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Carbon Management Plan

MS 4.2a - *Introduction*

The four Local Authorities of the Royal Borough of Kingston upon Thames and, the London Boroughs of Sutton, Croydon and Merton have joined up to form the South London Waste Partnership (the Partnership) as a means of addressing the issue of waste over the four boroughs. This is a very positive step in the strategy for Waste management. The Contractor has therefore considered the carbon strategies and targets for each of the four boroughs in developing this strategy for a Carbon Management Plan (as defined in PR3.2 of the Authority's Requirements).

[redacted]

MS 4.2a.i - *The Contractor's perspective on Carbon*

[redacted]

MS 4.2a.ii - *Carbon impact of the Contractor's solution*

[redacted]

MS 4.2b - *Background to Carbon Management*

MS 4.2b.i - *Fossil and Biogenic carbon*

Two types of carbon can be considered within any Carbon Management Plan; carbon derived from fossil fuel based sources and carbon derived from biodegradable sources. Although both types of carbon are considered to contribute to greenhouse gas (GHG) emissions, only the fossil derived carbon is normally reported. This is because biogenic carbon is considered to be 'short-cycle', which assumes that the carbon is taken up and released from biomass. If the biomass is grown sustainably the carbon emitted and sequestrated shall reach equilibrium. Fossil derived carbon feeds the long-term carbon cycle; prior to combustion this carbon was stored underground for a long time and thus is seen as a net addition to atmospheric carbon.

The French Entreprises pour L'Environnement (EpE) standard (an EU alternative to PAS 2050:2008) clarifies that biogenic carbon emissions from the combustion of waste should be netted off from a facility's gross direct emissions. This ensures that biogenic carbon emissions are reported, but for information purposes only and are therefore not counted in carbon assessments. Biogenic CO2 is therefore treated as a zero CO2e emission.

MS 4.2b.ii - *Scope 1, 2 and 3 emissions*

The GHG Protocol Corporate Standard defines three types of CO2e emission[1]; these are detailed below in terms of our proposed solution:

1. *Scope 1*: Direct emissions

These are the emissions which occur directly from sources that are owned or controlled by the Contractor. Emissions from the Key Facility's stack and emissions from company vehicles are examples of direct emissions.

2. *Scope 2*: Utility indirect emissions

This category accounts for any emissions associated with the generation of electricity, heat or steam which is used at the Key Facility. Imported power is an example of utility indirect emissions.

3. *Scope 3*: Other indirect GHG emissions

This category is an optional reporting category which incorporates all other emissions. These are emissions that are a consequence of waste services activities but occur outside of the Contractor's operational control. Examples include third party transport, production of purchase chemicals and transportation of any residues and so on.

The following figure highlights the three emission types.

[1] GHG Protocol boundary as listed in GHG Reporting: A Corporate Accounting and Reporting Standard (Revision edition) published by the World Business Council for Sustainable Development and the World Resources Institute.

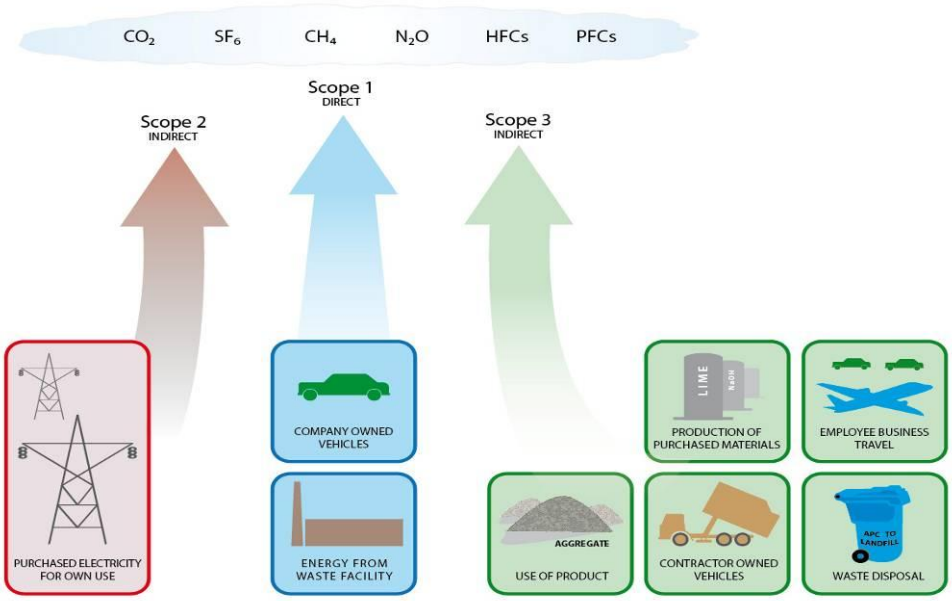

Figure 4.2-1 Scope 1, 2 and 3 emissions

MS 4.2b.iii - *Fixed and Variable Carbon*

In addition to the GHG Protocol definition of Scope 1, 2 and 3 emissions, there is another distinction to be considered; that between the fixed and variable carbon associated with the Key Facility. These two terms are discussed in detail below.

