Billet d'État XVI, 2014

Corrigendum

Article 9: "Environment Department – Waste Disposal (Management) Plan"

With the consent of the Bailiff, please note that this amended States report substitutes the version published as Article 9 of Billet d'Etat XVI of 2014 for the 29th July States Meeting.

ENVIRONMENT DEPARTMENT

WASTE DISPOSAL (MANAGEMENT) PLAN

The Chief Minister
Policy Council
Sir Charles Frossard House
La Charroterie
St Peter Port

20th May 2014

Dear Sir

1. EXECUTIVE SUMMARY

1.1 Under the Environmental Pollution (Guernsey) Law, 2004, the Environment Department must prepare, following recommendations made to it by the Waste Disposal Authority, a Waste Disposal Plan for consideration by the States. In doing so the Department must consider the recommendations put to it by the Waste Disposal Authority (currently the Public Services Department) and can only reject those recommendations if it has **adequate reasons** to do so. It is the Waste Disposal Authority (WDA) that has the responsibility under the Law of identifying and hence recommending to the Environment Department the Best Practical Environmental Options (BPEO), for dealing with the island's waste, on which the Waste Disposal Plan is based but it is the Environment Department's function to advise the States on Waste Policy including in relation to its statutory duty to prepare the draft Waste Disposal (Management) Plan for approval by the States.

1.2 In light of the fact that the States had directed the Public Services Department to report to the States on a waste strategy (the strategy contains most if not all of the elements that are required in a Waste Disposal Plan) the Environment Department was content for the process to be led by the Public Services Department and was content for the Public Services Department to draft a Waste Disposal Plan (as per the 2012 report, Billet d'État IV 2012 - see Appendix 9). However, in accordance with advice from the Law Officers and in recognition of the duty imposed on the Environment Department under the Environmental Pollution Law, it is clear that the Waste Disposal Plan must be presented to the States by the Environment Department and the Department must, in doing so, turn its mind to the recommendations made by the WDA and satisfy itself as to the BPEO put forward by the Public Services Department in those recommendations. In carrying out this duty the Department needs to assess and, to a degree, critically evaluate the processes and outcomes involved in arriving at the BPEO as recommended by the WDA.

1.3 The Environment Department has received the WDA's recommendations in the form of the two States reports submitted by the Public Services Department to the States: Billet d'État IV 2012 and Billet d'État II 2014.

1.4 The WDA has the duties under the Environmental Pollution Law to monitor the creation of waste in Guernsey, to keep under review the systems for the collection, transportation, sorting and recycling of waste and identify the BPEO for the disposal of waste following consultation with specified bodies. The Environment Department has the subsequent duty of considering such recommended BPEO and it has, therefore, utilised all the information and data provided to it by the WDA. The Department has examined how that data was used in the various stages and processes leading up to the recommendation of the BPEO. The Department has identified several areas of concern both in respect of the methodology adopted by the WDA to arrive at its recommendations and in the risks and assumptions on which the long term success and sustainability of those recommendations rely. These concerns are set out in this report.

1.5 The Department has approached and examined the data with a fresh pair of eyes and in some areas applied a slightly different methodology to assess the data. Whilst the Department has some concerns over the end result, the approach it has adopted has provided a conclusion which is not significantly at odds with the BPEO recommended by the WDA. The Department has concluded that, from the information provided to it and in light of the previous States decisions, its concerns do not constitute adequate reasons on which to reject the WDA recommendations and in particular the BPEO recommended. On that basis the draft Waste Disposal Plan has been prepared for States consideration based on the WDA recommendations as previously approved by the States and is attached as an Appendix.

1.6 A draft of this report was shared with the WDA and where appropriate their comments taken on board in changes or referred to in the text.

2. INTRODUCTION

2.1 The Waste Disposal Plan is a statutory plan the preparation of which is required by virtue of the Environmental Pollution (Guernsey) Law 2004 – "The Law". Under the Law as currently drafted "disposal" is not defined. The Law refers mainly to disposal of waste which reflects the fact that the main method of management of residual waste, at the time the Law was drafted, was by final disposal on island. However, there is also reference in the Law to the sorting, recycling and reuse or reclamation of waste as well as final disposal. In practical terms in order to identify options for final disposal of waste it is necessary to look at waste management in general. This approach was followed in the current 2007 Waste Disposal Plan which contains details relating to recycling and re-use of waste and waste management in general. States resolutions 10 and 16 in relation to Billet d'État II 2014 also direct amendments to the Environmental Pollution (Guernsey) Law 2004 to clarify, that parts of the Law are not limited to final disposal of waste but include waste recovery and other waste management activities. Assuming the amendments are approved by the States they will provide for this Waste Disposal Plan to continue to have effect

as the Waste Management Plan. A policy in relation to protecting strategically important States/WDA facilities has been provided in Section 4 of the draft Waste Disposal Plan attached to this report.

2.2 Section 30 of The Law sets out the functions of the WDA**; the Public Services Department is designated as the WDA by an Ordinance under the Law.** In section 30(1) these functions are set out as:

a) To make arrangements for and ensure the operation of Guernsey's public waste management system;
b) To monitor the creation of waste in Guernsey;
c) To keep under review the systems for collection, transportation, sorting and recycling of waste;
d) To identify the BPEOs for the disposal of waste;
e) To comply with the current Waste Disposal Plan;
f) To carry out such other functions as may be created, assigned or transferred for or to it by this law [The Law] or any other enactment.

The emphasis has been applied to bullet point "d" above as this function has specific bearing on the drafting of the Waste Disposal Plan by the Environment Department.

2.3 Section 31 of the law requires the WDA, after consulting various prescribed bodies, to make recommendations to the Environment Department in connection with the preparation by that Department, for the consideration of the States, of a draft **Waste Disposal Plan**.

2.4 In 2014 the recommendations of the WDA to the Environment Department were simultaneously presented to the Department and to the States in the form of a strategy report Billet d'État II 2014. This report further developed the recommendations of the WDA as presented to the States in Billet d'État IV 2012. As a result of these reports and the States resolutions the BPEO for the disposal of waste (which encompasses the management of waste) has been identified by the WDA and approved by the States. Whilst the Environment Department is not obligated under the relevant legislation to adopt the WDA proposed (and States approved) BPEO when drafting the Waste Disposal Plan, it would need to identify adequate reasons for not doing so.

2.5 The BPEO is not defined in the Law and so will take its normal meaning. However, in the context of the Law, it is clear this refers to the best practical environmental option looking at pollutants into all environmental media as the terms "environment" and "pollutant" are widely defined. Consequently, the WDA adopted a process broadly based on the Northern Ireland BPEO process, adapted to local circumstances where necessary. The accepted UK interpretation of BPEO is "*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"* (see p.430 of Billet D'État IV of 2012).

3. BEST PRACTICAL ENVIRONMENTAL OPTION – AS IDENTIFIED BY THE WDA

3.1 The BPEO was put forward by the WDA in its 2012 report (paragraph 17.6) known as Option B and consisted of:

a. 70% recycling by 2025 (i.e. 70% of commercial waste and 70% of household waste)
b. Waste Prevention and Minimisation
c. MRF for commercial waste –for sorting and separation of waste for recycling
d. Kerbside collections for Dry recyclables and food waste
e. Bring banks
f. In vessel composting (IVC) of food waste collected separately by kerbside collections generating a compost for land spreading
g. Green waste processing at Mont Cuet via windrows to create a soil conditioner
h. Transfer Station for residual waste from household black bags and commercial waste not suitable for recycling
i. Off island Energy from Waste treatment through incineration.
j. Landfill of special/hazardous waste only.
k. Legislative measures to support the high recycling objective

This BPEO identified by the WDA was subject to the caveat that a contract, for the export of waste, of suitable length and acceptable price could be obtained.

3.2 In its 2014 report the WDA elaborated further on its identified BPEO as follows:

1. MRF for co-mingled dry recyclables collected via kerbside collections from households and small businesses and recovery of recyclable materials from mixed commercial waste
2. Civic Amenity site
3. Kerbside collection vehicles (if required)
4. Repair and Reuse centre
5. IVC to also process commercial sector food waste
6. Residual waste target of circa 28,000 tonnes per annum decreasing to circa 18,000 tonnes per annum by 2025 for export to EfW
7. On island incinerators for some hazardous waste (animal carcass and clinical waste incinerator)
8. Export of residual waste to Jersey or Europe
9. A strategy cost over 20 years in the order of £10,000,000 to £13,000,000 per annum
10. A charging policy consisting of standing charge and pay as you throw elements.
11. Legislative requirements relating to presentation of recyclates and other waste for collection limited to households and small business premises using kerbside collection services with compliance encouraged by civil fixed penalty notices.

3.3 It is this recommended waste management approach that the Environment Department is now legally required to consider when drafting a Waste Disposal Plan.

Note Option B as presented by the WDA equates to Scenario 9/ 19 in the WDA's scenario analysis as set out below.

3.4 The approach the Department has adopted in considering this recommended BPEO along with the Department's findings is set out in this report.

4. THE BIGGER PICTURE

4.1 Before examining, in any depth, the assessments that led to the recommended BPEO it is, perhaps, beneficial to consider the bigger picture in terms of waste management as the Waste Disposal Plan must look at all waste and not just the putrescible fraction of household and commercial waste which goes to landfill and which has been the main focus of the Public Services Department's waste strategy as approved by the States.

4.2 Based on 2012 data, Guernsey generates circa 305,000 tonnes of waste per annum. Each year approximately 82 % of that waste will remain on island. The destination of waste under the proposed waste plan is shown in Appendix 3 of the attached draft plan under the headings "output management".

4.3 The greatest proportion of the waste remaining on island - circa 210,000 tonnes/yr -should be inert and be available for use in land reclamation projects. The current Longue Hougue reclamation has about 10 years remaining life after which a new reclamation/infill project will be required if this disposal method is to continue.

4.4 Of the waste that remains on island approximately 2000 tonnes/yr is categorised as hazardous or special waste and will be contained in an engineered cell at Mont Cuet. The ongoing longer term viability of this disposal route and the long term durability of the engineered cell are areas of concern for the Department.

4.5 Approximately 6,500 tonnes per year of waste derived material (excluding existing slurry waste circa 20,000 tonnes) will be spread on land after treatment. The majority of this material results from the processing of green waste with the remainder being processed food waste. The ongoing long term viability of this process and the long term capacity of the island's soils to take up these additional outputs, particularly in respect of food waste, without adverse impacts to the land and water resources is unknown and remains an area of concern for the Department. This remains the case notwithstanding PSD's reassurance that this waste derived material would meet quality standards and would be applied to the land in line with nutrient management plans. If such mitigation measures are successful then the Department's concerns in this respect can be set aside. If the mitigation measures are not successful then an alternative disposal route for food waste will be required. The Department is, therefore, placing considerable reliance on the quality monitoring requirements that will need to be attached to the site's licence.

4.6 In respect of the 18% of waste exported approximately half will be exported to an incinerator facility which provides heat/energy recovery (with the remaining being exported as recyclates). The Department understands that to comply with European Union legislation the waste exported for heat/energy recovery must meet the specification to be classified as Refuse Derived Fuel and not mixed municipal waste. Further the maximum consent that is likely to be granted by any European Union competent authority for shipments of waste from Guernsey is 3 years. The Department considers this to be a major element of the strategy and continues to have concerns that the strategy and hence the Waste Plan can have no certainty beyond the 3 year period. This remains the case notwithstanding PSD's reassurance that certain European jurisdictions have indicated a willingness to receive Guernsey's waste and an expectation that consents will be renewed after the initial 2/3 year period. If such consent renewals materialise then the Department's concerns in this respect can be set aside. Otherwise an alternative incineration route or other disposal route will be required for this waste.

