

THE FUTURE OF SOLID WASTE DISPOSAL IN GUERNSEY

REPORT OF THE PANEL OF INQUIRY

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**Government Business Unit
25 January 2005**

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CHAIRMAN'S INTRODUCTION

This introduction provides an overview of the terms of reference, tasks performed and information gathered by the Panel of Inquiry ("Panel"), which was formed following a Resolution of the States of Deliberation of the Island of Guernsey ("States") dated 1st July 2004:

"After consideration of the Requête, dated the 28th May, 2004, signed by Deputy S J Ogier and seven other Members of the States:-

- 1) To direct the Policy Council to establish an independent panel of inquiry, comprising five suitably qualified and experienced members, whose mandate shall be:
 - a. to inquire in such a manner as it deems appropriate into the future of solid waste disposal in Guernsey, which inquiry shall include, but not be limited to, the Resolutions of the States on Billet d'Etat XX of 2003;*
 - b. to receive representations from interested parties; and*
 - c. to report its findings to the Policy Council and the Environment Department as soon as possible, but not later than 31st December 2004.**
- 2) To direct the Environment Department, within two months of its receipt to submit the panel's report and that Department's comments thereon to the Policy Council for publication in a Billet d'État together with such recommendations as that Department may consider appropriate.*
- 3) To direct the Policy Council to meet the cost of the independent inquiry and to provide such secretarial and other support as may be necessary.*
- 4) To direct the Environment Department to defer contractually committing the States pursuant to Resolution 4 on Billet d'État No. XX of 2003 (by which the Department, either directly or through its special purpose company, was authorised, following completion of the Initial Services period, to contract with Lurgi for the construction of an energy from waste facility) until that review and report has been considered by the States."*

Membership of the Panel was chosen by the Policy Council and comprises specialists from the waste industry: Dr Marian Kelly of the Environmental Services Association¹, Mr Steve Lee, Chief Executive of the Chartered Institution of Wastes Management², and Mr David Purchon, a Chartered Environmental Health Practitioner, nominated by the Chartered Institute of Environmental Health³, together with Richard Eales, a Director of the National Audit Office⁴, and myself, as Chairman. The Panel is completely independent.

We set ourselves the following terms of reference:-

- 1) Review whether mass burn technology in the form of the proposed on-island energy from waste plant is the most appropriate waste management solution for Guernsey's needs.
- 2) Review whether there are practicable alternatives to on-island mass burn technology, which could cost-effectively meet Guernsey's needs. Options to be investigated may include waste reduction and recycling initiatives, off-island solutions, alternative technologies and interim solutions or a combination of these.
- 3) If on-island mass burn technology proves to be the only practicable option, review whether the proposed energy from waste plant at Longue Hougue is of an appropriate scale and whether Longue Hougue is the best location for the plant.
- 4) Review the contract procedures followed in the decision to select Lurgi as the preferred tenderer for the contract.
- 5) The Panel may vary its terms of reference in the light of the evidence it receives during the course of the inquiry.⁵

We approached our task by following a pre-determined analysis of the issues, which we established at an early stage of our task, as set out at Appendix 1.

There follows an Executive Summary, a section setting out the Panel's conclusions and recommendations, four main Parts of the Report dealing with each of the areas identified in the issue analysis, and supporting Appendices. The report is designed to be balanced, fair and easy to read.

In the interests of openness we have published the majority of representations received and this Report on our website at www.gov.gg. In some cases industry presentations have not been included for reasons of commercial confidentiality.

¹ www.esauk.org

² www.ciwm.co.uk

³ www.cieh.org

⁴ www.nao.gov.uk

⁵ The Panel did not find it necessary to vary its terms of reference.

During the period between late August 2004 and January 2005 the full Panel met on 12 occasions and hosted one public meeting. Members of the Panel visited incineration, landfill, composting, waste collection, recycling and other sites in Guernsey, Jersey, the Isle of Man, France and England and held more than 20 meetings with representatives of a variety of organisations. The Panel published well over 200 submissions from members of the public, organisations and States Members on its website and received a considerable amount of further information, some of it commercially sensitive, from more than 30 government, commercial and other organisations. Full details are at Appendix 2.

Given the complexity of the issues that beset Guernsey with respect to its present and future management of solid wastes, the Panel has been faced with a formidable task in the time available. I believe the selection of our members was inspired. It has been a privilege to work with each of them. Our conclusions and recommendations were reached after careful consideration and are agreed by us all.

We have been greatly assisted by George Marsh, Head of Government Business, his Executive Assistant Louise Le Pelley and other members of his staff, for which I record our grateful thanks. I also extend our thanks to the very many people and organisations who have so kindly assisted us in our work.

Roger Dadd
Chairman
25 January 2005

EXECUTIVE SUMMARY

1. In 1998 Guernsey's Board of Administration decided upon the procurement of an energy from waste incinerator as the most appropriate means of dealing with the Island's solid disposable waste. The States agreed in principle to such a plant, at a projected cost of £14.5 million⁶, after consideration of a report from the Advisory and Finance Committee on the Waste Strategy Assessment. Over the subsequent project definition and procurement stages the cost of the project rose to a high point of £102 million in 2003 when tenders were first received⁷. Following post-tender negotiations and changes in the proposed design of the plant, Lurgi was selected to design, build and operate such a plant for two years, at an agreed price of £80.3 million, of which £7.5 million is for the operational phase.
2. During the procurement phase, a narrow set of contractual parameters was decided upon for the design, build and initial operation of the incinerator for a two year period. As a consequence, the professional waste management industry was presented with a closely defined solution to the problem. The more usual approach would have been to present the industry with the problems of managing the Island's waste arisings and to invite proposed solutions for all aspects of an overall waste management plan.
3. More generally, we should like to see a much closer partnership between the public and private sectors in the management of the Island's waste. We consider that the public sector should only be involved in the operation of waste management activities if those activities have been independently market tested and public sector operation has been shown to be at least as efficient as that of the private sector.
4. There can be no doubt that officers have been diligent in seeking to implement the agreed policy. They have painstakingly pursued the option of a mass burn incinerator on the basis of its operation by the supplier's nominated contractor for an initial period of two years and subsequent handover to an (as yet unspecified) operator. However, this narrow focus on one solution has had a number of unfortunate consequences. Waste minimisation and recycling initiatives have been put on hold, alternative solutions have not been given due consideration and alternative contractual options have not been fully explored. Mont Cuet, the one remaining landfill site, has rapidly filled up when greater action might have been taken some years ago to conserve its capacity.
5. Although the decision in the late 1990s to seek to procure an energy from waste plant may have been right at the time, we believe that the proposed plant is no longer appropriate for Guernsey's needs. **We therefore consider that Guernsey should not proceed with the contract for the proposed energy from waste plant at Longue Hogue.**

⁶ Billet d'Etat XII 1998, Wednesday, 24th June 1998, p667, para 4.4.3

⁷ Billet d'Etat XX 2003, Wednesday, 24th September 2003, p1798, para 8.4

6. We conclude that:

- There are too many disadvantages and uncertainties in proceeding with the proposed energy from waste plant to make it the right choice for Guernsey (Part 1 of the Report).
- Much more should be done to encourage the reduction, re-use and recycling of waste. This would help to reduce the disposal problem but it would not solve it (Part 2 of the Report).
- Promising alternatives to the proposed plant should be explored which may provide a solution in the longer term (Part 3 of the Report).
- An interim solution will be needed until a long term solution becomes available (Part 4 of the Report).

There are too many disadvantages and uncertainties to justify proceeding with the proposed plant

7. We recognise that there would be some advantages in going ahead with the proposed plant. The contract is ready to be signed now and the plant could be operational within two years. The plant would be capable of dealing with Guernsey's waste stream. It is based on tried and tested technology. It has been designed to meet current best practice as regards emission standards and there is no appreciable risk to public health. Amounts of residual waste would be low.

8. However, we consider that the disadvantages and uncertainties associated with the proposed plant considerably outweigh the benefits of proceeding. Five main factors have led us to this conclusion:

(1) We have considerable doubts about the waste forecasts on which the proposed plant is based.

We fear that the capacity of the proposed plant is too large and that there will not be sufficient waste to keep it operating efficiently. The growth assumptions in the waste forecasts are doubtful and the impact of a three-fold increase in the gate fee from £33 to around £100 per tonne has not been included. It seems likely that a big increase in the gate fee will result in a large reduction in commercial waste for disposal. Better waste minimisation and recycling measures are also likely to reduce waste for disposal even further. The less waste there is for the incinerator the more the economic viability of the plant must be called into question.

(2) The visual impact of the proposed plant would be huge.

The proposed plant would be very unsightly for islanders and visitors alike. There is no such thing as a small mass burn incinerator and it is difficult to

ameliorate or screen the visual impact except at large cost. Condensing water vapour from the plume would also be highly visible in certain weather conditions. Although there would be no health risk from the plume, it would be an unattractive feature.

(3) The risk of the plant failing has been increased by the simplified design.

The single stream design is risky because there is no alternative stream available during unintended outages. To save costs bunker capacity has been reduced from 15 days to 5 days, thereby reducing the time available to store waste whenever the plant is out of action. There is also no backup in the event of failure and waste would have to be baled and stored until the problem was resolved.

(4) The proposed plant is considerably more expensive than similar plants elsewhere.

The proposed plant is very expensive and has risen way above the original estimates. The cost of building incinerators has increased significantly in recent years as the supply market has consolidated. The proposed plant is also more costly than plants elsewhere for a number of largely unavoidable reasons: because of the higher building costs in Guernsey; because of the particular civil engineering requirements of Longue Hougue being a land reclamation site; and because of the flue gas treatment designed to meet the latest emission standards.

(5) The contract was too tightly specified too early in the contract process and it is not clear that the resulting draft contract represents best value for money.

The market was presented with just one procurement option: an unusual “design, build and operate for two years” contract. Other more common types of contract such as design, build and operate over 25 years were ruled out without proper testing or consideration. The chosen procurement route involves negotiating two separate contracts: one for the design, build and operation of the plant for two years; and another later contract to cover the operation of the plant for its remaining life. This is likely to be a much more expensive approach than agreeing one contract to cover the design, build and operation of the plant over its whole life. There was also a lack of competitive pressure in the tendering process: just two bids were received, only one of which was compliant. We therefore have no assurance that the draft contract is good value for money even though a sensible draft contract has been agreed with good safeguards.

Much more should be done to encourage the reduction, re-use and recycling of waste

9. It is accepted best practice to reduce the amount of waste requiring disposal by means of reduction, re-use and recycling. We consider that there are a number of actions that could be taken to improve the uptake of such measures on the island. Guernsey should without delay set itself challenging targets for the minimisation and recycling of waste. Landfill prices at Mont Cuet should be substantially increased as part of a pre-planned, and advertised programme. Materials which have alternative recycling or recovery outlets, such as inert construction waste, soil, metals, glass, paper, cardboard and textiles, should be banned from Mont Cuet.
10. A number of initiatives should be also taken to encourage the minimisation and recycling of waste:
 - Measures should be introduced to engage public support for waste prevention and recycling.
 - Commercial recycling organisations should be provided with more investment certainty - on planning, licensing and the availability of sites.
 - There should be more help for the non-profit sector, including subsidies where appropriate.
 - The availability of public recycling facilities, such as bring banks and civic amenity sites, should be significantly expanded.
 - Greater use should be made of composting. Household with gardens should be encouraged to home compost. A green waste composting plant to meet local demand should also be commissioned.
 - The household waste collection service needs to be revised to encourage the minimisation and separation of waste at source. Options for a separated kerbside collection service for all households should be assessed and an incentive-based charging system should be introduced.
 - The collection service for bulky household waste should be continued.
11. We consider that fiscal measures should only be used if increases in gate fees and other measures do not succeed in reducing waste. Possible fiscal measures used elsewhere include taxes on landfill, virgin aggregates and plastic bags. However, such measures can be costly to introduce and administer and should therefore be kept in reserve in the event that the other options do not work.

Promising alternatives to the proposed plant should be explored which may provide a solution in the longer term

12. Joining with Jersey is a possible alternative solution which needs to be considered immediately if the opportunity is not to be lost. Jersey is planning to commission its own waste disposal plant and it may be possible for Guernsey to participate in this project. Exporting waste to Jersey is legally possible. However, there are a number of risks in joining with Jersey. The cost of joining with Jersey is likely to be less than Guernsey's proposed energy from waste plant at Longue Hougue. The Panel has encouraged the governments of both Islands to commission a feasibility study from Ramboll/Babtie Fichtner, which will review the technical and financial aspects of a joint Channel Island solution. That report is expected to be available shortly.
13. There are a number of alternative technologies, such as gasification, pyrolysis and volume reduction by pre-treatment (autoclaving or mechanical and biological treatment) that are in or close to commercial operation. None are yet fully proven for Guernsey's type of waste, however. The UK's Department for Environment Food and Rural Affairs (DEFRA) is pump priming a series of demonstrator projects to evaluate alternative technologies. DEFRA's aim is to have five demonstration plants in operation by the end of 2005 and a further five by the end of 2006. If joining with Jersey proves not to be a practicable option, we consider that Guernsey should await the outcome of the demonstrator projects before finalising its own long term solution.
14. When the demonstrator projects have been evaluated - and if joining with Jersey is not practicable - Guernsey should go to the market for a long term solution to its own waste needs using an output-based specification. Such a specification would set out the objectives to be reached rather than the specific means to achieve them. Expressions of interest should be invited in respect of all viable alternative technologies as well as mass burn incineration. Multi-solution options involving more than one type of plant or technology should not be ruled out. All different forms of contracting should be permissible.
15. Exporting Guernsey's waste to EU countries appears to be legally possible but the issues are not clear cut. The opportunity exists to export waste to certain countries, particularly France and possibly Germany. The cost of exporting waste to EU countries may be less than the cost of an on-island solution. However, exporting waste as a long term strategy has risks attached.

An interim solution will be needed until a long term solution becomes available

16. Except for inert waste, landfill is not a long-term solution to Guernsey's solid waste disposal needs. Mont Cuet does not meet accepted landfill standards. On current assumptions Mont Cuet has a remaining life of only 8 years. There are no

alternative landfill sites available for non-inert waste which could meet accepted environmental health standards.

17. We consider that a minimum of five years' landfill life must be maintained at Mont Cuet until a long term solution becomes available. We estimate that, through immediate pricing, waste minimisation and recycling measures, the life of Mont Cuet could be extended by a number of years.
18. Guernsey should take immediate steps to ensure that it is in a position to export waste as a short-term interim measure should this be necessary to maintain a minimum five year life at Mont Cuet. Residual waste for possible export needs to be reduced to a minimum through waste minimisation, recycling and possibly pre-treatment measures. The risks in exporting waste are very much less as a short term measure compared with export as a long term strategy.

CONCLUSIONS AND RECOMMENDATIONS

This section details the recommendations in each Part of the Report linked to the Report's main conclusions.

Key Conclusion: Guernsey should not proceed with the contract for the proposed energy from waste plant at Longue Hougue.

Main conclusion (Part 1): Although there would be some advantages in going ahead with the proposed plant, there are too many disadvantages and uncertainties to make it the right choice for Guernsey.

Recommendation 1.1: Given the uncertainties about the impact of a substantial hike in the gate fee, a thorough assessment of likely future waste arisings needs to be carried out as soon as possible after the gate fee has been increased to not less than £100 per tonne. Whatever disposal option is ultimately chosen it is crucial that forecasts are accurate in order to determine the size of the disposal operation. The Environment Department should make use of the economic and business expertise within the Commerce and Employment Department in carrying out this work (paragraph 1.26).

Recommendation 1.2: If and when a new procurement is begun, all procurement options should be independently tested in the market to determine which is likely to provide the best value for money (paragraph 1.77).

Recommendation 1.3: More generally, there should be a much closer partnership between the public and private sectors in the management of the Island's waste. We consider that the public sector should only be involved in the operation of waste management activities if those activities have been independently market tested and public sector operation has been shown to be at least as efficient as that of the private sector (paragraph 1.79).

Main conclusion (Part 2): Much more needs to be done to encourage the reduction, re-use and recycling of waste. This would help to reduce the disposal problem but it would not solve it.

Recommendation 2.1: Appropriate short, medium and long-term targets should be identified for waste management (paragraph 2.10).

Recommendation 2.2: The gate fee at Mont Cuët should be raised as soon as possible to not less than £100 a tonne (paragraph 2.18).

Recommendation 2.3: All materials which could be recycled should be banned from Mont Cuët (paragraph 2.22).

Recommendation 2.4: The three arms of government directly involved in the disposal of solid waste (the Environment Department, the Public Services Department and the

Health and Social Services Department) must work closely together and with the commercial organisations. Government needs to build trust and establish a common sense of purpose with the private sector so that commercial recycling organisations have the investment certainty they need to be able to play a full part in the waste strategy for Guernsey (paragraph 2.35).

Recommendation 2.5: The Environment Department should be tasked to carry out an in-depth review of possible sites for recycling and other waste management facilities (paragraph 2.39).

Recommendation 2.6: Facilities should be urgently developed in suitable locations to which the public can bring a range of household wastes for re-use or recycling (paragraph 2.49).

Recommendation 2.7: The Environment Department should encourage householders with gardens to compost garden and kitchen waste, and also commission a composting facility to take green wastes collected at the civic amenity site or to meet other local demand (paragraph 2.55).

Recommendation 2.8: The States should specify the use of such composted material as an alternative to peat or soil-based composts in their own works or contracts (paragraph 2.55).

Recommendation 2.9: The options for providing a kerbside collection of source separated materials should be assessed (paragraph 2.65).

Recommendation 2.10: The collection service for bulky household waste should continue and should not be charged for (paragraph 2.66).

Main conclusion (Part 3): There are a number of promising alternatives to the proposed plant that are worth exploring and which may provide a solution in the longer term.

Recommendation 3.1: The possibility of working with Jersey should be explored immediately by the relevant authorities in the two islands if the report of Ramboll/Babtie Fichtner confirms that there are economic and environmental reasons for so doing (paragraph 3.15).

Recommendation 3.2: If joining with Jersey is not practicable, Guernsey should finalise its own long term solution for residual wastes once the outcome of the DEFRA New Technologies Demonstrator Programme is known (paragraph 3.27).

Recommendation 3.3: The search for the right long term solution for Guernsey's waste management needs should be underpinned by a thorough analysis of strategic options for waste management for the island. This would involve comparison of a number of technologies and combinations of technologies, supported by an analysis of the environmental costs and benefits of the alternatives (paragraph 3.31).

Recommendation 3.4: When Guernsey is ready to go to the market for a long term solution, expressions of interest should be invited in respect of all viable technologies. Expressions of interest should be sought in terms of an outcome based specification, ie the objectives to be reached rather than the specific means to achieve them (paragraph 3.32).

Recommendation 3.5: Multi-solution options involving more than one type of plant or technology should not be ruled out (paragraph 3.34).

Recommendation 3.6: All different forms of contracting should be permissible. To test the market thoroughly, contractors should be allowed the freedom to propose their own choice of contract structure (paragraph 3.35).

Main conclusion (Part 4): An interim solution to Guernsey's waste needs will be required until a long term solution becomes available.

Recommendation 4.1: Through pricing, waste minimisation, enforcement and other measures, Guernsey should seek to maintain a minimum of five years' landfill capacity at Mont Cuet (paragraph 4.6).

Recommendation 4.2: To maintain a minimum five year life at Mont Cuet, Guernsey should take immediate steps to ensure that it is in a position to export waste as a short term interim measure should this be necessary (paragraph 4.11).

PART 1: THE PROPOSED ENERGY FROM WASTE PLANT AT LONGUE HOUGUE

- 1.1 This Part of the Report considers the advantages and disadvantages of proceeding with the proposed energy from waste plant at Longue Hougue. **We conclude that, although there would be some advantages in going ahead with the proposed plant, there are too many disadvantages and uncertainties to make it the right choice for Guernsey.**

Proceeding with the proposed energy from waste plant would have some advantages

- 1.2 The main advantage of pressing ahead with the proposed plant is that a great deal of time, money and effort has already been invested in the proposal and the project is “ready to go”. Following a decision to proceed with the agreed contract, the plant could be commissioned and running within two years (2007).
- 1.3 Some £5 million of expenditure⁸ has been irrevocably committed to plant design and site preparation and this would be lost if the decision were to be taken not to proceed. The capital investment in the Longue Hougue reclamation site itself would not be wasted, however, as the site would be suitable for any alternative development sanctioned in accordance with the original plans for the site. The land currently being reclaimed from the sea is a valuable asset because of the strong and persistent demand for industrial and commercial sites and premises on the island. The originally perceived need to cluster “bad neighbour” industrial and trade land uses away from residential and visitor land uses remains. From such a “zoning” perspective the purpose and location of the plant are sound.
- 1.4 A second advantage of going ahead with the proposal is that the Panel is satisfied that, subject to sufficient waste arising for final disposal, the plant offered “will do the job”. The plant should be capable of dealing with all combustible waste generated on the island. Island communities such as the Isle of Man and the Shetland Islands have invested in energy from waste technology for similar reasons to those promoted over the years by the authorities in Guernsey.
- 1.5 We are also satisfied that the plant should give the waste volume reductions projected (90 per cent) and that the remaining bottom ash/clinker should be reasonably suitable for disposal to Longue Hougue or, preferably, for use in construction on island. Relatively small quantities of flue gas treatment residues will need to be exported for disposal as hazardous wastes. It would be unreasonable for a small island community to be expected to deal with every specialist aspect of hazardous waste disposal.

⁸ as estimated by Ramboll, the Environment Department’s engineering consultants.

- 1.6 The plant is based on tried and tested technology. However, our confidence in the technology does not make the plant proof against failure and operational difficulties during its lifetime. Lurgi has guaranteed that, for the initial two years of operation, it will achieve availability of 88.5 per cent and meet agreed performance standards. We note that down time and outage days for annual repairs and maintenance have been taken into account in the availability standards.
- 1.7 A third advantage of pressing on with the proposal is that the plant has been designed to meet current and foreseeable best practice as regards air quality emission standards and that there would be no perceptible risk to public health from its operation. The proposed 60 metre high chimney stack will disperse the low levels of air pollutants not removed by the flue gas clean up system (Figure 1). The plant is designed to control the noise, odour and dust inevitably associated with waste handling. The health and safety of staff and visitors to the site has also been considered in consultation with specialist officers. We also draw attention to a review of the environmental and health effects of waste management published in May 2004 by DEFRA⁹. This concluded that there was no evidence to suggest that the current generation of municipal solid waste incinerators would be likely to have an adverse effect on human health. A study in 2000 by the Isle of Man reached similar conclusions.¹⁰

⁹ Review of Environmental and Health Effects of Waste Management (Appendix 7 to Billet XI 2004)

¹⁰ Report to Tynwald on the Health Implications of Human Exposure to Dioxins and other Toxic Chemical Components

Figure 1: Compliance with Criteria, Thresholds and Tolerance Limits set by the Environmental Impact Assessment

Air Quality		
Abatement Technology and sufficient effective stack height should be used to ensure that emissions meet standards set in the following guidance and legislation:		
The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, January 2000		
EC Directive 85/203/EEC		
EC Directive 1999/30/EC		
World Health Organisation Guidelines (revised)		
The current most stringent values from these various sources are as follows:		
NO2	1 hour mean	105 ppb (not to be exceeded more than 18 times per calendar year)
	Annual mean	21 ppb
	Calendar mean 98%ile of hourly means	70.6 ppb
	Calendar mean 50%ile of hourly means	26.2 ppm
SO2	24 hour mean	47 ppb
	Annual mean	8 ppb
	10 minute mean	175 ppb
Benzene	Running annual mean	5 $\mu\text{g m}^{-3}$
PM10	Daily mean	50 $\mu\text{g m}^{-3}$ (not to be exceeded more than 35 times per calendar year)
	Annual mean	40 $\mu\text{g m}^{-3}$
CO	Running 8 hour mean	10 ppm
	1 hour mean	25 ppm
	30 minute mean	50 ppm
	15 minute mean	90 ppm

Source: Former Board of Administration Compliance Document ref 0210BA9.

