

Norfolk Waste Management PFI Project Clarification Points
Provided 11 June 2008 and Incorporating Response 17 June 2008

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Technical

4. **Table 1.1 (in the OBC) shows a recycling rate of 51%. Please provide a break down for this, i.e. clarify what contribution comes from recycling/composting material prior to treatment by reference project and what contribution comes from recycling of residual waste at the reference project? The reference project mass flows appear to show 50% recycling prior to residual waste treatment – is this correct?**

Please find below the tonnage recycling breakdown and associated percentages for 2020 from the Waste Flow and Cost Model.

Household Waste Arisings = 457,496 tonnes

WCA Recycling / Composting = 192,264 tonnes (42.0%)

Contract A Recycling / Composting = 24,000 tonnes (5.2%)

Contract B Recycling / Composting = 17,598 tonnes (3.8%)

Total Recycling / Composting = 233,862 tonnes (51%)

5. **Please clarify what materials (and their %'s) are recovered from residual waste treatment and counted in the recycling/composting figures?**

The materials recovered are:

Ferrous	2.3%
Non-Ferrous metals	0.5%
Mixed plastics	4.1%
PE/PP	4.4%
Paper	3.9%
Total	15.2%

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- 10. Please provide a reference facility list for the residual waste project – list to be based on facilities (at a single site) that treat the tonnage of waste proposed, configured as proposed and that achieve 85% annual operational availability.**

The proposed reference facility is based broadly on the project soon to be closed for Norfolk Contract A. Whilst there are no such facilities currently operating in the UK of similar configuration and tonnage, the technical feasibility report included in Appendix G of the Outline Business Case examines the technical solution being offered for Contract A, and concludes that with such technology operating elsewhere in Europe of the same configuration, and noting the modular nature of the technology, the solution is equally appropriate for Contract B as for Contract A. Suitable reference plants that all incorporate the specific type of dry anaerobic digesters operating at suitable operational levels on similar waste streams are summarised in the table below.

Location	Company	Tonnage	Waste stream
Bourg – en – Bresse, France (in construction)	Organom	90,000 tpa 55,000 tpa AD	Mixed waste and green waste
Alicante, Spain	Ute Planta Residuous Alicante	180,000tpa 30,000 tpa AD	Mixed waste
Vitoria, Spain	Biocompost de Alava Ute	120,000tpa 20,000 tpa AD	Mixed waste
Münster, Germany	Remondis, GmBH &Co. KG	80,000 tpa 24,000 tpa AD	Residual waste and Industrial
Hille (MBA Pohlsche Heide)	AML-Immobilien GmBH	100,000 tpa 38,000 tpa AD	Residual waste
Kaiserslautern, Germany	Zweckverband Abfallwirtschaft Kaiserslautern ZAK	25,000 tpa 20,000 tpa AD	Residual waste
Bassum, Germany	Abfallwirtschaftsgesellschaft mBH (AWG)	105,000 tpa, 13,500 tpa AD	Residual waste

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- 11. Please provide evidence that the materials proposed to be recovered (mixed plastics, mixed paper, CLO, sand/grit) from residual waste treatment have an existing market outlet. What is the quality of these recyclable materials?**

The importance of existing markets is not overstated as the income streams for outputs is not overstated. Experiences in Norfolk from kerbside collections and MRF operations has established that with the exception of CLO markets for these materials are buoyant, but nonetheless conservative assumptions have still been made for income. The quality of the materials is established by comparison to existing Stadler plants in Europe which achieve a high quality product suitable for market. The market for CLO, considering the quarry restoration potential alone where 18m m³ of airspace is generated each year in Norfolk alone, is yet to be determined precisely as each end use will be considered on a case by case basis by the Environment Agency.

- 12. Please provide evidence that the Environment Agency has authorised (or have indicated that they are prepared to authorise) the use of CLO as proposed.**

The Environment Agency will not provide such authorisations until the product from an individual plant can be tested.