5. THE SNIFFER MODEL

5.1 In order to establish what is the BPEO it is desirable that a structured process is adopted. This then should afford transparency and enable others to test the evaluations, assumptions and conclusions. There is no prescribed system but SNIFFER (The Scottish and Northern Ireland Forum for Environmental Research) has developed a guidance document. That document has been further developed by Northern Ireland leading to that jurisdictions "BPEO – Decision Makers Guide". It is this Northern Ireland document that the WDA has adopted as its guidance in developing the BPEO.

5.2 Applying the SNIFFER approach requires consultation and engagement with stakeholders and recommends the use of workshops. It also requires careful consideration to be given to the local relevance when considering the application of decision criteria to the various options.

5.3 The WDA adopted the "BPEO – Decision Makers Guide" model to formulate its recommended BPEO.

6. OBJECTIVES OF A WASTE DISPOSAL STRATEGY

6.1 Through its workshops and consultations the WDA developed the following 3 objectives as a basis on which to formulate its waste management strategy.

a) To endorse and implement the principles of the Waste Hierarchy, which focuses on waste minimization.
b) To consider all waste streams, identify and adopt the most appropriate methods to manage them in accordance with the Waste Hierarchy.
c) To develop an environmentally, economically, and socially sustainable waste strategy that is practicable and adaptable to meet Guernsey's needs currently and in the foreseeable future.

COMMENTARY (section 6)

The Environment Department endorses the above objectives with one reservation. Whilst it is quite appropriate that strategies should be "adaptable" (third bullet point), the application of adaptability needs great care. Any waste treatment plant or system will come at not insignificant cost, albeit that the range of costs vary significantly, and hence the intention would be that over a short to medium time frame that system or infrastructure will be used as introduced without adaptation. Adaptation during its initial life would incur cost and wasted resources.

Beyond the short to medium time frame then the system (pretty much all systems) could be adapted to meet the changing characteristics and tonnages of the waste. Some systems will cost less to adapt than others. The question then turns on the cost of the adaptation and the timescale for that adaptation rather than the adaptability per se.

7. COMPLIANCE WITH WASTE HIERARCHY

7.1 The BPEO, identified by the WDA, is intended to follow the Waste Hierarchy. It is clear, however, that the most pressing demand on the island is the depleting landfill space and the need to find an alternative. The BPEO put forward by the WDA concentrates on diverting the waste currently landfilled and places an emphasis on reuse, recycling and recovery. Price, education, and promotion are put forward as means by which waste minimisation will be achieved. Waste minimisation through legislative Producer Responsibility incentives and penalties were excluded from the BPEO in the expectation that business will voluntarily take steps to minimise waste.

COMMENTARY (section 7)

The Environment Department endorses the application of the Waste Hierarchy. Whilst it is true that some treatment methods for the final residual waste lend themselves better to higher recycling than others it should not be assumed that any of the potential treatment options act as an obstacle to minimisation, reuse and recycling. The Department is concerned, that most of the tools available to attempt to reduce waste at source rather than deal with the waste generated have, at least during the initial stages of the strategy, been rejected by the WDA and it will be necessary for the WDA to carefully monitor the uptake and impact of voluntary agreements.

8. THE SELECTION OF THE WASTE TREATMENT SCENARIOS.

8.1 12 options were identified by the WDA for the residual waste treatment. All treatment options (excluding the baseline-current landfill option) sought to alter the physical and/or chemical composition of the waste (or waste fractions) resulting in an end product that either had a potential market place (e.g. compost or refuse derived fuel or energy etc.) or resulted in a product that was easier and cleaner to handle in subsequent disposal stages (e.g. biostabilised waste or ash

etc.). Each treatment option was considered as part of a package of measures involving collection and recycling.

8.2 Plasma arc gasification and windrow composting were not taken forward in any of the scenario evaluations.

COMMENTARY (section 8)

The Environment Department endorses the selection of the residual waste treatment scenarios for evaluation.

The scenarios adopted were broad ranging encompassing a range of technologies including relatively new technologies alongside more established technologies. Provided evaluation criteria gives sufficient weight to the existence or otherwise of an evidence base demonstrating a plant's robustness and ability to deal with the waste stream that would be presented to it (in the Guernsey context) it is appropriate to include new technologies.

9. ANALYSING /COMPARING THE TREATMENT SCENARIOS

9.1 In order to evaluate the various treatment scenarios the WDA engaged consultants ERM to score the scenarios against the chosen criteria. ERM had been a key author of the Northern Ireland BPEO guidance document based on the SNIFFER guidance. The criteria selected and the evaluation results are addressed in greater detail in the sections that follow.

9.2 Comparing the numbers that result from the evaluations in such a way that they can be readily interpreted by the lay reader typically presents a problem. The WDA and its consultants adopted the "Normalised Score and Ranking approach". This approach takes the best score and gives it a value of 1 and the worst score is given a value of 0. All other scores are given a decimal number as a ratio of their score relative to the best score. The results are then simply ranked in order.

COMMENTARY (section 9)

Normalisation and Ranking is a perfectly valid approach and is used in the SNIFFER model but unless read very carefully normalised scores can easily lead to misinterpretation. This is amply demonstrated when looking at the results of the human toxicity impacts in the WRATE analysis (shown below). Using a normalisation approach the impacts would be ranked 1 to 12. For most readers this would suggest that the scenario ranking 1 is far superior to the scenario ranking 12. However, in reality the scores of the 12 scenarios when evaluated against this health criterion are virtually identical (within 1.5% of each other) and under any reasonable assessment would be treated as equal.

The Environment Department has, therefore, avoided this potentially misleading normalisation and ranking approach and has instead expressed the results as "Percentage Difference". This is a perfectly valid statistical approach and it is an approach used by the WDA consultants in several areas

before the subsequent normalisation and ranking. It does not in any way change the actual scores but it enables a far clearer understanding of the relative merits of each scenario. The scores set out in the tables below simply take the analysis carried out by the WDA and its consultants and expresses those findings as Percentage Difference.

10. DECISION CRITERIA

10.1 In accordance with the SNIFFER guidance the WDA held workshops to identify the criteria that would be used to evaluate the various integrated waste management options. This resulted in the following list of evaluation criteria:

Air, land and aquatic environment
Global climate change
Natural environment
Human environment
Transport
Sustainable waste management
Water resources
Cost and financial affordability
Making producers responsible
Securing public acceptability and commitment
Practical deliverability
Technical feasibility

COMMENTARY (section 10)

The Environment Department endorses this list of criteria against which the potential scenarios were evaluated. The list is broad and includes all normal areas of concern. The Natural Environment criteria should provide the potential to examine biodiversity and ecosystem impacts; Transport should enable consideration of local congestion and noise; Air, Land and Water enables the issues of localised air pollution and impacts to the water table including nitrate loading and land take and land competition to be addressed. The broad headings of the criteria enable careful consideration to be given to the local relevance when considering the application of decision criteria to the various options, as recommended by the SNIFFER model.

11. LIFE CYCLE ANALYSIS –WRATE

11.1 The 12 scenarios selected by the WDA for evaluation were analysed by the consultants ERM using the WRATE model to identify their life cycle impacts. The model is a UK model and looks at global impacts drawing from databases based on 40 treatment processes. It is reported to be the most sophisticated life cycle analysis model available to compare waste technologies. The WDA did not carry forward all of the outputs from the WRATE analysis but selected those outputs it considered most relevant to the Decision Criteria listed above.

COMMENTARY (section 11)

The Environment Department endorses the application of Life Cycle Analysis and, in the apparent absence of a better tool, the application of the WRATE model to the selected scenarios but considers great care is needed when considering the relative importance of the results in the Guernsey context.

However, the relevance of WRATE as applied to BPEO evaluation in Guernsey might be questioned. The SNIFFER model recommends that careful consideration should be given to localised issues/concerns. For example, the decision criteria that resulted from the workshops and public engagement included the criteria Air Land and Aquatic Environment. However, this decision criterion was in practice assessed through the "freshwater eco toxicity" evaluation which has far more relevance to river basin areas and "acidification" of air by Sulphur Dioxide whereas perhaps ground water Nitrates and noise, dust and PM 10 particulates might be more relevant to Guernsey. There appears to have been little or no attempt to consider the actual air and water pollution levels in the area and how these might be affected by any of the treatment scenarios which is one of the approaches recommended by SNIFFER. Conversely the Human toxicity element of the WRATE analysis was not taken forward by the WDA.

11.2 The WRATE model looked at impacts on:

a) Carbon Footprint (Global warming potential); Column A below.

The consultants commented that the overall difference between the best and worst performing scenarios was a relatively small proportion of the overall benefit.

b) Abiotic (non living) resource depletion; Column B below.

The consultants commented that the overall difference between the best and worst performing scenarios was a relatively small proportion of the overall benefit.

c) Eutrophication (excessive nutrients in water); Column C below.

The consultants commented that there were significant differences between the scenarios due to sensitivity to certain factors for instance the contribution of landfill impacts.

d) Acidification (sulphur compounds leading to air and water acidification); Column D below.

The consultants commented that the overall difference between the best and worst performing scenarios was a relatively small proportion of the overall benefit.

e) Freshwater Aquatic Toxicity; Column E below

The consultants commented that the overall difference between the best and worst performing scenarios was a relatively small proportion of the overall benefit.

f) Human Toxicity. Column F below

The consultants commented that the overall difference between the best and worst performing scenarios was a very small proportion of the overall benefit.

11.3 The results of these analyses are set out in the table below and demonstrated as percentage difference scores. Scenario 9 is closely aligned to the WDA recommended BPEO.

	WRATE ANALYSIS	% divergence from best score						
	Option/Scenario	A, Carbon Footprint	B, Abiotic resources	C, Eutrophic-ation	D, Acidific-ation	E Fresh water toxicity	F Human Toxicity	G Sum
1	46% recycling of MSW, 41% recycling of C&I Landfill (BASELINE)	30.8	26.2	47.2	20.3	13.5	1.4	139.4
2	50% recycling of MSW, 56% recycling C&I Autoclave with production of cellulose fibre sent to UK for gasification	0	1.9	13.9	18.9	4.5	0.3	39.5
2a	50% recycling of MSW, 56% recycling C&I Autoclave with Bio ethanol production	4.4	7.8	No score	9.5	No score	0.8	N/A
3	50% recycling of MSW, 56% recycling C&I Gasification with on island energy production	10.3	5.8	3.7	4	10	1.2	35
3a	50% recycling of MSW, 56% recycling C&I Pyrolysis with on island energy production	5.1	3.9	9.3	2.7	4.5	0.5	26
4	50% recycling of MSW, 56% recycling C&I On island EFW , bottom ash used on island, fly ash exported	5.9	2.9	8.3	2.7	4.5	0.5	24.8
5	50% recycling of MSW, 56% recycling C&I Off island EFW, bottom ash returned to the island, fly ash remains off island	5.9	2.9	8.3	2.7	4.5	0.5	24.8
6	50% recycling of MSW, 56% recycling C&I MBT with AD producing RDF for off island incineration	8.8	2.9	26.8	3.4	0	0	41.9
7	50% recycling of MSW, 56% recycling C&I MBT with IVC producing low value compost on island and RDF exported for incineration	11.7	15.5	14.8	10.8	6	0.5	59.3
8	57% recycling MSW , 60% recycling C&I Waste Park (note1)	2.9	1	7.4	0.7	2	0.2	14.2
9	**62% recycling MSW , 67% recycling C&I** **Off island EFW, bottom ash returned to the island, fly ash remains off island plus AD of food waste**	1.5	0	0	0	5.6	0.5	7.6
10	62% recycling MSW , 67% recycling C&IMBT with IVC producing low value compost on island and RDF exported for incineration plus AD of food waste	4.4	7.8	5.6	7.4	6.5	0.5	32.2

(Note 1) Scenario 8 comprises - Medium recycling plus food waste collection. 'Dirty' MRF, Anaerobic Digester for food waste and small EfW plant on-island.