However, there are too many disadvantages and uncertainties to make the proposed energy from waste plant the right choice for Guernsey

1.8 We have concluded that Guernsey should not go ahead with the proposed energy from waste plant at Longue Hougue on five main counts:

- (i) We have considerable doubts about the waste forecasts on which the proposed plant is based.
- (ii) The visual impact of the proposed plant would be huge.
- (iii) The risk of the plant failing has been increased by the simplified design.
- (iv) The proposed plant is considerably more expensive than similar plants elsewhere.
- (v) The contract was too tightly specified too early in the contract process and it is not clear that the resulting draft contract represents best value for money.

(i) We have considerable doubts about the waste forecasts on which the proposed plant is based

1.9 The proposed energy from waste plant has been specified to have an operating capacity of between 50,000 and 70,000 tonnes per annum. The capacity of the plant was based on an assessment in 2001 by the consultants Ramboll for the former Board of Administration. Using data from the year 2000, Ramboll estimated that total waste arisings were then 73,000 tonnes per annum, of which 48,000 tonnes per annum were incinerable. Ramboll forecast that incinerable waste arisings would rise to 50,000 tonnes per annum by the time the energy from waste plant was commissioned in 2005.

1.10 The calorific value of the waste was estimated by Ramboll at 11 Mega Joules (MJ) per kilogram. We have received indications that this may be at the higher end of the scale and a more conservative estimate of between 9 and 10 MJ per kilogram may be more appropriate. This would accord more closely with the calorific value for waste being incinerated in Jersey. We also note that the calorific value for 2004 for the 56,000 tonne capacity North East Lines Cyclerval plant was 8.5 MJ per kilogram and that the plant had been designed for a higher calorific value.

1.11 Ramboll also forecast the likely growth in waste arisings over the life of the proposed plant. Ramboll's estimates were based on:

- an average increase in the Guernsey population of 0.27 per cent per year from 2000 to 2025;

- economic growth of between 1 and 3 per cent;
- initiatives to encourage recycling and waste segregation which would be likely to counter some of the increased waste arisings from economic growth.

1.12 Taking these factors into account, Ramboll predicted an average increase in the waste arisings of approximately 1.3 per cent per annum over the plant's lifetime. Ramboll concluded that the plant would need to be able to deal with a maximum of 65,000 tonnes per annum of incinerable waste towards the end of its life. To this figure needed to be added quantities of sewage sludge from a proposed new sewage treatment plant. These were expected to be 4,400 tonnes per year at a dried solids content of 25 per cent or 1,375 tonnes per year at a dried solids content of 80 per cent. Based on these figures the Board of Administration decided that the design of the plant should allow for future waste arisings increasing to 70,000 tonnes per annum towards the end of the plant's life.

The growth assumptions in the waste forecasts are doubtful

1.13 In September 2004 the Commerce & Employment Department carried out an economic impact assessment of the proposed energy from waste plant, which cast doubt on a number of the assumptions used by Ramboll in assessing the design capacity of the plant. Although the Environment Department told us that they considered the assessment to be flawed, we found the economic impact assessment to be well-argued. We consider that it throws new light on a complex subject and should not be lightly discounted.

the link between waste and economic growth

1.14 The economic impact assessment considered that Ramboll had failed to take account of the changing nature of Guernsey commerce and industry and the impact that this would have on the waste stream. Over the period to 2025, some of the industries which generate large amounts of waste - such as construction, horticulture, manufacturing and tourism - are not expected to grow and could actually decline in volume terms. By contrast, the types of industries and economic sectors that are expected to take growth forward in the Guernsey economy – such as financial services, management and supply businesses – are expected to generate relatively little additional waste. The economic impact assessment concluded that Ramboll's assumption that waste requiring final disposal would increase by 1.3 per cent a year was incorrect. We also note that, in most European Union countries, the aim is to de-couple waste arisings from economic growth, although experience shows that this is difficult to achieve. The Environment Department considered, however, that there was no evidence that growth in waste requiring final disposal would differ significantly from that forecast by Ramboll.

population growth

- 1.15 The Ramboll population projections were based on the 1996 census. Ramboll predicted that Guernsey's population would rise from 60,900 in 2005 to 64,400 in 2025. The economic impact assessment used the latest government actuarial figures from the more recent 2001 census. These figures show that, compared with the Ramboll projection, the Guernsey population is expected to be lower both at the start year for the plant and in the final year of its projected operating life, rising from 59,900 in 2005 to 63,600 in 2025. The Environment Department considered that these changes would have little impact on forecast waste arisings and that, more significantly, Guernsey is now taking Alderney's waste (population 2,300). We note, however, that the export of Alderney's waste to Guernsey may be only a temporary solution, whilst Alderney considers its long-term strategy. We consider that these differences in population projections are likely to have only a marginal effect on growth forecasts of waste requiring final disposal.

The likely impact of the increased gate fee on waste production has not been included in the forecasts

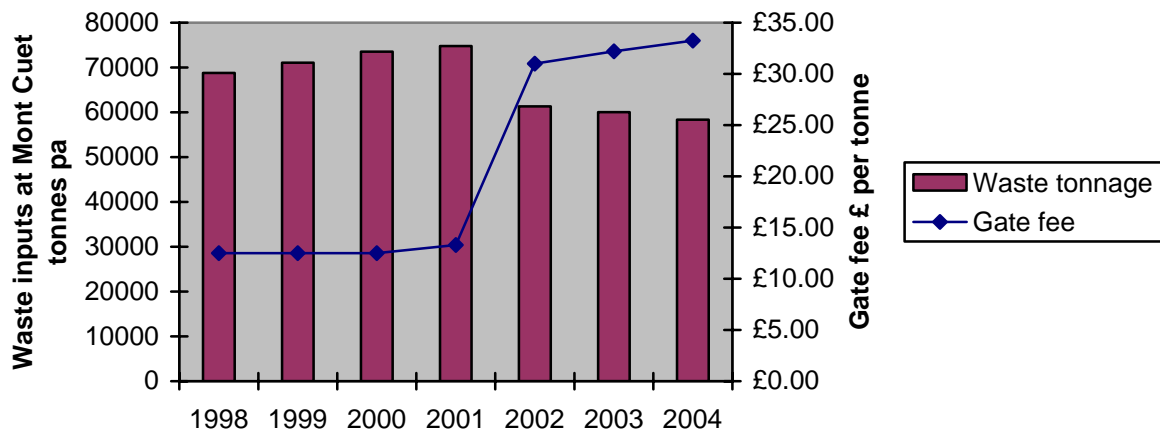
- 1.16 Ramboll's assessment in 2001 did not include any specific consideration of the likely impact of increasing the gate fee on future waste arisings. The Commerce & Employment Department economic impact assessment in 2004 considered that the proposed increase in gate fee from £33 per tonne to around £100 per tonne would focus business minds on the economics of waste disposal. Businesses would then be more likely to make decisions to minimise the cost increase by increased sorting and recycling.
- 1.17 The Environment Department told us that it did not agree that increasing the gate fee to around £100 per tonne would significantly reduce combustible waste arisings. It considered that the vast majority of waste that could be diverted from Mont Cuet by the waste generators and haulage companies had already been diverted and that the scope for further segregation was very limited. The Department felt that a greater level of recycling would be stimulated, in part, by an increase in disposal charges, but a threshold would be reached whereby the cost of further recycling would exceed the gate fee and further recycling would not be adopted.
- 1.18 Our discussions with recycling companies in Guernsey and elsewhere indicate, however, that there is considerable scope for further recycling by industry and commerce in Guernsey. A substantial increase in the waste disposal gate fee would be likely to provide a big boost to this recycling effort. We also note the position in the Isle of Man where there was a large increase in the landfill gate fee from £10 per tonne to £100 tonne¹¹ some two years before the island's new energy from waste plant opened in August 2004. This increase led to a big take-up in recycling by the commercial sector and a dramatic reduction in commercial waste going to landfill. As a result, the operator of the Isle of Man plant is

¹¹ this increase did not apply to household waste collected by the local authorities.

currently struggling to achieve its desired tonnage of combustible waste for the incinerator, although there are no current plans to import waste to make up the shortfall.

- 1.19 Figure 2 shows waste inputs at Mont Cuet from 1998 to 2004. After rising to a peak of 74,800 tonnes in 2001, there was a big drop in 2002 to 61,300 tonnes and there has been a steady decline since then. The drop in 2002 coincided with a substantial increase in the gate fee from £13.30 to £31.00.

**Figure 2: Waste inputs and gate fee at Mont Cuet
1998 to 2004**

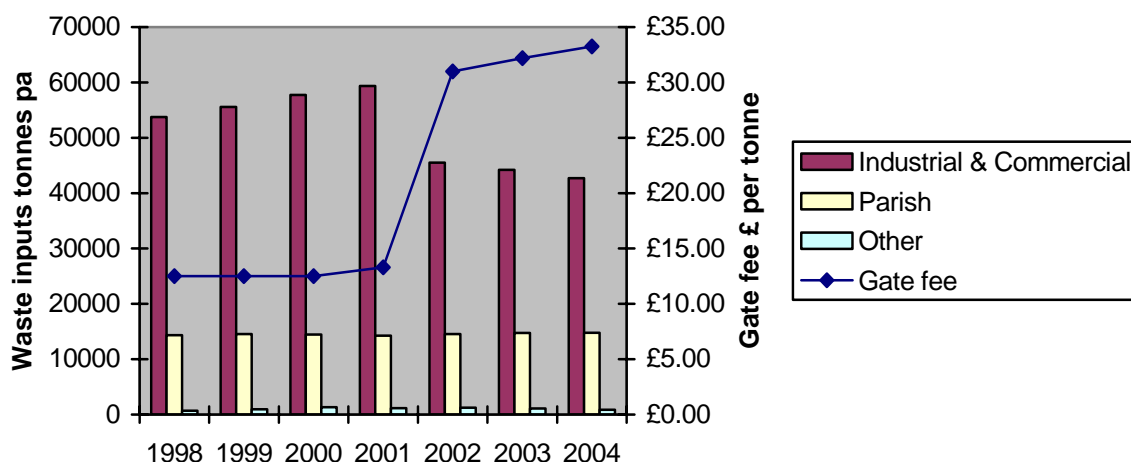


Notes: (i) 1998 and 2004 waste tonnage figures are based upon an extrapolation of 6 and 10 months of weighbridge records respectively; (ii) the gate fee shown is the standard rate for commercial hauliers.

Source: Guernsey Technical Services

- 1.20 Figure 3 shows waste entering Mont Cuet split between industrial and commercial, parish and other categories. The amount of parish waste has been fairly constant at between 14,200 and 14,800 tonnes per annum. However, the amount of industrial and commercial waste entering Mont Cuet landfill dropped by nearly 25 per cent between 2001 and 2002, from 59,400 tonnes to 45,500 tonnes, when the gate fee increased from £13.30 to £31.00. This suggests that a further increase in the gate fee to around £100 per tonne could have a similar effect on the amount of industrial and commercial waste entering Mont Cuet.

**Figure 3: Waste entering Mont Cuet by category
1998 to 2004**



Notes: (i) 1998 and 2004 waste tonnage figures are based upon an extrapolation of 6 and 10 months of weighbridge records respectively; (ii) the gate fee shown is the standard rate for commercial hauliers.

Source: Guernsey Technical Services

Better waste minimisation and recycling measures are likely to reduce waste for disposal even further

1.21 The Commerce and Employment Department economic impact assessment suggested that there is an increasing environmental awareness across sectors of the industry. The increase in gate fee should give a positive stimulus to the recycling industries. With improved services for waste collection and stimulation of the export market through the recycling companies, the commercial sector could make a significant switch away from the supply of material for an energy from waste plant and into greater sorting and recycling of waste. Much would depend on the relative economics of recycling versus incineration.

Lower waste forecasts would call into question the economic viability of the plant

1.22 The economic impact assessment concluded there might be no increase in waste arisings over the life of the proposed plant and that a plant with a capacity of 50,000 tonnes per annum might be more appropriate. The assessment also concluded that the proposed plant, with a capacity of 70,000 tonnes per annum, was oversized. This would have a number of potentially serious consequences:

- The proposed plant would be more expensive than it needs to be, although any savings from a smaller capacity plant would be relatively modest (a few million pounds on a capital cost of around £70 million).

- An energy from waste plant requires a continuous stream of waste material and is most efficient if operating near to its maximum capacity.
- A gate fee significantly higher than £100 per tonne would be required to balance operating costs and revenues (see below), which could threaten the plant's economic viability.

1.23 The Environment Department has calculated that an initial gate fee of £102 per tonne (and then rising by 4 per cent each year) would be needed for the plant to break even over its proposed 25 year life. The financial model used to calculate the gate fee makes the following assumptions:

- capital cost of £74 million, financed by borrowing from the Treasury;
- Treasury loan rate of 4.7 per cent;
- amortisation of capital over 25 years;
- initial waste input of 50,000 tonnes rising steadily to 70,000 tonnes per annum after 25 years;
- fixed annual operating costs of £1.5 million;
- variable operating costs of £20.22 per tonne;
- electricity revenue of £13 per tonne;
- inflation rate of 4 per cent.

1.24 The calculation of the gate fee very much depends on the assumptions used. For example, Ramboll has projected a cost of £155 per tonne based on Guernsey's waste arisings averaging 60,000 tonnes per annum over a 20 year period and with an interest rate of 5.5 per cent.¹²

1.25 The Panel used the Environment Department financial model referred to in paragraph 1.23 above to assess the impact on the projected gate fee of varying the forecast waste inputs (Figure 4). The Panel noted that, if waste inputs were higher than forecast, the gate fee could be set at less than £100 per tonne to enable the plant to break even. However, if the waste input remained steady at 50,000 tonnes over the life of the plant (based on the Commerce and Employment Department projections), the initial gate fee would need to be set at £121 per tonne. If the waste input dropped to 40,000 tonnes because of the increase in gate fee and other measures and then remained steady at this level, the gate fee would need to be set at nearly £150 per tonne. The more that a higher gate fee reduced waste inputs, the more the gate fee would need to be increased to compensate. A position might then be reached where the proposed gate fees were too high to be acceptable and the plant would not be economically viable.

¹² Letter dated 11.11.04 from Ramboll to Guernsey Technical Services.

Figure 4: Projected gate fee based on various waste input assumptions

Forecast waste input (tonnes per annum)		Projected gate fee (£ per tonne)
At start	After 25 years	
70,000	70,000	91
60,000	70,000	95
60,000	60,000	102
50,000	70,000	102
50,000	60,000	111
50,000	50,000	121
40,000	60,000	121
40,000	50,000	134
40,000	40,000	150

Source: Environment Department financial model.

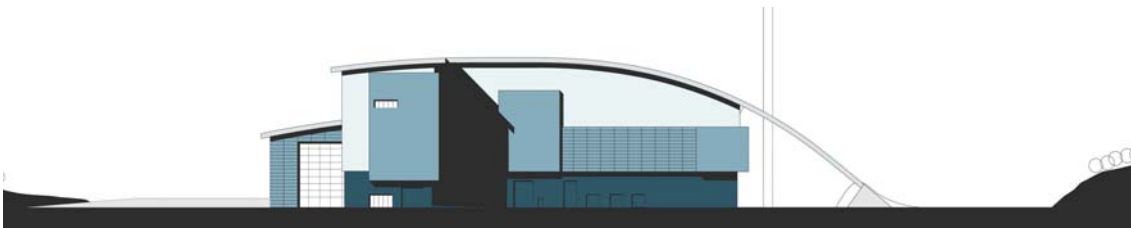
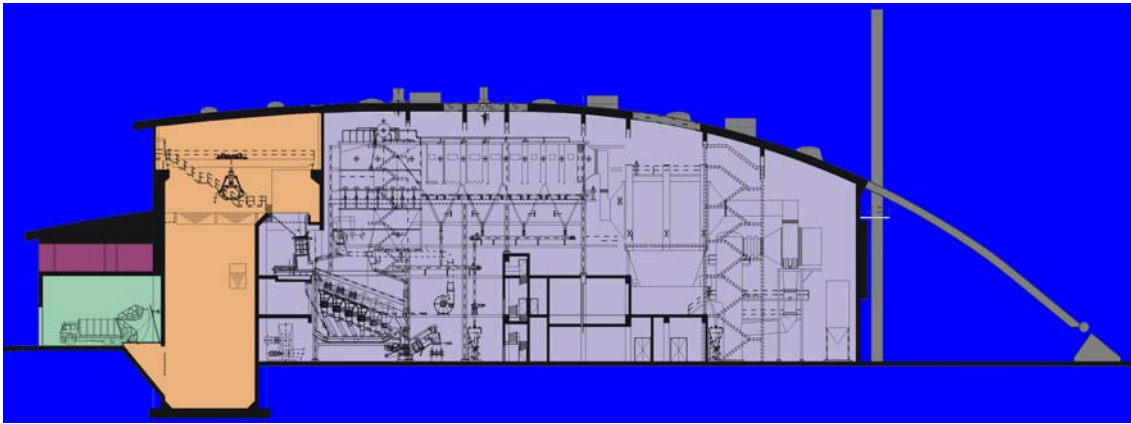
1.26 The economic impact assessment carried out by the Commerce and Employment Department casts considerable doubts over the forecasts of waste arisings used in deciding the design capacity of the proposed plant. The forecasts were based on assumptions about population and economic growth but did not take into account the likely impact on waste arisings of the proposed three-fold increase in gate fee to £100 per tonne. **Given the uncertainties about the impact of a substantial hike in the gate fee, we recommend that a thorough assessment of likely future waste arisings is carried out as soon as possible after the gate fee has been increased to not less than £100 per tonne.** Whatever disposal option is ultimately chosen it is crucial that forecasts are accurate in order to determine the size of the disposal operation. The Environment Department should make use of the economic and business expertise within the Commerce and Employment Department in carrying out this work.

(ii) The visual impact of the proposed plant would be huge

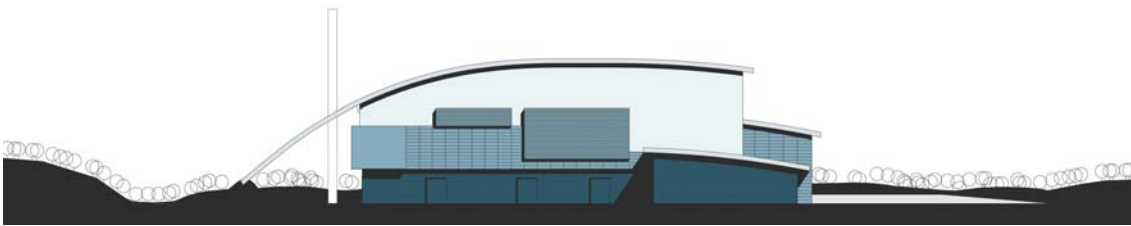
1.27 It is a fact of life that there is no such thing as a small mass burn incinerator. The plant is “heavy engineering and materials handling”: receiving, storing and mechanically handling tonnes of difficult and variable material; burning tonnes of that same material at very high temperature; using the furnace heat in a water tube boiler to generate steam; and using that steam in high-speed turbines to generate electricity. The flue gas pollution abatement is a complex process involving high temperature gas handling and chemical treatment. Disposal of residues is also complex, using a range of chemicals in spray wash water. There is a plant for separating ferrous and non-ferrous metals for recycling and baling them for transportation. Lastly there is electrical switchgear to transmit the power generated to the grid.

1.28 Figure 5 shows an impression of the proposed plant at Longue Hougue.

Figure 5: The Proposed Plant at Longue Hougue



South Elevation



North Elevation

- 1.29 This heavy engineering leads to the need for a site of some 2 hectares, a very large building some 35 metres high and a chimney some 60 metres high. We note that cost reductions required after receipt of initial tenders have raised the planned visible height of the building by some 6 metres. Proposals to sink the plant below ground level in the Longue Hougue site were aborted because the civil engineering difficulties of building below high tide levels would have added nearly £20 million to the cost of the plant.
- 1.30 The proposed building will be much larger than any now on Guernsey. The power station nearby at St Sampson's is the biggest complex already on the island and is undoubtedly visually intrusive. The energy from waste plant would be built on an even more prominent site where in our view it would be impossible to screen it. Having visited the site of the Isle of Man incinerator (Figure 6) we know how enormous such a building is and how it could dominate the landscape in Guernsey.

Figure 6: Picture of the Isle of Man plant opened in 2004



- 1.31 The only alternative to screening is to create a landmark building through skilled architectural design, which would substantially increase costs. In our view the building will be clearly industrial in character and the sketches in the Compliance Document are misleading. We do not believe the maritime location would support anything like the tree growth illustrated. We doubt that creation of an attractive landmark building is possible, even if it proves affordable, although we recognise that for some people big industrial buildings signify progress and modernisation. The panel notes the overwhelmingly adverse public comment it has received that the visual impact is most undesirable on an attractive tourist destination island.
- 1.32 Since the Panel commenced its work the Environment Department has engaged Lurgi to produce further architectural designs with the object of cladding the incinerator in such a way that it takes on the appearance of a “Landmark Building”. At the time of concluding our Report we were not able to obtain an estimate of the additional costs of these works, which are likely to be substantial. The Panel appreciates that any such proposal is likely to be the subject of considerable public debate.
- 1.33 Selection of the Longue Hougue site for the incinerator was made through a conceptual Environmental Impact Assessment. The proposal to site the incinerator on reclaimed land was originally seen in a positive light since it would enable the plant to be built partly below ground level. In the event, engineering difficulties and consequent costs turned this perceived “strength” at the concept stage into an unaffordable cost when tenders were received. The Planning Inspector, having heard objections to the choice of Longue Hougue, was not able to identify a more suitable site on the island for such a plant and none has been suggested to us.
- 1.34 We note that the Mont Cuet area was the second favourite site when all possible sites were evaluated and the ground conditions there are different and better for construction of a large plant. However, this is also a prominent site on the coast where effective screening of such a large plant would not be feasible. Mont Cuet is undeveloped land where mineral extraction has taken place but there are amenity considerations for coastal walkers and others seeking to enjoy the open space. We accept the view that from a planning and land use zoning viewpoint Longue Hougue was the preferable site, as it is already home to a number of industrial site uses where road traffic is already heavy.
- 1.35 A further concern about visual appearance is the likelihood, in certain weather conditions, of a highly visible plume of water vapour from the 60 metre high chimney. Although there would be no health risk from the plume, some people would inevitably regard the visible plume of water vapour as “smoke”. We fear that it would be much more visible than the brown smoke from the heavy oil fuel fired plant at the Power Station.

