline planning permission has been granted for the development of 135 ha of land at Ridham and Kemsley for a mix of employment uses. Full development of the site is conditional upon the completion of the A249 Iwade to

Queenborough Corner Improvement Scheme, the northern section of the Sittingbourne Northern Relief Road, and improvements to the northern access road into the site from Ridham Dock Road and within the site; and the need to accord with a Development Brief to be submitted to and agreed by the Borough Council."

4.7.4 Transport Aspects

Road access to Kemsley Mill can be gained via Ridham Avenue and Barge Way providing access to the A249, linking to the M2 and M20. There are existing docking facilities located on the estuary to the east. There is a railway located approximately 1.5 km to the North West of the site, although it is unclear at this stage whether they could be utilised for rail freight facilities.

4.8 Tilbury Green Power

Tilbury Green Power is located at Tilbury Docks in the Thames Gateway. The site has on-site docking facilities for waterborne transport and provides good access to the River Thames. Other forms of sustainable transport include nearby rail freight facilities which are available to the south east of the site. Vehicular access is available via St Andrews road which links into Dock Road.

4.8.1 Current Use and Status of Facility

The supporting planning statement for the Tilbury Green Power Proposal (Dalton Warner Davis, 2008) notes that the site "is currently occupied by plant, formerly the Cargill sweeteners plant, which has not been used since 2005 but before then grain deliveries were regularly received via the Grain Terminal. The north eastern part of the Site comprises a warehouse and car parking; the western side contains a former grain processing plant including the factory and a number of silos. The nearest residential area is approximately 130 metres to the north; there is a registered public right of way extending along the riverside frontage of the Site" (p.14).

4.8.2 Planning and Consents Status

The site is a former glucose and starch manufacturing plant which has been dormant for several years, but Tilbury Green Power (TGP) Limited submitted a Section 36 application in February 2008 to build a facility to generate electricity from renewable fuels, including SRF.

Following submission of the application, BERR requested that further information should be provided on the potential of Combined Heat and Power in connection with local development opportunities. A study carried out by Mott MacDonald (2008) identified that it is technically feasible to provide CHP to existing and future developments in the area, but concluded that it would not be financially viable unless grant funding was available.

4.8.3 Planning Policy

The local planning authority for the site is Thurrock Council, but the development control authority for major applications would be Thurrock Thames Gateway Development Corporation.

The proposed site is located within policy T21 (Tilbury Docks) in the Thurrock Borough Local Plan Proposals Map. The policy notes: "The Council will fully support the modernisation and redevelopment of Tilbury docks. The introduction of industrial and commercial development will not be permitted, except where the development is port related, and provided the principal use of the existing dock area for the import and export of goods and materials is retained. Expansion of the dock area will not be permitted unless it can be shown that no suitable land remains available within the existing area."

The Core Strategy Preferred Options Report (November 2007) identifies Tilbury as:

I. Key regeneration and employment area in the borough providing 500 –1,000 additional jobs in logistics, port and riverside industries.

II. Approximately 420 new dwellings together with improved community facilities in Tilbury town centre.

III. New school (Gateway College) and Health Centre facilities in the town centre area.

IV. Promotion of flagship mixed-use riverside development alongside cruise terminal including conference, retail and leisure facilities. Development of Marina.

V. Further development of cultural facilities and industry based upon the riverside development and cultural heritage of the riverside.

VI. Continue to improve public access and informal recreation along the riverside.

VII. Improved transport links including a bus-link road between Little Thurrock and Tilbury.

Figure 12: Tilbury Green Power

4.8.4 Transport Aspects

The Design and Access Statement (Studio E Architects, 2007) supporting the Tilbury Green Power Application notes that vehicles will approach and leave the Site by utilising the docks distributor road, A1089 and A13. The Design and Access Statement notes: "The bulk of traffic movements will be associated with deliveries to and from the SRF building, which is sited close to the site entrance. Maintenance and ash removal vehicles will penetrate further into the Site. Road-going vehicles will be able to access the biomass storage building at the rear of the Site."

In terms of sustainable transport, the statement notes: "The opportunity to recommence deliveries via the existing nearby jetty at the Port remains and it is proposed that biomass materials will be delivered via the jetty (see below). This is a significant benefit of the proposed operations, and represents an opportunity to reduce the number of vehicles on the existing highway network which would not have been possible without the dockside access…."