COMMENTARY (WRATE analysis)

The outputs from the WRATE analysis show that in Life Cycle Analysis terms there is very little differentiation between the scenarios. All except the current system of landfill provide acceptable solutions in life cycle terms. Options 8 and 9 score better overall than the other scenarios but, with the occasional exception, the results of each analysis across all the scenarios (save for the baseline scenario) are within 10% of each other.

The Environment Department is of the view that Lifecycle Analysis provides little persuasive evidence which would point to one scenario being preferable over the others and considers that the WRATE Lifecycle Analysis results are not persuasive in determining the BPEO for Guernsey.

Such a viewpoint was, to a degree, shared by the Consultants who stated "*No single Scenario stands out as a clear favourite on the basis of this life cycle analysis*".

Life cycle analysis allows all scenarios, except the current practice of untreated landfill, to be taken forward.

In ranking the scenarios according to WRATE analysis from 1 to 12 there is a real risk that scenarios which are in reality very closely comparable will, by the casual observer, appear much further apart.

Furthermore by combining the normalised scores for all the criteria before setting rank, significant skew can occur.

12. ADDITIONAL CRITERIA APPRAISAL

12.1 In order to address all the factors identified as important by the working groups additional criteria were identified by the WDA against which the scenarios were evaluated. The additional criteria were :

a) Transport [Column A Below] - This criterion is intended to focus on the amenity issues associated with transporting waste (risk of accidents, congestion, and impact on communities) and therefore only considers 'on land' transport; this includes both Guernsey based and mainland based on land transport.

b) Sustainable Waste Management [Column B Below] – ERM compared the scenarios based on the amount of waste recycled and composted, the amount of waste used to generate electricity, the amount of waste diverted from landfill (no electricity generation) and the amount of waste land filled.

c) Practical Deliverability (including bankability [Column C Below] and end product liability [Column D Below]) – ERM considered the reliability of delivery of each option based on existence or otherwise of proven operating plants; and the risks associated with the sale or disposal of the end products produced through the different waste management processes.

d) Technical Feasibility (including **flexibility** in relation to changes to composition (see under (1)) and tonnage (see under (2)) [Column E Below]; **But see commentary below.**

e) Flexibility Tonnage [Column E] (as per d above).

f) Water consumption. [Column F Below]. This criterion examined water consumption of the residual treatment method but included subsequent thermal treatment of RDF i.e. included water usage that would take place off island.

COMMENTARY (section 12)

The Department generally endorses the evaluation against these criteria but with strong reservations.

The Transport assessment was based only on miles driven. As such no weighting or consideration was given to local issues/constraints. Under this analysis a thousand miles driven on European motorways is considered to have the same impact as a thousand miles driven along the Bridge or around Pointes Lane.

The sustainability analysis considered, inter alia, the value of the electricity generated by each of the waste treatment solutions. However, where the energy was generated appears not to have been taken into account. As a consequence the local issues of Guernsey's energy requirements and the value of locally produced energy from waste was not considered.

The practical deliverability assessment included the risks around the market place for the end products from the various waste processes. The output to land of compost and composted food waste was considered a high risk within the evaluation. The Department remains concerned over the potential consequences of adding composted food waste to land.

The evaluation called "Technical feasibility" was actually limited to an evaluation of "Technical **flexibility**". The Department has concerns that **feasibility** is a much wider issue than **flexibility** and considers that narrowing the evaluation in this way whilst still referring to feasibility may have been misleading.

This concern is partially mitigated by the fact that the Practical Deliverability evaluation took into account whether plants were proven in other jurisdictions and this "proven" status is a very important element of technical feasibility.

12.2 The results of these analyses are set out in the table below and demonstrated as percentage difference scores. Again scenario 9 is closely aligned to the WDA recommended BPEO.

Additional Criteria		% Divergence from best score					
	Scenario	A Transport	B Sustainable Management	C Practically Deliverable	D End Products	E Flexibility 1 2	F Water use
1	46% recycling of MSW, 41% recycling of C&I ; Landfill (BASELINE)	0	83.5	0	0	1 1	n/a
2	50% recycling of MSW, 56% recycling C&I; Autoclave with production of cellulose fibre sent to UK for gasification	17.5	17.8	40	198	8 6	529
2a	50% recycling of MSW, 56% recycling C&I; Autoclave with Bio ethanol production	12	55.7	80	16.9	12 6	628
3	50% recycling of MSW, 56% recycling C&I; Gasification with on island energy production	16.6	8.3	60	67.3	10 6	501
3a	50% recycling of MSW, 56% recycling C&I; Pyrolysis with on island energy production	17.4	9.3	80	69.5	10 6	0
4	50% recycling of MSW, 56% recycling C&I; On island EFW , bottom ash used on island, fly ash exported	11.9	9.8	0	70.2	2 9	240
5	50% recycling of MSW, 56% recycling C&I; Off island EFW, bottom ash returned to the island, fly ash remains off island	10.4	9.8	0	70.2	5 3	240
6	50% recycling of MSW, 56% recycling C&I; MBT with AD producing RDF for off island incineration	11.4	49.8	40	39.6	8 3	366
7	50% recycling of MSW, 56% recycling C&I; MBT with IVC producing low value compost on island and RDF exported for incineration	12.1	31	0	89	6 3	104
8	57% recycling MSW , 60% recycling C&I; Waste Park	17.1	4	0	64.7	2 9	196
9	**62% recycling MSW , 67% recycling C&I; Off island EFW, bottom ash returned to the island, fly ash remains off island plus AD of food waste**	24.6	0	0	64	2 9	145
10	62% recycling MSW , 67% recycling C&I ; MBT with IVC producing low value compost on island and RDF exported for incineration plus AD of food waste	25.1	11.8	0	73.3	6 3	51

COMMENTARY (additional criteria analysis)

Transport, (Column A), setting aside the concerns stated above, provides little differentiation between the scenarios and is not a determining criterion. It is the transport effort in capturing the recyclates that results in lower scores for scenarios 9 and 10.

If diversion from landfill (Column B) is the key driver, and due to the limited availability of landfill on island this is a reasonable position to take, then those options that divert most waste become the clear favourites. This includes options 3, 3a, 4, 5, 8, 9 and 10.

One of the most important criteria must be the reliability (bankability) of the technology. This category (column C) is at the heart of risk and hence delivering a reliable, useable system. Options 1, 4, 5, 7, 8, 9, 10 (and possibly 6) can be included on this basis. However, other key risk considerations are pertinent to some scenarios and are covered later in this report.

The end product liability (Column D) looks at the ability to sell or the difficulty in getting rid of the end product. In some cases (scenario 2) the uncertain nature of the product results in a bad score. The Department has some concerns that the risks of getting rid of composted food waste onto Guernsey's restricted land base may have been given insufficient weight.

Flexibility - the ability to take different waste streams and non homogenous waste (Column E (1)) is a key element impacting on the reliable performance of the technology and hence is again a key risk consideration. The Consultants simply ranked the scenarios based on professional experience/judgement. Scenarios 1, 4, 8 and 9 can be included on this basis and possibly 5, 7 and 10.

The consultants also looked at the ability to take different waste tonnages (Column E (2)). Scenarios 1, 5, 6, 7 and 10 can be taken forward on this basis and possibly 2, 2a, 3 and 3a.

Water usage (column F) shows a marked difference (800%) between best and worst performers (landfill was considered not to use any water). However, to put this into context the worst performer only uses an amount of water equivalent to 0.4% of Guernsey's annual total water consumption and it is questionable how important this criteria is in scenario evaluation.

13. Summary of Evaluation

13.1 The results of all the evaluations described above can be summarised using a simple RAG chart where G (green) is a "Pass to next level", A (amber) is "potentially acceptable" and R (red) is "unacceptable". This involves a qualitative judgement which, of course, can be challenged. However, the Environment Department has tended towards inclusion rather than exclusion at each level. This ensures that a broad range of potential options is taken forward rather than narrowing the field too early on in the comparative assessments.

NOTE Once discounted by a Red score subsequent evaluations for that scenario are not relevant but for completeness a score in lower case is used to show how on that evaluation alone the scenario would have scored.

Evaluation	Scenario											
	1	2	2a	3	3a	4	5	6	7	8	9	10
	Base line landfill	Autoclave with fibre export to gasification	Autoclave with Bio-ethanol	On island gasification	On island Pyrolysis	On island EfW	Off island EfW	MBT with AD and export of RDf to EfW	MBT with IVC and export of RDF to EfW	Waste Park	Off island EfW with AD of Food Waste	MBT with IVC and export of RDF to EfW and AD of food waste
WRATE	R	G	G	G	G	G	G	G	G	G	G	G
Transport	g	G	G	G	G	G	G	G	G	G	G	G
Sustainability	r	A	R	G	G	G	G	A	A	G	G	G
Bankability	g	a	r	R	R	G	G	a	g	G	G	G
End product liability	g	r	g	a	a	A	A	g	a	A	A	A
Flexibility	g	r	r	r	r	a	g	a	g	a	a	g
Water use	g	a	a	a	g	a	a	a	a	a	a	g

13.2 It can be clearly seen that no single scenario readily passes all the evaluations. However, scenarios 4, 5, 8, 9 and 10 score well especially against the more critical evaluations of sustainability and bankability with options 5 and 10 having the benefit of flexibility. (Scenario 9 closely aligns to the WDA BPEO)

14. FURTHER CRITERIA APPRAISAL

14.1 In order to address all the factors, identified by the working groups as important criteria against which scenarios should be evaluated, the WDA carried out 3 further criteria analyses namely: Cost/Affordability; Making Producers Responsible; and Securing Public Acceptability.

14.2 Cost was based on indicative costs from the consultant's model. Public Acceptability was based on extrapolating responses to a market research survey carried out by Island Analysis. This survey asked related questions about waste but did not specifically ask about the public acceptability of the various scenarios. Making Producers responsible was based on a qualitative score resulting from assumptions based on the requirement for additional legislation.

COMMENTARY (section 14)

The Department does not endorse application of the criterion "Making producers responsible". That is not to say that the Department does not consider this to be an important factor but it is not one which the Department considers has a significant bearing on the type of treatment plant selected. Whether or not producers are made responsible and how that is achieved is a political issue and has no bearing on the treatment technology used for the residual waste. The two concepts are fully independent of each other and to score treatment technologies against this criteria is considered inappropriate. It is true that the higher recycling targets are likely to require more legislative measures including statutory enforcement powers but as the States has set very high recycling targets and applied these across all scenarios these impacts are common to any scenario chosen and cannot be a persuasive factor in determining one treatment technology over another.