(iii) The risk of the plant failing has been increased by the simplified design

The single stream design is risky because there is no alternative stream available during unintended outages

- 1.36 In terms of availability, landfill has proven to be the most reliable waste management option. Most landfills are capable of operating 365 days a year, generally because the technologies used are simple and robust. More complex waste management processes have to be shut down from time to time both for planned maintenance and because of unplanned stoppages, incidences of which will vary over the life of the plant. Typically, a modern energy from waste plant can be expected to experience between 5 and 10 per cent of downtime in any period.
- 1.37 The Environment Agency has assessed downtime for other technologies. It reports 14 per cent downtime for a pyrolysis technology plant; and greater than 85 per cent availability and between 81.6 and 92.3 availability for two gasification technology plants, figures which the Agency considers to be “high” (ie they offer relatively good performance with relatively little down-time). No complex technology is capable of the almost permanent availability offered by landfill.
- 1.38 Any failure to maintain an energy from waste plant at its minimum capacity increases the risk of unexpected failures due to the variation in temperature cycles. These plants operate best over time with steady state burning conditions rather than stop-start conditions. This is a particular risk for the proposed plant in Guernsey, as the waste stream may well be insufficient to sustain the plant. The Isle of Man, with a population of 76,000, has found it difficult to achieve 50,000 tonnes of combustible waste per annum; and the problem could get worse as disposal subsidies for household waste diminish.
- 1.39 Many waste management plants work by having duplicate or multiple waste treatment streams. The likelihood of simultaneous breakdown of both or all streams is low and it is possible to manage the waste from the unavailable stream during downtime. The design of the proposed energy from waste plant at Longue Hougue has only one stream. When it is not available - either for planned maintenance or for other reasons - treatment of waste at the site would stop.
- 1.40 A number of alternative technologies offer a multi-stream capacity which permits planned maintenance whilst the plant remains in operation or allows for continuing operation, perhaps at a temporarily reduced level, during periods of unavailability. The size of some alternative technologies would allow for a multi-option solution to waste disposal (see Part 3 of our Report). Having more than one type of treatment would provide additional flexibility during both planned maintenance and unplanned shutdowns.

1.41 The Environment Department told us that Ramboll had recommended a single stream solution for the Guernsey energy from waste facility for the following main reasons:

- It would be difficult to attract key market players to supply twin stream units as the individual units would be too small.
- Because of the small size of the plant, one stream would be more efficient than two streams in dealing with large elements in the waste, handling variations in calorific value, achieving uniform combustion, ensuring that emission standards can be met, and in producing power.
- A single stream solution would be £10.6 million less expensive on capital cost and £0.4 million less expensive in annual operational costs than a twin stream solution.

Measures in the contract to mitigate the risks from relying on a single stream include stocks of strategic spare parts, a waste baler and an emergency plan to use Mont Cuet for the storage of baled waste. Lurgi had also guaranteed, on pain of damages, that it would achieve an availability of 88.5 per cent for the two years that it would be responsible for the operation of the plant. Although this would provide financial compensation it would not avoid having to deal with the problem of waste that could not be disposed of.

1.42 We note that the reasons given for choosing a single stream all relate to the fact that - on efficiency and financial grounds - the proposed plant is too small to have more than one stream. This reinforces our view that Guernsey's residual waste now and in the future may not support efficient mass burn incineration in the plant proposed.

1.43 We believe that there would continue to be a substantial risk in relying on a single stream despite the mitigating measures proposed. Re-design of the proposed energy from waste plant to incorporate two waste streams would increase the size of the building to house them and would greatly increase capital and operational costs. Such a plant would be unlikely to be either financially or operationally sustainable.

The capacity of the waste reception bunker has been reduced to five days

1.44 The rate of waste production on Guernsey is not easy to change. Businesses can hold waste for a few days longer than would be normal for them, but municipal waste depends on regular (once or twice a week) collection from every household.

1.45 Because of the unexpectedly high costs of the proposed energy from waste plant, the waste reception bunker at the front end was reduced in size during post-tender negotiations. The revised design of the bunker has a 5 day capacity, compared with 15 days in the original design.

- 1.46 The bunker allows some flexibility over the rate of waste delivery to the plant – such as no deliveries at night, on a Sunday or bank holidays – without waste processing having to stop. This is helpful as an energy from waste plant works more efficiently if allowed to operate continuously. The reception bunker also allows waste to be delivered when the plant is not working. With good operational practice the amount of waste in the reception bunker could be kept to the minimum needed to support continuous working. At any one time the bunker could therefore be assumed to have 3 or 4 days additional waste capacity after weekend build-up.
- 1.47 Nevertheless, 3 to 4 days capacity does not allow much margin for error. We are concerned that the reduced bunker capacity increases the risks from unplanned outages. We note that the energy from waste plant in the Isle of Man has been designed with a 16-day bunker capacity despite the availability of several landfill sites as back-up.

There is no back-up in the event of failure and waste may have to be stored until the problem is resolved.

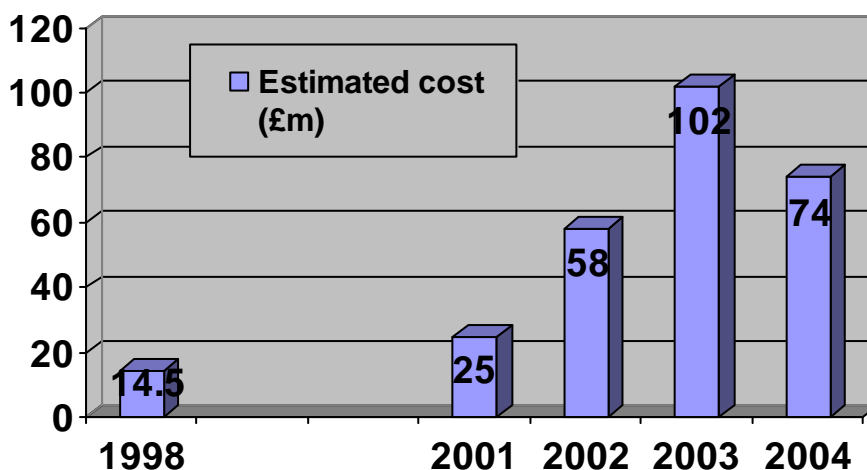
- 1.48 Any downtime for the proposed plant of less than 3 days is unlikely to need any changes to the rate of waste delivery. The additional waste in the reception bunker could gradually be processed over the following few days unless the plant was already operating at maximum capacity. This would be unlikely, however, as the Panel believes that waste arisings for the plant are overestimated.
- 1.49 Alternative arrangements would be needed to cope with any plant downtime of more than 3 days. The Panel has not been able to procure an estimate of the likelihood of stoppages less than or greater than 3 days. However, in an extreme case where a year's downtime of 5 per cent was experienced in one event, an expected throughput of 50,000 tonnes per year (140 tonnes per day) would require some 15 days waste delivery, amounting to over 2,000 tonnes of waste, to be diverted away from the site.
- 1.50 For anything other than the shortest periods, storage of this waste in sealed containers would be prohibitively expensive, both in terms of the cost of the containers themselves and the equipment needed to fill and store them. One day's waste delivery would fill something like 15 ISO containers. We are concerned that the baling and temporary storage provision in the proposed design do not appear to be adequate in the event of extended downtime.
- 1.51 In such circumstances the Environment Department is considering using the Mont Cuet landfill for storage purposes. Long-term breakdown would rapidly consume the landfill capacity at Mont Cuet and alternatives would need to be explored including export off-island. The Environment Department told us that Mont Cuet currently has the capacity to store 26 weeks of baled waste.
- 1.52 Guernsey's policy for its waste strategy has been centred around mass burn incineration as the most reliable technology. However, basing the proposed plant

on a single waste processing stream with reduced bunker capacity increases the risks considerably. There is a much greater likelihood of having to implement “coping” strategies at times of breakdown, either on-island landfill or export. In the panel’s view, the simplified design flies in the face of one of the main advantages of choosing mass burn incineration over alternative options: that it is the least risky technological option.

(iv) The proposed plant is considerably more expensive than similar plants elsewhere

1.53 The cost of the proposed facility has risen way above the original estimates (Figure 7). In 1998 the indicative capital estimate was £14.5 million for the construction of a plant capable of burning 25,000 tonnes a year.¹³ In its budget for 2001 the former Board of Administration identified a sum of £25 million for the facility. In 2002 the pre-tender estimate for the proposed facility was £58 million¹⁴, although this did not include any estimate for the cost of bonds or other forms of protection or for the costs during the operational period. Bids then came in at between £93 million (Martin) and £102 million (Lurgi) in early 2003.¹⁵ Cost savings were subsequently achieved by reducing the specification to arrive at a capital cost of around £74 million.

Figure 7: The increasing estimated cost of the proposed energy from waste plant



1.54 Emission standards and building costs have risen significantly since the plant was envisaged and there are other factors which have contributed to the rising cost. There have been significant changes in the energy from waste market between the

¹³ Billet d’Etat XX 2003, para 3.3

¹⁴ *ibid*, para 3.2

¹⁵ *ibid*, para 1.8

preparation of the pre-tender estimate and the receipt of tenders. The number of suppliers has reduced because of insolvencies, mergers and companies withdrawing from the marketplace. Even taking these factors into account, however, the continuing increases in estimated costs compared with budgets notified to the States are a matter of considerable concern. We are surprised that these periodic hikes in cost estimates had not led to a fundamental review of the project long before now.

- 1.55 The cost of the proposed plant is very high compared with similar plants elsewhere. The Isle of Man incinerator cost £45 million when the contract was awarded in October 2000, although this cost would probably be significantly more if tenders were sought now. The Isle of Man plant became operational in August 2004 and has a second stream for animal and hazardous wastes. An incinerator at Le Havre in France, which opened in July 2004, cost 80 million euros (£55 million at an exchange rate of 1.45) and has a capacity of 24 tonnes per hour (more than twice that of Guernsey's proposed plant). A 2002 survey of incineration costs on the UK mainland undertaken by the UK Cabinet Office¹⁶ calculated an average cost of £55 per tonne, compared with a figure of over £100 per tonne for the proposed plant in Guernsey.
- 1.56 We asked the Environment Department whether the cost of the proposed Guernsey plant had been benchmarked against the cost of similar plants elsewhere. The Department said that this was not a straightforward exercise as project specifications, contract terms and risk apportionment varied greatly between projects. A cost comparison had been made with the Isle of Man plant (Figure 8). The comparison took into account inflation, exchange rates, Guernsey building costs, site conditions, market conditions and varying plant specifications. After making appropriate adjustments to the Isle of Man base price for each of these factors, the assessment suggested that the cost differential between the two projects was of the order of £4.7 million. The Panel's own enquiries of the Isle of Man Government confirmed the value of the secondary incinerator (for dealing with animal waste) as being £3.5 million. The cost comparisons at Figure 8 below should therefore be treated with caution.

¹⁶ Cabinet Office report, "Waste Not, Want Not", 2002 (Annex F)

Figure 8: Cost comparisons between the Isle of Man and Guernsey plants

	Isle of Man £m	Guernsey £m
Base price	45.13	72.7
Additions to price		
Inflation	3.47	
Exchange rate	3.63	
Guernsey building cost	3.8	
Site conditions	4.0	
Flue gas treatment	2.0	
Market conditions	6.77	
Boiler protection	0.2	
Deductions from price		
Secondary incinerator	(1.0)	
Total	68.0	72.7
Difference	+4.7	

Source: Environment Department

- 1.57 There is no doubt that the cost of building incinerators has increased significantly in recent years. The supply market has consolidated dramatically. The number of potential suppliers for a “bespoke” energy from waste plant is small as a result of the limited number of orders for such plants throughout the world. The protracted and specialised design and contracting procedures also raise costs and reduce market competition. Europe has the highest emission standards in the world, which should give a stimulus to innovation. However, the high level of “green awareness” in Northern Europe means that all proponents of energy from waste developments face opposition, sometimes fierce, which limits the number of orders placed and often delays those orders as controversy rages. When competition is weak, tender prices can be expected to be high. Timing is also an issue as companies in the market claim to have lost money on recently completed plants. This makes it difficult to compare the costs of recent contracts.
- 1.58 There are also a number of Guernsey factors which make the proposed plant very expensive:
- Building and construction materials and labour prices are more expensive than in the UK. Guernsey costs are more than 48 per cent higher than the

UK average¹⁷, but some areas of the UK such as London and parts of the South are also significantly higher than the UK average. These extra costs are inevitably reflected in tender prices.

- The civil engineering requirements of the proposed plant at Longue Hougue are exceptionally costly. The site is “made ground” and subject to tidal infiltration. The plant is very heavy and the foundations must both hold it up on the bedrock and hold it down to stop it floating like a boat. Post tender, considerable savings were secured by reducing the depth of the waste bunker originally specified and by lowering the height of the water tube boiler by specifying a horizontal rather than a vertical configuration. Nevertheless, site-engineering costs for such a plant are very high and unavoidable at Longue Hougue. In our view even a re-design to process a smaller tonnage would have little or no effect on the plant size or foundation design. If the only other site available, Mont Cuet, were to be used civil engineering would be less difficult. Other land at St Sampson’s considered as a possible site for the plant is also “made ground” and subject to sea water infiltration. If a smaller lighter technology were selected, site engineering would be much less problematic.

1.59 The other significant cost element is the flue gas emission treatment designed to meet current and foreseeable emission standards. We consider that standards will continue to tighten. In our view Guernsey should aim to meet the EU Waste Incineration Directive standards with whichever technology it selects and we could not recommend any savings in this regard. The Panel applauds the States decision to achieve the highest possible standards of gas clean up for the proposed plant.

(v) The contract was too tightly specified too early in the contract process and it is not clear that the resulting draft contract represents best value for money

1.60 The former Board of Administration was directed by the States in 1998 to investigate the feasibility of commissioning an energy from waste plant. Following a competitive tendering process, Lurgi was selected to design, build and operate such a plant for two years, at an agreed price of £80.3 million, of which £7.5 million is for the operational phase. Selected steps in the contracting process are set out at Appendix 3.

1.61 Some of the reasons for the high cost of the proposed plant – such as the island environment, the civil engineering requirements and the flue gas treatment - are referred to earlier in this report. However, even taking these factors into account, the way that the proposed plant has been procured does not give us confidence that best value for money has been achieved.

¹⁷ Commerce and Employment Department

Alternative technologies to mass burn incineration were ruled out, although this was probably right at the time

- 1.62 Companies proposing alternative technologies such as gasification or pyrolysis were ruled out when the shortlist of companies to be interviewed was prepared in late 2000. Juniper Consultancy was subsequently commissioned in April 2002 and again in April 2003 to review emerging technologies to determine whether they had developed sufficiently to be a suitable waste management option for Guernsey. In each case Juniper concluded that incineration with energy recovery was the most appropriate option. The Board of Administration therefore continued to rule out alternatives to mass burn grate incineration. We consider that this was probably the right decision at the time, although market conditions are now starting to change (see Part 3 of our Report).

Alternative contractual options were not properly evaluated

- 1.63 Prior to tendering, the Board of Administration considered two principal options for the procurement of an energy from waste facility:
- (i) A Design and Build (DB) turnkey contract with a separate Operate and Maintain contract. The Design and Build element would be provided through a single contract and the client would take possession of the completed facility.
 - (ii) A Design Build Finance and Operate (DBFO) contract. This would be a single contract for the procurement of the plant and its subsequent operation and maintenance. Plant, equipment, staff and all other costs would be recovered by service based charges made during the contract period. The operation period of the contract would have to be sufficient to allow recovery of the capital investment.

The market was presented with a DB2O contract as the only option

- 1.64 The Board of Administration's preferred strategy was a variation of option (i) above: to procure the energy from waste facility through a design, build and two year operate contract (DB2O). The Board considered that there would be advantages to be gained from placing responsibility for operating the energy from waste facility with the design and build contractor for a period equating to the end of the warranty period, that is two years after successful commissioning and testing of the plant. The contractor would thus maintain full responsibility for the plant during the period when 'teething problems' might occur and modifications might be needed. The Board considered that letting a short operating contract would allow time for a decision on how to manage the operation of the plant in the long term, ie whether the States should operate the plant itself, the operation of the plant alone should be let to a contractor or the operation of the plant and all waste activities should be let to one operator.

- 1.65 The DB2O contract was the only procurement option put to the market. This ruled out of contention all those specialist waste management companies that specify, sometimes finance, and operate waste disposal plants and often recycle, compost and collect waste too.

The DBFO option was ruled out without proper testing or evaluation

- 1.66 The Board rejected option (ii) above - a Design Build Finance and Operate (DBFO) contract - on the grounds that such a contract would need to include as much of the waste management function as possible if total costs were to be reduced and effective control of the waste stream ensured. The DBFO route therefore presented problems in that the States had not at that time (and still has not) debated the issues surrounding the future long-term strategy for the integrated management of waste collection, treatment and disposal.
- 1.67 The Advisory and Finance Committee considered that best value for the sustainable long term provision of waste services could only be achieved if the design of all waste facilities, including the energy from waste plant, fully accounted for long term operational considerations. The Committee's strong preference was for tenders to be sought for the provision of integrated waste services and the Committee asked the Board of Administration to invite tenderers to put forward a DBFO tender if they so wished. The Board of Administration considered, however, that it would be inappropriate to pursue a DBFO contract since it would result in unacceptable programme delays and would not result in financial benefits. We consider that this was a poor decision.
- 1.68 We consider it unfortunate that the waste management strategy had not been sufficiently developed to allow this option to be pursued further. A DBFO contract might well have been a good fit for an integrated waste management approach since it would have provided opportunities for total service delivery by a private sector partner, including the provision of high value capital investment, significant scope for technological innovation and attendant risk transfer. The DBFO option was not put to the market even though it is likely that a number of firms would have been interested in this option.

Negotiating two separate contracts (for DB2O and separate operation) may well be more expensive over the life of the plant

- 1.69 The strategy was agreed in June 2001 to procure the energy from waste facility through a design, build and two year operate turnkey contract (DB2O) followed by a finance and 25 year operate contract (FO25). As the Board of Administration noted, this strategy was fraught with problems as it was essential that the DB2O contract should contain sufficient clauses to enable the future letting of the FO25 contract as part of an integrated waste management contract which may include operation and maintenance of landfill and other waste disposal facilities on the island. It would therefore be necessary to identify all the interlinks between the two contracts and hence to draft the framework of both

contracts before the detail of the DB2O contract. We were told, however, that no work has yet been done on the FO25 contract.

- 1.70 In view of the potential risks and associated costs of negotiating two separate contracts, it would have made sense to compare the whole-life costs of this option with other options, such as one contract to cover both the design and build phase and the operational phase (either DBO or DBFO). However, no comparison was made of the relative whole-life costs of the various options and it is impossible to know whether the chosen option is likely to provide the best value for money. We consider that the DB2O contract option is particularly high risk. When operating periods are short - in this case just two years - contractors may not have a strong interest in maximising the long term operating efficiency of the plant.

There was a lack of competitive pressure in the tendering process

- 1.71 Competition is a fundamental requirement for getting good value from procurement. A procuring body needs to survey the market to establish how many companies would be interested in the project and to assess whether its proposals are likely to be attractive to potential bidders. If too few bidders are interested there may be problems with the design of the project and the body should think again. Competition is essential if value for money is to be achieved. The receipt of just one compliant bid may indicate, for example, that the proposed project has been poorly designed. In such circumstances, the body should consider redesigning the project and starting the procurement again.

Only two bids were received

- 1.72 As a result of deciding to adopt the DB2O route, a number of operators withdrew their interest. Following expressions of interest, a shortlist of four preferred bidders was selected. Two of these dropped out, however, and the Board of Administration was left with only two bidders - Lurgi (UK) Ltd and Martin Engineering Systems Ltd.
- 1.73 The two remaining bidders submitted bids at £93 million (Martin) and £102 million (Lurgi) which were not considered viable. The Board of Administration held post tender negotiations with both tenderers with a view to establishing the scope for significant cost reductions and to identify a preferred partner for the construction of the plant. The original tender specification was amended and Lurgi and Martin then both submitted tenders at around the £80 million mark for design, build and two year operation.

Only one of the two bids was compliant

- 1.74 The Martin tender was submitted on the basis of a Limited Liability Partnership (LLP). A LLP structure limits the liability of its members to the amount of capital – usually a just a nominal sum – that they contribute. The law firm CMS Cameron McKenna was commissioned to give an independent opinion on the

risks associated with contracting with a LLP. Both CMS Cameron McKenna and Tods Murray (the Board of Administration's legal advisers) concluded that the LLP structure would expose the States of Guernsey to a far greater degree of risk than was normal in a turnkey contract.

- 1.75 There was very little to choose between Lurgi and Martin on cost and technical issues. However, the Martin bid was considered to be non-compliant because of its LLP structure. Following consideration of the tender appraisal report, the Board of Administration therefore identified Lurgi as its preferred tenderer and commenced a series of detailed negotiations and clarification meetings with Lurgi.

Although costly, a sensible draft contract has been agreed with good safeguards that seek to minimise the risk of failure through performance penalties and bonds

- 1.76 Although, as noted above, we have serious concerns about the chosen procurement strategy and whether it will deliver value for money, we are satisfied that the draft contract negotiated with Lurgi is sound. It contains a number of safeguards, including the following:

- on-demand payment, performance and retention bonds;
- contractor guarantees on emission and residue standards;
- a parent company guarantee by Lurgi's parent.

We note that Tods Murray confirmed to the Board of Administration that the extent of overall security provided by the draft contract was in excess of that which would normally be achieved in similar projects in the UK. Tods Murray told us that the safeguards were probably more in line with those used in Europe. We note, however, that such security comes at a considerable cost.