"Fixed" carbon

The fixed carbon refers to the amount of CO2e associated with the Key Facility when it is ready to operate but not actually treating Waste. This therefore includes any emissions associated with lighting, consumables, operating pumps, fans and conveyors etc which are required to operate the Key Facility with no Waste being processed.

Fixed carbon is therefore often seen as being under the direct control of the operator and therefore aligned to scope 1 emissions. It is however, possible to drill further down into the specific plant processes and identify where fixed carbon levels can apply. This results in the operator being able to maintain and improve, where possible, the Key Facility in order to reduce its fixed carbon impact. It is difficult to measure the fixed carbon under normal operation as the plant would be treating Waste; furthermore a significant number of measuring locations are required in order to capture all emissions.

"Variable" carbon

[redacted]

[redacted]

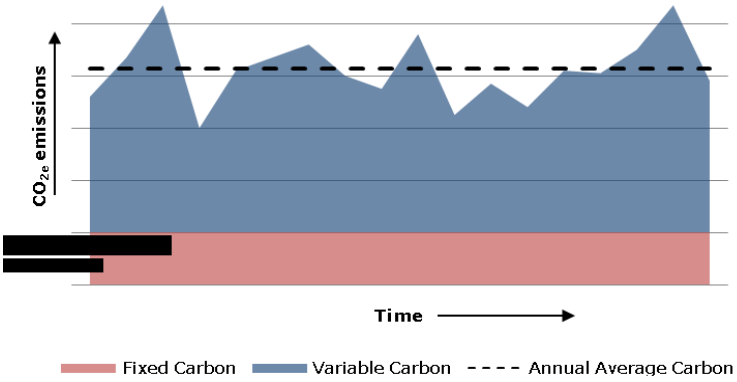

Figure 4.2-2 Fixed and variable carbon

The concept of fixed and variable carbon is used in other industries as a differentiator for the management of carbon, in that differing focus can be applied to the two types of carbon for improvement reasons.

MS 4.2b.iv - *Offsetting*

Two forms of offsetting are often considered within carbon management plans; direct emissions offsetting and offsetting through avoiding emissions.

1. *Offsetting – Direct Emissions*

This is where CO2e emissions are produced by a process, but the company wishes to negate the environmental burden associated with these emissions. The company can choose to offset this burden by reducing CO2e emissions through another process. The most common practice is the planting of trees, under an approved offsetting scheme, as the photosynthesis process uses CO2 to produce O2. This topic is widely debated, as it is very difficult to measure and validate the carbon offset from the planting of one tree, or the planting of 1 m³ of reedbed etc.

To enable this process to be used within a Carbon Management Plan, the concept of additionality (where it is proven that the emissions reduction would not have happened without intervention such as this project), should be considered very carefully.

2. *Offsetting – Avoided Emissions*

This is where CO2e emissions are avoided through the production of energy or material. If a process generates electricity which is exported to the national grid, then this electricity does not need to be generated by the national grid. This reduces the amount of electricity that power stations are required to generate, therefore negating the emissions associated with the generation of the power. Similarly this example can be used for the production of a material (for example aggregate) offsetting the emissions associated with production of a material produced for a similar purpose (for example gravel).

It is important not to double count carbon savings under this aspect. Such reductions should be considered very carefully and in consultation with the supply chain before declaration.

Again this area of offsetting is widely debated as it is very difficult to measure and verify. Carbon verification should therefore be conducted by a recognised external organisation accredited by United Kingdom Accreditation Service (UKAS).

MS 4.2b.v - *Absolute and Relative emissions targets*

There are potentially two types of emissions targets; absolute and relative. Absolute targets consider tonnes of CO2e emitted, whereas relative targets consider the tonnes of CO2e per unit of output or production. Reporting CO2e emissions per tonne of Contract Waste treated is a relative target. Both types of reported target can achieve the Carbon Trust Standard (carbon management accreditation) as long as the relative target is based on an absolute value.

Reporting based on a relative target can lead to difficulties if the denominator is a variable quantity, for example per tonne of Waste treated. If the denominator varies, then the relative reduction also changes. This can lead to CO2e reductions being reported without any actual CO2e reduction occurring in real terms, see Figure 3 below. A relative target is therefore often calculated using a fixed denominator.