It would be feasible (subject to financial considerations) to provide a rail-link to and sidings within the proposed development in the future. The rail link would join the existing Docks rail

loop that lies adjacent to the site. A corridor of land has been left clear of structures on the southern boundary where a rail siding could be constructed if required" (p.39).

4.9 Unilever Purfleet

The Unilever site is located to the north of the River Thames in Purfleet and falls within the boundary of Thurrock Council. The site is located within close proximity to the M25 ring road and provides access to the wider trunk road network. Current Use and Status of Facility

The site is currently occupied by Unilever Food Group and includes an existing industrial (food processing) plant bounded by two aggregates terminals.

Figure 13: Unilever

4.9.1 Planning Policy (Thurrock Borough Council)

The local planning authority for the site is Thurrock Council, but the development control authority for major applications would be Thurrock Thames Gateway Development Corporation.

The Thurrock Core Strategy notes that the site is located within the Thames Gateway and identifies the Gateway Port clusters as key transformational locations relevant including "Tilbury, Purfleet and potentially London Gateway (Shellhaven) which emphasis the important logistics role played within the borough" (p.18).

The Thurrock Thames Gateway Purfleet Master Plan (June 2007) forms part of a suite of documents that collectively support the regeneration of Thurrock. The master plan notes that application of appropriate design and construction standards to all new developments will be essential in achieving a sustainable future for Purfleet. Future developments are advised to consider *inter alia* sustainable Utilities including low carbon energy solutions and Heat Pumps and CHP.

The Thurrock Thames Gateway Spatial Plan (2007) sets out a vision to "secure comprehensive and sustainable housing and economic growth, through the structured development

and regeneration of the Borough for the benefit of new and existing communities and visitors to the area (p.1)"

The plan sets out a number of goals within the appendix, one of which sets out to "create a wide range of jobs with a future"(p.71). The supporting policy (2) sets out to "encourage the growth of new sectors, specifically offices, construction, waste management and the public sector".

4.9.2 Transport Aspects

The main egress point to the site is located to the south of the London Road Purfleet. This provides access to Canterbury Way which forms part of the M25. On-site docking facilities are located to the south of the site on the River Thames and there is a railway line located along the northern boundary of the site.

4.10 Ineos Runcorn

The Ineos Runcorn site is located in Old Basin Wharf, Western Point, Chester. The site is defined by inland waterways with Runcorn and Western Canal (disused) to the east, and Manchester Ship Canal to the west. The main egress point to the site is West Road and provides access to the eastern boundary of the site. In addition to the waterborne transport, there also appears to be a railway line to the east of the site. Whether this is still in use is unclear at this stage.

4.10.1 Current Use and Status of Facility

The site is currently identified as existing industrial land, including workshops, stores and fuel oil storage tanks. However, the secretary of state has recently granted consent for construction and operation of a combined heat and power energy from waste fuelled generating station.