- 1.77 We are concerned that a DB2O (design, build and operate for two years) contract was committed to from the outset. Alternative options were dismissed without proper evaluation, on the grounds that changes to the approach would inevitably result in significant delays. This is a perhaps understandable reaction when so much time and effort has been invested in one particular approach but it is not conducive to securing best value for money. **We recommend that, if and when a new procurement is begun, all procurement options are independently tested in the market to determine which is likely to provide the best value for money.**

- 1.78 There should be a presumption that, of all the available options for the States to contract for the design, build and operation of a plant, an arrangement which leaves responsibility with the designer/builder for the on-going operation of the plant throughout its life, is likely to be best for Guernsey. The contract by which Lurgi would operate the plant for a period of only two years was unlikely to be

value for money. A new operator coming to the project at the end of this period would so heavily qualify its responsibilities as to leave the States with risks it need not otherwise bear. In an isolated location, with but one plant and with no historical expertise, it would not be prudent for the island to run its own operation. Leaving the on-going management to the designer/builder under an appropriate long-term operating contract would ensure that all these elements are managed with minimum risk or involvement on the part of the States. A competent operator would have recourse to expertise, manpower, backup and management which would not be available to the States. Given its lack of operational experience, the decision of the Isle of Man to let a contract for a twenty-five year operating period, in the terms it did, is likely to prove advantageous for that island.

- 1.79 More generally, **we recommend that there should be a much closer partnership between the public and private sectors in the management of the Island's waste.** We are concerned at the lack of expertise in integrated waste management in Guernsey and are conscious that this may be limiting the range of management options properly considered. There appears to be an assumption that change needs to be minimal or at least incremental whereas in our view there is a need for new and radical approaches. We would go so far as to say that the public sector should only be involved in the operation of waste management activities if those activities have been independently market tested and public sector operation has been shown to be at least as efficient as that of the private sector.

PART 2: WASTE MINIMISATION AND RECYCLING

- 2.1 This Part of the Report considers the progress that Guernsey has made in limiting waste for disposal through recycling and other measures. **We conclude that much more needs to be done to encourage the reduction, re-use and recycling of waste. This would help to reduce the disposal problem but it would not solve it.**
- 2.2 Guernsey has traditionally depended on landfill to manage its waste. Land availability and existing operational standards have made landfill a relatively cheap method of disposing of waste. However, capacity at Mont Cuet is limited and the design and operation of the landfill is unsatisfactory for a modern landfill site. There is no realistic possibility of developing alternative compliant landfill sites for the reception of putrescible waste on the Island because of the wide extent of the water catchment area and the proximity of dwellings to potential sites.
- 2.3 There remains no alternative but to adopt new options for managing the Island's household, commercial and industrial waste. Guernsey is limited in the number and scale of waste management facilities it can support. As an island, Guernsey's waste management plan must ensure that outlets exist for all streams of waste generated, whether on-island (wherever possible), or through export of certain waste streams. The plan must also examine what scope exists to minimise residual waste by reducing existing waste arisings and re-using and recycling waste.
- 2.4 We consider that there are a number of actions that would increase the level of waste reduction on the island:
- (i) Guernsey should without delay set itself challenging targets for the minimisation and recycling of waste.
 - (ii) Landfill prices at Mont Cuet should be substantially increased as part of a pre-planned and advertised programme.
 - (iii) Materials which have alternative recycling or recovery outlets should be banned from Mont Cuet.
 - (iv) A number of initiatives should be taken to encourage the minimisation and recycling of waste.
 - (v) Fiscal measures should only be used if increases in gate fees and other measures do not succeed in reducing waste.

(i) Guernsey should without delay set itself challenging targets for the minimisation and recycling of waste

2.5 The Environment Department is preparing a waste management plan for submission to the States after the Panel has reported. If this plan is to be successful, targets will need to be set against which progress can be measured and a timetable drawn up for the development of an appropriate waste management infrastructure. We note that a number of broad and long-term targets have been defined in the draft waste management plan. Whilst there is merit in setting long term targets, success in meeting such targets - for as far ahead as 2077 - will only be achieved if the States can accurately measure trends in waste management activity in the meantime. Targets therefore need to be set for the short and medium term, say over the next 10 to 20 years.

2.6 European Member States measure progress towards sustainable waste management by a variety of targets, some of which are outlined in Figure 9.

Figure 9: English and European waste targets

English waste management targets	European waste targets
<p>Household waste recycling (incremental targets rising to 33 per cent by 2015)</p> <p>Municipal waste recovery (incremental targets rising to 67 per cent by 2015)</p> <p>Industrial and commercial waste landfill diversion targets (Reduction in the amount of industrial and commercial waste sent to landfill to 85 per cent of that landfilled in 1998 by 2005)</p>	<p>Increasing reduction of volumes of biodegradable municipal waste sent to landfill (Landfill Directive) (75 per cent of total produced in 1995 by 2006, 50 per cent of total produced in 1995 by 2009 and 35 per cent of total produced in 1995 by 2016) [The UK has a four year derogation from these targets]</p> <p>To recover value from 70 per cent of packaging waste in 2008 (Packaging Directive)</p> <p>To recycle between 50 to 75 per cent of waste electrical and electronic equipment by 2006 (WEEE Directive)</p> <p>To re-use, recycle or recover 85 per cent of materials from end of life vehicles (ELV Directive)</p>

2.7 Targets, when accompanied with appropriate incentives and penalties, can stimulate recycling and recovery activities. Member States which miss European Union targets and local authorities which miss English waste management targets

could be subject to significant penalties (the proposed fine for a local authority missing its biodegradable waste landfill target is set at £200 a tonne). Local authorities in England have moved close to delivering 2003-04 household waste recycling targets of 17 per cent, partly due to the threat of such strict penalties which would result if these targets are missed.

- 2.8 Setting appropriate targets will not be easy, especially if these are to be coupled with incentives and penalties to stimulate recycling and recovery activities. Despite the difficulties, however, the setting of challenging but realistic targets is something that Guernsey should now address as a matter of urgency. Guernsey would not be tied to any UK or EU model, but would be free to respond to its own requirements under the provisions of the Environmental Pollution (Guernsey) Law 2004 once the Law comes into being. The Island would be able to select those elements of European and UK practice which would suit it best. For example, Guernsey might choose not to recycle certain materials because it would be uneconomic or environmentally unjustifiable to do so.
- 2.9 As well as setting numerical targets, Guernsey should set strategic targets for building up its infrastructure for the minimisation and recycling of waste. An example of the sort of target we have in mind is as follows:

“By no later than ...2005 there will be two civic amenity sites operating - one at Longue Hougue, the other at Each will be open daily from 8 am to 6 pm, Monday to Sunday and will accept from the public at least the following wastes The sites are to be operated by a commercial undertaking, following the letting of a contract of not less than ...years duration, on terms commonly applicable to the operation of such sites in the UK or France. The costs of operating the sites will be met by the States. Charges will not be levied on the public for bringing waste to the sites”.

- 2.10 **We therefore recommend that Guernsey should identify appropriate short, medium and long-term targets for waste management.** These should include:

- household waste recycling targets;
- targets for diversion of household, industrial and commercial waste from final disposal;
- targets for material, such as glass, to be recycled and used on-island;
- strategic targets for the dates by which waste minimisation and recycling infrastructure will be in place.

- 2.11 We note that the Environment Department’s draft waste management plan proposes a performance target to limit the growth of waste¹⁸ to an average of 1.4 per cent per annum over 25 years. We consider that this is too modest a target for limiting the growth in Guernsey’s waste. As noted in Part 1 of this Report, most

¹⁸ requiring incineration

European Union countries aim to de-couple waste arisings from economic growth, although experience shows that this is difficult to achieve.

(ii) Landfill prices at Mont Cuët should be substantially increased as part of a pre-planned and advertised programme

2.12 Landfill is currently the cheapest method of disposing of waste in Guernsey (Figure 10). To encourage waste minimisation and recycling, the cost of landfill needs to be raised to make it more expensive than alternative disposal methods. It should be noted, however, that the price for recyclable material can go significantly up and down according to market conditions.

Figure 10: Cost of waste management in Guernsey

Disposal method	Cost per tonne
Mont Cuët (general waste)	£33.25
Longue Hougue (inert waste)	£5.55
Proposed energy from waste plant	£102
Recycling paper	£63 ¹⁹
Recycling glass and cans	~£180 ²⁰
Recycling plastic bottles	~£180

Source: Environment Department

2.13 Experience in other countries has clearly shown that diversion of waste from landfill can be achieved by pricing changes. The different methods used include landfill taxes (Denmark, the Netherlands, Sweden, and the UK), and charging for residual waste (Switzerland and Ireland). Both approaches have led to significant reductions in the volume of waste being sent to landfill. However, the increase in the gate fee must be high enough to effect a change. The UK is currently increasing landfill tax by £3 a year, which many in the waste management sector consider to be too small to have any marked effect, although eventually the landfill tax will reach £35 per tonne.

2.14 In the Netherlands an increase in landfill tax on non-hazardous combustible waste from £11.30 per tonne in 1995 to £38.70 per tonne in 2000, coupled with

¹⁹ The collection and export of paper for recycling is carried out by Mayside Reclamation Ltd.

²⁰ The collection of glass and cans for recycling is carried out by the States. Recycling companies in Guernsey told us that they could undertake this work significantly cheaper than the States.

implementation of other waste management policies, led to a reduction from 53 per cent to 13 per cent in the amount of household waste sent to landfill. Increases in landfill tax in Denmark have contributed towards an impressive 80 per cent recycling rate for building and construction waste. A large increase in the landfill gate fee from £10 per tonne to £100 tonne in the Isle of Man led to a dramatic reduction in commercial waste going to landfill. Guernsey also experienced a significant decrease in the volume of industrial and commercial waste being deposited at Mont Cuét following the more than doubling of the gate fee in 2002 (see Figure 3 above).

- 2.15 As the operator of the only landfill accepting mixed waste on Guernsey, the States have the power to increase landfill gate fees without, for example, the need to introduce primary legislation. This gives the States considerable flexibility in deciding how to introduce a new charging regime.
- 2.16 The standard rate for waste disposal at Mont Cuét was £33.25 per tonne in 2004. It is intended to increase this charge by £25 per tonne plus RPI over the years 2005 to 2007. In line with this decision, the gate fee rose to £59.80 per tonne from 2005 and is expected to rise further to around £87 per tonne in 2006 and around £115 per tonne in 2007. The aim is to have the same or similar gate fees for landfill and the proposed energy from waste plant. Clearly, recycling of some materials would become more commercially viable if Mont Cuét's landfill gate fee was not less than £100 per tonne.
- 2.17 A phased increase in the cost of waste disposal has certain advantages. It allows waste producers to investigate alternative options for managing waste; and it gives waste managers time to plan and invest for business growth. Significant increases in the cost of waste disposal also need to be clearly indicated and communicated to the public and private sector to promote the development of recycling services and infrastructure.
- 2.18 However, given the imperative of promptly and substantially reducing the rate at which Mont Cuét is being filled, a phased introduction of increased charges is not really a serious option. In any case operators are generally extremely well attuned to the opportunities for alternative treatment of waste and recyclates which present themselves as the gate fee gets higher. In Guernsey's present circumstances, **we recommend that the gate fee at Mont Cuét should be raised as soon as possible to not less than £100 a tonne.**

(iii) Materials which have alternative recycling or recovery outlets should be banned from Mont Cuét

- 2.19 There are currently no outright bans on landfilling particular materials at Mont Cuét. The Environment Department has chosen to manage waste activity by means of gate fees that are specific to particular materials. In 2004 the flat rate

gate fee at Mont Cuet was £33.25 per tonne. Contaminated waste²¹ was charged at between £41.55 and £49.90 per tonne and loads of inert waste were charged at £66.50 per tonne. Landfill of inert waste cost £5.55 per tonne at Longue Hougue. The system is somewhat arbitrary and may be open to abuse.

2.20 Figure 11 below shows the tonnage of industrial and commercial waste materials going to Mont Cuet in 2000, 2002 and 2004 for which alternative recycling or recovery outlets are currently available.

Figure 11: Waste materials going to Mont Cuet (industrial and commercial)

	Mont Cuet 2000 (tonnes)	Mont Cuet 2002 (tonnes)	Mont Cuet 2004 (tonnes)	Alternative outlets
Glass	903	307	312	Commercial Recycling Bring sites
Metals*	8,695	260	2,305	Commercial Recycling
Cardboard*	1,666	814	1,149	Commercial Recycling
Paper	1,193	615	174	Commercial Recycling Bring sites
Fines/soil	11,796	2,389	3,481	Longue Hougue

Source: Guernsey Technical Services Waste Audit (2004)

* In 2002 55 tonnes of cardboard and 80 tonnes of metals were extracted from waste sent to Mont Cuet and were sent for recycling. It is estimated that 74 tonnes of cardboard and 114 tonnes of metals will be extracted in 2004.

2.21 The significant differential between gate fees for contaminated and non-contaminated material resulted in an immediate decrease in the amount of commercial and industrial waste sent to landfill at Mont Cuet. Significant reductions were seen in a range of materials suitable for recycling, including glass, metals, cardboard, paper and inert material. This effect was most pronounced for non-combustible material, such as inert materials, metals and glass. It is estimated that 1,149 tonnes of cardboard and 174 tonnes of paper are currently being landfilled, probably because contamination has made these wastes difficult to recycle. A better method of collecting recyclable materials at source would reduce contamination significantly.

2.22 **We recommend that all materials which could be recycled should be banned from Mont Cuet.** This would include inert construction waste, soil, metals,

²¹ a mix of putrescible and inert or other unacceptable waste such as oil or metal.

glass, paper and cardboard capable of being recycled, and textiles. Outlets for some of these materials currently exist on island and we see potential for diverting substantial further amounts of material from Mont Cuet.

(iv) A number of initiatives should be taken to encourage the minimisation and recycling of waste

- 2.23 Current on-island facilities for recycling household waste include bring banks for glass, cans and paper and a small Civic Amenity site, open for limited hours, at Mont Cuet. The Longue Hougue reclamation site accepts inert building waste. Other recyclable industrial and commercial wastes (glass, metal, plastics, paper and cardboard, waste electrical and electronic equipment, end-of-life vehicles, tyres, petrol, oils and batteries) are segregated at Fontaine Vinery or are collected and treated by private recycling companies. Fontaine Vinery recycles around 20 per cent of the waste it receives and the remainder goes to Mont Cuet. Some 19 per cent of household waste was recycled in 2003.
- 2.24 Given the demographics of the Island and the interest which the Panel has found in recycling, there is likely to be a generally positive response to initiatives which encourage waste minimisation and recycling. The effectiveness of these measures is likely to be directly related to the quality of the services introduced and the professionalism by which the public is made aware of these services and the benefits of using them.
- 2.25 The best evidence suggests that the UK is some way behind leading European countries in its commitment to recycling and waste minimisation, but has been making better progress in the recent past. Guernsey has, on its doorstep, examples of best European practice in France. The Panel has explored this practice in some depth and points to benefits which could derive from working with, for example, the community of Granville (see Figure 12), to develop specific elements of a recycling strategy which are probably at the leading edge of current best practice.

Figure 12: Recycling in Granville, France



This is a reproduction of the cover of a 10 page public information brochure “A practical guide to sorting” issued to the community of Granville, illustrating part of the Bring Bank System for the collection of papers, magazines, brochures, cartons (blue), bottles, glass and cans (green), plastic bottles and containers, tins, aerosols and aluminium containers (yellow).

The system involves weighing each container upon emptying. A computer-controlled collection schedule adjusts the frequency of emptying particular waste streams at each Bring Bank, dependant upon the rate at which capacity is used.

One vehicle services the Bring Banks on a cycle which sees blue bins emptied on one day and yellow another. The ratio of Banks to population is higher than would be required for Guernsey, being set at one per 500 head of population. The design, appearance and functionality of this system is considerably better than the present systems employed in Guernsey and is a practical illustration of the scope for development which is available. We understand that the contractor concerned with the Granville scheme is currently working with Jersey to provide proposals for an island-wide operation, which may also prove of interest to Guernsey.

2.26 In the light of the Panel's research, we suggest that the Environment Department examines the following initiatives:

- (a) engaging public support more effectively;
- (b) creating greater certainty for commercial waste management organisations;
- (c) encouraging the non-profit sector;
- (d) enhancing public recycling facilities;
- (e) encouraging composting;
- (f) improving household waste collection.

(a) Measures should be introduced to engage public support for waste prevention and recycling

2.27 Successful implementation of a waste management strategy will rely on support and buy-in from the public as well as commercial and industrial interests on the island. The States must engage householders, commerce and industry at all stages of implementing the waste management strategy.

2.28 Initiatives used by other waste management communications programmes, both in France and the UK, include the provision of clear and accessible information – leaflets and web site, the promotion of schemes by waste collection crews, and coverage by local media. Local networks such as business groups, schools, clubs and voluntary groups, can also disseminate information to the public and private sectors. Experience elsewhere has shown that helplines and assistance are particularly important when waste collection systems are changing.

2.29 There are a number of 'good practice guides' to waste management communication initiatives. The cost of issuing such guides is estimated to be £1 to £1.20 per household per annum. Customer care support – such as helplines and other assistance - is an additional cost.

2.30 The Environment Department's draft waste management plan makes proposals to develop a carefully structured communications programme directed at waste producers. This would highlight the cost savings that could be realised by reducing disposal costs and avoiding the unnecessary purchase of materials which might become waste. The environmental benefits of minimisation, re-use and recycling would also be emphasised. The Department could also work with island businesses and the States itself to introduce voluntary waste reduction and recycling initiatives to tackle specific waste streams.

2.31 Adequate resources would need to be allocated to these initiatives if the public information programme is to be effective. There is a considerable body of

expertise available in county and regional authorities, such as Kent and Granville, and specialist organisations such as WRAP.²²

(b) Commercial recycling organisations should be provided with more investment certainty

- 2.32 Although not high profile, there are a number of commercial businesses handling recyclable materials on Guernsey. There has been considerable investment in plant and equipment. Some of the businesses are part of more substantial organisations based elsewhere and have resources and expertise which belie their relatively small presence on the Island.
- 2.33 Almost without exception, these undertakings suffer from a lack of commercial certainty. Their premises do not offer long term security; planning constraints prevent them from developing their present facilities; and future licensing requirements may make their operations untenable. At present there is no clearly defined strategy for dealing with the island's waste and no policy which makes it clear to what extent, if any, the public sector wishes to engage directly in the business as opposed to contracting with the private sector. We nevertheless believe that the States do recognise that an effective partnership between private and public sector is essential if the waste strategy for the island is to succeed.
- 2.34 Introduction of higher gates fees should result in recycling operations becoming more commercially viable. Bans on land-filling certain materials would increase the rate of supply of material appropriate for recycling. However, regulatory, planning and operational uncertainties undermine the businesses that the States should be encouraging and make it difficult for them to plan for the future.
- 2.35 To build an effective partnership between the public and private sectors, ways must be found to give the private sector the necessary confidence to invest in the future requirements of the solid waste strategy. **We recommend that the three arms of government directly involved in the disposal of solid waste (the Environment Department, the Public Services Department and the Health and Social Services Department) must work closely together and with the commercial organisations. Government needs to build trust and establish a common sense of purpose with the private sector so that commercial recycling organisations have the investment certainty they need to be able to play a full part in the waste strategy for Guernsey.** We do not believe that any arm of government – whether planning, licensing or operations – should be permitted to work in isolation or be able to thwart the overall objectives of clearly defined States policy.
- 2.36 The Phase Two Site at Longue Hougue has been identified as the preferred site for creating waste management facilities. Co-locating an Energy from Waste plant (of whatever type), metal recycling, other sorting, baling, recycling facilities and a civic amenity site would be advantageous. Some elements of these facilities have

²² www.wrap.org.uk

large footprints but light loads in terms of the civil engineering work required, for example, a Materials Recovery Facility should it be required. Other facilities would have requirements for more complex civil engineering works.

- 2.37 Any alternative to an incinerator would be likely to have a smaller footprint and require less civil engineering works. It might therefore be appropriate for certain elements of the overall facilities to be located somewhere other than at Longue Hougue Phase 2. The adjacent site, Longue Hougue Phase 1, has limitations, as refuse was included in the infill material. Other sites may have disadvantages in terms of their neighbours, location and accessibility. If civil engineering considerations permitted, locating the lighter elements at Longue Hougue Phase 1 would have obvious benefits.
- 2.38 Any expansion of the waste facilities at Longue Hougue will have to take account of the possibly competing demands of the proposed harbour development. Some 75 per cent of Longue Hougue Phase II is earmarked for harbour development. However, the plans for extending the harbour - scheduled for 2020 - are somewhat tentative and it is possible that enough land will be available to accommodate both developments. Requirements and specifications will need to be kept under review, including any proposal that Longue Hougue should also be the site of a sewage treatment works.
- 2.39 It will be necessary to plan and implement a strategy for re-locating or co-locating existing and additional waste management facilities as soon as possible and most probably in advance of any plant which might be adopted for the final disposal of waste. The Environment Department, the Public Services Department and the Health and Social Services Department must work in close co-operation with each other and the private waste management industry in Guernsey, and elsewhere, to develop and implement a strategy for the location of solid waste management facilities. As part of this process, **we recommend that the Environment Department should be tasked to carry out an in-depth review of possible sites for recycling and other waste management facilities.**

(c) There should be more help for the non-profit sector, including subsidies where appropriate

- 2.40 Many local authorities across the UK work closely with voluntary bodies to promote solid waste management, particularly textile recycling. The States should continue to support such organisations and provide further support where appropriate. The non-profit sector can play an important role in diverting certain wastes from landfill. Island voluntary bodies such as Oxfam, the Salvation Army, Les Bourgs Hospice and the Red Cross are currently involved in material re-use as well as textile recycling.

(d) The availability of public recycling facilities should be significantly expanded

- 2.41 The amount of waste recycled on Guernsey has doubled since 1996 and now stands at 19 per cent. This recycling rate compares well with England, where the average municipal waste recycling rate was 15.6 per cent in 2002-03 and only eleven local authorities recycled more than 20 per cent. Yet there are one or two areas where recycling rates achieve levels comparable with best practice in Europe. In South Cambridgeshire, for example, a rate of 53 per cent has been achieved (including green waste for composting).
- 2.42 Materials collected for recycling include paper, glass, ferrous and non-ferrous cans, cardboard, textiles and metals. These materials are collected at bring banks or specific facilities or extracted from material deposited at Mont Cuet. The cost to the States of the 'bring scheme' and recycling of plate glass was £415,000 in 2003. During the course of the Panel's inquiry, substantial public support was expressed for the expansion of existing recycling schemes. The significant rates of recycling already achieved through the existing bring schemes demonstrates the active support that recycling enjoys among the public.
- 2.43 Civic amenity facilities play a useful role in collecting material which cannot be viably collected at either bring banks or in kerbside collections. Although increasing proportions of material are recycled by separate collection, some 65 per cent of household material collected for recycling in England continues to be brought to civic amenity and bring sites. English waste management statistics show that, of the household materials collected for recycling, 81 per cent of glass, 84 per cent of compost and 95 per cent of scrap metal were collected at civic amenity sites. Of all the materials collected, paper and card were the only ones for which more than half the total tonnage was collected through kerbside collection schemes. Even then, 40 per cent of all paper and card collected came from civic amenity and bring sites.
- 2.44 Experience in the UK has shown that recycling rates for materials collected at civic amenity sites can be as high as 80 per cent. Guernsey might find it difficult to achieve such high rates as the market for material for recycling is limited on-island and the cost of shipping material off-island to be recycled would be more expensive. However, significant amounts of waste might be diverted from final disposal by providing facilities to which the public could bring a range of household wastes for reuse or recycling.
- 2.45 The effectiveness of public recycling will depend to a large extent on the quality of civic amenity sites and bring banks. Those in Guernsey presently operate at the most basic level. The Panel believes that the French approach - in terms of the design of bins, control of collection, use of specialised vehicles and community involvement - has much to commend it. The States of Jersey are also considering the installation of much more attractive bring banks and a system of recycling and collection which could be implemented by an appointed contractor. Such an operation could be extended to embrace civic amenity sites. We also note the

experience of UK local authorities, most of whom contract operations of this nature to private undertakings who are able to provide the necessary manning and achieve levels of recycling and recovery which could probably not be delivered by the public sector for the same price.