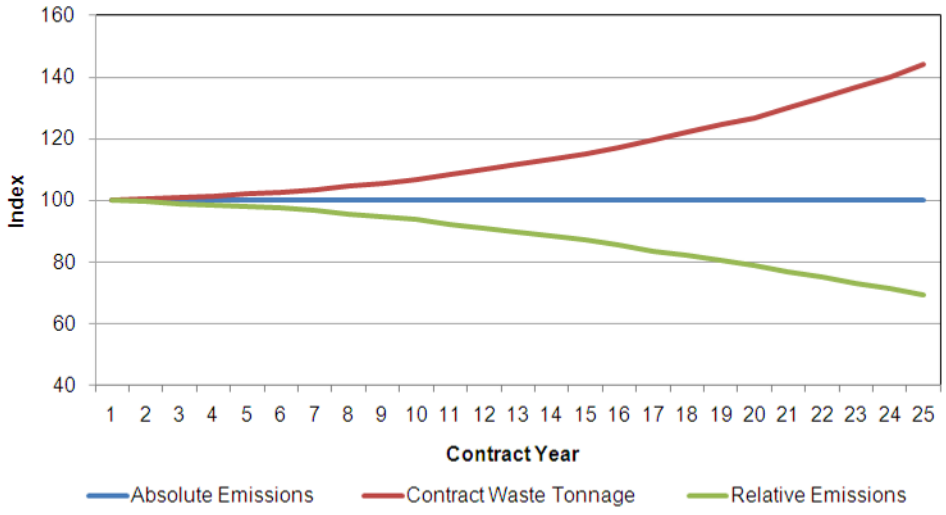

Figure 4.2-3 Absolute and Relative Emissions

MS 4.2c - *Guidance and Legislation*

MS 4.2c.i - *The Greenhouse Gas Protocol*

The greenhouse gas (GHG) protocol for project accounting[2] from the World Business Council for Sustainable Development (WBCSD) and the World Resources Institute (WRI) establishes six guiding principles when developing a carbon management plan:

3. *Relevance*

The plan should use data, methods, criteria and assumptions that are appropriate to South London, the Authority, the Contractor and the technology used in the proposed solution.

4. *Completeness*

The plan should consider all relevant information which may affect the accounting and quantification of reductions in GHG.

5. *Consistency*

The plan should use data, methods, criteria and assumptions which allow meaningful comparisons year on year.

6. *Transparency*

The plan should provide clear and sufficient information for reviewers to assess the credibility and reliability of the measured data and calculated reductions.

7. *Accuracy*

The plan should reduce uncertainties as much as practical and avoid bias in measurement and estimation.

8. *Conservativeness*

The plan should use conservative assumptions, values and procedures where uncertainty is high so that reductions in emissions are not overestimated.

The GHG Protocol also allows the Contractor to set carbon reduction targets.

[2] GHG Protocol boundary as listed in GHG Reporting: A Corporate Accounting and Reporting Standard (Revision edition) published by the World Business Council for Sustainable Development and the World Resources Institute.

MS 4.2c.ii - *GHG Management Hierarchy*

The GHG management hierarchy has been developed by Forum for the Future and Clean Air-Cool Planet[3] and echoes the Waste hierarchy.

The GHG management hierarchy, illustrated in Figure 4 below, places avoidance of carbon emissions through development of alternative processes or activities first. The next stage of the hierarchy, if emissions cannot be avoided, is to reduce the emissions through increasing efficiencies. If efficiencies cannot be improved, the next stage of the hierarchy is to reduce emissions through replacement of high carbon energy sources with low or zero carbon alternatives. The final stage of the hierarchy, if all other stages are not possible, is to offset emissions. Offsetting is considered as a last resort as this does not directly reduce an organisation's carbon emissions.

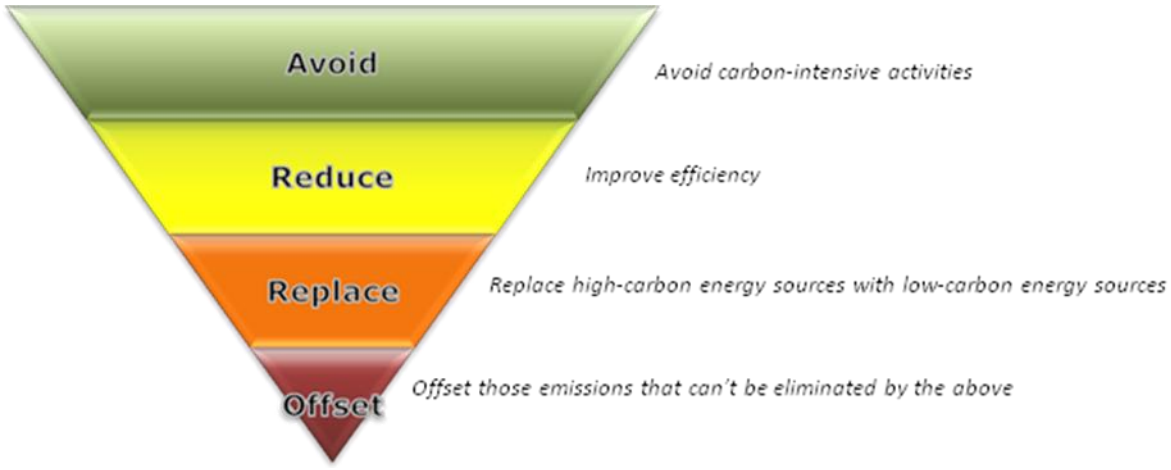

Figure 4: The GHG Management Hierarchy

MS 4.2c.iii - *Climate Change Act 2008*

The Climate Change Act 2008 (the Act) was developed primarily to set a target for the year 2050 for the reduction of GHG emissions. The Act also aims to improve carbon management and aid the transition to a low carbon economy.

