South London Waste Plan – Examination in Public

Written Submission on behalf of Lichen Renewal by GD Environmental in consultation with David Lock Associates

Session 2 - Main Matter 2 & Session 3 Main Matter 3
0.0 Executive Summary

The South London Waste Plan states in Table 2, on page 99, that it is Compliant with the Clauses in Article 28 of the EU Waste Framework Directive.

0.2 The text within the Waste (England and Wales) Regulation 2011 which transposes the revised Directive as: “historical contaminated waste disposal sites and measures for their rehabilitation” is a matter which may be included in waste management plans (Part 3 regulation 12 d). However the revised waste plan fails to adequately demonstrate how such sites have been assessed. Therefore it is our belief that the revised plan, in its current form, remains unsound.

0.3 It is important to note in this respect that the reference is to “contaminated waste disposal sites” and not a direct reference to “contaminated land” under the Contaminated Land Regulations made under Part 2A of the Environmental Protection Act 1990 i.e. having a much broader meaning than that within Part 2A. Also we note the use of the word “rehabilitation” which has a wider meaning than just addressing the contamination present.

0.4 Lichen Renewal’s approach specifically addresses the above issue as well as providing an holistic approach for the remediation and restoration of former landfill sites. The after use of the site to allow for the on-going treatment of green waste and the production of renewable energy, linked in with the utilisation of methane gas, meets a number of government policies. These include:

- the proximity principle;
- moving waste up the waste hierarchy;
- towards a zero waste economy;
- transition to a low carbon economy;
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- improving the status of groundwater quality (Water Framework Directive); and
- dealing with land through the planning system as opposed to direct regulation through the Contaminated Land (Part 2A regime).

0.5 Historic landfill sites which are considered to be problematic in terms of landfill gas generation have been notified to the Local Planning Authority by the Environment Agency under the General Development Procedure Order (1995) and now under Schedule 5 of The Town and Country Planning (Development Management Procedure) (England) Order 2010 (although the wording of this section remained unaltered).

0.6 When landfill gas is being generated from biodegradable waste it is more than likely that contaminative leachate is also being generated. Whilst there are a number of ways of remediating such sites the most common method adopted is to cap the sites with a low permeability cap and positively extract methane to prevent lateral migration through the side walls of the site. More recently the environmental concern has rightly focussed on climate change implications.

0.7 Sites without a low permeability cap and/or positive gas extraction systems will allow methane emissions to be released, unabated, through the surface of the site. These sites are particularly relevant, and appropriate to Lichen Renewal’s approach, particularly where built development is proposed nearby e.g. residential growth areas that would benefit from district heating schemes.

[485 words]
1.0 Introduction

1.1 Following written submissions prepared by David Lock Associates on behalf of Lichen Renewal the Inspector raised the issue of the use of former landfills in his response to the submissions. The Inspector stated:

“3.8 From the evidence in SLWP2.8 and other sources, what additional waste management capacity is expected to come forward within these areas?

3.9 If it is not possible to identify specific sites within any of these Schedule 2 areas what is the evidence that the required capacity can be delivered?

3.10 Should former landfill sites be included as suggested by Lichen Renewal? Are there/will there be any within the Plan area apart from Beddington Farmlands?”


1.2 For completeness the identified sites have been reproduced in Appendix 1 to this further written submission. For illustrative purposes only screenshots of the Environment Agency “what’s in your back yard” is produced in Appendix 2. Whilst not all of those sites will be relevant, some may be and as such should form part of the waste plan assessment of sites, particularly the sustainability assessment given Lichen Renewal’s proposed approach. A more accurate illustration could be provided by each Local Planning Authorities maps of notified sites as well as the information relating to those sites (It is understood that
the Environment Agency provided a CD to all Local Authorities in England and Wales containing details of landfill sites in their area in 2007).

2.0 Background

2.1 Historic landfill sites continue to emit greenhouse gases to the atmosphere unabated. The majority of these sites are owned by Local Authorities (County and Unitary Authorities).

2.2 There are an estimated 22,000 historic landfill sites in England and Wales (Defra / EA research – publication pending). Of which 1,500 are thought to be significant in terms of methane emissions to the atmosphere. Therefore they will have accepted biodegradable waste that breaks down to produce methane and carbon dioxide (plus numerous trace gases). These sites operated on the “dilute and disperse” philosophy i.e. no containment or capping system, precipitation was encouraged to wash through the waste and dissolve out soluble contaminants in to the underlying groundwater and methane was not addressed to any great extent (if at all) allowing it to freely vent to the atmosphere through the site surface.