- 2.46 The existing ‘civic amenity’ site at Mont Cuet collects a limited range of materials including green waste and paper. In the 1998 Waste Strategy Assessment, the former Advisory and Finance Committee identified the need to expand this facility and to augment it by providing another facility in a different part of the island. It is also proposed to develop a materials recovery facility, a civic amenity site and a metal recycling site at Longue Hougue. However, none of these proposals has yet been implemented. We understand that suitable sites have not even been reviewed at this stage let alone identified for development.
- 2.47 The temporary waste segregation facility at La Fontaine Vinery is inefficient because it is poorly sited, operates for limited hours and can only handle certain materials. The function could advantageously be transferred to Longue Hougue, where it could then be expanded to form part of the overall waste management strategy. The cost of creating the site at La Fontaine was £508,000 but the building itself (being 13,225 square feet in area) could be relocated, together with some other elements of the present site.
- 2.48 The Environment Department has estimated that around 8,400 tonnes of waste would be managed at Civic Amenity sites annually and that the annual cost would be about £500,000. This estimate and the assumptions underlying it need to be tested and consideration needs to be given to alternative arrangements which might arise by involving the private sector.
- 2.49 **We recommend that Guernsey urgently develops facilities in suitable locations to which the public can bring a range of household wastes for re-use or recycling.** Evidence in the UK suggests that a high level of recycling can be achieved when civic amenity sites are professionally run. We suggest that suitable opening hours, design and operator support are established to cater for the needs of the public. There should be potential to expand and improve the existing bring bank collection scheme. Studies in the UK, for example in Brighton and Hove, have shown how bring bank density can be optimised.

(e) Greater use should be made of composting

- 2.50 There has been a significant growth in composting activity across the UK and Europe over the past 5 years. The amount of waste composted in the UK (80 per cent of which was green waste) doubled between 1999-2000 and 2001-02. Restrictions imposed by the EU Animal By-Products Regulation has limited commercial composting of kitchen waste in the UK and a number of local authorities are encouraging householders to compost kitchen and garden waste at home.

- 2.51 The Panel visited a fully licensed site in the UK which treats household biodegradable waste, including animal/food waste, using in vessel composting. This process raises the temperature of the material to 60°C and thereby eliminates the micro-organisms which would otherwise give rise to the risk of infection. The site is subject to regular monitoring by the Environment Agency.
- 2.52 Of the estimated total 6,000 tonnes of green garden and horticultural waste generated in Guernsey each year, over 5,000 tonnes is deposited at Chouet Horticultural Site. Green waste compost is also used as landfill cover at Mont Cuet. Green and biodegradable waste is also present in the mixed parish and household waste going into Mont Cuet.
- 2.53 The former Board of Administration proposed the development of an in-vessel composting facility for green waste (capacity 6,000 tonnes) at Longue Hougue. Initial costs of producing the compost were estimated to be in the region of £25 to £35 per tonne. It is likely, however, that output from the facility would exceed commercial demand for the compost produced. The compost could therefore be provided free of charge to anyone who wants it to encourage its use.
- 2.54 It has been estimated that 20 per cent of household waste in Guernsey is biodegradable kitchen waste. Diversion of this waste from the parish waste collection system could reduce overall household waste for disposal. A number of local authorities in the UK have included home composting schemes in their waste management strategy. However, the contribution of these schemes towards a reduction in household waste arisings has proved very difficult to quantify. Nonetheless, many local authorities in the UK feel that home composting has a role to play in waste management. Experience indicates that households are more likely to compost at home when they are provided with appropriate equipment, information and a contact for advice. The Isle of Man and many local authorities in the UK provide home composting bins at reduced prices, usually between £5 and £20 a bin.
- 2.55 The efficient treatment of green waste should form part of a comprehensive waste management strategy. The process of installing and operating a composting system, probably at Mont Cuet for reasons of space and odour, would be relatively inexpensive. **We recommend that the Environment Department should encourage householders with gardens to compost garden and kitchen waste, and also commission a composting facility to take green wastes collected at the civic amenity site or to meet other local demand.** We recognise that if compost is to be used for beneficial purposes it must be of a high quality and the plant or system adopted must meet a quality specification. The Composting Association in the UK has an agreed “Publicly Available Standard” (PAS 100) for high quality compost and is about to launch an operational code of practice in February 2005 for composting operations. We commend both to the Environment Department as guidance for composting in Guernsey. **We recommend that the States should specify the use of such composted material as an alternative to peat or soil-based composts in their own works or contracts.**

(f) The waste collection service needs to be revised to encourage the minimisation and separation of waste at source

2.56 Collection of mixed domestic refuse is currently the responsibility of the Parishes, each of which awards a contract for collection to take place within their parish boundary. Research by consultants contracted by the former Board of Administration indicated that cost savings of around 17 per cent could be achieved by structuring collection rounds on optimal collection routes rather than within the limitations of parish boundaries.

2.57 The law relating to the collection of household waste is summarised in Figure 13 below.

Figure 13: The Law (a simplified summary)

The collection and disposal of refuse from dwelling houses is governed by the provisions of The Parochial Collection of Refuse (Guernsey) Law 2001 (IX 2002).

Responsibility rests with the officials of each of the ten Parishes to make arrangements for the collection and disposal of refuse from dwelling houses and tenements, but not businesses, within each Parish.

The costs are raised by way of an annual rate (“the refuse rate”), which is set by approval at a meeting of Parishioners.

The Constables of each Parish then make application to the Royal Court to apply the rate. A person subject to the rate may appear and object.

The Environmental Pollution (Guernsey) Law 2004, (“the New Law”), will shortly be enacted. Schedule 2 of the New Law provides for the repeal or amendment of earlier legislation by Ordinance, including the Parochial Collection of Refuse (Guernsey) Law 2001.

Section 29 of the New Law provides for the designation of “a person or a Committee of the States, (other than the Health and Social Services Department), as the Waste Disposal Authority”. It will be a function of the Waste Disposal Authority to make arrangements for and ensure the operation of Guernsey’s public waste management system and to fulfil other responsibilities ascribed to it by Section 30 of the New Law, which may include both the means of charging and the collection of those charges, for dealing with waste.

2.58 We consider that at least two changes, which are provided for under the new law, may be required:

- 1) Arrangements for collection and disposal should not be confined to the separate Parishes. Existing anomalies could be removed with advantage and the collection of recyclables might need to be other than Parish based.
 - 2) The present method of charging does not sit squarely with the objective of reducing the quantity of waste for disposal. Nor is it consistent with the present policy that the polluter pays. To encourage waste reduction, the basis of charging needs to be related to the volume and/or weight of the waste collected. This could be achieved, for example, by collecting waste presented only in special pre-paid disposal sacks or by kerbside weighing/charging.
- 2.59 The Douzaines told us that they were best placed to manage local collections of household waste and that the present system was efficient, cost-effective and popular with parishioners. Nevertheless, there is a willingness on the part of the Douzaines to work collectively in rationalising the areas covered by different contractors and on other waste management matters. Should an island-wide scheme for kerbside recycling be introduced, the Douzaines may also be willing to work with contractors to collect recyclables from doorsteps. A more detailed note of the Panel's dialogue with the Douzaines is at Appendix 4.
- 2.60 As with business waste, the main incentive to minimise household waste arisings is cost. A scheme that charged householders according to the level of residual waste requiring collection would encourage them to reduce the volume of waste requiring disposal. The main charging options being used elsewhere include:
- Pay by weight – wheelie bins are weighed at the collection point by the waste operator and the householder is billed for the amount of refuse collected.
 - Pay by tag – wheelie bins, when full and ready for collection, are tagged with pre-purchased tags by the householder.
 - Pay by bag – refuse bags are tagged for collection with pre-purchased tags by the householder.
- 2.61 Some waste collection authorities set a flat rate fee and an additional weight based charge for residual (ie non-recyclable) waste left for collection. Some sell different coloured bags for different wastes and will not collect any others. The Panel recognises that there may be a resistance to the proliferation of “wheelie bins” on the Island.
- 2.62 There are three principal ways by which recyclable materials could be diverted: through kerbside collection programmes, bring schemes or civic amenity sites. The possible contribution of bring banks and civic amenity sites has already been discussed above. Kerbside collection of materials for recycling – through co-mingled collection of mixed recyclables or collection of source-separated material - could also divert significant amounts of waste away from final disposal.

Although public participation rates are generally higher for co-mingled collection, collection of source-separated material generates higher quality material for recycling.

- 2.63 The proportion of households served by kerbside collection schemes in England increased from 58 per cent in 2001-02 to 67 per cent in 2002-03. This increase led to a 22 per cent rise in the amount of paper and card collected in kerbside schemes. The amounts of compost and glass collected both increased by over 40 per cent over the same period. In total, 34 per cent of recycled municipal material was collected by kerbside collection schemes in 2002-03, up from 31 per cent in 2001-02.
- 2.64 A practical illustration would be the requirement that all bottles, glass and cans from business, particularly the Hotel and Catering Industry, be kept separate from the mixed refuse stream. At present, even if separated by the undertaking concerned, it is likely that the contracted waste collector will include it in the general refuse, for eventual disposal at Mont Cuet.
- 2.65 **We recommend that the options for providing a kerbside collection of source separated materials should be assessed.** In particular, the options for collecting glass, metal, cans, paper and cardboard, and possibly plastic should be examined. The assessment should include an evaluation of the sort of service contractors, both on and off-island, could deliver.
- 2.66 In the view of the Panel, removal of the bulk refuse service or the introduction of a charge per load for bulk refuse would increase the risk of fly-tipping and could disadvantage people who live in flats or have no means of transport. **We therefore recommend that the collection service for bulky household waste should continue and that it should not be charged for.**

(v) Fiscal measures should only be used if increases in gate fees and other measures do not succeed in reducing waste

- 2.67 As noted above, management of waste is driven by price. We have recommended that the gate fee at Mont Cuet should be increased to at least £100 per tonne and that variable charging (weight or volume related) should be introduced for residual household waste.
- 2.68 Other fiscal measures have been successfully introduced in other countries to direct specific wastes towards or away from certain waste management options. A £1.60 per tonne levy on virgin aggregates (sand, gravel and rock) was introduced in the UK in 2002 to encourage increased use of secondary materials. Ireland introduced a levy on plastic bags in March 2002 (€0.09 per plastic carrier bag) and this resulted in a 90 per cent drop in use. The 'plastic bag tax' also resulted in a heightened awareness of waste management issues amongst the public. Incoming European Union legislation, such as the Waste Electrical and Electronic Equipment Directive and the End of Life Vehicle Directive, will place

responsibility on the producer rather than the consumer for ensuring that an appropriate infrastructure exists for disposal. These Directives, coupled with strict recycling and recovery targets, will direct waste materials away from final disposal such as landfill.

- 2.69 These measures have successfully influenced waste management practices in other countries and, in some cases, have put the spotlight on resource inefficient practices. However, some measures can be costly to introduce and to administer, particularly on a small island such as Guernsey. The Panel believes that the initiatives suggested elsewhere in this report, such as the increase in landfill gate fee, the banning of certain materials from Mont Cuët and the provision of appropriate recycling facilities, provide the best and simplest means of controlling the flow of waste. But the States may wish to consider the introduction of other fiscal measures in the light of experience once a fully integrated waste strategy has been implemented.
- 2.70 The Panel notes the introduction in Guernsey of a £10 per annum tax on vehicles, collected through the registration process, to provide for the cost of the eventual disposal of vehicles at the end of their lives. The cost to the States of dealing with such end-of-life vehicles forms a major element of the bulk refuse collection service. The introduction of this tax, without the requirement for an onerous administrative burden, illustrates that such fiscal measures can be effectively brought in, where appropriate.

PART 3: ALTERNATIVES TO THE PROPOSED ENERGY FROM WASTE PLANT

3.1 This Part of the Report considers the long-term alternatives to proceeding with the proposed energy from waste plant at Longue Hougue. **We conclude that there are a number of promising alternatives to the proposed plant that are worth exploring and which may provide a solution in the longer term.**

3.2 The possible long term solutions we examined were as follows:

- 1) Joining with Jersey to find a common solution to the two islands' waste needs.
- 2) Other on-island solutions involving alternative technologies.
- 3) Export of Guernsey's waste to another European country.

3.3 We consider that Guernsey should explore the option of joining with Jersey as its first priority because this option will only be available until mid 2005. If joining with Jersey is not practicable, Guernsey should pursue an on-island solution for its long term residual waste needs, most probably using alternative technologies when they are available. We do not believe that export to another European country, although possible, is likely to be a suitable long-term option but it may provide an interim solution to Guernsey's needs.

(1) Joining with Jersey on a common waste disposal solution needs to be considered immediately if the opportunity is not to be lost

3.4 The first alternative option we examined was whether there was a common Channel Island solution to the problem of waste disposal. We found that:

- (a) the opportunity exists to join with Jersey in a common waste disposal solution;
- (b) exporting waste to Jersey is legally possible;
- (c) there are a number of associated risks in joining with Jersey;
- (d) the cost of joining with Jersey is likely to be less than Guernsey's proposed energy from waste plant at Longue Hougue.

(a) The opportunity exists to join with Jersey in a common waste disposal solution

- 3.5 Historically, levels of co-operation between the Islands of Jersey and Guernsey have not been as high as the respective Governments now envisage. As regards future waste management, there has been a difference in the time lines of each island. The delay in settling a solution in Guernsey has, however, brought the schedules closer together. The way may now be open for the two islands to find a joint solution to the problems of solid waste disposal.
- 3.6 Since 1979 Jersey has incinerated solid waste at its Belle Ozanne plant. This plant is now approaching the end of its useful life and an alternative means of disposal is required by 2008-2009, when it is expected that the present plant will be de-commissioned. The Public Services and Environment Committee of the States of Jersey intends to bring forward plans for its preferred option in the first half of 2005.
- 3.7 The Shadow Scrutiny Committee of the States of Jersey is also closely involved with finding a solution for dealing with Jersey's solid waste. The Committee expects to report its findings to the States of Jersey early in 2005, before the matter is brought before the States of Jersey by the Public Services and Environment Committee.
- 3.8 The Public Services and Environment Committee and the Shadow Scrutiny Committee of the States of Jersey will be considering a range of options for their new waste strategy. The Panel understands that co-operation with Guernsey will be among the options considered and might feature in specific proposals for on-island or off-island solutions. Shipping solid waste from Guernsey to a new disposal facility in Jersey could be one possibility. Shipping waste from both islands to an existing disposal facility in France could be another.
- 3.9 The Panel has encouraged the governments of both Islands to commission a feasibility study of a joint Channel Island energy from waste solution. This study is being carried out by Ramboll/Babtie Fichtner with assistance from Guernsey Technical Services and Jersey's Public Services Department. Ramboll/Babtie Fichtner's report, which is expected to be available shortly, will address this option in greater depth than the Panel has been able to do.

(b) Exporting waste to Jersey is legally possible

- 3.10 There need be no legal bar either to the transshipment of solid waste from Guernsey to Jersey for disposal in an energy from waste plant or to the returning of bottom ash from Jersey to Guernsey (some 10 per cent by volume of waste sent for disposal). These arrangements would require the co-operation of both Governments and an appropriate legislative framework for licensing. Such a framework already exists in Guernsey in the form of The Environmental Pollution (Guernsey) Law 2004 (presently awaiting commencement). The equivalent

Jersey Law is older and fragmented. Shipments between the islands would not be regarded as trans-boundary shipments within the European Union and DEFRA has confirmed that the British Government would view them as a matter for the insular authorities.

(c) There are a number of associated risks in joining with Jersey

3.11 Joining with Jersey would entail a number of risks for Guernsey, which would need to be carefully considered before taking this option forward. We assess these risks as being:

- With landfill capacity at Mont Cuét declining fast, Guernsey has only a finite time to agree a long-term solution for dealing with its solid waste. It would therefore have to avoid getting into long drawn-out negotiations with Jersey that put achievement of its waste disposal strategy at risk.
- Jersey has a means of disposing of its waste for as long as it is able to run its incinerator. But the plant at Belle Ozanne is not able to accept waste from Guernsey. Any extension of Jersey's time-frame might therefore result in Guernsey not being able to dispose of its own waste, particularly if Mont Cuét had little remaining capacity.
- The Jersey plant might not go ahead, for political or other reasons.
- The Jersey plant might go ahead, but politicians in Jersey or the Jersey electorate might object to disposing of Guernsey's waste.
- The potential site of a joint plant at La Colette in Jersey may not be available.
- It might prove difficult to agree contractual terms that safeguarded Guernsey's right to dispose of its waste in Jersey over the long-term.
- It might prove difficult to agree other contractual terms, such as the apportionment of risk or costs between the respective Islands.

(d) The cost of joining with Jersey is likely to be less than Guernsey's proposed energy from waste plant at Longue Hougue

3.12 As noted above, Ramboll/Babtie Fichtner has been undertaking a feasibility study of a joint Channel Island energy from waste solution. As part of this work, Ramboll/Babtie Fichtner has costed two options: a split solution whereby Guernsey and Jersey commission their own separate energy from waste plants; and a joint solution whereby one plant is built on Jersey and Guernsey ships its waste there. The main costs of the split option are the capital and operating costs of the two plants. The main costs of the joint solution are: the capital and operating costs of a waste transfer station in Guernsey (where waste could be

baled or could be transferred from small containers or collection vehicles to large containers); the cost of shipping Guernsey's waste to Jersey (including transport to and from the harbour at each end); and the capital and operating costs of the plant in Jersey.

- 3.13 The Panel has met Ramboll/Babtie Fichtner to discuss the consultants' preliminary findings. The Panel expressed various concerns and was reassured that Ramboll/Babtie Fichtner's report would address the issues brought to their attention by the Panel. In particular, the Panel noted that the initial costings were based on the forecasts of waste arisings estimated by Ramboll in 2001, which as indicated in Part 1 of this report are contentious. We were also concerned that projected costs for the construction and operation of a waste transfer station in Guernsey exceeded, by a considerable margin, those costs which separate industry sources had indicated to us would be appropriate. We also considered that the estimated costs for transportation were also too high, although these have now been revised downwards. We note that in the event that a vessel were taken on time charter there could be considerable cost savings in moving recyclates from either island for processing. We have therefore asked Ramboll/Babtie Fichtner to validate these costs and to conduct some additional sensitivity analysis based on waste arisings at a lower level than estimated by Ramboll in 2001.
- 3.14 We understand that a conclusion which points to the joint solution with Jersey having lower overall costs is likely. There may also be other benefits which make the option of joining with Jersey worth pursuing. For example, the islands would have the visual impact of only one energy from waste plant and not two. The costs and benefits of joining with Jersey will need to be weighed against the risks referred to above.
- 3.15 Final disposal of Guernsey's waste at an energy from waste plant situated on Jersey would provide a combined solution for treating the waste for disposal, arising from a total community of 148,000 people. If Guernsey wishes to pursue the option of joining with Jersey in a joint waste strategy, a decision will almost certainly be required by mid 2005. **We therefore recommend that the possibility of working with Jersey should be explored immediately by the relevant authorities in the two islands if the report of Ramboll/Babtie Fichtner confirms that there are economic and/or environmental reasons for so doing.**

(2) Other on-island solutions involving alternative technologies should be carefully evaluated

- 3.16 The Panel examined the state of play as regards alternative technologies to traditional energy from waste "mass burn" incineration. We found that:
- (a) There are a number of alternative technologies in or close to commercial operation, but none is yet fully proven for Guernsey's types of waste.

- (b) If joining with Jersey is not practicable, Guernsey should await the outcome of the DEFRA New Technologies Demonstrator Programme before finalising its own long-term solution for residual wastes.
- (c) When the demonstrator projects have been evaluated, Guernsey should go to the market for a long term solution to its own waste needs using an outcome based specification.

(a) There are a number of alternative technologies in or close to commercial operation, but none is yet fully proven for Guernsey's types of waste

3.17 The requirement of the EU Landfill Directive for Member States to reduce biodegradable and hazardous landfill, has renewed UK interest in alternative technologies to traditional energy from waste plants. These technologies, many of which have been used in Europe and beyond, include:

- Composting: breakdown of biodegradable wastes by micro-organisms in the presence of air - in an enclosed vessel or in open "windrows".
- Anaerobic Digestion: breakdown by micro-organisms with no air. Works in-vessel and produces bio-gas and a sludge/liquid "digestate".
- Mechanical and Biological Treatment (MBT): combines a number of simple waste separation and treatment techniques, usually involving composting and/or refuse derived fuel production.
- Pyrolysis: medium/high temperature (500°C), low oxygen breakdown of organic wastes producing gas or oil fuel and a high carbon "char" which may need to be landfilled. The plant often runs on pre-sorted waste or refuse derived fuel output from another technology.
- Gasification: high temperature (1000+°C) low oxygen partial combustion to produce a gas fuel. Often uses pre sorted waste or refuse derived fuel.
- Autoclaving: steam treatment, often of unsorted wastes - facilitates removal of recyclables and produces a fibrous refuse derived fuel and residues for landfill.

3.18 Many of these technologies are believed to offer advantages in terms of cost, size, quality of recyclates or emissions (see Appendix 5)²³. They are reported to have been working successfully, particularly in Scandinavia and around the Pacific rim. We were given an insight into these technologies by the Environment Agency and there are indications that many are providing practical solutions to community

²³ The Panel advises caution in taking reported performance or costings to be directly applicable to Guernsey's circumstances. In any evaluation of a particular technology as a possible means of dealing with solid waste in Guernsey a site specific analysis and costing would be essential.

waste disposal. However, the Panel was not in a position to evaluate these alternative technologies in depth.

- 3.19 Only some of them have performance and reliability proven to the satisfaction of investors or operators. There is too little objective and comparable information available to allow a full and considered appraisal of the options available. The claims of plant and equipment vendors have not been fully tested and some may be exaggerated.
- 3.20 The Environment Department has quite properly maintained a review of the technology alternatives to the proposed energy from waste plant. In April 2002 the former Board of Administration engaged Juniper, acknowledged experts in this field, to undertake a review of the several developing technologies. The analyses were thorough and Juniper's report concluded that the energy from waste technology was then the most dependable for Guernsey. In April 2003 Juniper provided an update report and concluded that there had been little progress in the commercial development of the alternatives to incineration since its last report.
- 3.21 Juniper's conclusions must be seen in the light of the continued development of alternative technologies. Delays in agreeing and building Guernsey's residual waste treatment plant have meant that there is now a greater body of knowledge and experience of these technologies. Matters are now close to the point where decisions about whether and when to adopt alternative technologies can be made with far greater confidence. The work now being undertaken by DEFRA should reinforce such decisions.