The Act sets out provisions for the establishment of a Committee on Climate Change, the development of a system of carbon budgeting and the establishment of trading schemes to limit GHG emissions or encouraging activities that reduce such emissions. The Act also provides financial incentives to produce less domestic Waste and to recycle more.

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[3] Burtis,B., Watt, I., Markham, A., Sheppard, B., Aeron-Thomas, D., and Uren, S., 2008, *Getting to Zero: Defining Corporate Carbon Neutrality,* Forum for the Future & Clean Air-Cool Planet.

The Act sets a target that the UK carbon emissions will be reduced to 80% of the 1990 baseline by the year 2050. An interim target of a 34% reduction from the 1990 baseline by the year 2020 has also been set. The GHGs targeted by the Act are carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride. This target is legally binding and has therefore been passed onto local authorities and businesses.

MS 4.2c.iv - *EU Emission Trading Scheme (EU ETS)*

The EU ETS has been developed in order aid the EU with meeting its targets from GHG reductions under the Kyoto Protocol. This is based on the EU Emissions Trading Directive 2003/87/EC which came into force on the 25th October 2003 and was updated by EU Directive 2009/29/EC.

The EU ETS allows each member state to develop a national allocation plan and set an overall cap on emissions allowed by installations covered by the scheme. This cap is then converted into allowances and distributed to installations. At the end of each reporting year, the installations must surrender allowances equal to their emissions. Excess allowances can be sold on the EU ETS, whilst a shortfall of allowances can be purchased.

The EU ETS has been split into a number of distinct phases. The first phase ran from 2005 to 2007. The second phase started in 2008 and incorporated lessons learnt from phase 1. It also expanded on the industries covered by the EU ETS. The second phase is due to finish in 2012.

The third phase is set to run from 2013 until 2020. This again builds on the lessons learnt during phase 2 and further expands the industries covered by the EU ETS. Phase 3 sets an annually reducing cap on allowances and increases the amount of allowances auctioned to 50%.

Waste installations are currently not included within the EU ETS, however this may change as the EU ETS is developed further after 2020.

MS 4.2c.v - *CRC Energy Efficiency Scheme Order 2010*

The CRC Energy Efficiency Scheme 2010 came into force on the 22nd March 2010 and the scheme started on the 1st April 2010. It is mandatory for all organisations who had at least one half hourly meter settled on the half hourly market and whose annual electricity consumption was greater than 6,000 MWh in 2008. It is estimated that around 20,000 companies will be required to participate in some way. The majority of these will simply be required to disclose information regarding electricity consumption every few years. However some 5,000 companies will be required to participate fully, by monitoring and reporting their CO2 emissions and purchasing allowances equivalent to their emissions.

The CRC Energy Efficiency Scheme 2010 is divided into phases. The first introductory phase started on the 1st April 2010 and will last for three years. All subsequent phases will run for seven years (of which the first two years will overlap with the previous phase).

Each footprint year the organisation shall provide a report detailing the energy supply they are responsible for and which parts of the footprint are included under the CRC. The organisation will then buy allowances from the Government to cover each tonne of CO2 the organisation estimates they will emit during the annual reporting period. The organisation will then monitor and record the energy consumed during the reporting period. At the end of the reporting period the organisation will surrender allowances equal to each tonne of CO2 emitted. Extra allowances can be purchased or sold on the secondary market to cover any shortfall or excess. As a result of the recent Government spending review, the recycle element of the scheme has been removed. This makes the scheme a tax mechanism in real terms.

This scheme covers emissions which are not covered by the Climate Change Agreements with the Department for Energy and Climate Change or the EU ETS. Transport emissions are also excluded.

At the end of each reporting period the CRC administrator will compile and publish a league table of participating organisations.

The Contractor anticipates that the CRC scheme is of importance to the Authority and therefore the Contractor proposes to share its knowledge base with the Authority in order to obtain maximum energy efficiency for the Key Facility and the Project stakeholders. The visitor centre would be used to share this knowledge, lead by the management team of the Key Facility as part of the engagement process.

MS 4.2c.vi - *The Carbon Trust Standard*

The Carbon Trust has developed a standard certification in order to develop a clear and robust definition of good practice for reporting carbon reductions. To become certified, a company's carbon strategy must meet the following three key points:

- Measure carbon emissions;
- Demonstrate reductions in carbon emissions; and
- Provide evidence of good carbon management.

On achieving the Carbon Trust Standard, the company will receive a higher ranking in the CRC energy efficiency league table. This standard is not industry specific and requires a carbon strategy to be in place (although the Carbon Trust can aid with the development).

The Carbon Trust Standard defines two boundaries; 'Level 1' and 'Level 2' footprints, which overlap the scope 1, 2 and 3 emissions previously discussed.