2.3 Initial modelling on behalf of Lichen Renewal (using the Environment Agency-commissioned GasSim 2 model) of three municipal waste sites\(^1\) which operated from the 1960s to the 1990s under the philosophy of ‘dilute and disperse’ showed that, at one site, up to 38,000 tonnes/year of Carbon Dioxide equivalent (te/yrCO\(_2\)e) could be saved with the provision of a low permeability cap in the first year. The average figure for the three sites is 22,000 to 26,000 te/yrCO\(_2\)e.

2.4 Assuming 500 of the 1,500 sites could benefit from a low permeability capping system, extrapolating the above figures equates to between 11,000,000 and

\(^1\) 6 million, 1.5 million and 1 million cubic metres
13,000,000 te/yrCO2e emission savings. Over a 40 year period (assuming a declining source) it has been calculated that this would represent 157,812,500 teCO2e.

2.5 The National Atmospheric Emissions Inventory² (Data Warehouse 2008) identifies 966,000 tonnes of methane was emitted from sites currently regulated by the Environment Agency. This equates to 24,150,000 te/yr CO2e. This figure does not include the historic landfill sites which are in effect unregulated with no legal requirement to report on greenhouse gas emissions to the atmosphere i.e. they do not need an Environmental Permit because the waste disposal activity ceased many years ago.

3.0 Area of land and prohibition against former landfill sites

3.1 The plan identifies only a few hectares of land for the use of waste management.

3.2 Locating waste management facilities on former landfill is specifically prohibited by WP5 relating to windfall sites, which states:

“Proposals for waste facilities on windfall sites will be considered and planning permission granted, provided the proposed development meets all of the following criteria:.... Priority will be given to sites which:

• are designated by the Waste Plan area’s local authorities as suitable for industrial development in the planning policy documents or within extensive areas of despoiled, contaminated, previously developed or derelict land or areas with a history of a

² Complied by AEA on behalf of DECC and used in international reporting
waste related use other than restored landfill or to be restored landfill...” (page 43)

3.3 Therefore the restoration of landfill using waste is specifically excluded without any justification. Such sites will have good access and services given the likely previous use for mineral extraction and subsequent waste disposal operations.

3.4 Given the identification of historical waste disposal sites in the revised Waste Framework Directive to be considered within the waste plan it would seem that at the European level the link of locating future waste facilities on such sites has already been made. Therefore, a complete exclusion in the waste plan makes the plan unsound. Within Lichen Renewal’s business model the future waste operation can offset the cost of the rehabilitation of the historic site.

3.5 In using suitable for use waste for the remediation i.e. capping and restoration of historic landfill sites an Environmental Permit is required to be obtained from the Environment Agency. The Environment Agency can not legally issue an Environmental Permit, for a waste operation, unless a valid planning permission exists. If the Waste Plan does not allow this then non-waste materials would have to be used e.g. clay for capping and soil. In the current economic climate soil is not forthcoming from construction / development projects. The consequence is to have a policy framework that does not promote the use of waste as a resource and misses an opportunity to move tens of thousands of tonnes of waste up the waste hierarchy.

3.6 Landfill sites can be considerably larger that the area allocated in the waste plan. The area in need of capping is a function of the historical area of waste disposal. Hence the Waste Plan needs to be far more flexible on this issue.
4.0 Background to Lichen Renewal’s proposed use of former landfill sites

4.1 The UK has a target to reduce greenhouse gas emissions by 34% by 2020 following the Climate Change Act of 2008, and has also signed up to deliver 15% of its energy through renewables by 2020 as part of the EU Renewable Energy Directive. Even in light of the recent change in Government and subsequent revocation of Regional Spatial Strategies, there is still a requirement at local level to drive towards meeting these targets. Lichen Renewal has identified a process which will make significant contributions to both of these targets and have added social, environmental and economic benefits. Lichen Renewal wish to raise awareness of the considerable positive impacts at a local level, including the movement of considerable volumes of waste up the “waste hierarchy”.