In respect of cost, the cost of the WDA preferred scenario has been debated by Government (in 2012 and in more detail in 2014) and found to be "acceptable". As such the Environment Department considers that this element of the WDA proposed BPEO i.e. *"Best option...at acceptable cost..."* can be taken as a given and does not require further analysis by the Environment Department. The Environment Department agrees it was quite appropriate for the WDA to take into account cost in arriving at its BPEO.

Evaluating public acceptability required the extrapolation of the non technology specific waste survey questions carried out by Island Analysis to apply scores to specific technologies. The survey revealed strong support from the respondents for recycling and a willingness (which should not be confused with a preference) to separate food waste. There was also majority support in favour of all technologies being considered including newer technologies and majority support in respect of dealing with Guernsey's waste on island.

To extrapolate these generalised survey responses into scores against specific technologies involved significant application of judgement and assumptions and as a result the Department has reservations over the validity and robustness of the approach.

Nevertheless, the results demonstrated that the only factor having significant impact on public acceptability was cost. With this factor excluded (for the reasons set out above) then all results involving export were the same and all results involving import were the same. Hence, as for the WRATE analysis and the transport considerations the public acceptability analysis provides little persuasive evidence to favour one scenario over another.

All of the scenarios (except base line) therefore, meet the public acceptability criterion based on these survey results.

15. CONSTRAINTS

15.1 The WDA identified a number of constraints that would be used to inform the selection of the identified waste management scenarios. The WDA defined a constraint as "an overriding factor that must be met by the options such as a specific cost ceiling or a legal requirement". These constraints were: Space; Cost; Regulatory; and Timescale.

15.2 The application of these constraints led to the removal of the baseline option (continuing the current practice) as well as removal of two scenarios that were based on autoclaving with bioethanol production due to the large volume of rejects that would go to landfill.

COMMENTARY (section 15)

The Environment Department does not endorse these constraints or their method of application.

The Department does endorse constraints based on regulatory compliance and on space. Clearly any scenario that cannot comply with relevant legal requirements should not be considered. Neither should any scenario that requires more space than is feasibly available be considered. However, most facilities can be engineered to meet reasonably constrained footprints. Cost, at the time of the exercise had not been capped by Government and should be treated as a qualitative appraisal rather than a constraint, indeed the WDA used cost as a qualitative assessment before then using it as a constraint. Timescale is equally a qualitative assessment unless delivery of any of the scenarios was anticipated to take longer than the remaining life of the landfill (at that stage circa 10 years) and hence again should not be seen as a constraint.

In addition the Environment Department would expect any approved constraints to be applied at an early stage thus removing non conforming scenarios before any qualitative or quantitative analysis of the remaining scenarios rather than the reverse as adopted by the WDA. The SNIFFER guidance indicated constraints should be applied early on in the process.

It seems to be perverse to subject scenarios, that simply cannot be adopted because they fail a yes/no constraint, to a full evaluation and ranking.

More importantly, a constraint should simply remove a scenario from the list with the order of other scenarios remaining the same but it would appear that the application of constraints by the WDA resulted in some scenarios swapping their ranking position. The Department is, therefore concerned, that the constraints were actually used as an evaluation rather than elimination tool thus wrongly affecting the ranking order of the scenarios.

16. APPLICATION OF WEIGHTINGS

16.1 The scenarios and the raw scores achieved from the criteria evaluations described in the pages above were subjected, by the WDA, to further evaluation using weightings set by the consultee workshops. In essence, each normalised score was multiplied by the weighting and the resultant scores then added to give final scores and hence the ranked order

The criteria and weightings used were:

Assessment criteria	Weighting
Sustainable Waste Management	9
Cost and financing/affordability	7.7
Practical deliverability	6.8
Air land and aquatic environment	5.8
Making producers responsible	5.6
Technical feasibility **(Flexibility)**	5.5
Human environment	4.3
Securing public acceptability and commitment	4.1
Natural environment	3.8
Water resources	3.1
Global climate change	2.3
Transport	1.3

COMMENTARY (section 16)

Whilst appreciating that the rankings came from the various workshops and whilst appreciating that the SNIFFER guidance considers workshop input an important element in arriving at weightings, the Environment Department does not generally support these weightings either on environmental policy grounds or on simple logical analysis.

For example, if a scenario cannot practically be delivered it would be irrelevant how sustainable that scenario is or what cost it carries. As such "practical deliverability" would be expected to carry higher weightings than, for example, "cost". Indeed practical deliverability in that sense could be treated as a constraint.

Similarly, and taking into account SNIFFER'S emphasis on considering local issues, the impacts to Guernsey's Natural Environment might be expected to be at least as important if not more so than the impacts to Air, Land and Aquatic (global) environment especially as the life cycle analysis carried out by WRATE produced very little differentiation between the various scenarios.

With a States Strategic Plan and Environmental Policy that puts Environmental Policy equal not subservient to Financial Policy it cannot be acceptable for "cost" to carry a higher weighting than "Air, land and aquatic environment or Natural environment".

As such the Department considers these weighting factors inappropriate and potentially a distortion of what could otherwise be valid results.

Furthermore, the Department has already expressed its concern over the normalisation approach used to create the comparative scores and ranking. Multiplying these normalised scores by weightings, especially if those weightings are open to challenge, simply exaggerates the concerns already expressed.

17. RE-EVALUATION USING HIGH RECYCLING.

17.1 The WDA noted that the results of all the evaluations carried out demonstrated that, in general, those scenarios that had the higher recycling targets –scenarios 8, 9 and 10 – performed better than the others. The WDA, therefore, asked for all scenarios to be recalculated against all the criteria using a high recycling target across the board. The results of this analysis were that all scenarios performed better (the higher the recycling the better the performance) but importantly the pattern did not change, i.e. the higher recycling targets benefited all scenarios more or less equally. As such the application of the higher recycling targets did not, of itself, assist in selecting a preferred option but did demonstrate a fair treatment of all scenarios which may otherwise have been open to challenge.

17.2 The relationship between the numbers assigned to the various scenarios before and after the application of high recycling can be summarised as:

Initial scenario number	Description	Scenario number when Including Max recycling
1	46% recycling of MSW, 41% recycling of C&I ; Landfill (BASELINE)	(see 21 below)
2	50% recycling of MSW, 56% recycling C&I; Autoclave with production of cellulose fibre sent to UK for gasification	12
2a	50% recycling of MSW, 56% recycling C&I; Autoclave with Bio ethanol production	12a
3	50% recycling of MSW, 56% recycling C&I; Gasification with on island energy production	13
3a	50% recycling of MSW, 56% recycling C&I; Pyrolysis with on island energy production	13a
4	50% recycling of MSW, 56% recycling C&I; On island EFW , bottom ash used on island, fly ash exported	14
5	50% recycling of MSW, 56% recycling C&I; Off island EFW, bottom ash returned to the island, fly ash remains off island	(see 19)
6	50% recycling of MSW, 56% recycling C&I; MBT with AD producing RDF for off island incineration	16
7	50% recycling of MSW, 56% recycling C&I; MBT with IVC producing low value compost on island and RDF exported for incineration	17

8	57% recycling MSW , 60% recycling C&I; Waste Park	18
9	**62% recycling MSW , 67% recycling C&I; Off island EFW, bottom ash returned to the island, fly ash remains off island plus AD of food waste**	**19**
10	62% recycling MSW , 67% recycling C&I ; MBT with IVC producing low value compost on island and RDF exported for incineration plus AD of food waste	20
	MBT, stabilisation, and landfill, kerbside	21

Scenario 19 (scenario 9 with high recycling) is the WDA BPEO (option B).

COMMENTARY (section 17)

The Environment Department endorses this like for like comparison. It is perhaps not surprising that the pattern of results did not materially change. All scenarios were already being assessed against a reasonably ambitious recycling standard but it would have been wrong not to examine scenarios on a like for like basis applying the 70% (overall) recycling target set by the States. In that the pattern of performance across all scenarios remained broadly the same, simply showing higher overall performance across the piste, the application of high recycling does not change the selection of residual treatment scenarios.

18. APPLICATION OF IVC IN PLACE OF AD

18.1 The WDA asked the consultants to compare IVC (in vessel Composting) of food waste against AD (anaerobic digestion) of food waste with the potential of swapping AD in scenarios 19 and 20 (but apparently not 16) to IVC.

18.2 The consultant's analysis showed that there was no significant difference in the scores resulting from replacing AD with IVC.

COMMENTARY (section 18)

The appropriateness of any such change in scenarios after initial scoring must always be questionable especially as the re-evaluation was only carried out in respect of the WRATE analysis. Equally of concern, DEFRA state in their policy guidance that in respect of food waste Anaerobic digestion is the BPEO currently available. In that the WRATE analysis ignores Guernsey specific implications and is a DEFRA (Environment Agency) tool it seems contradictory that DEFRA considers AD to be BPEO whilst the WDA considers IVC and AD to be interchangeable.

In terms of BPEO, the AD system scores higher than IVC because of the gas capture and use i.e. the system is better at reducing carbon emissions. However, when the costs are taken into account the WDA's consultant SLR commented that "food waste treatment does not represent particularly good value for money for carbon reduction". If One, therefore, sets aside the carbon

reduction benefits of AD over IVC the concern over the WDAs decision to swap from AD to IVC is somewhat mitigated. However, the value of the energy that could be generated from AD has not been taken into account. As a consequence the local issues of Guernsey's energy requirements and the value of locally produced energy from waste was not considered.

However, the BPEO comparison between AD and IVC is much less important when compared with the more general concern of spreading composted food waste on land in Guernsey and the risks of Nitrate overload of the island's ground waters.

The WDA's consultants SLR (when considering the IVC/AD comparison) indicated that care should be exercised in determining the current loading of land with Nitrates (slurry etc.). The WDA was unable to present this current loading data to the Department and hence the Environment department has consulted with the Commerce and Employment Department.

The advice received is that circa 20,000 tonnes of slurry is currently spread on land selected by farmers as being both suitable and convenient. If the slurry was evenly spread over all available land, loadings would be in the order of half the maximum permitted Nitrate loading. However, as, in reality, the slurry is not evenly spread over all available land the loadings may be approaching the maximum permitted.

The WDA advises that it was due to concerns raised with it over the risks of digestate from AD of food waste contaminating ground water that the comparison with IVC was carried out. Without drying, AD digestate is wet and gives quick run off of excess nutrients to the land and water table. Matured compost from IVC or dried digestate from AD reduces this risk.

19. APPLICATION OF CUT OFFS FOLLOWED BY RE RANKING

19.1 Having applied the weightings to the extended list of 21 scenarios, the WDA applied a cut off value below which scenarios would be discounted. The intention was to generate a more manageable list. Having deleted the scenarios below the cut off point the WDA then evaluated the remaining scenarios against each other resulting in a change in ranking position for some scenarios. Having completed this exercise the WDA considered there were still too many scenarios to consider and hence applied a second (higher) cut off value below which scenarios were discounted. Again the remaining scenarios were reassessed against each other resulting in a change in ranking position for some scenarios. The output of these two rounds was the final ranking list.