The Level 1 footprint consists of:

- Electricity, heat and steam consumption;
- Combustion of fuels (oil, gas, diesel, waste etc); and

- Fuel consumption in company owned vehicles.

The Level 2 footprint covers the following sources in addition to the Level 1 emissions:

- Process emissions from chemical reactions;
- Fugitive emissions; and
- Emissions from business travel by employees.

This is summarised below in relation to the scope 1, 2 and 3 emissions in Figure 5. Final clarification shall however be sought on the exact boundary definitions from the Carbon Trust.

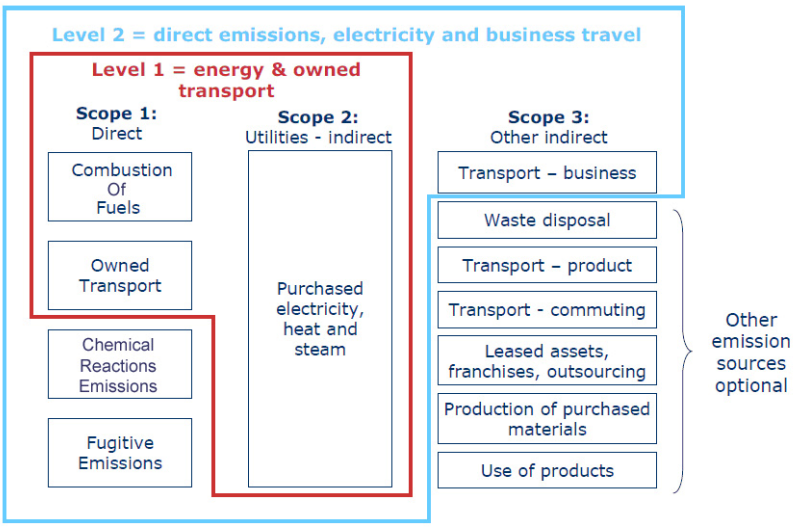

Figure 5: CRC emission boundaries

The Carbon Trust Standard also details good practice in relation to data measurement:

9. All emissions should be transformed into CO2e using published emissions factors.
10. Combined heat and power facilities shall allocate emissions between the heat and electricity exported according to the methodology provided in either the GHG Protocol "Allocation of Emissions from a Combined Heat and Power Plant" or the Department for Environment Food and Rural Affairs' (DEFRA) "Corporate Reporting Guidelines[4]".
11. For facilities which export electricity or heat but whose primary purpose is not the generation of power/heat, the assessment should exclude emissions relating to the electricity/heat exported.

[4] DEFRA Guidance on how to measure your carbon footprint, September 2009 and Conversion Factors for Company Reporting updated October 2010.

It can be argued that the proposed Key Facility is not only for the treatment of Waste but also for the generation of electricity. This would mean that the Contractor would be able to claim benefit from avoided emissions on the exported electricity/heat.

MS 4.2c.vii - *BREEAM*

The BRE environmental assessment method (BREEAM) is the most widely used environmental assessment for buildings. BREEAM assesses buildings against a set criteria and provides an overall score ranging from 'pass' to 'outstanding'.

The BREEAM assessment looks at a broad range of environmental impacts in the following categories with example criteria for each category:

- *Management*: Best practice commissioning, operating manuals, environmental management system;
- *Health and Wellbeing*: Heating, lighting, air quality, noise;
- *Energy*: CO2 emissions, low energy lights, metering, 'A' rated white good, energy management;
- *Transport*: Location, parking & cyclist facilities, access to public transport and local amenities, implementation of travel plans;
- *Water*: Water efficient appliances, water metering, leak detection systems, water butts;
- *Material and Waste*: Materials with a low embodied energy, building re-use, responsibly resourced materials, use of recycled materials;
- *Landuse and Ecology*: brownfield use, ecological enhancements, protection of ecological features, best use of building footprint; and
- *Pollution*: Refrigerants and insulation with low global warming potential, space heating with minimum NOx emissions, attenuation of surface water run off, good practice in terms of oil interceptors/filtration.

BREEAM ratings give assurance to developers and designers that best environmental practices have been incorporated into a building design. It enables developers and designers to prove the environmental credentials of their buildings to both planners and clients, and maintains a technical standard with quality assurance and certification.

It is important to appoint a BREEAM assessor as early in the design process as possible. Many environmentally beneficial elements can only be included in a building at the design phase, and bringing a BREEAM assessor onto a project at the earliest stages increases the likelihood that a building is able to achieve a high rating.

MS 4.2c.viii - *CEEQUAL*

The Civil Engineering Environmental Quality Assessment and Award Scheme (CEEQUAL) strives to improve sustainability in civil engineering and public projects in the UK. CEEQUAL assessments are made using a points based system, with the assessment focusing on environmental and social aspects of a project. CEEQUAL award levels vary from pass to excellent.