4.2 The underlying principle of Lichen Renewal’s proposals is to facilitate environmental, economic and social improvements through the restoration of environmentally damaged land, namely historic landfill sites. Historic municipal waste landfill sites can cause pollution. Once they have ceased accepting waste for disposal they may continue to produce significant volumes of landfill gas (primarily methane and carbon dioxide) and contaminative leachate. Where historically poor or limited capping of former landfills has occurred this results in the uncontrolled emission of methane; a powerful greenhouse gas, into the atmosphere and further leachate production subsequently leading to wider scale groundwater pollution. Lichen Renewal aims not only to reduce significantly the pollution associated with existing landfill sites, but also seeks to bring them back into a productive use.

4.3 The process proposed by Lichen Renewal involves the provision of a cap to the historic landfill sites. The cap will be engineered from pulverised fuel ash (PFA) with added lime which provides a low permeability layer. The cap will both reduce the uncontrolled emissions of methane into the atmosphere and minimise
the amount of water that can enter the site and cause leachate seepage. Any surface water run-off will be managed as part of a Sustainable Drainage System (SuDS) and potentially used for crop irrigation. The SuDS will ensure that additional flood risk will not occur.

4.4 Lichen Renewal’s proposals provide an opportunity to accommodate both inert and non-inert waste and reduce the need for it to be sent to landfill. The production of a restoration soil layer which will be manufactured from “suitable for use” waste streams will help divert these from operational landfill. Whilst some of these waste streams would not meet the strict definition of inert waste (e.g. the organic content of green waste which will biodegrade) they are considered suitable given the proposed use that Lichen Renewal will put them to. The manufactured soil layer will be placed above the cap to protect it from drying out and to prevent roots from trees and plants growing through it. This top soil will be free draining and mimic a silt/clay type soil, providing suitable conditions for the proposed after use. This soil layer is manufactured from recovered suitable waste and includes:

- excavated soils from local development sites;
- compost (e.g. from parks and garden waste);
- biosolids (e.g. sewage sludge cake);
- brick rubble (as a drainage layer);
- biochar (a by product of burning biomass in the absence of oxygen to produce syngas that provides a matrix that holds in nutrients and allows slow release, as well as providing a free draining property); and
- pulverised fuel ash.

4.5 The activity is classed as a “recovery” operation given that the wastes substitute for natural materials that would otherwise be used, as determined in the European Court of Justice Case Law (Abfall Services). The wastes are not being disposed
of. They are put to a particular use, it just so happens to be on historic landfill, and hence are moved up the waste hierarchy.

4.6 The methane that is prevented from escaping by the cap will be captured and used to dry green waste prior to it proceeding to the gasification / pyrolysis plant or potentially used directly for energy generation. The gasification / pyrolysis process produces renewable energy in the form of “syngas” (i.e. synthetic gas). The heat from this process could be used to heat greenhouses and to enhance crop growth. Or more importantly used in district heating schemes especially where new development is proposed close to a former landfill site.

4.7 The after-use of the restored sites would vary depending on the setting, particularly its proximity to built development. The uses that are being proposed by Lichen Renewal include primarily renewable energy generation, agriculture and recreation.

4.8 Lichen Renewal have assessed the existing impact of historic ‘dilute and disperse’ landfill sites nationally and consider that the opportunity to reduce the proximate adverse environmental impacts of these polluting sites should be taken. The double-headed approach of dealing with the past and the future elements in an integrated fashion contributes to both the mitigation of anthropogenically produced green house gases and the adaptation in land use terms to the early keying in of green infrastructure that would support further development. In this light, Lichen Renewal wish to secure recognition and support for the use of former landfill sites for this process in the South London Waste Plan. To make the subsequent strategy sound the use of former landfills as detailed above should be considered in detail.

4.9 It is important to clarify that Lichen Renewals’ proposals do not involve landfill operations and are to be classified as a “waste recovery” and restoration process;
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it will be essential that this differentiation is made in any forthcoming policy. Lichen Renewal understands that landfill is the last option for waste management with regard to the waste hierarchy, and in submitting these representations, are not promoting the use of landfill, but the diversion of waste from operational landfill (where it is "disposed" of) and its subsequent re-use in the remediation and restoration process in substitution for other natural materials that would otherwise been used i.e. natural clay and soils. The approach is akin to the remediation and restoration of any other land that may be affected by contamination.

4.10 Essentially, Lichen Renewal, through these representations, wish to secure changes to the waste plan which will demonstrate a stronger commitment to pollution reduction and the improvement of environmentally damaged land that has occurred due to past waste management processes, as detailed in the Waste (England and Wales) Regulation 2011. Only when there is explicit acknowledgement in planning terms of the contribution that the delivery of improved historic and ‘sterilised’ waste land to the carbon reduction commitment as set out in the Climate Change Act 2008 should the document be capable of being considered both sound in accordance with national policy. It is pertinent to the delivery of the strategy that accounting for these emissions within the strategy will make a concerted and significant contribution to the carbon reduction commitment espoused by DECC, Defra, DCLG and the Treasury.