COMMENTARY (section 19)

The Environment Department does not endorse this process. Whilst it is perfectly acceptable to apply a cut off point and discount any scenario falling below that cut off this should not result in a re-ranking of the other scenarios. If they have been correctly scored (with or without weightings) in the first instance there should be no need to re-rank against each other. The SNIFFER guidance does allow for comparison across scenarios at this stage of the process but the intention is to take the highest ranking scenarios, examine those specific criteria for which the higher ranking scenarios may not have scored so well, compare these with other scenarios which scored better on those specific criteria and assess whether or not incorporating elements from the lower ranking scenarios into the higher ranking scenario could further strengthen those highest ranking scenarios creating a better BPEO package. This was not, however the process adopted. Rather the scenarios without modification were simply rescored against each other.

The Department considers it would have been far more robust to simply carry forward the top 3, 4 or 5 scenarios. This re-ranking, especially when considered in light of the concerns already expressed in respect of the application of normalised scores and weightings and the re-ordering after the application of constraints further reduces the transparency of the process and further introduces potential skew.

However, the WDA recommend scenario (scenario 9/19) ranked in the top 3 prior to the application of weightings, constraints and cut offs and hence despite the concerns expressed was a valid option to take forward.

20. CONCLUSION

20.1 In light of the above comments and concerns expressed relating to the further analysis, the constraint application and the re-ranking steps applied by the WDA, the Environment Department considers that the scenario evaluation as previously set out (and reproduced below) should form the basis for BPEO selection.

Evaluation	Scenario										
	1	2	2a	3	3a	4	5	6	7	8	9	10
	Base line landfill	Autoclave with fibre export to gasification	Autoclave with Bio-ethanol	On island gasification	On island Pyrolysis	On island EfW	Off island EfW	MBT with AD and export of RDf to EfW	MBT with IVC and export of RDF to EfW	Waste Park	Off island EfW with AD of Food Waste	MBT with IVC and export of RDF to EfW and AD of food waste
WRATE	R	G	G	G	G	G	G	G	G	G	G	G
Transport	g	G	G	G	G	G	G	G	G	G	G	G
Sustainability	r	A	R	G	G	G	G	A	A	G	G	G
Bankability	g	a	r	R	R	G	G	a	g	G	G	G
End product liability	g	r	g	a	a	A	A	g	a	A	A	A
Flexibility	g	r	r	r	r	a	g	a	g	a	a	g
Water use	g	a	a	a	g	a	a	a	a	a	a	g

20.2 As a result the BPEO**s** would comprise: Minimisation followed by high recycling including kerbside, with either on or off island incineration with or without AD (or potentially IVC) of food waste, windrow composting for green waste and potentially supplied through a waste park.

20.3 These BPEOs allow for, but do not limit the treatment package to, the preferred scenario 9/19 Option B (BPEO) recommended by the WDA and approved by the States. As a consequence the Environment Department has concluded that its comments and concerns set out above do not amount to "adequate reasons" for rejecting the recommended BPEO (option B).

21. SCENARIO 9/19 (OPTION B) ASSOCIATED RISKS

21.1 The preferred scenario 9/19 (option B) identified by the WDA has been presented in debate as an acceptable means of driving forward high recycling and as a means of dealing with the residual waste without creating the unacceptable risk of constructing on island facilities which may prove to be too large once the 70% recycling targets have achieved their objective of significantly reducing the amount of residual waste for treatment. It addresses a related concern that a large facility will need to be "fed" thus damaging the drive to recycle. Scenario B (19) is primarily aimed at delivering the facilities to achieve the 70% recycling target and then exporting the residual waste remaining. There is a possibility that at some stage in the future, once the residual waste stream has been reduced as far as is reasonably practical, a smaller technology solution could potentially be brought on island to deal with

the remaining residual waste stream locally thus avoiding export in the longer term although this would be subject to prior approval by the States of a revised WDP.

In terms of managing over capacity risks this is, in the Environment Department's opinion, a reasonable stance to take. However, the scenario introduces other significant risks that require to be documented.

21.2 Processing waste at overseas facilities (export) is subject not only to contractual agreements but also to regulatory consents issued by the competent authority in the receiving jurisdiction. The maximum certainty attached to those consents and agreements in European Union countries is (at present) 3 years. As such scenario B risks investing millions of pounds capital in a system that could potentially only have a 3 year life. It is, of course, possible to then strip out the facility and use it as a large building but if this is assumed to be part of the potential strategy then the "flexibility ratings" in the evaluations above must present different scores as must the "cost" and "sustainability" evaluations.

21.3 The requirement for export also necessitates the storage of baled waste pending shipment. The Department considers that the risks associated with storing baled waste, including smells, visual impacts and vermin may present problems in locating an acceptable site although such matters would have to be considered on the basis of the full evidence then available in the context of any future planning permission.

21.4 Scenario B assumes that existing privately owned facilities will continue to process waste that cannot be handled in the clean MRF i.e. all skip waste and contaminated waste, and will generate a clean product that meets the Waste Acceptance Criteria for the Transfer Station. This presents two risks. Firstly that such private facilities will be able and willing throughout the life of the strategy to meet such criteria and secondly that the few private sites that exist will be willing and able to take such waste from all hauliers in order to process it to the WAC standards. Should the private sites not engage in this process or choose to close or limit the waste they process then the only available disposal route for such waste will be on island landfill.

21.5 Such a risk could be avoided by a States run dirty MRF or by long term binding contracts (including financial bonds that would survive the demise of the company) with the private suppliers. It appears neither risk avoidance approach has been put in place as part of the WDA proposals. This is largely due to the WDA's stated intention not to interfere with the private business of the existing operators.

21.6 The Department accepts that every scenario carries its own risks but a structured risk analysis of each scenario would have allowed for an informed assessment of those risks.

21.7 Nevertheless, these risks have largely been open to and discussed by the States (even if not qualitatively or quantitatively evaluated) and have been set aside as being of insufficient consequence to warrant a review of the preferred strategy. The Environment Department has taken into consideration, in putting forward the WDP for approval by the States, the fact that the risk acceptability profile has been taken into account by the States in its recent debates on the waste strategy. However, the Department asks that as part of the tender evaluation process an evaluation of these risks is undertaken.

22. CURRENT AND FUTURE WASTE ARISINGS

22.1 The WDA calculations are based on zero growth in waste and a recycling target of 70%. These waste growth/recycling targets have been accepted by the States. It must be recognised that a zero waste growth projection has been adopted with little evidence base. This runs counter to the States approved Environmental Policy Plan that calls for evidence based decisions. It should be recognised that population is currently growing at circa 340 people per year. The target for housing construction is currently 350 units per year and GDP is forecast to continue to grow moderately.

22.2 The above are all factors which historically have been aligned with waste growth and whilst there are global desires to decouple economic growth from waste production, efforts continue to be targeted at recycling the waste created rather than stopping its generation. As such a zero waste growth target is more a desire or hope than a factual based projection.

22.3 Recycling targets of 70% are extremely ambitious. There are few if any reference jurisdictions that could be regarded as comparable to Guernsey which currently achieve these rates of recycling across household and commercial waste. Again, therefore, the target is based less on factual evidence and more on an aspiration.

22.4 The Environment Department has taken into account that these recycling targets have been approved by the States and that ambitious recycling targets would form part of any of the possible BPEOs. However, it must be recognised that targets that are not supported by sound evidence present additional risks to the strategy.

23. WASTE FLOWS

23.1 In order to document the WDP, the Environment Department is required, under the Law, to identify the tonnages of waste and the waste flows (through the various proposed waste facilities) in order to confirm the nature and capacity of the facilities required. The Department has based its analysis on original data provided by the WDA and supplemented by the Department's own knowledge.

23.2 The current waste tonnages, the method by which the waste is currently managed and how that changes under the proposed BPEO is set out in Appendix 2 and Appendix 3 of the Draft WDP attached to this report.

23.3 In analysing the data provided to it the Department identified the following categories of waste for which the proposed management route are, in its opinion, uncertain. These waste groups have been discussed with the WDA:

- Contaminated Soil – 100 tonnes in 2012
  The WDA has assumed that contaminated soil will be remediated in situ, if untreatable on site small quantities of such waste could be utilised as 'cover' material at the Special Waste Cell at Mont Cuet.

- Commercial MRF 'cover' material - 7,000 tonnes in 2012
  The WDA has advised that this material will only be accepted at Mont Cuet if there were a requirement for 'cover' material at the Specially Controlled Waste Cell. The WDA has assumed that if this material is not required, it would be sorted to a standard that could meet the Waste Acceptance Criteria at the Waste Transfer Station or Inert Waste Disposal site.

- Site Preparation Materials (Hard core and tarmac) - 12,500 tonnes
  The WDA advises that a proportion of this material will continue to be required at Mont Cuet and Longue Hougue. The WDA has stated that the remaining material will be used for other engineering/building projects or will meet the Waste Acceptance Criteria at the Inert Disposal site.

- 'Fragmentiser' Waste (from Scrap Metal Processing) – 1,200 tonnes
  A proportion of this material is currently exported for recovery. The remaining material is disposed of at Mont Cuet or used as 'cover' material. The WDA has assumed that all this material can be exported for recovery.

- Waste Wood – 7,650 tonnes
  The tonnages for waste wood are estimated based on historical data provided by commercial operators. At the time of writing, the only licenced operation which burns waste wood (up to 1,000 tonnes per annum) has been suspended by the Director of Environmental Health and Pollution Regulation. A proportion of the remaining material (estimated to be in the order of 1,000 tonnes) is shredded and blended with 'cover' material used at Mont Cuet. This cover material is unlikely to be required under the proposed BPEO. From discussions with the industry, the WDA assumes that all the remaining waste wood is being burnt in small quantities across the island. It is possible that the amount of wood being disposed of in this way exceeds the 7,650 tonnes estimated figure. Waste wood could be accepted at the transfer station and exported.

- Alderney Waste – 800 tonnes
  Alderney currently sends its residual waste to Guernsey for disposal. However, following discussions with Alderney, the WDA has assumed that Alderney will find an alternative disposal route for its waste. However, until such alternative is delivered the WDP must provide for any Alderney Waste accepted in Guernsey for disposal or treatment.

23.4 The Environment Department has concern over the assumptions detailed above as, if these assumptions are misplaced, alternative disposal routes must be found for the relevant waste type and tonnage. There is a risk that there are no guaranteed re-use, recycling options for these waste streams and hence the amount exported or landfilled on island may have to increase.

23.5 The WDA has also advised the Environment Department that there are waste types currently in the waste stream, such as gypsum that will not be accepted at the Waste Transfer Station, as they would impact on the Waste Acceptance Criteria for the exported waste. The WDA has advised that it will work with the commercial sector to identify alternative disposal or recycling routes for these waste types.

23.6 Contrary to the above, while every effort should be made to preserve the life of Mont Cuet, the Environment Department has, within the draft Waste Disposal Plan, identified the need to provide the ability to accept 'problematic' wastes that arise on an ad hoc basis and that can only be disposed of on-island.

24. CONCLUSION ON METHODOLOGY TO IDENTIFY BPEO

24.1 The Department has considered all the information and data provided to it in the recommendations of the WDA. The Department has examined how that data was used in the various stages and processes leading up to the recommendation of the BPEO. Whilst the **majority** of members of the Department have some ongoing concerns as listed in this report, the approach it has adopted has resulted in a conclusion, as set out at paragraph 20.2 and 20.3 of this report, which is not significantly at odds with the BPEO recommended by the WDA. The analysis undertaken by the Environment Department, utilising the information provided by the WDA, results in the identification of BPEO as described in paragraph 20.2 which include but are not limited to the BPEO recommended by the WDA i.e. Option B.