CEEQUAL assessments are performed using the CEEQUAL assessment manual for projects which contains 200 questions that comprise the scheme. The questions cover the following areas:

- Project management;
- Land use;
- Landscape;
- Ecology and biodiversity;
- Historic environment;
- Water resources and the water environment;
- Energy and carbon;
- Material use;
- Waste management;
- Transport;
- Effects on neighbours; and
- Relations with the local community and other stakeholders.

There are five types of CEEQUAL awards:

- Whole project award;
- Client and design award;
- Design award only;
- Construction only award; and
- Design and build award.

Participants in the CEEQUAL assessment receive a range of benefits such an improved reputation and public relations, improvement to best practice, demonstration of commitment to the environment and enhanced team spirit. A CEEQUAL award shows that an organisation is concerned about the impacts of construction on the environment.

MS 4.2c.ix - *Other Reporting Standards*

Currently there are a range of carbon reporting standards available, but only a few of these have been specifically developed for the waste industry.

12. PAS 2050:2008

This standard has been developed by the British Standards Institution (BSI) in association with the Carbon Trust and the Department for Environment, Food and Rural Affairs (DEFRA). The standard is aimed at providers of goods and services. Section 8.2 of this standard provides information relating to calculating impacts from emissions from Waste treatment, while section 8.3 covers emissions from energy production (electricity or heat).

13. ISO 14064:2006

This standard has been produced by the International Organisation for Standardisation (ISO). The standard is aimed at organisation level quantification and reporting of GHG emissions. This is a general specification and there is no specific information given relating to the applications in the Waste industry.

14. Entreprises pour L'Environnement (EpE)

The French EpE Association drew up a GHG protocol for industries with 14 sector specific protocols annexed to it. The Waste sector specific protocol has been developed by Veolia Environmental Services (UK) Plc, Séché Environnement S.A. and Suez Environnement S.A. The protocol is accompanied by a Waste sector specific calculation and reporting spreadsheet.

MS 4.2c.x - *Regional and Local Guidance*

With regards to climate change policies and the reduction of carbon emissions within the individual authorities, there are differing targets and overall goals. These regional and local carbon reduction targets are set out below:

a) *Regional level*

The Mayor of London has outlined plans for the Greater London region which are intended to assist the UK in meeting its targets. The final 2050 target of an 80% reduction in CO2e emission from 1990 levels has been adopted, but alternative, interim targets have also been set. By 2015 the Mayor aims to reduce CO2e emission by 22%, 38% by 2020, and 60% by 2025[5].

[5] Delivering London's energy future - The Mayor's draft Climate Change Mitigation and Energy Strategy, February 2010, from

b) *Local level*

The four boroughs within the Partnership are responsible for creating their own carbon strategies to achieve these targets or ones which have been set specifically for their region. It should be noted that all four boroughs are signatories of the Nottingham Declaration, which commits councils to developing a strategy to address the issues of climate change at a local level. All four councils have also signed up to the Local Area Agreement (LAA) indicator NI 186. This indicator provides a means of creating a base line, measuring and reporting per head of capita reduction in CO2e emissions within the local borough area.

b.i) Kingston upon Thames

Royal Kingston is still in the process of establishing and setting a long term carbon reduction target to 2020 and beyond. In the short term, NI 186 targets have been adopted from a 2005 baseline of 5.9 tonnes per head of capita. The LAA target is to achieve a 10% reduction in CO2e emissions by 2010. The Royal Borough of Kingston aims to help achieve the national targets for CO2e reduction and also to source 15% of energy consumption within the borough from renewable sources by 2020.

b.ii) Sutton

Sutton aim to develop their climate change adaptation plan by 2011, but a number of interim goals have already been set by Sutton Council. The Sutton LAA for NI 186 was to reduce CO2e emissions from households by 11% by 2011 against a 2005 baseline of 5.0 tonnes per head of capita. More specific targets are:

- to reduce CO2e emissions from its council vehicle fleet by 50% by 2017;
- to eliminate CO2e emissions from energy use within buildings by making them more efficient;
- meeting any remaining energy needs with renewable technologies by 2025;
- to have less than 10% of its staff commuting as single occupant of cars by 2017; and
- that all new developments across the Borough of Sutton will be net zero carbon by 2014.

b.iii) Croydon

The NI 186 LAA set by the Authority was to reduce CO2e per capita emissions by 9.5% in the Borough of Croydon by 2011 against a 2005 baseline of 5.5 tonnes per head of capita. The Authority is still to decide as to whether the Mayor of London's targets are appropriate and how they could be met. The

http://legacy.london.gov.uk/mayor/priorities/docs/delivering_london_energy_future_assembly_and_functional_body_draft_february_2010.pdf

Authority has adopted the Merton Rule which requires new developments to offset 10% of predicted carbon emissions through in situ renewable technology.

b.iv) Merton

Merton Council has set short term goals for reducing CO2e emissions. Using NI 186, Merton Council aimed to reduce emissions by 11% by 2010/11 from a 2006/7 baseline of 5.0 tonnes per head of capita. In addition to this, there is a community plan which sets a target for a 15% reduction by 2015. As the creators of the Merton Rule, developments in the borough have to meet the 10% renewable technology requirement.