- 13. Please provide what evidence there is for the reduction in BMW to 15% assumed for the residual waste treatment. Has this performance level been accepted by the EA?**

This is a conservative figure based on LOI tests on material similar to that generated by the reference project, information that was provided by a bidder as part of Contract A. The Environment Agency will not assess performance until material is generated from a specific plant once it is operational.

- 14. Has there been a study of the CHP potential for the project? Can we have sight of the report?**

The County Council has purchased a site that facilitates CHP. However, due to the options appraisal indicating an MBT with AD solution being preferable, a detailed feasibility study for CHP which would determine the parameters of the heat off takers (including energy requirements, seasonality of demand, etc) has not been undertaken. Synergies with potential off takers at the adjacent power station and paper mill have already been recognised by potential bidders some of whom have already had discussion with potential off takers. The County Council has also been had discussions with other parties.

- 15. We note potential for 2 heat off-takers – prison and paper mill. What is the potential heat demand from these off-takers? What has been assumed in the EfW cost model?**

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The County Council has purchased a site that facilitates CHP. The County Council has not undertaken a detailed feasibility assessment of the potential off takers of any heat, which for clarity do not include a prison as is the case in Staffordshire. The cost model for EfW makes assumption of a 6MW heat rating for the CHP aspect. The model assumes a 3000 hour annual demand to take into account seasonality of the worst case (domestic style supply) resulting in 18,000MWh and a revenue of £20/MWh.

- 16.WRATE analysis – please provide a breakdown of the GWP figure showing contribution from recyclates (mixed paper, plastics, mixed plastics, ferrous and non-ferrous) and residual waste treatment.**

The attached excel spreadsheet provides the GWP figures.

- 17.Has the existing WRATE analysis been the subject of a peer review (e.g. by the EA?). If not, please provide the WRATE input scenarios (e-files) for the original as well as the revised runs (see below).**

The Environment Agency has not reviewed the Wrate analysis but for reassurance this part of the process was completed by Enviros. The attached .lca file provides the input scenarios requested.

- 18.Please re-run the WRATE analysis based on the revised assumptions noted in the Table below.**

The Wrate analysis will not be affected by most of the revised assumptions in the table below which are financial in nature, where Wrate assesses the environmental burden of differing solutions in isolation from the associated costs. With regards to CLO Wrate is neutral on whether CLO goes to landfill or is used as it looks at the BMW content regardless of the end use. Consequently the Wrate analysis has not been re-run.

- 19.There are a number of anomalies in the cost/mass flow model as noted in the table below. Please re-run the analysis based on the changes noted and provide a NPV for the 2 (MBT, EfW) cases.**

The responses below hopefully provide reassurance that these are not anomalies but assumptions that reflect market positions.

Parameter	MBT Assumption	EfW Assumption	Comment/Suggestion
Planning Cost	£1,000,000	£1,500,000	What evidence is there that planning /PPC costs for the plants will be different. Suggest you model with the same cost. Industry experience notes that obtaining planning permission for an EfW is generally more difficult than

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			a non-EfW solution. The cost differential offered here is based on costs submitted for other procurement projects which appropriately reflects the planning risks associated with each of the technologies in the model.
Power/heat off-take cost	£2,000,000	£4,000,000	<p>Does not appear to be cost-effective to build for CHP – suggest you model EfW as electric only.</p> <p>Some of the difference arises out of the differing scale of the two operations to create electricity from different means ie steam versus gas. The capex is only one consideration as additional capex here can reap dividends in the revenue particularly where ROCS come in to play and large volumes of third party income can be realised. However, a different Wrate conclusion would still not be reached on the preferred option as a result.</p>
NNDR cost	£300,000	£900,000	<p>What evidence for the difference? Suggest you equalise.</p> <p>Given the technology specific nature of valuation for NNDR we do not believe it prudent to equalise the NNDR assumption. This is based on Contract A experience and advisors experiences on other projects.</p>
3rd party electric revenue	-£5.90/t (eq. 2.3 p/kwh)	-£17.00/t (eq. 3.4 p/kwh)	<p>Why different – suggest you equalise.</p> <p>MBT / AD generates less electricity per given tonnage than EfW. It should be noted that ROCS goes some way to removing this difference in overall terms but the difference remains at the</p>