(b) If joining with Jersey is not practicable, Guernsey should await the outcome of the DEFRA New Technologies Demonstrator Programme before finalising its own long-term solution for residual wastes

- 3.22 DEFRA has set up a £30 million "New Technologies Demonstrator Programme" in England to establish pilot plants to assess the commercial and environmental viabilities of a range of technologies. First round bids closed in October 2004, with seven preferred bidders encompassing the following technologies:
- Gasification;
 - Pyrolysis;
 - Anaerobic digestion;
 - Mechanical and Biological Treatment;
 - In-vessel composting;
 - Various combinations of these technologies.

- 3.23 The second round of bidding closes in March 2005. The objective is to have five plants in operation by the end of 2005 and ten by the end of 2006. The pilot plants will run for two years and should yield valuable information by 2007-08. The outputs should increase investor, local authority and operator confidence, although it is unlikely that all pilot plants will prove fully successful.
- 3.24 The Environment Agency in England and Wales is also undertaking an assessment of waste technologies in use across Europe. Preliminary findings are included and regularly updated on the Agency's website [www.environment-agency.gov.uk].
- 3.25 Alternative waste treatments often suffer either from a poorly understood or demonstrated technology or unproven combinations of technologies. A report by Fichtner in March 2004 for the Environmental Services Training and Education Trust concluded that:
- “commercial application of gasification and pyrolysis technologies [for residual solid municipal wastes] is not widespread in the UK or Europe. Only a few plants operate at a commercial scale. The risks associated with using less well developed technologies for the treatment of waste are considered to be higher than for more established technologies”, and that “..the majority of plants [in the report] are either very small, operate on refuse derived fuel rather than for residual solid municipal wastes, [are] incomplete or [have] closed down”.*
- 3.26 The DEFRA and Environment Agency projects are designed to overcome this lack of objective information and shared experience of using alternative and combined technologies.
- 3.27 The former Board of Administration's decision to pursue tried and tested energy from waste technology was almost certainly right at the time. Now the technology market is changing and within two to three years there should be increased confidence in identifying the right technology for treating Guernsey's wastes. It should be noted, however, that the best solution for the island at that stage need not rule out incineration. For example, the Panel visited a reciprocating kiln incinerator on South Humberside, designed and operating in France in smaller communities and which appeared to meet all the Island's requirements matching those of the currently proposed plant at a significantly smaller scale and capital cost. What is needed now is a better informed decision, and time to allow more information to become available. **We recommend that, if joining with Jersey is not practicable, Guernsey should finalise its own long term solution for residual wastes once the outcome of the DEFRA New Technologies Demonstrator Programme is known.**
- 3.28 One option the Panel has considered is for Guernsey to host its own proving trial working in partnership with a technology supplier and operator along similar lines to the DEFRA demonstrator programme. The trial could be done over a period of

two years, perhaps on 25 per cent of the island's municipal solid waste. The Panel has received specific indications from suppliers and operators of alternative technology plants that they would be willing to partner the States during the introductory stage of a local reference plant to treat a proportion of the Island's waste. However, the Panel did not consider it to be part of its role to enquire into the commercial merits or opportunities of these proposals, reserving this to the States.

3.29 Engaging in a proving trial would undoubtedly entail a degree of risk for both parties. The nature and extent of the risks would depend on the form of any agreement and the security each party could bring to the project. Although hosting a proving trial in Guernsey could be a useful step forward in finding a long term solution for the Island's waste disposal needs, Guernsey may prefer to await the outcome of the DEFRA trials.

(c) When the DEFRA demonstrator projects have been evaluated, Guernsey should go to the market for a long term solution to its own waste needs using an outcome based specification

3.30 Guernsey should re-examine what the market can offer in 2007 or 2008 when the state of knowledge should have advanced. However, a decision regarding the long term solution for the island's residual wastes cannot be deferred indefinitely and a firm decision would be needed at that stage.

3.31 **We recommend that the search for the right long term solution for Guernsey's waste management needs should be underpinned by a thorough analysis of strategic options for waste management for the island.** This would involve comparison of a number of technologies and combinations of technologies, supported by an analysis of the environmental costs and benefits of the alternatives. Such a "Best Practicable Environmental Option Appraisal" has just been completed in Hull and the East Riding of Yorkshire (see Appendix 6). The appraisal was triggered by the failure to secure planning permission for an energy from waste plant to serve the area and changes to the law regarding composting. It has taken ten months from start to finish.

3.32 When Guernsey is ready to go to the market for a long term solution, **we recommend that expressions of interest should be invited in respect of all viable technologies.** Expressions of interest should be sought in terms of an outcome based specification, ie the objectives to be reached rather than the specific means to achieve them. This should encourage the private sector to be innovative and explore the full range of options to address Guernsey's waste management needs in the long term.

3.33 The assessment of expressions of interest will have to take full account of the specific conditions relating to the island. This will include the ease of access to off-island recycle markets, the extent of on-island recycle markets, the pre-treatment requirements of some technologies or plants and the need for capacity to

treat rejects, process outputs and the management of wastes during plant down-times.

3.34 **We recommend that multi-solution options involving more than one type of plant or technology should not be ruled out.** Guernsey should include consideration of a strategy and contracts based on a range of technologies, possibly at different sites. Experience to date shows that:

- Some technologies will manage only specific parts of the waste, for example, composting or anaerobic digestion.
- Local (smaller scale) residual waste treatments may be possible using a single technology at a number of sites.
- Some technology vendors are likely to propose several different combinations of technologies at the same site, for example, Mechanical and Biological Treatment, Pyrolysis and Gasification.

3.35 As discussed in Part 1, **we recommend that all different forms of contracting should be permissible.** To test the market thoroughly, contractors should be allowed the freedom to propose their own choice of contract structure. Although this will make tender evaluation more complex and time consuming, it should leave the private sector greater room to propose more flexible, cost-effective and innovative solutions.

(3) Exporting Guernsey's waste to EU countries is a possible option but has risks attached

3.36 A third possible option we examined was the export of Guernsey's waste to other European countries. We found that:

- (a) Exporting waste to EU countries appears to be legally possible but the issues are not clear cut.
- (b) The opportunity exists to export waste to certain countries.
- (c) The cost of exporting waste to EU countries may be less than the cost of an on-island solution.
- (d) Exporting waste as a long-term strategy has risks attached.

(a) Exporting waste to EU countries appears to be legally possible but the issues are not clear cut

3.37 There is a possibility that Guernsey might be able to export its waste to a European country. The legal issues are complex, involving both international and domestic law. Thus, in a shipment between Guernsey and France, three separate

suites of legislation²⁴ might come into play. Legal opinion suggests that the relevant EU law does not apply to Guernsey but could be mirrored by “adoption”.

- 3.38 The former Board of Administration had believed that trans-boundary shipment of waste was not possible. Legal opinion subsequently provided to the Environment Department indicates that there is considerably more scope for the movement of waste under the relevant laws than had previously been thought. The Panel considers that the advice provided to the Environment Department was comprehensive and well founded, although it is accepted that more research might be required. It is not therefore sensible to discount the possibility of transporting waste to an EU country on purely legal grounds, although shipment to some countries might be more problematic than others.
- 3.39 In all cases the competent authorities dispatching and receiving the waste must classify it as being for disposal or recovery. The legislative framework aims not so much to define the characteristics of waste as to secure protection of the environment. The principle of proximity seeks to discourage over-long shipments and the principle of sustainability evaluates the options within a State to deal with its own waste in a realistic way.
- 3.40 Trans-boundary movements of waste occur for both recovery and disposal. Recovery involves at least an element of energy production, whilst preserving natural resources. The better view may be that untreated waste sent for incineration in an energy from waste plant is treated as being for disposal.
- 3.41 By convention waste is colour coded as in Figure 14.

Figure 14: Colour coding of waste for trans-boundary movement

Colour	Type of waste	Extent of movement allowed
Green	Recyclables	Free movement
Orange	Household / Industrial and Bottom Ash	Subject to an agreement between authority of dispatch and destination
Red	Hazardous waste	Requires a duly motivated request pursuant to the Basle Convention

- 3.42 Different States take different positions in the way they interpret the law. In Germany and France there is a willingness to accept waste on the part of waste treatment plants, who contend that the relevant authorisations are obtainable from the appropriate authorities. However, this view would need to be tested by way of an application originating from Guernsey, supported by the receiving plant.

²⁴ Legislation affecting Guernsey and the UK, French legislation and EU legislation.

(b) The opportunity exists to export waste to certain countries

- 3.43 In Billet XIII of 2002 (page 1103), the former Board of Administration advised the States that enquiries of 24 plants situated in England and France indicated that between these facilities only 20,000 tonnes of spare capacity was then available. This would not have been enough to have treated even half of Guernsey's solid waste. Visits by the Panel to various plants and approaches to it from waste disposal companies indicate that the suggestion that there is insufficient overseas capacity to accept waste from Guernsey is no longer correct.
- 3.44 The Panel believes there to be a strong possibility of shipping waste to France (see below). It may also be possible to ship waste to Germany. For example, Stadtreinigung Hamburg of Germany has indicated a willingness to accept Guernsey's waste. However, save for hazardous wastes, where special arrangements apply, it is unlikely that waste could be shipped to England because of the lack of available capacity, an expectation by the Competent Authority that Guernsey should be in a position to make adequate arrangements to manage its own non-hazardous wastes, and the likely extent of public resistance.
- 3.45 Perhaps the most likely opportunity - on capacity, proximity and cost grounds - exists at the plant operated by the contractor at Le Havre. It has substantial unused capacity of some 30,000 tonnes a year within its two waste streams. Spare capacity also exists at other energy from waste plants in France operated by the same contractor. These are at Valorelle (Chartre), with spare capacity of 40,000 tonnes a year, and Arcante (Tours), with spare capacity of 15,000 tonnes a year. The combined capacity of 85,000 tonnes a year at the three plants could, in conjunction with effective recycling, handle a very substantial proportion of the residual waste of both Guernsey and Jersey.
- 3.46 Jersey has stronger links with Normandy than Guernsey. However, it would be open to Guernsey to forge a similar relationship, perhaps in concert with Jersey. Our research leads us to believe that there is a desire on the part of the regional government of Normandy to create stronger economic and commercial ties with the islands. This objective may be driven by the investment which central government is believed to be making in positioning the port of Cherbourg as the future premiere port of Europe, the creation of a substantial new port at Granville by 2010 and the construction of a motorway infrastructure and improved rail links to serve the planned regional expansion. Opportunities to respond to such initiatives offer the possibility for dealing with the production of energy from waste and the treatment of recyclates, together with associated shipping movements. We understand that Jersey has already initiated the process of obtaining the necessary permissions through the government of the United Kingdom.
- 3.47 The possibility also exists for the islands to enter agreements which would see all their waste management activities brought together under the umbrella of a single contract. The arrangement could include the collection of recyclables, the operation of bring banks and civic amenity sites, the processing of waste and

recyclates on-island, and the shipping for re-processing or disposal of residual wastes. Certain elements could be sub-contracted on-island as required. This type of arrangement may prove of interest to one or both islands as part of implementing an overall waste strategy.

(c) The cost of exporting waste to EU countries may be less than the cost of an on-island solution

3.48 The costs of exporting waste to EU countries could compare favourably with the costs that would be incurred under the proposed contract with Lurgi. To illustrate the sorts of costs involved, a case study of the possible use by both Guernsey and Jersey of the Le Havre facility is shown at Figure 15 below.

Figure 15: Case study of the possible use by Guernsey and Jersey of the Le Havre energy from waste facility²⁵

<p>The energy from waste incinerator at Le Havre was opened in July 2004. It has a capacity of 12 tonnes an hour on each of its two lines. The capability for a third line was part of the original structure; the boiler would be added when required and could take up to 15 tonnes an hour. The Le Havre facility serves a population of 370,000.</p> <p>It may be possible for both Guernsey and Jersey to use the Le Havre facility. It would then be economic to open a third stream at the plant if both islands were to consider shipment to France as a long term solution. For this to be possible both islands would probably have to join the present “syndicate” which provides feedstock for the plant. This would involve negotiations with the regional authorities, through the office of the Mayor of Le Havre, and require the successful negotiation of a robust long-term agreement, with a cancellation period of not less than five years.</p> <p>The addition of the third boiler within the existing structure would be likely to form part of any “entry fee” on the part of the Channel Islands to the “syndicate”. There may also be a requirement to contribute to the cost of the existing plant as, for example, the gas treatment from the third stream would join that of the first and second in the single process for gas treatment.</p> <p>By way of illustration the contractor has assisted Jersey in compiling the following average costs for an interim pan Channel Island solution, to which must be added the costs of on-island collection and baling. There would be a difference in the required payment between the short-term “non-syndicated” gate fee at 90 € per tonne and a syndicated fee, where an element of capital had been invested, at 60 € per tonne.</p>		
	Non-syndicated cost per tonne (Guernsey’s waste spread amongst the three plants – see para 3.49)	Syndicated cost per tonne (opening a third stream at Le Havre)
Shipping	50.00 €	50.00 €
French Transport	22.00 € (average cost for the three plants)	2.12 €
Treating Waste	90.00 €	60.00 €
Taxes	21.00 €	12.18 €
Total	183.00 € (£126)*	124.30 € (£86) *

* Exchange rate of 1.45€ to £1 used

²⁵ The figures in this case study are indicative and would need to be confirmed with the relevant sources before this option was pursued further.

(d) Exporting waste as a long-term strategy has risks attached

3.49 Exporting waste has risks attached, especially in the longer term:

- The principle of sustainability will be more difficult to maintain once alternative solutions have been proven as part of the DEFRA Programme referred to earlier.
- Unless a binding agreement is concluded, the present capacity at Le Havre or other plants in France might not remain available over a long period of time.
- Future laws or court decisions might make the long-term export of waste more difficult or even impossible.
- Except for the adjacent plants in France accessed through the ports of Le Havre, Cherbourg or Granville, shipping waste to more distant plants overseas would run counter to the proximity principle.
- Pressure groups within the EU country of destination might derail the import of Guernsey's waste.
- It might be difficult to agree contractual terms that safeguard the disposal of Guernsey's waste over the long term, particularly in light of the above risks.

3.50 These risks could possibly be mitigated if Guernsey pre-treated its waste so that it left the island as a Refuse Derived Fuel. A Refuse Derived Fuel facility would need to be built on island with associated capital and operating costs. The export of the Refuse Derived Fuel would then be treated as "green waste" for recovery rather than waste for disposal. However, the markets for Refuse Derived Fuels are tentative at present. In the longer term, and given the increasing demand for a finite stock of fossil fuel, the market might become more sustainable, although the receivers would probably be in a number of different locations. This solution would not solve all Guernsey's problems as residual wastes would need to be dealt with on-island.

PART 4: AN INTERIM SOLUTION

4.1 This Part of the Report considers what Guernsey should do as an interim solution until long-term alternatives to the proposed energy from waste plant at Longue Hougue become available. **We conclude that an interim solution to Guernsey's waste needs will be required until a long term solution becomes available.** The interim solutions we examined were: extending the life of the Mont Cuet landfill; and export as an interim measure.

4.2 We consider that:

- (1) Except for inert waste, landfill is not a long-term solution to Guernsey's solid waste disposal needs.
- (2) A minimum of five years' landfill life should be maintained at Mont Cuet until a long term solution becomes available.
- (3) Immediate steps should be taken to secure the export of waste as a short-term interim measure so as to maintain a minimum five year life at Mont Cuet.

(1) Except for inert waste, landfill is not a long-term solution to Guernsey's solid waste disposal needs

4.3 The Panel is concerned that Mont Cuet does not and cannot meet accepted standards of landfill (Figure 16 below). By modern standards Mont Cuet is suitable only for the deposit of inert waste. Nevertheless, we recognise that Mont Cuet is the only solid waste disposal option currently available and there is no suitable alternative site for the deposit of mixed waste to landfill on the island. It is unfortunate that the authorities in Guernsey should not previously have planned any alternative or taken the steps necessary to raise the standard of landfill management. The Health and Social Services Department told us, however, that Mont Cuet had been given environmental safeguards at the request of the waste regulator.

4.4 On current assumptions, the Environment Department has estimated that Mont Cuet has a void space/life of up to 8 years. We accept that assessment. We note, however, that progress in implementing the 1998 Solid Waste Strategy has been very limited. We believe much more could have been done in the past and should be done now to limit deposits at Mont Cuet.

4.5 There is ample capacity over the long term for the deposit of inert waste at Longue Hougue. We welcome the steps that have been taken to divert suitable fill material to reclamation purposes.

Figure 16: Comments on the Establishment and Operation of Mont Cuet Landfill

1. The site was a worked out stone quarry and was never prepared for landfilling as would be required by site licensing regimes in the EU.
2. The site is inherently unsuitable as it is infiltrated by both ground water and sea water. It was not practicable to line the site with either a butyl liner or clay, both of which would have had to be imported. Anchoring a liner would have been a major difficulty.
3. The infrastructure provided on the site is limited because of the size and limitations of the site. The site has a weighbridge but apart from measuring the weight of material delivered there appears to be insufficient monitoring of waste types received and limited capacity to divert inappropriate materials spotted.
4. There does not appear to be any formal approved working plan of the site including the recording of where particular wastes are deposited.
5. Although the site is fenced, wind-blown litter will be an increasing problem as the quarry is filled.
6. Management of landfill gas has not yet begun.
7. Management of leachate is not really practicable due to the influx of ground, surface and sea water, although some attempt is made to pump out and aerate leachate.
8. There needs to be formal management and monitoring of wastes deposited, landfill gas, odour, dust, noise, surface water, ground water and leachate.
9. For the monitoring and management to be meaningful, there need to be environmental baselines, a routine monitoring and sampling plan and the regular publication of results and trends.
10. The best waste management operations now tend to seek third party accreditation of their operations through a quality management scheme such as BS9000, BS14000 or EMAS (Eco-Management and Audit Scheme).

(2) A minimum of five years' landfill life should be maintained at Mont Cuét until a long term solution becomes available

- 4.6 The Panel is uneasy about Mont Cuét's continued use as it is unlikely ever to meet EU landfill requirements: the site is not fully fit for purpose and is not managed according to best modern practice. However, there is no alternative waste disposal option readily available and Guernsey has to make the best of what it has. The remaining disposal capacity at Mont Cuét therefore needs to be carefully protected. **We recommend that, through pricing, waste minimisation, enforcement and other measures, Guernsey seeks to maintain a minimum of five years' landfill capacity at Mont Cuét.** A margin of five years would allow Guernsey the flexibility to determine the right long term solution for the island.
- 4.7 The panel estimates that the pricing changes it recommends, coupled with waste minimisation and improved recycling measures, could extend the life of Mont Cuét by a number of years. This would only be achieved, however, if the States and Parishes adopt a rigorous and determined approach towards waste minimisation and recycling.
- 4.8 We note that it would be technically possible to extend landfill capacity further by treating waste to reduce its volume and water content. But we do not consider that this option would be worthwhile because the infiltration of water at Mont Cuét would lead to the dried waste absorbing ground and sea water and it would swell until it became saturated. In this connection it should be noted that sea water slows bacterial growth and activity, which means that the landfill would take longer to stabilise.

(3) Immediate steps should be taken to secure the export of waste as a short-term interim measure so as to maintain a minimum five year life at Mont Cuét

- 4.9 The measures suggested by the panel - including pricing, enforcement, waste minimisation and recycling initiatives - should go some way to extending the life of Mont Cuét. However, at some stage - and most probably before a long-term waste disposal solution is operational - landfill capacity will get close to having a remaining life of only five years. An interim disposal method will then need to be brought into play.
- 4.10 We consider that the only viable interim measure is export of waste to a neighbouring jurisdiction. As discussed in Part 3 of this Report, the opportunity exists to export waste to certain EU countries, most notably France. The risks in exporting waste are very much less as a short term measure compared with export as a long term strategy.

- 4.11 However, it will take time to set up the necessary arrangements. Action to set up an interim export facility cannot therefore wait until it is needed. It needs to be set up straight away so that the option can be used as soon as it becomes necessary. **We therefore recommend that, in order to maintain a minimum five year life at Mont Cuet, Guernsey should take immediate steps to ensure that it is in a position to export waste as a short term interim measure should this be necessary.**
- 4.12 In the short-term, Guernsey can argue that it requires a temporary off-island solution because its on-island resources (Mont Cuet) are not sustainable and there is currently no suitable long-term disposal option available. A short-term solution is also appropriate in the light of DEFRA's work under its "New Technology Demonstration Programme", with alternative technologies likely to become proven over the next few years. The short-term solution would be required whilst the technology was being established for a long-term, on-island solution to the disposal of Guernsey's residual waste. It would be open to the States to consider the option of Guernsey hosting its own proving trial, as referred to in paragraph 3.28.
- 4.13 The arrangements for the interim export process should be commenced by the States entering commercial negotiations with its preferred receiver of waste. In conjunction with that organisation, and either directly or through the government of the United Kingdom, the States should make such formal requests as may be required to secure the necessary approval or permission for the export of waste for a short-term period. Residual waste for export will need to be reduced to a minimum through waste minimisation, recycling and possible pre-treatment measures.
- 4.14 It is essential that the States should decide by no later than 2008 what its main disposal route is to be for the long term. The implementation of that strategy must be in place and operating effectively by no later than 2011. These imperatives require that temporary solutions are fully effective in reducing the amount of waste going to Mont Cuet to the levels required.
- 4.15 If these waste reduction methods are fully effective exporting waste might not be necessary or only be required for a short period. However, the arrangements for such export should now be put in hand.

APPENDIX 1: ISSUE ANALYSIS

In September 2004, the Panel developed the following issue analysis to scope its work:

Key Question: Is mass burn technology in the form of an on-island energy from waste plant the most appropriate waste disposal solution for Guernsey's needs?

Issue 1: Are there practicable alternatives to on-island mass burn technology which could cost-effectively meet Guernsey's needs?

- (a) Have the authorities taken all reasonable steps to encourage the reduction, re-use and recycling of waste?
 - Reduction (prevent and minimise)?
 - Re-use?
 - Recycling and composting?
- (b) Are there practicable off-island solutions for disposing of Guernsey's waste?
 - Jersey, including joint arrangements?
 - UK?
 - Elsewhere in Europe?
- (c) If off-island solutions are not available, are there practicable alternatives to mass burn technology available at the present time?
 - Biological (aerobic)?
 - Biological (anaerobic)?
 - Gasification?
 - Incineration (excl mass burn)?
 - Pyrolysis?
 - Physical (autoclaving)?
 - Landfill?
 - Mont Cuet?
 - Les Vardes?
 - Elsewhere on island?
- (d) If practicable alternatives to mass burn technology are not yet available, are there interim solutions which could bridge the gap until practicable alternatives become available?
 - Landfill on island?
 - Export?