The four boroughs have each stated their individual short term goals for per head of capita CO2e reduction, each of which aim for similar reduction percentages over similar time scales. Fully developed longer term climate change strategies are being developed by the Partnership and upon publication of these, a greater idea of each Council's aspirations for the future will be known.

MS 4.2d - *Carbon Management Plan*

MS 4.2d.i - *Carbon Strategy Concept and Scope of the Plan*

[redacted]

The Contractor will follow a five step carbon methodology based on a Carbon Trust methodology (and Carbon Trust Standard for carbon reporting) as set out in Figure 6 below:

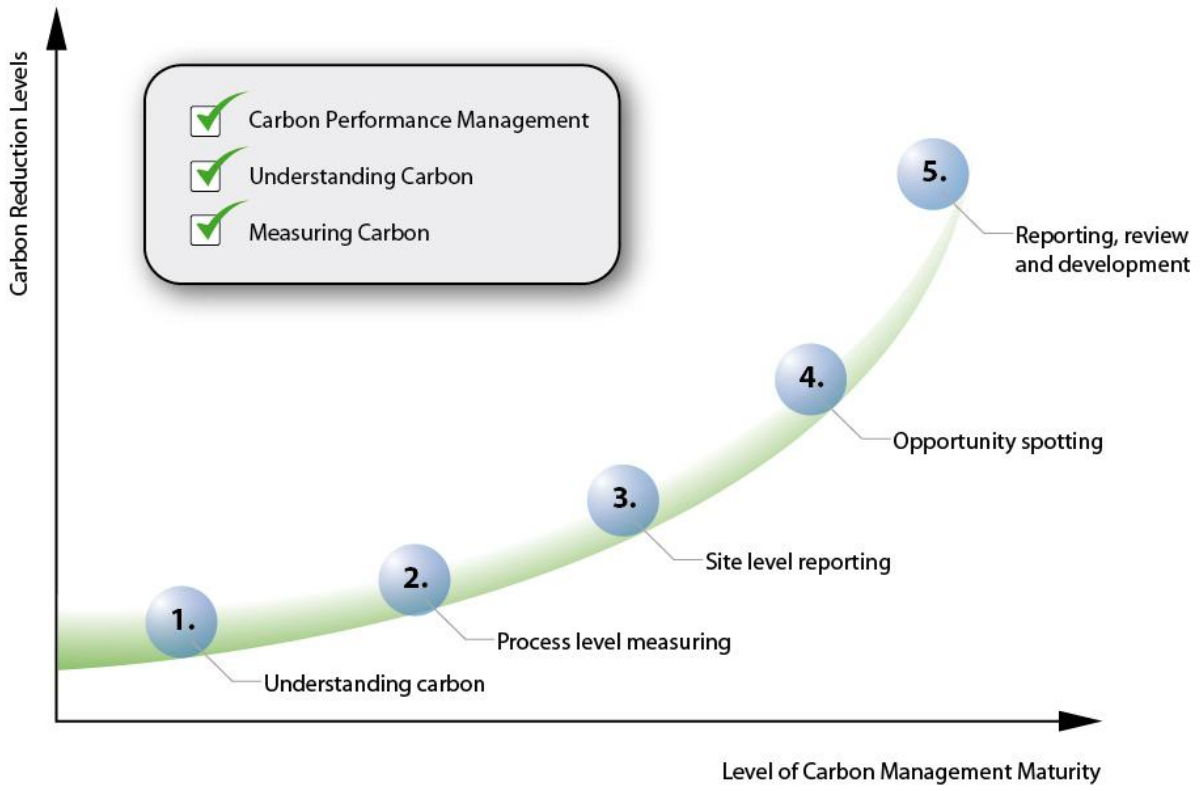

Figure 6: 5 step process for Carbon Management

15. *Understanding carbon*

This involves ensuring that the project team fully understand the issues and impacts of carbon, including the differences between biogenic and fossil derived carbon, fixed and variable carbon and scope 1, scope 2 and scope 3 emissions. This also involves ensuring that the team understand the boundaries and baseline which have been set in order to provide a year-on-year comparable CO2e emissions figure.

16. *Process level measuring*

A service wide measurement system will be used in order to record emissions, consumables consumption, Waste inputs and process outputs from each Facility within the Contract.

17. *Site level reporting*

This stage of the strategy utilises a service wide measurement system in order to capture emissions, consumables, inputs and outputs measured at process level into a single data store.

18. *Opportunity spotting*

[redacted]

[redacted]

19. *Reporting, review and development*

CO2e emissions would be verified, as required, and reported to the Authority as part of the performance monitoring. Annualised reporting of the year on year CO2e saving will be adopted and the cumulative CO2e saving in relation to the defined baseline will also be reported.

The carbon management plan will be reviewed regularly and developed as required to ensure that it is consistent with current guidance and Legislation.