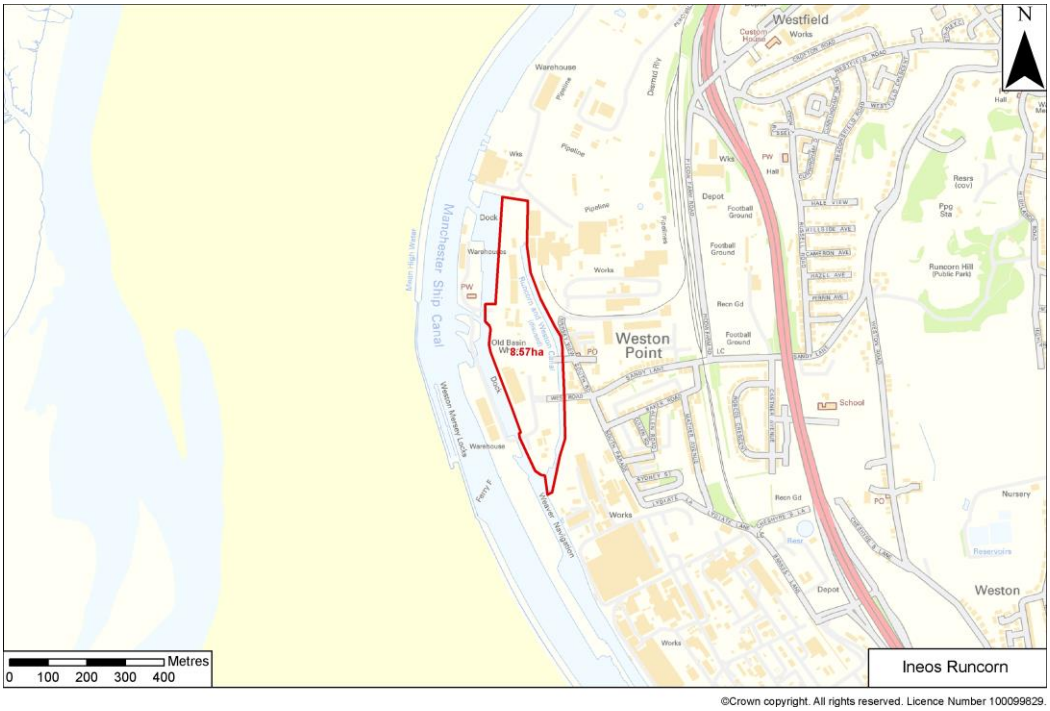

Figure 14: Ineos Runcorn

4.10.2 Planning and Consents Status

The secretary of state decision notes that "the proposal does not meet fully the criteria set out in the Halton Unitary Plan 2003 and that some local residents are unhappy with the Council's handling. It is the secretary of State's view that the consideration of the proposal by the council is a matter for them". The SoS decision notice also notes "that the Council

has not objected on the grounds that the proposal is contrary to regional or local development policy and even if there were some conflict he is satisfied that the needs of energy and waste policy override that concern." (para 3.5)

4.10.3 Transport Aspects

The facility has direct rail freight access and would be able to be served from a fuel preparation facility located at the Hendon site.

4.11 Rugeley Power Station

The site covers approximately 1km² and is located to the east of Rugeley within the administrative boundaries of Lichfield District Council, Staffordshire County Council and the West Midlands.

'Rugeley B' is currently the only operational power station on the site, following the closure of 'Rugeley A' in 1995. The power station is coal powered and produces approximately 1,000 megawatts of electricity in order to supply circa 500,000 homes. A desulfurization plant is currently being constructed at the plant, which will allow it to comply with environmental legislation and continue to generate electricity. (www.rugeleypower.com)

4.11.1 Planning and Consent Status

In October 2007, Staffordshire County Council resolved to grant planning consent to drain and landfill the flooded 'Borrow Pit' at the eastern end of the Power Station Site. (www.rugeleypower.com)