24.2 Nevertheless, the Department is not unanimous in its view that Option B as presented by the WDA should present the basis for the Waste Disposal Plan. Deputies A Spruce and B Paint are of the view that the risks presented by the composting of food waste and the reliance on export to Europe are of sufficient merit not to support those waste management methods. As such Deputies Spruce and Paint do not support the recommended Waste Disposal Plan.

24.3 The Department, **by majority**, has concluded therefore, from the information provided to it and taking into account the previous decisions of the States, that its concerns set out in this report do not constitute adequate reasons on which to reject the WDA recommendations and in particular the BPEO recommended. On that basis the draft Waste Disposal Plan has been prepared for States consideration based on the WDA recommendations and in particular the BPEO recommended by the WDA as previously approved by the States and is attached as an Appendix.

25. GOOD GOVERNANCE

25.1 In accordance with Resolution VI of 2011 (Billet d'État IV, 2011 refers) the Environment Department is required to explain the extent to which it considers that this Report complies with the six principles of good governance as detailed in the aforementioned Billet d'État.

25.2 **Core Principle 1 –** Good governance means focusing on the organisation's purpose and on outcomes for citizens and service users. As detailed in this report the Department has a legislative function to review the proposed BPEO within the context of wider environmental policy.

25.3 **Core Principle 2 –** Good governance means performing effectively in clearly defined functions and roles. Under the Environmental Pollution (Guernsey) Law, 2004 the Environment Department must prepare, following recommendations made to it by the WDA, a Waste Disposal Plan for consideration by the States.

26. RECOMMENDATION

The Department recommends the States to approve the attached draft Waste Disposal Plan in accordance with section 31(3) of the Environmental Pollution (Guernsey) Law, 2004.

Yours faithfully

R Domaille, Minister
A Spruce
B J E Paint
Y Burford
B L Brehaut

States of Guernsey
Waste Disposal Plan

Approved by the States on *[insert date]*

ENVIRONMENT
A STATES OF GUERNSEY GOVERNMENT DEPARTMENT

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1. PURPOSE OF WASTE DISPOSAL PLAN

To identify the solid and liquid wastes generated by the Community for which provision for disposal needs to be made for the period of 20 years from [*insert date approved by the States*], the disposal methods to be used for that waste and related matters, in accordance with section 31 of The Environmental Pollution (Guernsey) Law, 2004 (the Law) (see Appendix 1).

In identifying waste for disposal and methods for such disposal the Plan also identifies the wider management of waste including recycling and reuse.

2. CONTEXT

2.1 Waste Types

For the purpose of this Waste Disposal Plan (WDP), the waste produced and requiring disposal by Guernsey has been broken down into the following categories:

- Solid Waste
  - Household Waste
  - Commercial Waste (includes Inert waste)
  - Specially Controlled Wastes (e.g. asbestos, batteries, florescent tubes and oils - mineral and vegetable).
- Liquid Waste (e.g. Waste Water)

2.2 Background

2.2.1 Solid Waste

The States has approved the Waste Disposal Authority (WDA) recommendations for the Best Practical Environmental Option (BPEO), as set out in Billet d'État IV 2012 and Billet d'État II 2014.

These recommendations have been considered by the Environment Department in preparing this Plan in accordance with Section 31 of the Law. The Department concluded that the Best Practical Environmental Options for Guernsey would be described as : Minimisation followed by high recycling including kerbside, with either on or off island incineration with or without Anaerobic Digestion (or potentially) In Vessel Composting) of food waste, potentially supplied through a waste park for the reasons set out in paragraph [*] of Billet D'État No. [*] of 2014. [**To be inserted once details known*]

As the Environment Department concluded these Best Practical Environmental Options would include the scenario 9/19 Option B recommended by the WDA and approved by the States[1], it decided that there were not adequate reasons for the Department to reject the WDA recommendations despite the comments and concerns raised by it in Billet D'État No. [*] of 2014. [**To be inserted once details known*]

This WDP, therefore, as well as identifying the existing waste disposal and management methods used on the island also sets out the future methods proposed to be used in accordance with that WDA recommended BPEO. However, those methods are subject to the various actions and approvals referred to in the resolutions approved by the States on 12th February, 2014 pursuant to Billet d'État No II of 2014.

The BPEO was put forward by the WDA in its 2012 report (paragraph 17.6) known as Option B and consisted of:

a. 70% recycling by 2025 (i.e. 70% of commercial waste and 70% of household waste)
b. Waste Prevention and Minimisation
c. MRF for commercial waste –for sorting and separation of waste for recycling
d. Kerbside collections for Dry recyclables and food waste
e. Bring banks
f. In vessel composting (IVC) of food waste collected separately by kerbside collections generating a compost for land spreading
g. Green waste processing at Mont Cuet via windrows to create a soil conditioner
h. Transfer Station for residual waste from household black bags and commercial waste not suitable for recycling
i. Off island Energy from Waste treatment through incineration.
j. Landfill of special/hazardous waste only.
k. Legislative measures to support the high recycling objective

This BPEO identified by the WDA was subject to the caveat that a contract, for the export of waste, of suitable length and acceptable price could be obtained.

[1] Billet D'État IV of 2012 and Billet D'État II of 2014.

In its 2014 report the WDA elaborated further on its identified BPEO as follows:

1. MRF for co-mingled dry recyclables collected via kerbside collections from households and small businesses and recovery of recyclable materials from mixed commercial waste
2. Civic Amenity site
3. Kerbside collection vehicles (if required)
4. Repair and Reuse centre
5. IVC to also process commercial sector food waste
6. Residual waste target of circa 28,000 tonnes per annum decreasing to circa 18,000 tonnes per annum by 2025 for export to EfW
7. On island incinerators for some hazardous waste (animal carcass and clinical waste incinerator)
8. Export of residual waste to Jersey or Europe
9. A strategy cost over 20 years in the order of £10,000,000 to £13,000,000 per annum
10. A charging policy consisting of standing charge and pay as you throw elements.
11. Legislative requirements relating to presentation of recyclates and other waste for collection limited to households and small business premises using kerbside collection services with compliance encouraged by civil fixed penalty notices.

Under the Law as currently drafted "disposal" is not defined. The Law refers mainly to disposal of waste which reflects the fact that the main method of management of residual waste, at the time the Law was drafted, was by final disposal on island.

However, there is also reference in the Law to the sorting, recycling and reuse or reclamation of waste as well as final disposal. In practical terms in order to identify disposal options it is necessary to look at waste management in general. This approach was followed in the current 2007 Waste Disposal Plan which contains details relating to recycling and reuse of waste and waste management in general.

States resolutions 10 and 16 in relation to Billet d'État II 2014 also direct amendments to the Environmental Pollution (Guernsey) Law, 2004 to clarify that parts of the Law are not limited to final disposal of waste but include waste recovery and other waste management activities.

Assuming the amendments are approved by the States they will provide for this Waste Disposal Plan to continue to have effect as the Waste Management Plan in the future.

2.2.2 Liquid Waste

In February 2012, the States considered a report by the Public Services Department (Billet d'État III 2012). The scientific evidence presented within the report identified that current discharges are having a minimal impact on the environment. However, it identified that improvements are required to achieve dilution standards at the sea surface around the point of final effluent discharge.

The States resolved to proceed with the design of a replacement long sea outfall using the Intertek METOC model with the works to incorporate the installation of five diffusers near the discharge end of the Phase IV replacement long sea outfall in order to achieve initial dilution standards.

3. THE PLAN

3.1 Description and quantities of waste for disposal

Under section 31(3)(a) of the Law, the draft Waste Disposal Plan is required to identify *the descriptions and quantities of waste for the disposal of which provision needs to be made during such period as may be specified.* The period specified in this Plan is 20 years starting from [*insert date approved by the States*]

3.1.1 Solid Waste

The descriptions and quantities of waste (excluding Liquid Waste) currently requiring provision for disposal or other waste management are shown below.

Summary of 2012 Waste Arisings Data (tonnes)

Waste Category	Household	Commercial	Total
Inert Waste		174,704	174,704
Inert Recycling		56,322	56,322
Inert Sub-Total		**231,026**	**231,026**
Residual Waste	13,910	27,538	41,448
Recycling	12,218	20,724	32,942
Sub-Total	**26,128**	**48,262**	**74,390**
Total Waste	26,128	279,288	305,416

A more detailed breakdown of such descriptions and quantities of waste is provided in Appendix 2.

Notwithstanding government policies on net inward migration, increasing the housing stock by 300 houses per annum and growing the islands GDP, the WDA and the States has adopted zero waste growth in the BPEO evaluations. The Plan reflects this approach in setting out the quantities of waste for disposal.

3.1.2 Liquid Waste

Wastewater is water which contains foul effluent from toilets, sinks, baths and showers.

The average flow rate of wastewater requiring primary treatment at the Belle Grave pumping station is 15,200 m^3 per day based on a population of 65,000[2] people. The maximum flow rate is 34,500 m^3 per day.

[2] Population figure includes allowance for visitors, migrant workers and trade effluent flows.

It is assumed that as the Island's population increases so will the flow rates of wastewater.

3.2 Methods to be employed for the disposal of waste

Under section 31(3)(b) of the 2004 Law, the draft Waste Disposal Plan is required to identify the methods to be employed for the disposal of waste identified in section 3.1 above. Facilities for recovery as well as for final disposal have been identified as explained above.

3.2.1 Solid Waste – Existing Facilities

The table below details existing key infrastructure in Guernsey for the management of solid waste. These sites are operated, where appropriate, under licences issued by the Director of Environmental Health and Pollution Regulation (the Director):

DESCRIPTION	LOCATION (WDA SITES ONLY)	OPERATOR	EXISTING TONNES PER ANNUM
Materials Recovery Facilities (Commercial)	Fontaine Vinery	WDA & Private	Inputs unknown for Private Facility
Materials Recovery Facilities (Dry Recyclables)	Fontaine Vinery	WDA & Private	c. 12,000
Windrow Composting	Mont Cuet	WDA	c. 11,000
Carcass Incinerator		Commerce & Employment Department	c. 400
Healthcare Waste Incinerator		Health & Social Services Department	c. 650
Inert Landfill	Longue Hougue	WDA	c. 175,000
Inert Recycling		Private	c. 37,000
Residual Landfill	Mont Cuet	WDA	c. 53,000[3]
Specially Controlled Waste – On Island Disposal	Mont Cuet	WDA	c. 1,700
Specially Controlled Waste – Exported for Recovery		WDA, Private	c. 1,400
Specially Controlled Waste – Exported for Disposal		Commerce & Employment Department, Private	Up to a maximum of 84 (as specified within the Duly Reasoned Request[4])

[3] Includes Site Preparation Materials

[4] A Duly Reasoned Request is required under Article 11 of the Basel Convention and Article 41 of Regulation (ED) No. 1013/2006 in order for Guernsey to export specially controlled wastes to the UK for disposal.

In addition to the above, there are a number of smaller operations that manage waste material prior to being recycled or reused.

3.2.2 Solid Waste – Existing Supporting Facilities

In addition to the above facilities, the WDA also manages a Kerbside Recycling Scheme and provides Bring Banks for the collection of dry recyclables.