A typical full management programme is shown at the bottom of this Method Statement and is based on the five step approach as set in Figure 6 above. The plan shows the annual tasks required to develop and implement a robust carbon management regime and requires agreement with the Authority.

MS 4.2d.ii - *Design Phase*

a) ***Scope***

[redacted]

b) ***Method of Measurement***

[redacted]

[redacted]ts

c) *Monitoring*

[redacted]

d) *Mitigation*

[redacted]

[redacted]

MS 4.2d.iii - *Works Period*

a) *Scope*

[redacted]

b) *Method of Measurement*

[redacted]

c) *Monitoring*

[redacted]

d) *Mitigation*

[redacted]

20. *Sub-Contractor Engagement*

[redacted]

21. *Mobile Plant & Generators*

[redacted]

[redacted]

22. *Site Portacabins*

[redacted]

[redacted]

23. *Site Planning & Logistics*

[redacted]

24. *Manufactured materials*

[redacted]

6 Department of Transport: Transport Carbon Reduction Delivery Plan, March 2010

[redacted]

25. *Unavoidable carbon*

[redacted]

MS 4.2d.iv - *Facility Operations*

a) ***Scope***

[redacted]

Figure 7: Scope 1, 2 and 3 emission boundaries

[redacted]

26. *CO2 equivalence factors*

[redacted]

27. *Contract Waste tonnage*

[redacted]

28. *Imported electricity emissions*

[redacted]

29. *Avoided emissions offsetting*

[redacted]

30. *Direct emissions offsetting*

[redacted]

7 DEFRA Guidance on how to measure your carbon footprint, September 2009 and Conversion Factors for Company Reporting updated October 2010.

[redacted]

b) *Method of Measurement*

The process level CO2e emissions would be measured continuously using suitable measuring instruments. The list below details a range of process areas where measurement shall take place and is not intended to be exhaustive:

31. *Continuous Emissions Monitoring System (CEMS)*

The Key Facility shall have a CEMS to monitor, in real time, the emissions from the stack. This would be linked to the chosen reporting system to store all of the gaseous emissions from the Facilities. The reporting system would then utilise the agreed CO2 equivalence factors to calculate the CO2e emitted from the Key Facility.

32. *Power metering*

[redacted]

33. *Process fuel consumption*

[redacted]

34. *Offices / Visitor Centre power consumption*

[redacted]

35. *Waste Composition*

[redacted]

[redacted]

c) *Monitoring*

[redacted]

[redacted]

d) *Mitigation*

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

MS 4.2d.v - *Associated Transport*

a) *Scope*

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

36. *CO2 equivalence factors*

[redacted]

37. *Vehicle Fuel*

[redacted]

b) *Method of Measurement*

The process level CO2e emissions would be measured continuously using suitable measuring instruments.

[redacted]

[redacted]

c) *Monitoring*

[redacted]

d) *Mitigation*

[redacted]

[redacted]

MS 4.2d.vi - *Reporting method*

The Contractor proposes using a recognised reporting method such as Entreprizes pour L'Environnment (EpE) or PAS2050 (Carbon Trust and BSI methodology) or ISO14064 (ISO Standard) models for reporting under the GHG guidelines.

A schematic of the summary page of the EpE carbon reporting model is shown in Figure 8 below:

8 SAFED Driver benefits, Department of Transport

EMISSIONS SYNTHESIS

COLOUR CODE:

Direst Emissions
Indirect Emissions
Avoided Emissions

Source	Gross Direct Emissions *t CO2 eq*	Net Direct Emissions *t CO2 eq*
Permanent combustion facility	0	0
Operated transport	0	0
Landfill	0	0
Incinerators	0	0
Waste water treatments	0	0
Total direct emissions (except wastewater)	0	0
Emissions related to the use of electricity or thermal energy	0	0
Indirect emissions related to transport	0	0
Total indirect emissions	0	0
TOTAL	**0**	**0**

Beware: for incineration, the calculation could have been made without a prior calculation of the gross emissions before, according to available data. As a consequence, every analysis or comparison of gross and net emissions should be done carefully.

Source	Total avoided emissions *t CO2 eq*
Energy recovery from the produced biogas	0
Energy production from incineration	0
Recovery of incineration by-products	0
Alternative fuels	0
Sorting and recycling	0
Total avoided emissions	0

Avoided emissions shouldn't be deduced from the total of direct/indirect emissions calculated above.

Figure 8: Extract from the EpE model

[redacted]

[redacted]

Figure 9: Verification process

MS 4.2e - *Benchmarking and Targets*

a) *Benchmarking*

[redacted]

b) *Setting Targets*

[redacted]

[redacted]

MS 4.2f - *National Performance Indicators*

[redacted]

MS 4.2g - *Demonstrating Continuous Improvement*

a) *Approach to Continuous Improvement*

[redacted]

[redacted]

b) *Identifying potential improvements*

[redacted]

c) *Implementing changes*

[redacted]

38. Options with no associated monetary cost

[redacted]

39. Options with an associated monetary cost

[redacted]

[redacted]

MS 4.2h - *Conclusion*

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]