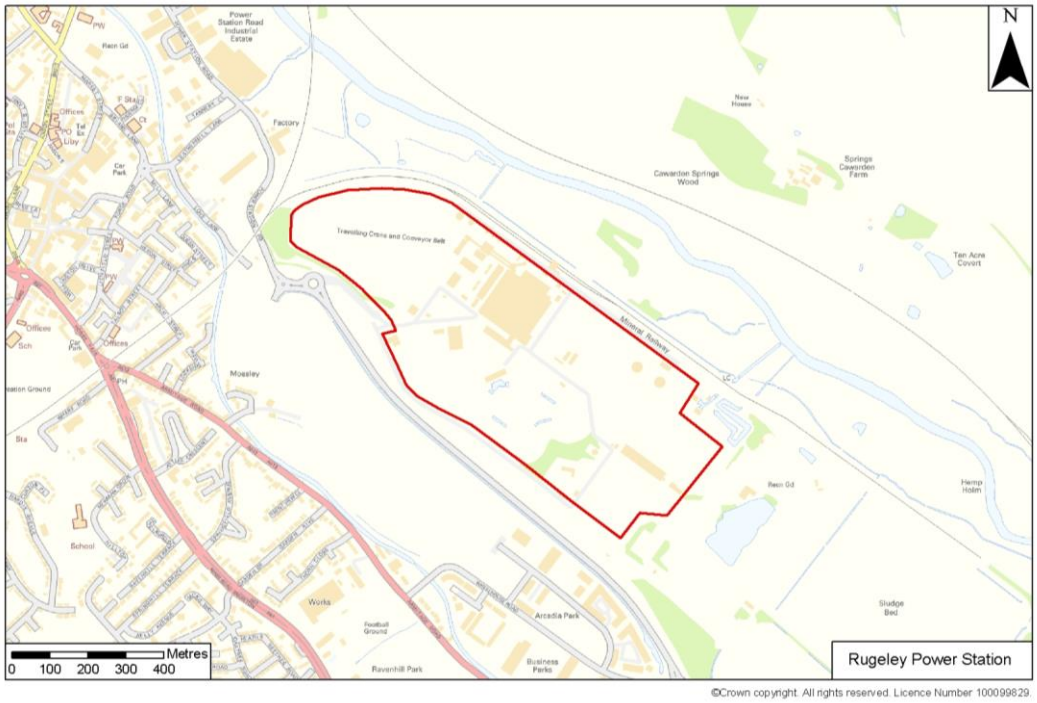

Figure 15: Rugeley Power Station

4.11.2 Planning Policy

The site is located within the administrative boundary of Cannock Chase District Council. The Local Plan policy NA13 was approved by Government Office in September 2007. This relates specifically to Rugeley Power Station and identifies that "Surplus land available within the Rugeley Power Station site will be redeveloped for a mixture of employment and recreation uses. Employment uses, which shall primarily be within the Use Classes B1 and B2, will be restricted within site to the area indicated on the Lea Hall/Rugeley Power Station Inset..."

The supporting text identifies that “the requirements of the electricity generating industry have resulted in the closure of part of the power station.” It notes that “although there are uncertainties about the precise amount of land which will become surplus to the needs of the power industry, the site is considered to be appropriate for redevelopment to provide for the creation of new job opportunities.

4.11.3 Transport Aspects

The site can be accessed via Power Station Road; this provides access to Station Road to the north (B5013) and Lea Hall Road (A51) to the south. Operational rail sidings located alongside the north east boundary of the site provide an opportunity for the more sustainable movement of SRF.

5 Carbon Impact of Fuel Transportation

5.1.1 Distances between Fuel and Waste Sites

In order to measure the carbon impact for the transportation of SRF, it is first essential to understand the distances, via road, rail and water, between the supplier and consumer. Table 2 below provides the distance, in kilometres, between the proposed SRF generating waste sites (Pinkham Way / Edmonton) and the identified potential fuel consumption sites. Distances by rail take account of the 9km distance by road from Pinkham Way (the nearest SRF production location) to the Hendon rail transfer station. Disitances by water assume export from the Edmonton site, where wharf access exists adjacent to the site.

It is particularly important to gauge an idea of the distances between sites when considering the proximity principle as it allows comparisons to be made between those sustainable and non-sustainable modes of transport.

Table 2. Distance from SRF production sites to potential treatment locations, by mode

Destination Site	**Road** (from Pinkham Way or Edmonton site) (km)	**Rail** (from Pinkham Way via Hendon) (km)	**Water** (from Edmonton) (km)
Ford Dagenham	20 (from Edmonton)	9 + 23	26
Dubai Ports London Gateway	45 (from Edmonton)	9 + 52	57
Tilbury Green Power	40 (from Edmonton)	9 + 39	42
Unilever Purfleet	31 (from Edmonton)	9 + 32	35
Slough Heat and Power	31 (from Pinkham Way)	9 + 30	n/a
Alyesford Newsprint	62 (from Edmonton)	9 + 87	87
Kemsley Mill	74 (from Edmonton)	9 + 93	110
Ineos Runcorn	285 (from Pinkham Way)	9 + 288	n/a
Brent Cross Cricklewood	0	n/a	n/a
Central Leeside	1 (from Edmonton)	n/a	1
Rugeley	185 (from Pinkham Way)	9 + 195	n/a

5.1.2 Carbon Dioxide Output

The following section of the report identifies a carbon impact factor for the transportation of waste by road, water and rail freight, allowing the measurement of $C0_2$ between waste site and fuel site according to any given transport mode. For the purposes of this study, the following carbon impact factors have been identified in order to calculate the output of CO2 from the transportation of SRF:

- Transportation by road for an articulated HGV (>33T) at 59% = 19.47T load (the UK average) which equates to 929 g CO2/ Km.[3] **This works out at 47.17g C02 per km for one tonne.**

[3] 2008 Guidelines to Defra's GHG Conversion Factors: Methodology Paper for Transport Emission Factors (2008)