3.2.3 Solid Waste - Future Facilities

Based on current fill rates (published within the WDA Waste Management Quarterly Reports), it is recognised that the residual landfill site at Mont Cuet will cease to be a viable option beyond 2022. Mont Cuet is also the last site licensed under the Law for the on-island disposal of specially controlled wastes.

The Solid Waste Strategy approved by the States (Billet d'État IV 2012) focuses on ensuring that waste is dealt with at the highest level possible in the Waste Hierarchy. This is to be achieved by minimising waste, increasing recycling and exporting residual waste for recovery.

To support this strategy, the following facilities are required:

DESCRIPTION	**LOCATION (WDA SITES ONLY)**	**OPERATOR**	**EXPECTED TONNES PER ANNUM**
Materials Recovery Facilities (Commercial)		Private	Inputs unknown
Materials Recovery Facilities (Dry Recyclables)	Longue Hougue or another site	WDA & Private	c. 14,000
In-Vessel Composting Facility	Longue Hougue	WDA	6,000 - 13,000 [5]
Windrow Composting Facility	Mont Cuet	WDA	2,000 – 9,000 [3]
Animal Carcass Incinerator		Commerce & Employment Department	c. 400
Healthcare Waste Incinerator		Health & Social Services Department	c. 650
Waste Transfer Station	Longue Hougue	WDA	c. 28,000

[5] In-Vessel Composting requirements will be dependent on capture rates for food waste and the mix of food waste and green waste. The percentage mix is dependent on the technology and hence the range of tonnes given.

'Baled RDF' Storage Site (prior to export)	TBA	WDA	c. 28,000
Residual Landfill	Mont Cuet	WDA	Unknown
Inert Landfill	Longue Hougue	WDA	c. 175,000[6]
Inert Recycling		Private	c. 56,000[7]
Specially Controlled Waste – On Island Disposal	Mont Cuet	WDA	c. 1,700
Specially Controlled Waste – Exported for Recovery	North Side Oil Yard	WDA, Private	c. 1,400
Specially Controlled Waste – Exported for Disposal		WDA, Commerce & Employment Department, Private	Up to a maximum of 84 (as specified within the Duly Reasoned Request)

3.2.4 Associated Facilities and Processes

In addition to the above facilities, the WDA recommended BPEO is reliant on Kerbside Recycling (for dry recyclables and food waste), the Bring Banks, a Household Waste Recycling Centre and a Repair and Reuse Centre.

3.2.5 Solid Waste – Waste Flow and WDA Assumptions

Appendix 3 shows the waste flow based on the 2012 waste arisings data detailed in Appendix 2. This Waste Flow includes a number of assumptions made by the Waste Disposal Authority (WDA):

- Contaminated Soil – 100 tonnes in 2012
  The WDA has assumed that contaminated soil will be remediated in situ, if untreatable on site small quantities of such waste could be utilised as 'cover' material at the Special Waste Cell at Mont Cuet.

- Commercial MRF 'cover' material - 7,000 tonnes in 2012
  The WDA has advised that this material will only be accepted at Mont Cuet if there were a requirement for 'cover' material at the Specially Controlled Waste Cell. The WDA has assumed that if this material is not required, it would be sorted to a standard that could meet the Waste Acceptance Criteria at the Waste Transfer Station or Inert Waste Disposal site.

[6] The quantity of inert waste received for land reclamation fluctuates considerably.
[7] Includes material previous used for Site Preparation at the residual landfill site.

- Site Preparation Materials (Hard core and tarmac) - 12,500 tonnes
  The WDA advises that a proportion of this material will continue to be required at Mont Cuet and Longue Hougue. The WDA has stated that the remaining material will be used for other engineering/building projects or will meet the Waste Acceptance Criteria at the Inert Disposal site.

- 'Fragmentiser' Waste (from Scrap Metal Processing) – 1,200 tonnes
  A proportion of this material is currently exported for recovery. The remaining material is disposed of at Mont Cuet or used as 'cover' material. The WDA has assumed that all this material can be exported for recovery.

- Waste Wood – 7,650 tonnes
  The tonnages for waste wood are estimated based on historical data provided by commercial operators. At the time of writing, the only licenced operation which burns waste wood (up to 1,000 tonnes per annum) has been suspended by the Director of Environmental Health and Pollution Regulation. A proportion of the remaining material (estimated to be in the order of 1,000 tonnes) is shredded and blended with 'cover' material used at Mont Cuet. This cover material is unlikely to be required under the proposed BPEO. From discussions with the industry, the WDA assumes that all the remaining waste wood is being burnt in small quantities across the island. It is possible that the amount of wood being disposed of in this way exceeds the 7,650 tonnes estimated figure. Waste wood could be accepted at the transfer station and exported.

- Alderney Waste – 800 tonnes
  Alderney currently sends its residual waste to Guernsey for disposal. However, following discussions with Alderney, the WDA has assumed that Alderney will find an alternative disposal route for its waste. However, until such alternative is delivered the WDP must provide for any Alderney Waste accepted in Guernsey for disposal or treatment.

- Waste Derived Material - 6,500 tonnes
  Approximately 6,500 tonnes per year of waste derived material (excluding existing slurry waste circa 20,000 tonnes) will be spread on land after treatment. The majority of this material results from the processing of green waste with the remainder being processed food waste. The ongoing long term viability of this process and the long term capacity of the island's soils to take up these additional outputs, particularly in respect of food waste, without adverse impacts to the land and water resources is

unknown. The WDA has assumed that this waste derived material will meet quality standards and would be applied to the land in line with nutrient management plans.

3.2.6 Liquid Waste

There are currently 66 pumping stations that transport wastewater to the centralised treatment facility at Belle Greve Wastewater Centre. At the Waste Water Centre, mechanical screens remove grit and non-biodegradable material larger than 6mm in any two dimensions.

The resulting wastewater is then discharged through a long sea outfall pipe which extends into the waters of the Little Russel.

At its meeting held on 8th February 2012, and following consideration of the Public Services Department report entitled 'Liquid Waste Strategy' (Billet d'État III 2012), the States resolved:

1. To proceed with the design of a replacement long sea outfall using the Intertek METOC model to incorporate:

    i. The optimum length and location of pipe to achieve the greatest environmental benefit:
    ii. The installation of five diffusers in order to achieve dilution standards at the sea surface around the point of final effluent discharge.

2. To review the "less sensitive area" status of the Little Russel every four years.

Subject to the discharges and supporting infrastructure meeting the standards set by the Director, Waste Water will continue to be treated and discharged to sea during the life of this Plan.

3.3 Estimated Financial Costs

Under section 31(3)(c) of the Law, the draft Waste Disposal Plan is required to identify the estimated financial costs of such disposal by the methods identified in 3.2.

The costs detailed below are in relation to waste disposal and other waste management operations provided, managed, arranged or funded by or on behalf of the Waste Disposal Authority. All private facilities will have a gate fee set to cover operating costs of that facility.

3.3.1 Solid Waste – Existing Operating Costs

It currently costs in the order of 3.8 Million per annum to operate the States owned key infrastructure for the management and disposal of solid waste (including recycling activities).

3.3.2 Solid Waste – Future Operating Costs

As outlined in Billet d'État II 2014 (paragraph 22.22) the WDA estimate future operating costs of waste disposal and other waste management facilities to be between £10 to £13 million per annum based on a 20 year strategy.

3.3.3 Liquid Waste – Existing and Future Operating Costs

It currently costs in the order of £5 million per annum to run wastewater services.

It is anticipated that costs will remain at this level in real terms during the life of the Plan.

3.4 Recovery of the financial costs

Under section 31(3)(d) of the 2004 Law, the draft Waste Disposal Plan is required to identify arrangements for recovery of the estimated costs identified in 3.3.

3.4.1 Solid Waste – Existing Cost Recovery Policies

Costs at public waste disposal and other waste management sites managed by the Waste Disposal Authority are recovered by way of gate fees[8] applied at the receiving facilities, and are based on the tonnage and type of waste being deposited or otherwise managed. The gate fees have been set by the WDA to encourage segregation of inert material and the segregation of materials for recycling. Contamination rates are applied at Mont Cuet for loads containing material that could have been segregated.

The income received from the gate fees at Mont Cuet and Longue Hougue covers the running costs of the two sites, along with the cost of running WDA managed recycling and segregation facilities.

It is noted that a proportion of the gate fees were used to cover the costs of previous waste strategy investigations and are currently being used by the WDA in developing the recommended BPEO.

3.4.2 Solid Waste – Future Cost Recovery Policies

As outlined in Billet d'État II 2014 (paragraph 31.16), the following charges are proposed for domestic waste:

- The Douzaines will make a direct charge to household for the costs of collections and transfer of waste, recyclables and food waste to licensed facilities based on a fixed charge per household, calculated by whatever method is set out in the relevant legislation. This is on the basis that the collection service represents a fixed cost regardless of how much waste is placed out by each household.

- The WDA will directly charge households to cover the costs of processing the materials after collection and to pay costs of all other public waste management services and initiatives provided, arranged or funded by the WDA i.e. the States and made available to households. This charge will comprise:

[8] In respect of household waste this is paid from the refuse rate levied by the Parishes.

- A Charge per bag (black bags and recyclables bags)
- An annual fixed charge per household.

As outlined in Billet d'État II 2014 (paragraph 32.2), commercial waste delivered to sites provided, operated, or funded by or on behalf of the Waste Disposal Authority will be charged a gate fee at a per tonne per load rate to cover the cost of providing the service. Gate fees at the different facilities will be set at differential rates to encourage businesses to deal with their waste through methods such as re-use and recycling which are higher up the Waste Hierarchy than recovery and disposal.

As outlined in Billet d'État II 2014 (paragraphs 32.5), small businesses producing waste of a similar nature or composition and of a similar or lower volume to that produced by households will have the opportunity to opt into parochial household collection services for black bag waste, recyclables and food waste and a duty placed on the Douzaines to make arrangements to provide such collections for such businesses.

3.4.3 Liquid Waste – Cost Recovery Policies

Costs are recovered on a user pays principle through water and waste water charges based on the Tax on Real Property (TRP) value of a property (for properties not on a water meter) or by the volume of water consumed (for properties on a water meter).

3.5 Public waste disposal and management sites

Under section 31(3)(e) of the 2004 Law, the draft Waste Disposal Plan is required to identify the sites under the management of the Waste Disposal Authority where such disposal is to take place ("public waste disposal sites").

Section 32(1) of the 2004 Law states that it is the duty of the Waste Disposal Authority to make reasonable provision for the reception and disposal of all normal household and commercial waste at one or more public waste disposal sites.

As detailed in the 2014 States Report, the Solid Waste Strategy recommended by the WDA has identified a number of strategically important waste management facilities. It was agreed that the duty in section 32(1) of the Environmental Pollution (Guernsey) law, 2004, would be amended to require the WDA to make arrangements for recovery, as well as disposal, of waste so that it is clear that the WDA has duties in relation to not just end disposal of waste but also recycling and re-use of waste and other waste management. This will also provide a more flexible duty on the WDA so that it may provide waste facilities itself or via arrangements with the private sector. The sites listed below, therefore, include waste management facilities which may be provided, operated or funded by the WDA as well as managed by it.