4.11 The proposals deliver in terms of:

- the proximity principle (re-using local excavation and construction waste from developments which can be recovered for beneficial use in the local vicinity);
- moving waste up the waste hierarchy;
- generating energy, electricity and heat, from waste (including historic waste deposits and gasification / pyrolysis of green waste);
4.12 With regards to the waste hierarchy Lichen Renewal would draw your attention to the fact that the hierarchy does not have to be followed where there is a technical justification. Given that the aim will be to produce biochar (biological charcoal) from the gasification / pyrolysis process to incorporate into the restoration soils it should be noted that biochar sequestrates carbon for hundreds of years whereas composting sequestrates carbon for less than ten years. Consequently, it is our belief that the gasification / pyrolysis of material should fit above composting. The adopted strategy, in line with national best practice, should allow for such flexibility in decision making.
A1.0 **Appendix 1 – Extract from South London Waste Plan Consultation Document**

A1.1 WP4: Industrial Areas with Sites Suitable for Waste Management Facilities

Planning permissions will be granted for waste management facilities on land from within the industrial estates identified in Schedule 2 in order to provide sufficient waste management facilities to meet the Waste Plan’s capacity needs, identified in Policy WP1.

A1.2 Proposals must satisfy all other policy requirements of this South London Waste Plan. Proposals must also satisfy any other relevant policies within the applicable borough’s Development Plan.

### Schedule 2: Industrial Areas with Sites Suitable for Waste Management Facilities

Waste management development will be permitted on a limited amount of land, in accordance with the Waste Plan’s capacity needs identified in Policy WP1 (up to a total of seven hectares of land as calculated in 2010) on a single or multiple sites within the following industrial areas:

<table>
<thead>
<tr>
<th>Site ref</th>
<th>Site name</th>
<th>Borough</th>
<th>Likely timescale for redevelopment</th>
</tr>
</thead>
<tbody>
<tr>
<td>69</td>
<td>Willow Lane, Industrial Area</td>
<td>Merton</td>
<td>2017-2021</td>
</tr>
<tr>
<td>99</td>
<td>Croydon Purley Oaks Highway Depot</td>
<td>Croydon</td>
<td>2017-2021</td>
</tr>
<tr>
<td>102</td>
<td>Purley Way, Lysander Road and Imperial Way Industrial Area</td>
<td>Croydon</td>
<td>2017-2021</td>
</tr>
<tr>
<td>105</td>
<td>Factory Lane Industrial Estate</td>
<td>Croydon</td>
<td>2017-2021</td>
</tr>
<tr>
<td>125</td>
<td>Croydon Factory Lane (South Side)</td>
<td>Croydon</td>
<td>2017-2021</td>
</tr>
<tr>
<td>351/352/353</td>
<td>Chessington Industrial Area</td>
<td>Kingston</td>
<td>2017-2021</td>
</tr>
<tr>
<td>491</td>
<td>Kimpton Industrial Estate, Land</td>
<td>Sutton</td>
<td>2017-2021</td>
</tr>
<tr>
<td>north of Minden Road</td>
<td>Durnsford Road / Plough Lane Industrial Area</td>
<td>Merton</td>
<td>2017-2021</td>
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<tr>
<td>641 /642 /651</td>
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<tr>
<td>702</td>
<td>Garth Road Industrial Area</td>
<td>Merton</td>
<td>2017-2021</td>
</tr>
<tr>
<td>1006</td>
<td>The Wandle Valley Trading Estate (part of )</td>
<td>Sutton</td>
<td>2011-2016</td>
</tr>
<tr>
<td>5312 /532 /533 /534 /535 /539</td>
<td>Beddington Industrial Area</td>
<td>Sutton</td>
<td>2017-2021</td>
</tr>
</tbody>
</table>
A2.0 Appendix 2 – Screen shot of Environment Agency’s – What’s in your Backyard?

A2.1 The screen shot of Environment Agency – What’s in your Backyard web page below clearly indicates - with irregular shaped pink colouring - sites which are historic landfills. Contrastingly, brown areas are those sites which are currently sites authorised by the Environment Agency.