- A figure of 21g CO2/ tonne per km for rail freight is identified by Defra's conversion factors[3]. On closer inspection converting this figure for a particular train mass would appear to vastly overestimate fuel consumption - i.e. 21 g CO2/ tonne km is equivalent to a fuel consumption of 5.62 gal/mile of diesel at a trailing load of 2000 tonnes. Alternatively, the AEA Technology figure of 19,147 gCO/km for the whole train[4], converts to a fuel consumption of 2.54 gal/mile, which is a more realistic estimate for a trailing load (mass of wagons and contents, excluding loco) of around 1500-3000 tonnes. Converting this to a tonnes per km figure works out at **9.57g CO2/ tonne per km** which is applicable for a trailing load between 1500-3000 (typical for a loaded train). The figures for rail incorporate the road travel distance from Pinkham Way to Hendon (9km x 47.17g CO2 = 0.424kg CO2 per tonne).
- Waterborne transport, based on a barge with a dead weight of 844 tonnes equates to **21g CO2/ tonne km**.[3]
- No account is taken for the other carbon impacts of transport, e.g. handling and site operations, including double handling for the transfer from road to rail for SRF produced at Pinkham Way and transported via Hendon.

Destination Site	**Road** (from Pinkham Way or Edmonton site) (Total kg CO_2/ Tonne)	**Rail** (from Pinkham Way via Hendon) (Total kg $C0_2$/ Tonne)	**Water** (from Edmonton) (Total kg $C0_2$/ Tonne)
Ford Dagenham	0.955 (from Edmonton)	0.640	0.543
Dubai Ports London Gateway	2.130 (from Edmonton)	0.921	1.197
Tilbury Green Power	1.863 (from Edmonton)	0.800	0.877
Unilever Purfleet	1.468 (from Edmonton)	0.732	0.735
Slough Heat and Power	1.464 (from Pinkham Way)	0.710	n/a
Alyesford Newsprint	2.926 (from Edmonton)	1.254	2.324
Kemsley Mill	3.476 (from Edmonton)	1.316	2.313
Ineos Runcorn	13.888 (from Pinkham Way)	3.183	n/a
Rugeley	9.800 (from Pinkham Way)	2.291	n/a

5.1.3 Analysis

The results of this assessment demonstrate that transfer of SRF by water and rail has significantly lower impacts on CO_2 emissions than that of road transportation. For example, despite a greater distance between the waste sites and Aylesford Newsprint for water and rail (87km), the overall CO_2 emissions are noticeably lower for transportation via road

4 Rail Emission Model, AEA Technology, (2001)

(62km). The results identify that, in terms of $C0_2$ emissions, rail is the most efficient form of transport, followed by waterborne barge transport with road transport the least efficient. However, the effect of producing SRF at Pinkham Way, a distance of 9km from the Hendon rail transfer station site, means that in some cases the water transport mode (sourced from Edmonton) will offer the lowest carbon impact of the three options.

In addition to the evidence provided, it could also be argued that the promotion of water and rail transportation may also have a synergistic effect upon the wider objective of sustainability, in that it would not only reduce the carbon emissions associated with road transportation, but it would also reduce the number of HGVs on the road. However, this hypothesis is beyond the scope of this study and cannot be validated.

Comparisons between the three modes of transport identify that for every mile travelled by road, an additional 1.5 miles could be travelled by barge, while a further 4 miles could be travelled via rail. To emphasis this point, the road emissions from Edmonton to Kemsley Mill (74km) are 3.477 CO_2 per tonne, while rail emissions from Pinkham Way to Ineos Runcorn (285km) are 2.758 CO_2 per tonne. When the two journeys are compared, despite the considerable variation in distance, it becomes apparent that the emissions are, in fact, lower for rail journeys to Runcorn than for road transport to Kemsley.

5.2 Conclusion

This study has reviewed the policy context, current status and prospects for securing approval for SRF treatment (either advanced thermal treatment or conventional incineration) associated with a number of likely heat user locations. The results indicate that while there will be a range of local environmental and procedural issues to address for any site which does not already have a consent in place for treatment of SRF, overall there appear to be no major planning or policy impediments to one or more of the reviewed sites being able to accept and treat SRF. Indeed, the national and regional policy context which supports energy recovery and decentralised energy generation tends to be highly supportive of such schemes.

There is a significant issue to address in the context of London or north London being the source of the SRF, i.e. that many of the sites are a considerable distance from north London. As SRF is considered to be waste until it is treated and the energy recovered, the transportation of SRF great distances out of London would be in conflict with the proximity principle. Previous cases indicate that access to rail or water transport modes will be a significant factor in overcoming this objection.

There appears to be some application of flexibility to the proximity principle, and that regard must always be had to other material considerations. In particular, a strong case could be made for the North London Waste Authority, and other relevant waste authorities, to ensure that the waste and fuel sites are situated in the best value location within their administrative boundaries. This should take into consideration land supply issues and site constraints. Furthermore if a site location can ensure sustainable transport modes such as river or rail links, or even the use of less polluting vehicles, highly efficient routing and operating practices, all of these deliverables would, in certain cases, outweigh the need to apply the proximity principle.