Issue 2: If on-island mass burn technology is the only practicable option, is the proposed energy from waste plant at Longue Hougue the most appropriate solution?

- (a) Have Guernsey's needs been adequately identified?
 - Has Guernsey's current waste production been identified (types and volumes), inc hazardous wastes?
 - Has the likely growth in waste production been accurately estimated as far as possible?
 - Has the scope for a reduction in waste for disposal as a result of recycling and other initiatives been properly assessed?
- (b) Is the scale of the proposed plant appropriate for Guernsey's needs?
 - Is the scale of the proposed plant in line with Guernsey's forecast waste production?
 - Would the proposed plant still be appropriate if actual waste production proves to be significantly different from that forecast?
 - Is the proposed plant consistent with Guernsey's solid waste management strategy (being developed)?
 - Would the proposed plant integrate effectively with Guernsey's current waste management infrastructure?
 - Is the scale of the proposed plant in line with experience elsewhere, including the Isle of Man and Jersey?
 - Would the proposed plant allow (ie not stifle) the potential for future expansion in areas such as recycling and composting?
 - Is the design of the proposed plant appropriate for what is required?
- (c) Is Longue Hougue the best location for a plant of this size and scale?
 - i. Is Longue Hougue suitable on health, environmental and access grounds?
 - ii. Would any other locations be more suitable than Longue Hougue?
- (d) Were appropriate contract procedures followed in the decision to select Lurgi as the preferred tenderer?
 - i. Was a sensible procurement strategy adopted?
 - ii. Was the tender process conducted properly?
- (e) Is the proposed contract a good deal for Guernsey?
 - i. Has the bid offering the best value for money been chosen?
 - ii. Has the cost been benchmarked against the cost of similar plants elsewhere?

APPENDIX 2: PROCEDURAL MATTERS

This appendix summarises the activities of the Panel since the appointment of Members was completed in late August 2004.

1. Meetings of the Panel

The Panel met on the following dates:

2004

27 August	in Guernsey
16 September	in Guernsey
17 September	in Guernsey
29 September	in Guernsey
30 September	in Guernsey
7 October	in London
8 October	in London
2 November	in London
4 November	in London
11 November	in London
29 November	in London

2005

14 January	in London
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2. Individuals/Organisations with which Meetings were held

a. Formal Meetings of the Panel

In two separate meetings held on 16 September the Panel met representatives of the following organisations:

- Association of Guernsey Compliance Officers
- Guernsey Chamber of Commerce
- Confederation of Guernsey Industry
- GHATA
- Institute of Bankers
- Institute of Directors

- Friends of the Earth
- Guernsey Litter Forum
- La Société Guernesiate
- The National Trust
- Town Centre Partnership
- Waste Action Group Guernsey

Also on 16 September the Panel individually met:

- Deputy Scott Ogier, the lead signatory of the Requête
- Deputy Charles Parkinson, who proposed the successful amendment to the Requête

On 17 September the Panel visited Mont Cuet and Longue Hougue landfill sites.

On 29 September the Panel held a public meeting.

On 30 September the Panel met Deputy B M Flouquet, Environment Minister and Mr Steve Smith, Chief Officer, Environment Department, together with other staff of the Environment Department and Guernsey Technical services.

On 7 October the Panel met:

- Dr Frank Hardwick - Manager, Waste Technology Data Centre, Environment Agency
- the following representatives of Lurgi:
 - David Porter - Director –Lurgi (UK) Ltd
 - Mike Wilkins - MD – Lurgi (UK) Ltd
 - Gerhard Lohe - Sales Director Lurgi Lentjes AG
 - Richard Adams - Legal Counsel
- Chris Davey - Manager of Local Authority Relations, Wrap (Waste and Resources Action Programme)

On 2 November the Panel met Mr John Acton, Chairman of Compact Power Ltd.

b. With Members of the Panel

On 21 and 22 September David Purchon and Richard Eales met Dr David Jeffs, Director of Public Health, and Mr John Cook, Chief Environmental Health Officer (the regulator), and Mr S Smith, Chief Officer, and other staff of the Environment Department and Guernsey Technical Services

Between 3 and 5 October the Chairman accompanied representatives of the States of Jersey Shadow Scrutiny Committee on a fact finding visit to Le Havre, Granville and Isigny in France.

On 8 October the Chairman, Richard Eales, David Purchon and the Head of Government Business met the following representatives of Mayside Recycling

Brian Perry

Paul Deakin

On 12 October the Chairman, Richard Eales and the Head of Government Business visited Jersey and met representatives of the States of Jersey Environment and Public Services Committee including Senator Phillip Ozouf, President, and Mr John Richardson, Chief Executive.

On 15 October the Chairman attended a session of the States of Jersey Shadow Scrutiny Committee when it received a presentation.

On 28 October the Chairman and the Head of Government Business met the Island Douzaine Council's working party comprising:

- Douzenier W Le R Robilliard (Torteval) (Chairman, IDC)
- Douzenier R H H Barneby (Senior Constable St Peter Port)
- Douzenier M Levrier (St Sampson)
- Douzenier M Cleal (Vale)
- S Langlois (Junior Constable St Pierre du Bois)

On 29 October the Chairman and Richard Eales visited the following operations in Guernsey:

- Mayside Reclamation
- Island Waste
- Guernsey Recycling
- La Fontaine Vinery

On 9 November the Chairman and the Head of Government Business met the Island Douzaine Council.

On 16 November the Chairman, Richard Eales and the Head of Government Business met Dr Haden Taylor of ReCycled Refuse International Ltd.

On 17 November the Chairman and David Purchon, accompanied by a representative from Guernsey Technical Services, visited the sites identified in the Environment Impact Assessment.

On 18 November David Purchon met representatives of the Environmental Health and Planning departments.

On 19 November the Chairman, Richard Eales and the Head of Government Business met the following representatives of Nehlsen & Co (Guernsey) Ltd:

- Mr R J A Brown
- Mr David Archer
- Mr Charles Hinde
- Mr Jens Bruns

Mr Bernd Gabriel

On 24 November the Chairman, Richard Eales and the Head of Government Business met Mr Alan Crowe of Guernsey Recycling Ltd.

On 30 November the Chairman, Richard Eales and the Head of Government Business met the following representatives of CNIM/R G Falla/SPIE:

Andy Hall

Andrew Woolcock

On 1 December the Chairman, Richard Eales, David Purchon and the Head of Government Business met representatives of the Isle of Man Department of Local Government and the Environment. On 2 December the Chairman, Richard Eales and the Head of Government Business toured the new Isle of Man incinerator.

On 15 December the Chairman, Richard Eales and David Purchon visited the Donarbon waste management site at Waterbeach Cambridgeshire with representatives of Verno Ltd.

On 21 December the Chairman, Richard Eales and the Head of Government Business met representatives of the Environment Department.

On 6 January the Chairman met the States of Jersey Shadow Scrutiny Committee.

On 6 January David Purchon visited the Cyclerval plant of Newlincs Development Ltd at Stallingborough, North East Lincolnshire.

On 7 January the Chairman, Richard Eales and the Head of Government Business met Mr John Cook, Chief Environmental Health Officer, and Mr Simon Welsh and, separately, Mr John Ogier from the Commerce and Employment Department.

On 12 January the Chairman, Richard Eales and the Head of Government Business met Dr John Weatherby of Bابتie Fichtner and Mr Klaus Jacob Jensen of Ramboll.

3 Submissions Published on States of Guernsey Website

a. Individual submissions

Adams, Julie
Addison, Edward
André
Andrews, Tim
Ashworth, Muir

Bailey, Lesley & Andrew
Barber, Gresham
Barnes, Dominic
Barnes, John & Marybell
Barnes, Marcus & Blaise

Batiste, Mrs I F
Battye, Bob
Bean, P J H
Bihet, Molly & André
Bisson, Andrew
Bisson, Roy
Blanchford, Gary
Blondin, A L
Bodman, Mrs L
Bowditch, Anna
Bowker, Caroline

Bradshaw, Rosie
 Brazier-Creagh, Victoria
 Brook, R & S
 Brown, Chris
 Brown, Richard J A
 Buchanan, John

 Callaway, J E
 Cameron-Singleton, Barry & Linda
 Campbell, Laurence
 Campelli, Z
 Carey, Mrs S
 Carré, Andy, Julie, Esmee & Henry
 Cariou, Marcel
 Casbolt, Trevor & Trudy
 Cataroche, Sheila
 Ciotti, Della
 Clark, Joan E
 Clavadescher, Elizabeth
 Cocks, J R & family
 Collenette, Zoe
 Cooper, Hayley
 Cooper, M F
 Cotterill, M

 Davis, Gill
 De'Ath, Mervyn
 De Guerin, Lynn
 De La Mare, Dave
 De La Mare, Richard & Sandra
 De La Rue, Nigel & Clair
 De La Rue, Pierre
 De La Rue, S
 De La Rue, Simon
 De Putron, Susan
 Dodd, Colin & Andrea
 Dorey, Rosie
 Dorey, Rupert
 Dudley-Owen, Mr D & Mrs G
 Duncan, Jenny

 Edge, Patrick
 Edwards, David & Jackie

 Falla, Michael
 Falla, Peter J
 Farnham, George & Jean
 Fox, Richard & Sally
 Fuller, Dave & Andie

 Gallienne, Ian
 Garbut, Karen

 Gaudion, B J
 Gilbey, Harry
 Godfrey, David
 Gold, Nicholas
 Greening, Jennifer
 Gregson, Ed
 Gregson, Norah
 Gregson, Rob
 Grimshaw, David R
 Grimshaw, Jocelyn
 Groves, Errol

 Harrison, Mrs G
 Harty, Selena
 Hazlewood, Marion
 Head, Liz
 Hearse, Andy & Claire
 Heighton-Jacjson, Andrew
 Henderson, Tim
 Hewins, Mr & Mrs D
 Hewlett, Brian
 Heyworth, Adrian & Penny
 Higgs, John
 Higgs, Roger
 Hodge, R W
 Hubert, Laura

 Iles, Janet

 Jehan, S W J

 Keneally, Mr P
 King, Gemma
 Knapp, Mr & Mrs D
 Krebbs, Patricia

 Le Breton, Kevin & Georgina
 Leach, John & Marguerite
 Le Cocq, Mark
 Leech, Dennis & Patricia
 Lees, Mrs S J
 Le Maitre, Maria
 Lenfestey, Mrs C M
 Le Tissier, Chantelle
 Le Tissier, Owen & Fiona
 Lovell, Martin & Barbara
 Loveridge, T A

 Macdougall, Suzette
 Mahy, Geoff & Pauline
 Maindonald, Mr & Mrs D E
 Marsh, Sam

Marson, Geoffrey & Lorraine
Mason family
Mauger, Lee
McClellan, Ethan
McDada, A J
Meacock, Richard
Meecham, Mrs B L
Merjojam, Carolyn
Moore, Terry
Morris, Mrs J M

Nash, D W
Nicolle, Michael
Northey, Roy

Oliver, Stephen
Ozanne, Sally

Packer, Mrs J V
Partridge, Caroline
Paul, Michael
Pearce, Emma
Phillipe, H
Pill, David
Platts, Robert
Potter, Deborah
Proudlove-Gains, Helen

Rebollo, Francisco
Rebollo, Sheila
Reeve, K & P
Richardson, Mrs A
Ritchie, A
Ritchie, Renate
Robinson, Chris
Rouillard, John

b. Organisations

Allied Coasters Ltd
Aqua Star Ltd
CNIM International Operations/
R J Falla Ltd
Commerce & Employment Department
Confederation of Guernsey Industry
Construction Industry Forum
Energos
Estech Europe Ltd
Friends of the Earth Guernsey
GHATA
Guernsey Chamber of Commerce
Guernsey Conservation Society

Round, Andrew
Rousse, James
Russell, Renwick S

Sandwith, Anne
Schute, John
Searle, Martin
Sebire, Ray
Short, Andy
Skillet, Joy
Smith, Alan & Norma
Tasker, Mrs J M
Thompson, David
Thompson, Katherine
Thompson, John & Caroline
Torode, Marilyn
Trubill, J W

Vaudin, Joan

Warlow, J
Warr, Sarah (& Mr & Mrs Rex)
Webb, Brenda
Webber, Mrs B K
Webber, G T
Wenman, Vivienne
White, Julia
Wilding, Karen
Wills, Helen
Wills, Jill
Wills, John
Wills, Tony
Winsall, Sarah
Winter, Fleur
Wisher, Pat

Guernsey Recycling Ltd
IET Energy
Institute of Directors
Island Waste Ltd
La Société Guernesaise
Mayside Reclamation
National Trust
Planet Advantage Ltd
Recycled Refuse International Ltd
TEG Environmental plc
THIDE Environment
Verno Ltd
WAGG

c. States Members

Barry Brehaut
A H Brouard
Mike Burbridge
Chris Brock
David de Lisle
Graham Guille
Jack Honeybill
D Jones
R J Le Moignan
T M Le Pelly
Jonathon Le Tocq

G H Mahy
Sam Maindonald
Rhoderick Matthews
Carla McNulty Bauer
Scott Ogier
Charles Parkinson
Peter Roffey
Peter Sirett
Duncan Staples
L S Trott

4. Documentation Received – Not on the Website

a. Guernsey Government

Commerce and
Employment Department

Economic Impact Assessment – Waste Disposal
through an Energy from Waste Plant

Information about animal incinerator

Environment Department
(including Guernsey
Technical Services)

Detailed background information on the development
of the Waste Strategy Assessment (Solid and Liquid
Waste), then draft Waste Management Plan and the
seeking, assessing and presenting to the States of
Deliberation of tenders for the proposed Energy from
Waste Plant

Information on waste arisings, costs of solid waste
disposal, recycling activities, the export of waste (legal
background and costings), contractual arrangements
with Lurgi

(Access was also provided to the Department's files)

Health and Social Services
Department

Information about clinical waste incinerator

Draft Environmental Pollution Law

Home Department – Police	Information about fly-tipping Information about fixed penalties for littering offences
Public Services Department	Information about the operation of Mont Cuet and Longue Hougue landfill sites Information about plans for the use of Longue Hougue for harbour operations
States Works	Information on waste recycling

Local Government -

Island Douzaine Council	Views on future arrangements for the collection of domestic waste, including charging and recycling
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b. Jersey Government

States of Jersey Shadow Scrutiny Committee	Information on the Jersey Waste Strategy Papers produced by Professor Chris Coggins
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c. Isle of Man Government

Isle of Man Department of Local Government and the Environment	Information on waste strategy including implementation of decision on new incinerator, recycling and regulation Information on the specification for the new incinerator Information on health impact of incinerator Information on the value of a second stream
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d. Commercial Organisations

Advanced Recycling Technology Ltd	Information on the company's plant producing high performance briquette fuel
Allied Coasters Ltd	Information on transport arrangements and costs for waste export

Bio Bubble	Information on the company's sequencing batch reactor for waste water and sludge treatment
CIVIC Environmental Systems	Information on the company's MSW processing and materials recovery plant
CNIM/Falla/SPIE	Information on the group's unsuccessful compliant and alternative tenders submitted to the former Board of Administration
Compact Power Ltd	Information on the company's pyrolysis and gasification process and the company's Avonmouth plant Indication of interest in possible demonstration plant in Guernsey
ENER-G	Information on two-stage thermal treatment process incorporating gasification and high temperature oxidation
EnviroArc Technologies AS	Information on the company's gasification/plasma technology
UK Environment Agency	An overview from the Waste Technology Data Centre of processes including incineration, gasification, pyrolysis, anaerobic digestion/ BT/BMT, autoclaving and composting
Entech Ltd/ IET Energy	Information on the company's third generation combustion technology known as pyrolytic gasification Indication of interest in possible demonstration plant in Guernsey
Estech Europe Ltd	Information on the company's autoclaving and post separation process
Fernwood Waste Ltd	Information on the company's process involving autoclaving, sorting of recyclates and possible electricity generation
Herhof Environmental UK	Information on the company's mechanical biological treatment process
Island Waste Ltd	Information on current and future recycling activities in Guernsey

IWI (UK) Plc	Information on the company's MBT system producing refuse derived fuel
Lurgi Ltd	Information on the preferred tender submitted to the States of Guernsey and post tender negotiations
Mayside Reclamation Ltd	Information on current and future recycling activities in Guernsey, transportation costs for the export of recyclates and kerbside collection arrangements
Nehlsen & Co (Guernsey) Ltd	Information concerning the company's MBT process
Planet Advantage Ltd	Information on the company's gasification process Indication of interest in possible demonstration plant in Guernsey
ReCycled Refuse International Ltd	Information concerning the company's thermal treatment process to produce a refuse derived fuel
Ronez Ltd	Information on the company's aggregate production process
Stradtreinigung Hamburg/ Mindest SA	Information about the export of waste to Germany
St Peter Port Services Ltd	Information on current recycling activities in Guernsey
TEG Ltd	Information on the company's thermophilic aerobic composting process
Thide Environment	Information concerning the company's thermolysis treatment process
Verno Ltd	Information on the company's plasma gasification process Indication of interest in possible demonstration plant in Guernsey
WRAP	Information on the aims and activities of the UK Waste Resources Action Programme

APPENDIX 3: SELECTED STEPS IN THE CONTRACTING PROCESS

Date	Action / Event
Jun 1998	The States directed the Board of Administration to investigate the feasibility of commissioning an energy from waste plant (Billet XII 1998). The technology was to be mass burn - alternative technologies were discounted as they were not tried or tested for the treatment of municipal solid waste.
Mar – May 2000	Expressions of interest were sought from companies with experience in the design, construction and operation of energy from waste plants. Over 40 expressions of interest were received.
Jul 2000	A joint meeting of the Advisory and Finance Committee and the Board of Administration assessed the procurement options and resolved that the States should initially fund and own the energy from waste plant and other waste facilities and that a design, construct and operate contract (max 10 years) should be let. The adoption of a turnkey contract was felt to offer the best risk management approach.
Dec 2000	Expressions of interest submissions were examined by a review panel which recommended that 12 companies were suitable for further consideration. The remaining companies were deemed unsuitable either because of the technology they proposed (normally gasification or pyrolysis) or because they had insufficient experience and capability for the Guernsey project.
Jan 2001	Ramboll, a leading Danish engineering consultancy with experience of energy from waste projects, was appointed as technical consultants. Ramboll produced a project definition brief to define the facility's technical and operational requirements and this was used to develop the tender documents.
	The Board of Administration's preferred strategy was to procure the energy from waste facility through a design, build and two year operate contract (DB2O).
Early 2001	Following the receipt of expressions of interest from appropriately qualified and experienced technology lead bidders, suitable companies were invited for interview. A list of preferred bidders was then selected as follows: <ul style="list-style-type: none"> • Alstom Power Generation Ltd. • Lurgi (UK) Ltd (lead contractor/technology supplier) / SITA and/or Guernsey Electricity (operator). • Babcock Borsig Power Environment GmbH (lead contractor/technology supplier) / CGEA-ONYX (operator) / Garenne Group. • Martin Engineering Systems Ltd (technology) / MES Environmental Ltd (operator).
Apr 2001	The Advisory and Finance Committee twice asked the Board of

	Administration to give tenderers the option to offer alternative tenders for design, build, fund and operate (DBFO) proposals. The Committee noted the firm advice from 4Ps (an agency which advises UK local authorities on procurement) that the chosen DB2O procurement option was unlikely to provide best value for money. The Board of Administration considered that it would be inappropriate to pursue a DBFO contract since it would result in unacceptable programme delays and would not result in financial benefits.
May 2001	The Advisory and Finance Committee wrote again to the Board of Administration. The Committee considered that best value for the sustainable long term provision of waste services could only be achieved if the design of all waste facilities, including the energy from waste plant, fully accounted for long term operational considerations. The Committee's strong preference was for the seeking of tenders for the provision of integrated waste services and asked the Board of Administration to invite tenderers to put forward a DBFO tender if they so wished. The Board of Administration responded that, although it intended to proceed with the DB2O contract, it would in parallel start to formulate tender documentation for the operation of waste disposal facilities, including the energy from waste facility, upon expiry of the DB2O contract.
Jun 2001	The strategy was agreed to procure the energy from waste facility through a design, build and two year operate turnkey contract (DB2O) followed by a finance and 25 year operate contract (FO25).
Aug 2001	Tods Murray was appointed as legal advisers to draft a bespoke design, build and two year operate (DB2O) contract. A bespoke DB2O contract was chosen to ensure not only that the plant was constructed to a high technical specification but also that consideration was given to the operation of the plant as the contractor would have to operate and maintain the plant for two years. A plant was required that would be attractive to future operators. In addition, it was decided to procure the DB2O contract through a special purpose vehicle as this afforded the States maximum future flexibility. The States could then sell the shares of the special purpose company or form a joint venture company or a States trading company as appropriate.
Early 2002	The energy from waste division of Alstom Power was bought by CNIM, owner of Martin Engineering Systems. Alstom therefore withdrew from the preferred bidder list and was replaced by AMEC Capital Projects Ltd (lead contractor) / Volund (technology supplier).
Apr 2002	Juniper Consultancy was commissioned to consider incineration versus emerging technologies as the most suitable waste management option for Guernsey. Juniper concluded that incineration with energy recovery was the most appropriate option.
Jun 2002	The States approved in principle the procurement of a mass burn energy from waste facility by means of a design, construct and two year operate contract (DB2O) to be signed by a Special Purpose company wholly owned by the States of Guernsey (Billet XIII 2002).

mid 2002	AMEC informed the Board of Administration that the company was no longer prepared to tender for government let turnkey contracts as Volund, the technology supplier, was not prepared to take the turnkey risk.
	Prior to the issue of tender documentation, Babcock Borsig Power Environment's parent holding company experienced serious trading difficulties with the result that the firm was unable to tender and subsequently went into insolvency.
	As a result the final tender list was reduced to two: <ul style="list-style-type: none"> • Lurgi (UK) Ltd (lead contractor/technology supplier) / TIRU and/or Guernsey Electricity (operator). • Martin Engineering Systems Ltd (technology) / MES Environmental Ltd (operator).
	The preferred bidder list could not be expanded due to changes in the energy from waste market place, arising from unprofitable turnkey project experience, major groups leaving the energy from waste field and restructuring of group companies.
Jul 2002	Tender documents were issued to Lurgi and Martin Engineering Systems for the procurement of an energy from waste plant.
Jan 2003	Tenders were received from Lurgi and Martin Engineering Systems for the design, construction, two-year operation and provision of essential spare/wearing parts for a mass burn energy from waste plant as follows: <ul style="list-style-type: none"> • Lurgi £102,454,000 • Martin £92,669,283 Tender sums at this level were not considered viable.
Early 2003	The Board of Administration held post tender negotiations with both tenderers with a view to establishing the scope for significant cost reductions and to identify a preferred partner for the construction of the plant.
	Following post tender negotiations and examination of options for reducing the cost of the energy from waste plant, whilst maintaining the key objective of constructing a robust reliable plant capable of meeting European emission standards and meeting the needs of Guernsey, the tenderers agreed to a further tendering stage against a revised brief and procurement route. The original tender specification was amended as follows: <ul style="list-style-type: none"> • Revised architectural treatment • Simplified building type • Reduced waste storage bunker capacity • Eliminate need for deep basements • Allow above ground bunker with ramp access • Accept a possible visible building height of 33m (concept 27.5m) • Reduce tipping bays to 2 plus 1 manual tipping bay (concept 4 bays) • Amended flue gas treatment system for NOx abatement but still complying with European emission standards • Allow vertical as opposed to horizontal boiler • Exclusion of the animal carcass incinerator