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			brown power only income for electricity per tonne.
3rd party heat revenue		-£2.00/t	Model electric only case and adjust power output (upwards) as necessary. As this leaves open the prospect of ROCS income for EfW which in the round would be beneficial it is felt reasonable to retain this element of the model.
ROC income	-£15.67/t (eq. 6 p/kwh)		With this value it is assumed that the income from power will be 8.3 p/kwh for the duration of the project. This seems overly optimistic. Suggest that the ROC benefit be limited to a 12 year operational period (i.e. ROC ends 2027) It is still not clear what will happen to ROCS after 2027. However to allow beneficial projects to continue or flourish whilst ROCS may not be available in their current form throughout the life of the contract, it is viewed that an equal or similar economic driver will continue to apply. Whilst the driver for the ROC in encouraging emerging technologies may expire, the onus on reducing dependency on fossil fuel and reduction in carbon footprint will continue such that renewable sources of energy are likely to continue to be encouraged and incentivized.
BA metals income		-£100/t	Why so high – does it include non-ferrous recovery? This was to test the sensitivity regarding recycle income, and its effect on which option offers

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			the best value for money. £100/t was assumed on the basis that non-ferrous metals may be extracted.
Power output	~ 40,000 MWh/a (range – 15,000 to 44,000 MWh/s)		<p>This is at the top end of recovery. Suggest you model a mid range as the base case.</p> <p>The MWh/a is not an assumed value, but rather a product of the parameters detailed in the technical feasibility report and referenced in the model. The income associated with this is referenced to other bids where income is guaranteed and may therefore be adjudged to be conservative already. This should therefore provide the reassurance that the power output and consequently third party revenue is not overstated.</p>
CLO/sand & minerals	Assumed to be placed in market.		<p>Suggest as a prudent approach you model with 100% going to landfill for the base case.</p> <p>This scenario has already been modelled as part of the sensitivity analysis of the base case and as such it is not felt appropriate for this to replace the base case. See answer to Question 27.</p>
Mixed paper, plastics and inerts	Assumed to be placed in market		<p>Suggest as a prudent approach you model with 100% going to landfill for the base case.</p> <p>It is not viewed to be appropriate for all material outputs to be assumed to be destined for landfill as the base case where markets are evident for these materials and no outlandish assumptions for income from these materials have been incorporated in the model.</p>

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- 20. The OBC recognises the likely need for an environmental permit for the process. Can you provide details on how risks associated with waste permitting, in particular the risks around securing appropriate outlets for their compost like outputs (CLO), have been taken into account? [In relation to CLO, I would draw your attention to the Environment Agency's published position statement titled: 'Compost Like outputs from Mechanical Biological Treatment (MBT) of Mixed Source Municipal Wastes': www.environment-agency.gov.uk/commondata/acrobat/mbt_2010727.pdf].**

The process for Contract A is already at a draft permit stage for a similar solution. This provides great reassurance for the reference project and shows that a permit is not predicated upon securing outlets for CLO. Consequently the CLO issue is not a licensing risk for the main facility but a commercial risk relating to the approval of process outputs for particular uses / sites. The Environment Agency will not approve uses until the output from a facility has been assessed. Consequently the County Council's position is that this should be a risk born by the bidder proposing the solution.

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- 24. The OBC mentions that contract A is nearing financial close. Please confirm when you expect financial close to occur and also please provide a copy of the current draft contract including all key schedules and in particular the Output Specification and Payment Mechanism (and the Environment Agency's views on the proposed use of CLO).**

The current expectation is that Financial Close will occur in August 2008. As some key parts of the Project Agreement, including the Specification and Paymech, are still subject to negotiation and furthermore that full due diligence by the funders technical advisors is yet to take place it is felt that it is better to wait until closer to Financial Close before providing copies of these documents if required.

The Environment Agency will not give a view on its likelihood of approving CLO for any use, or not, until it has assessed the precise nature of the material coming out of the process on a facility by facility basis and on each proposed end use / site / market.

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