The applicant will be required to demonstrate that they have examined the possibility of utilising a number of other fuel sites if, in terms of the proximity principle, it is deemed that the site falls outside an acceptable boundary for the transportation of waste. Consideration should also be given to the sustainable movement of waste – via water or rail – which in terms of the proximity principle, would reduce the carbon footprint of transport; reduce congestion on the truck road network; and allow waste to be transported beyond the regional self sufficiency boundary.

Site	Region	Local Authority	Current Status of Facility	Consents Status	Environmental Aspects / Risks
Brent Cross Cricklewood	London	Barnet	Outline Planning application lodged in March 2008, which includes an SRF advanced thermal treatment CHP facility. Decision expected in 2009.	Barnet development control committee resolved on 19 November 2009 to grant planning permission subject to Mayoral referral and s.106 agreement. The application may be called in and is likely to be challenged in the courts if permission is granted.	• Location within London complies with regional self-sufficiency policy • Very low carbon impacts as SRF would be treated within 9km of their production site. • Within existing industrial area but substantial residential development will come forward as part of redevelopment proposals • Some risk of local impacts due to emissions – can be mitigated through emission controls and stack height
Central Leeside	London	LB Enfield or LB Haringey	No proposals have been published.	Area is covered by an Area Action Plan. Central Leeside AAP has reached Issues and Options stage. Target adoption date late 2010.	• Location within London complies with regional self-sufficiency policy • Very low carbon impacts as SRF would be treated effectively on site (or very close to the site). • Within existing industrial area but residential development may come forward in the area as part of AAP proposals • Some risk of local impacts due to emissions – can be mitigated through emission controls and stack height

Site	Region	Local Authority	Current Status of Facility	Consents Status	Environmental Aspects / Risks
Ford Dagenham	London	LB Barking and Dagenham / LB Havering	Not confirmed	Consent granted in 2006 for waste to energy plant.	• Location within London assists compliance with regional self-sufficiency policy • Approval decision was based on sourcing only within ELWA area. • Good rail / river access • Within existing industrial area • Low risk of local impacts
Dubai Ports London Gateway	East of England	Thurrock (TTGDC is development control authority)	On hold pending improvement in economic climate	EPR permit and planning / Section 36 consent would be required for SRF treatment facility	• Good rail / river access • Within existing industrial area • Low risk of local impacts
Tilbury Green Power	East of England	Thurrock Council (TTGDC is development control authority)	Section 36 application lodged with SoS in February 2008 for biomass and SRF combustion	Once consent is granted and facility built, it will be able to accept SRF	• Within existing industrial area • Good river access • Low risk of local impacts
Unilever Purfleet	East of England	Thurrock Council (TTGDC is development control authority)	Not confirmed	Not confirmed	• Good rail / river access • Within existing industrial area • Low risk of local impacts
Slough Heat and Power	South East	Slough	Existing biomass-fuelled CHP power station	EPR permit and Section 36 consent would be required for conversion to SRF treatment facility	• Existing facility – limited retooling required • Within existing industrial area • Rail access not confirmed.
Alyesford Newsprint	South East	Tonbridge and Malling Borough Council (Kent CC in relation to waste)	Existing paper-fuelled CHP power station	EPR permit and Section 36 consent would be required for conversion to SRF treatment facility	• Existing facility – limited retooling required • Within existing industrial area • River access likely but not confirmed.

Site	Region	Local Authority	Current Status of Facility	Consents Status	Environmental Aspects / Risks
Kemsley Mill	South East	Swale Borough Council (Kent CC in relation to waste)	No power station in place. Plans understood to be in place for consent application to be lodged.	EPR permit and planning / Section 36 consent would be required for SRF treatment facility	• Within existing industrial area • Good river access • Low risk of local impacts
Ineos Runcorn	North West	Halton Borough Council	Under construction	Consent granted	• Rail access but a long distance from London
Rugeley Power Station	West Midlands	Cannock Chase District Council (Staffordshire CC in relation to waste)	Existing coal-fired power station. There is room on the site for a potential second power station	No extant permission for additional energy development on the site was identified.	• Close proximity to town of Rugeley • Existing coal-fired power station site. • Rail access but a long distance from London