	<ul style="list-style-type: none"> • Client obtains planning and environmental permits • Contract terms to be rewritten to reflect partnering approach 												
Apr 2003	Juniper produced an addendum to its April 2002 report examining progress in the development of new technologies over the year since its last report. Juniper concluded that, because of the failure of some companies and the slower than forecast progress of others, the States of Guernsey should be less inclined to consider novel solutions instead of the proven incineration processes which had been tendered.												
May 2003	<p>Lurgi and Martin Engineering Systems submitted amended tenders in the following amounts:</p> <table border="1"> <thead> <tr> <th></th> <th>Lurgi</th> <th>Martin</th> </tr> </thead> <tbody> <tr> <td>Design and Construct</td> <td>£72,254,178</td> <td>£74,346,819</td> </tr> <tr> <td>Two year operation</td> <td>£8,696,000</td> <td>£6,258,082</td> </tr> </tbody> </table>		Lurgi	Martin	Design and Construct	£72,254,178	£74,346,819	Two year operation	£8,696,000	£6,258,082			
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	<p>Following post tender negotiations, inclusion of cap-ex capitalisations and the assumption of 60,000 tonnes per annum throughput, the following amounts were derived:</p> <table border="1"> <thead> <tr> <th></th> <th>Lurgi</th> <th>Martin</th> </tr> </thead> <tbody> <tr> <td>Design and Construct</td> <td>£72,713,545</td> <td>£73,184,869</td> </tr> <tr> <td>Two year operation</td> <td>£8,199,406</td> <td>£6,215,175</td> </tr> <tr> <td>Less electricity income</td> <td>(£1,322,933)</td> <td>(£1,536,187)</td> </tr> </tbody> </table>		Lurgi	Martin	Design and Construct	£72,713,545	£73,184,869	Two year operation	£8,199,406	£6,215,175	Less electricity income	(£1,322,933)	(£1,536,187)
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	The Martin Engineering Systems tender was submitted on the basis of a Limited Liability Partnership (LLP). A LLP structure limits the liability of its members to the amount of capital – usually a just a nominal sum – that they contribute. CMS Cameron McKenna was commissioned to give an independent opinion on the risks associated with contracting with a LLP. Both CMS Cameron McKenna and Tods Murray (the Board of Administration’s legal advisers) concluded that the LLP structure would expose the States of Guernsey to a far greater degree of risk than was normal in a turnkey contract.												
Jul 2003	Following consideration of the tender appraisal report, the Board of Administration identified Lurgi as its preferred tenderer and commenced a series of detailed negotiation and clarification meetings.												
Sep 2003	<p>Following the post-tender negotiations with Lurgi, the Board of Administration recommended the States to accept the design, construct and operate fee negotiated with Lurgi in the following sums:</p> <table border="1"> <tbody> <tr> <td>Initial Periods Services</td> <td>£2,982,500</td> </tr> <tr> <td>Construction of energy from waste facility</td> <td>£69,813,978</td> </tr> <tr> <td>Two year operation</td> <td>£7,513,106</td> </tr> <tr> <td>Total</td> <td>£80,309,584</td> </tr> </tbody> </table>	Initial Periods Services	£2,982,500	Construction of energy from waste facility	£69,813,978	Two year operation	£7,513,106	Total	£80,309,584				
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Construction of energy from waste facility	£69,813,978												
Two year operation	£7,513,106												
Total	£80,309,584												
Sep 2003	The States reaffirmed its previous in principle decision to procure an energy from waste facility under a design build and two year operate contract. The States directed the Board of Administration to proceed in accordance with the provisions of the Letter of Intent signed with Lurgi and to commence the initial services period at a sum not to exceed £2,982,500. The States authorised the Board of Administration, following the initial services period, to contract with Lurgi for the												

	construction and two year operation of the energy from waste facility (Billet XX 2003).
Oct 2003	Lurgi commenced work on the nine month initial services period, including: <ol style="list-style-type: none"> 1. Detailed architectural design 2. Detailed engineering design 3. Site survey 4. Modelling of noise and emissions 5. Finalisation of contract documents 6. Hazard and operability study 7. Preparation of data for input to planning process

APPENDIX 4: VIEWS OF THE DOUZAINES ON THE COLLECTION OF HOUSEHOLD WASTE

1. The Panel has met the Island Douzaine Council and its working party on waste. The purpose was to ascertain the views of each Parish in the light of their present and possible future responsibilities under both the Parochial Collection of Refuse (Guernsey) Law 2001 and the soon to be enacted Environmental Pollution (Guernsey) Law 2004.
2. Our meeting with the Island Douzaine Council Working Party, together with the written representations from each of the Douzaines, indicated that the Douzaines are concerned to retain responsibility for raising refuse rates on a parochial basis and engaging with their preferred contractors (subject to contractors being licensed under the law of 2004). The Douzaines argue that they are best placed to manage local collections of household waste and that the present system is efficient, cost-effective and popular with parishioners. There is a willingness on the part of the Douzaines to work collectively; both in rationalising the area covered by different contractors and on other matters. They may also be willing to engage with one or more of the existing or additional contractors to undertake the collection from doorsteps of recyclables, in the event that an island-wide scheme for kerbside recycling were to be introduced.
3. The Panel has made the Douzaines aware of the fact that the Environmental Pollution (Guernsey) Law 2004 contains the potential for repealing the Parochial Collection of Refuse (Guernsey) Law 2001. If done, this could lead to the replacement of the present (voluntary) service with a centralised service provided by the States. This would incur an increase in both administrative and management costs. The Island Douzaine Council has expressed their utmost concern that this should not happen.
4. However, there are disparate views held by the Douzaines with respect to changing the method of charging for the collection of household waste for disposal. If it were to be decided that refuse should be charged for on a volume/weight basis, rather than by the blunt instrument of a set refuse rate per household, the Douzaines, or some of them, will need to modify their stance on this issue if they are to play a full part in the future of household waste collection and management.
5. It would be unfortunate if this were not to be possible as there is considerable merit in their collective assertion that they are best placed to perform the functions historically ascribed to them by law.

APPENDIX 5: THE COSTS AND BENEFITS OF ALTERNATIVE WASTE TECHNOLOGIES

1. This Appendix sets out the latest information as regards the costs and benefits of alternative waste technologies as compared with “mass burn” incineration.

Cost

2. Reliable on-island cost estimates for a variety of waste treatment technologies are not yet available. Fichtner concluded that “reliable costings for gasification and pyrolysis will only come from real quotations against detailed project specifications”²⁶.
3. However, most alternative waste technologies are likely to have lower capital costs for the plant itself than an energy from waste mass burn incinerator. The smaller building and equipment size for most technologies will also allow cheaper foundation and building design. This will be particularly so in Guernsey, especially at the Longue Hougue site.
4. Operational costs are harder to estimate and will vary depending on the level of manpower needed and the tonnage and type of residue and reject material still needing to be landfilled (both costs are likely to be higher in Guernsey than in the UK).
5. Capital and operational cost estimates for the UK were included in the 2002 Cabinet Office report “Waste Not – Want Not”²⁷. Estimates of capital and operational costs of alternative technologies across Europe are also given on the Environment Agency website²⁸ and in the Eunomia 2004 report on biodegradable municipal waste diversion²⁹. A summary of these costs is given in Figure 17 below.
6. The accuracy and applicability of these estimates to Guernsey should be guided by the £55 per tonne operating cost and £19 million capital cost of an energy from waste plant against the much higher known cost of the plant on the Isle of Man and the predicted cost on Guernsey. The Panel advises caution in taking reported performance or costings to be directly applicable to Guernsey’s circumstances. In any evaluation of a particular technology as a possible means of dealing with solid waste in Guernsey a site specific analysis and costing would be essential.
7. Technology vendors’ estimates should be viewed with caution. They may include or exclude waste pre-treatment, additional transport, land purchase,

²⁶ The Viability of Advanced Thermal Treatment of MSW in the UK, produced by Fichtner Consulting Engineers and published by ESTET in March 2004.

²⁷ Cabinet Office report, “Waste Not, Want Not”, 2002 (Annex F)

²⁸ Environment Agency, Waste Technology Data Centre website (2004)

²⁹ Eunomia report, “Economic Analysis of Options for Managing Biodegradable Municipal Waste”

demolition/foundation design, and the costs of planning and licensing. They are also variously based on assumed incomes from recycle and energy sales from the process. There are also Guernsey and/or Longue Hougue specific considerations, such as the cost of electricity on Guernsey, whether or not a premium is payable for energy derived from renewable sources, and Guernsey premiums for construction and operational labour.

Figure 17: Indicative Capital and Operational Costs for a Range of Waste Technologies

Technology	Cabinet Office Report		Environment Agency / Eunomia	
	Capital cost	Operational cost	Capital cost	Operational cost
Windrow composting	£0.5m - £1.23m (25,000 tonnes pa)	£13 - £25 per tonne		
In-vessel composting	£0.6m - £4.5m (20,000 tonnes pa)	£18 - £45 per tonne		
Anaerobic digestion	£1.4m - £5.0m (10,000 tonnes pa)	£9 - £20 per tonne		
Mechanical & Biological Treatment (MBT)	£7.6m - £8.5m (50,000 tonnes pa)	£15 - £50 per tonne		
Mass burn energy from waste	£12.5m - £19m (50,000 tonnes pa)	£35 - £55 per tonne		
Pyrolysis	£8m - £93m (32,000 - 360,000 tonnes pa)	£20 - £55 per tonne	£17m - £22m (35,000 and 60,000 tonnes pa)	£5 - £35 per tonne
Gasification			£11m - £19m (40,000 and 80,000 tonnes pa)	£26 - £38 per tonne
Materials Recovery Facility	£2.5m - £6.0m (25,000 -125,000 tonnes pa)	£19 - £35 per tonne		

8. It is clear that, in the UK, until landfill tax reaches around £35 per tonne, all alternative technologies will cost more than landfill. This is not the case on Guernsey, however, as the States exercise direct control over the gate price at landfill and scope exists to encourage more sustainable waste management through price control.

Emissions

9. All thermal treatment technologies for waste are likely to be able to meet or exceed Waste Incineration Directive standards [see table from Fichtner report, page 31]. Emissions from other plants, such as composting and Mechanical and Biological Treatment, can be controlled through regulation to acceptable standards. The only facility in future strategies unlikely to be able to meet emission standards is the Mont Cuet landfill site.

Plant Size

10. Land Area: Not greatly affected by technology choice – typically 1.5 to 2 hectares.

Plant Height: Lower for all alternative technologies (10m to 20m) compared with mass burn energy from waste (30m).

Stack height: Usually determined by Nitrous Oxides (NO_x) emission standards – but likely to be less for alternative technologies than mass burn energy from waste.

Foundations: Simpler/cheaper for all alternative technologies - smaller, lower, lighter equipment.

Many alternative technologies offer a modular design not dissimilar to techniques employed in the offshore oil and gas industries. The two advantages are that the plant can be constructed at the point of origin (for assembly on site) and the ability to “up-size” by adding further modules.

Technology Capability

11. Whilst a mass burn energy from waste incinerator can accept most waste types with or without pre treatment, other technologies have limitations. Gasification and pyrolysis may depend on pre-treated waste input including Refused Derived Fuel from other technologies. Anaerobic Digestion and composting will only be applicable to parts of the total residual waste and need careful input control. The Panel noted, however, that existing installations of certain types of alternative technologies outside the UK have plants in sustained operation treating unsorted municipal solid wastes.

Process Outputs

12. The process outputs from the various technologies are as follows:

Composting	Quality depends on input and process control. Quality can be variable, lower grades of “compost” being suitable only for landfill, landfill cover or low-grade land restoration.
Mechanical & Biological Treatment	Produces composts and refuse derived fuels. Markets are uncertain for these products even in the UK. Recyclates subject to normal and Guernsey-specific pressures.
Anaerobic Digestion	Gas fuel. Digestate may be suitable for spreading on land.
Mass Burn Energy from Waste	Usually steam heat for power/heating. The generation of electricity is a less efficient alternative. Bottom ash is suitable for aggregate use. Gas cleaning residues are usually alkaline and need hazardous waste treatment and/or specialised landfill.
Gasification	Gas fuel. Clinker produced at high temperature so is usually acceptable as aggregate.
Pyrolysis	Gas and oil fuels. High carbon char often needs to be landfilled.

Energy Efficiency

13. This may not be a real concern for Guernsey where all energy is imported and is at a lower price than the UK. Thermal efficiency of all alternative treatments is less than for mass burn energy from waste.

APPENDIX 6: EAST RIDING OF YORKSHIRE AND HULL COUNCILS – BEST PRACTICABLE ENVIRONMENTAL OPTION APPRAISAL

Following rejection of planning permission for a mass burn incinerator, the East Riding of Yorkshire and Hull Councils decided to undertake jointly a comprehensive Best Practicable Environmental Option appraisal for their future waste management strategy. The authorities have a history of joint working at a political level and the process was guided by a joint officer working group.

The strategy involved:

- 254,000 Households
- 330,000 Tonnes of Municipal Waste (Expected 2004/05)
- 2003/4 Recycling/Composting rates of 11% and 14.5% respectively in Hull and East Riding

According to the Royal Commission on Environmental Pollution (1988) 12th Report Best Practicable Environmental Option, a BPEO assessment is:

“The outcome of a systematic and consultative decision-making procedure which emphasises the protection and conservation of the environment across land, air and water.

The BPEO procedure establishes for a given set of objectives, the option that provides the most benefits or the least damage to the environment as a whole, at acceptable cost, in the long term as well as in the short term”

The council awarded the contract to undertake this work in February 2004, and the outcomes were ready to be finalised in December 2004. The process had 8 stages:

Step 1. Develop Waste Management Scenarios

11 scenarios were chosen using a range and mix of available technologies:

BV = England / Wales “Best Value” recycling target (25%)

MBT = Mechanical and Biological Treatment

AD = Anaerobic Digestion

RDF = Refuse Derived Fuel

ATT = Advanced Thermal Treatment eg. Pyrolysis or gasification

	Scenario
Scenario 1	BV Recycling, Large Scale Incineration
Scenario 2	High Recycling, Smaller Scale Incineration
Scenario 3	BV Recycling, MBT & AD
Scenario 4	High Recycling, MBT & AD
Scenario 5	High Recycling, MBT with RDF and ATT
Scenario 6	BV Recycling, MBT with AD, RDF & Co-firing
Scenario 7	BV Recycling, Autoclave with RDF & ATT
Scenario 8	High Recycling, 60% Incineration, 40% MBT with AD & RDF to Incineration
Scenario 9	BV Recycling, 40% Incineration, 60% MBT with AD & RDF to Incineration
Scenario 10	High recycling, 40% Incineration, 60% MBT with AD & RDF to ATT
Scenario 11	BV Recycling, 40% Autoclaving with AD and RDF to ATT, 60% MBT with AD and RDF to ATT

Step 2. Identify Decision Criteria

These were taken from standard Office of the Deputy Prime Minister criteria, and measured in a range of ways including use of the BPEO “WISARD” software.

O D P M Criterion	Measurement	Assessment Method
1. To ensure prudent use of land and other resources	1a) Land take (ha)	Quantitative
	1b) Assessment of non-renewable resources using WISARD	Quantitative using WISARD
2. To reduce greenhouse gas emissions	2a) Greenhouse gases	Quantitative using WISARD
3. To minimise adverse impacts on air quality and emissions which are injurious to public health	3a) Air acidification	Quantitative using WISARD
	3b) Toxicity to humans	Quantitative using WISARD
	3c) Potential health impacts	Qualitative
4. To conserve landscapes and townscapes	4a) Building size, type etc.	Qualitative
5. To protect local amenity	5a) Odour	Quantitative using WISARD
	5b) Noise, dust, litter etc.	Qualitative assessment
6. To minimise adverse effects on water quality	6a) Water eutrophication	Quantitative using WISARD
	6b) Eco-toxicity	Quantitative using WISARD

O D P M Criterion	Measurement	Assessment Method
7. To minimise local transport impacts	7a) Traffic	Qualitative
8. To provide employment opportunities	8a) Job creation and skills levels	Qualitative and Quantitative
9. To provide opportunities for public involvement and education	9a) Education & involvement of the public	Qualitative
10. To minimise costs of waste management	10a) Costs and revenues	Quantitative
11. To ensure reliability and deliverability	11a) Performance & track record	Qualitative and Quantitative
	11b) Compatibility with collection systems	Qualitative
12. To conform with waste policy	12a) Recycling / Recovery performance (BVPIs)	Quantitative
	12b) Diversion of biodegradable waste	Quantitative

Step 3, Step4, Step 5 . Quantitatively and Qualitatively Assess and Score Scenarios

	Scenario	Total Value Score
Scenario 2	High Recycling, Smaller Scale Incineration	14.80
Scenario 5	High Recycling, MBT with RDF and ATT	14.64
Scenario 4	High Recycling, MBT & AD	13.63
Scenario 8	High Recycling, 60% Incineration, 40% MBT with AD & RDF to Incineration	11.88
Scenario 1	BV Recycling, Large Scale Incineration	11.81
Scenario 10	High recycling, 40% Incineration, 60% MBT with AD & RDF to ATT	11.63
Scenario 7	BV Recycling, Autoclave with RDF & ATT	9.75
Scenario 6	BV Recycling, MBT with AD, RDF & Co-firing	8.86
Scenario 3	BV Recycling, MBT & AD	8.80
Scenario 9	BV Recycling, 40% Incineration, 60% MBT with AD & RDF to Incineration	8.53
Scenario 11	BV Recycling, 40% Autoclaving with AD and RDF to ATT, 60% MBT with AD and RDF to ATT	8.23

Scenarios 2, 5, and 4 preferred at that stage.

Step 6, Step 7. Public Consultation and Weighting Scores

Communication was a major part of this exercise, including

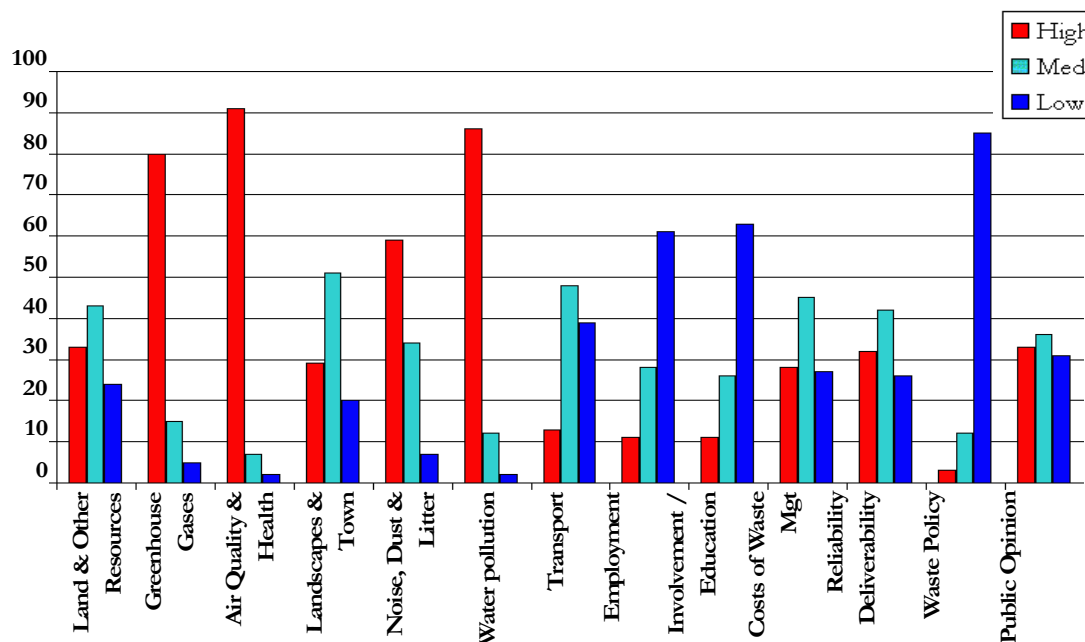
- Information on what “BPEO” is
- An explanation of the waste management technologies being considered
- Elected Members workshops in both Authorities
- 8 Public Workshops
- ‘Interested Parties’ Workshop – eg environmental groups etc
- Questionnaire to Every Household in Hull and East Riding

Residents were then asked in a postal questionnaire:

1. to allocate High (5), Medium (4) and Low (4) to the 12 ODPM Criteria, plus an additional criterion - the importance of public acceptability.
2. to rank the six technologies in order of preference
3. if they wanted to strive for a 45% high recycling, or 25% ‘Best Value’ recycling.

Question 1 result:

CRITERIA PERFORMANCE



The ranking after weighting was:

- | | | |
|-----|------------|---|
| 1st | Scenario 5 | High recycling and MBT + RDF → ATT |
| 2nd | Scenario 2 | High recycling and Incineration (smaller scale) |
| 3rd | Scenario 4 | High recycling and MBT + AD |

Question 2: ranking the technologies in order of preference:

- | | | |
|-----|------------|---|
| 1st | Scenario 2 | High recycling and Incineration (smaller scale) |
| 2nd | Scenario 5 | High recycling and MBT + RDF → ATT |
| 3rd | Scenario 4 | High recycling and MBT + AD |

Question 3: preference for level of recycling:

86% of Respondents Favour High Recycling

14% of Respondents Favour Best Value Recycling

Ranking after consideration of Question 3:

- | | | |
|-----|------------|---|
| 1st | Scenario 2 | High recycling and Incineration (smaller scale) |
| 2nd | Scenario 5 | High recycling and MBT + RDF → ATT |
| 3rd | Scenario 4 | High recycling and MBT + AD |

Step 8. Identification of the BPEO Strategy

Following the agreed steps the three top performing scenarios were checked against “external” factors. These included:

- the likely availability or volatility of outlet markets for recyclates, AD composts or refuse-derived fuels;
- the delay likely in the provision of “alternative” technologies viewed against the need for urgent action to avoid significant penalties;
- the likely availability of financial backing for the different technologies.

The preferred strategy was therefore identified as high level (45%) recycling (well above the Government’s “Best Value” 25% target) with smaller scale incineration – scenario 2. This advice has been passed on to the two authorities for final approval.

This leaves the Councils in a position of agreeing the waste management strategy but still needing to secure planning permissions, consents and contracts for provision and/or operation of the facilities needed.