3.6 Solid Waste – Existing Public Waste Disposal and Management Sites

The following are existing WDA Public Waste Disposal and Management sites that are managed by the WDA or via arrangements with the private sector:

Household Waste Recycling Facility (Longue Hougue)

A temporary Household Waste Recycling facility is provided at Longue Hougue where the public can deposit potentially recyclable or reusable household waste.

Green Waste Processing Site (Mont Cuet)

Green waste processing, involving the creation of Windrows, is currently undertaken at Mont Cuet.

Inert Waste Disposal Site (Longue Hougue)

Longue Hougue is a marine reclamation site. Only inert waste is accepted at this site as the material has direct contact with the marine environment.

Materials Recovery Facility (MRF) (Fontaine Vinery)

A facility is provided at Fontaine Vinery for the segregation of co-mingled dry recyclates collected from Bring Banks and for the segregation of co-mingled commercial waste delivered directly to the facility.

Residual Landfill Site (Mont Cuet)

Mont Cuet is the only site on Guernsey in respect of which a licence is held under the Law (licensed site) for the disposal of mixed household and commercial residual waste.

Specially Controlled Waste Disposal Site (Mont Cuet)

Mont Cuet is a licensed site for the disposal of specially controlled wastes.

Specially controlled waste can currently be accepted at Mont Cuet due to the quantity of residual waste that is currently landfilled and which helps dilute and breakdown the specially controlled waste.

Waste Oil Storage Site (North Side Oil Yard)

Waste mineral and vegetable oil will continue to be stored at the North Side Oil Yard prior to reuse on-island (e.g. as a biodiesel) or being exported for recovery.

3.7 Solid Waste – Future Public Waste Disposal and Management Sites

The following are WDA Public Waste Disposal and Management sites that will be managed by the WDA or via arrangements with the private sector under the recommended BPEO:

Baled RDF Storage Site

Baled RDF that has been processed at the Waste Transfer Station will be bulked up at a storage site prior to export.

Household Waste Recycling Centre (Longue Hougue)

The temporary Household Waste Recycling facility will be upgraded to a Household Waste Recycling Centre.

Repair and Reuse Centre (Longue Hougue or other site)
In addition to the Household Waste Recycling Centre, a Repair and Reuse Centre may be set up.

Green Waste Processing (Mont Cuet)

Green waste processing, involving the creation of Windrows, will continue to be undertaken at Mont Cuet.

Inert Waste Disposal Site (Longue Hougue)

Inert waste will continue to be accepted for land reclamation at Longue Hougue.

However, it is also noted that the existing reclamation site at Longue Hougue has a finite life. The Site is surveyed by the WDA biannually and, based on information from the January 2014 survey, it is estimated that Longue Hougue has a further 8 years' life (based on filling rates from 2009-2014).

In-Vessel Composting Facility (Longue Hougue)

Household and commercial food waste collected will be processed at the WDA In-Vessel Composting Facility to be located at Longue Hougue.

Materials Recovery Facility (MRF) (Longue Hougue or another site)

A facility is to be procured by the WDA for the segregation of co-mingled dry recyclates collected from Bring Banks and kerbside collections from households and small businesses that opt into the kerbside scheme. The location may be at Longue Hougue or privately funded at an alternative site.

Residual Landfill Site (Mont Cuet)

Although it is proposed that residual household and commercial waste, excluding specially controlled wastes, should be exported to an energy from waste facility, there may be times when exceptional circumstances or waste types result in the need to dispose of residual wastes on-island.

As the last licensed landfill site, provision must be maintained for such ad hoc wastes requiring disposal at Mont Cuet during the life of the approved Strategy.

Specially Controlled Waste Disposal Site (Mont Cuet)

With no residual waste to act as a buffer, the current practice of disposal for Specially Controlled Waste will cease when the export of residual waste commences.

At this time, Specially Controlled Wastes requiring disposal on-island will be landfilled in a specially engineered cell at Mont Cuet.

Waste Oil Storage Site (North Side)

Waste mineral and vegetable oil will continue to be stored at the North Side Oil Yard prior to reuse on-island (e.g. as a biodiesel) or being exported for recovery.

Waste Transfer Station (Longue Hougue)

Residual household and commercial waste, excluding specially controlled wastes exported under the UK Duly Reasoned Request, will be exported after processing at the WDA Waste Transfer Station to be located at Longue Hougue.

4. POLICY IN RELATION TO STRATEGICALLY IMPORTANT STATES/WDA FACILITIES

Policy to be taken into account by the Director in making waste management licensing decisions in relation to private waste operations which may compete with the IVC or Transfer Station.

Section 33(2)(b) of the Law requires the Director to take into account this Waste Disposal Plan when considering an application for a licence under the Law permitting the disposal of waste on land otherwise than at a public waste disposal site, or for any variation of the conditions of such a licence. Section 35(1) of the Law also requires the Director to attach to any licence permitting waste management operations all such conditions as appear to the Director to be necessary or expedient to ensure.....the sustainable management of waste in the longer term.

States resolution 9 concerning Billet d'État II of 2014 provides that the controls on licensing of private waste disposal sites under the Law be extended to other private facilities which may compete with the island's key waste infrastructure as set out in the States report. This applies to the States/WDA provided, operated or funded IVC and Waste Transfer Station (WDA IVC or WDA Transfer Station respectively).

Subject to the prior approval and coming into force of any necessary legislative amendments, this Plan sets out the States policy the Director should take into account, in addition to the matters set out in the Law, when making a decision under the Law –

4.1 in relation to the licensing of waste management operations other than those which are provided, operated or funded by or on behalf of the WDA , and

4.2 the imposing of conditions on licences for the carrying out of waste management operations,

in relation to operations which may compete with the States/WDA IVC or Waste Transfer Station.

The States policy is to impinge as little as possible on private waste operations whilst recognising that it is essential and in the public interest that the States/WDA IVC and the States/WDA Waste Transfer Station can remain available and economically viable in the long term to manage the waste identified in relation to those facilities in this Plan.

In a small jurisdiction, given limited economies of scale and the relatively small quantities of waste to be managed, it may be in the public interest to restrict diversion of waste from the WDA IVC and/or States/WDA Waste Transfer Station to private facilities given the cost of building public waste management facilities.

5. PLAN MONITORING AND REVISION

As detailed under section 31(3)(e) of the 2004 Law, the Environment Department shall from time to time, following recommendations made to it by the Waste Disposal Authority, lay before the States a draft Waste Disposal Plan for consideration.

It is noted that the maximum consent that can be granted by any European Union competent authority in relation to shipments of waste exported from Guernsey is 3 years. The Waste Disposal Authority will be responsible for ensuring these consents are obtained. Should the WDA not be able to secure the necessary consents, it will recommend to the Environment Department any changes which may be required to the Plan in order to meet any Waste Acceptance Criteria of the receiving facility or other requirements. Alternatively, the WDA will propose an alternative method for managing residual household and commercial waste following the procedure under the Law.

It is also noted that the existing reclamation site at Longue Hougue has a finite life. The Site is surveyed by the WDA biannually and, based on information from the January 2014 survey, it is estimated that Longue Hougue has a further 8 years' life (based on filling rates from 2009-2014).

APPENDIX 1

Extract from 'The Environmental Pollution (Guernsey) Law, 2004'

31. (1) The Waste Disposal Authority shall from time to time make recommendations to the [Environment Department] in connection with the preparation by the [Department] for consideration by the States of draft Waste Disposal Plans.

(2) In performing its duties under subsection (1) the Waste Disposal Authority shall consult –

(a) the [Environment Department],
(b) the [Public Services Department],
(c) the States [Commerce and Employment Department],
(d) the Douzaine of each of the Parishes of Guernsey,
(e) the [Health and Social Services Department],
(f) the Director, and
(g) such other bodies or persons as it thinks fit.

(3) The Environment Department shall from time to time, following recommendations made to it by the Waste Disposal Authority, lay before the States a draft Waste Disposal Plan identifying –

(a) the descriptions and quantities of waste for the disposal of which provision needs to be made during such period as may be specified,
(b) the methods to be employed for its disposal,
(c) the estimated financial costs of such disposal,
(d) arrangements for the recovery of those costs, and
(e) the sites under the management of the Waste Disposal Authority where, subject to subsection (4), such disposal is to take place (**"public waste disposal sites"**),

and when such a draft Plan has been approved, with or without modification, by the States it shall become the current **"Waste Disposal Plan"** for the purposes of this Law.

APPENDIX 2

The following information is based on 2012 waste arisings data provided by the Waste Disposal Authority.

HOUSEHOLD		
Residual Waste		***13,910***
– 'Black bag' waste	12,784	
– CA Site / Bulk Refuse	1,128	
Recycling		***12,218***
– 'Dry' recyclables	6,839	
– 'Green' waste	4,095	
– CA Site / Bulk Refuse	1,284	
TOTAL HOUSEHOLD		**26,128**
COMMERCIAL		
Inert Waste		***174,704***
– Inert Builders Waste	174,584	
– Contaminated Soil	120	
Inert Recycling		***56,322***
– Inert Recycling	36,661	
– Site Preparation Materials		
o Commercial MRF Output	7,183	
o Hard-core/Tarmac	12,478	
Residual Waste		***27,538***
– Compacted	6,544	
– Residual Commercial	10,114	
– Fragmentiser Waste (disposal)	228	
– Fragmentiser Waste (cover material)	779	
– Special Wastes (on-island disposal)	1,683	
– Waste Wood	7,650	
– Healthcare Waste	643	
– Abattoir Waste	416	
Recycling		***20,724***
– 'Dry' recyclables	5,079	
– 'Green' waste	6,995	
– Recyclables (metal, pallets, WEEE)	7,240	
– Specially Controlled Waste (off-island recovery)	1,196	
– Fragmentiser Waste (recovery)	212	
TOTAL COMMERCIAL		***279,288***
TOTAL WASTE ARISINGS		***305,416***

The waste categories detailed above are currently processed as follows:

DISPOSAL AT MONT CUET[9]	TONNES
'Black bag' waste	12,784
CA Site / Bulk Refuse	1,128
Contaminated Soil	120
Commercial MRF Output (used for site preparation)	7,183
Hard-core/Tarmac (used for site preparation)	12,478
Compacted (Commercial)	6,544
Residual Commercial	10,114
Fragmentiser Waste (disposal)	228
Fragmentiser Waste (cover material)	779
Special Wastes (on-island disposal) – Includes asbestos (519t)[10]	1,683
TOTAL	**53,041**

LAND RECLAMATION AT LONGUE HOUGUE	TONNES
Inert Builders Waste	174,584
TOTAL	**174,584**

RECYCLED/RECOVERED WASTE	TONNES
'Dry' recyclables (Household)	6,839
'Green' waste (Household)	4,095
CA Site / Bulk Refuse	1,284
Inert Recycling	36,661
'Dry' recyclables (Commercial)	5,079
'Green' waste (Commercial)	6,995
Recyclables (metal, pallets, WEEE)	7,240
Specially Controlled Waste (off-island recovery)	1,196
Fragmentiser Waste (recovery)	212
TOTAL	**69,601**

ON-ISLAND TREATMENT	TONNES
Waste Wood	7,650
Healthcare Waste	643
Abattoir Waste	416
TOTAL	**8,709**

[9] Includes site preparation materials
[10] Asbestos not included in the WDA figures

APPENDIX 3

Waste Flow for Recommended BPEO

		1. Pre-Treatment & Processing				2. On-Island Treatment				Output Management									
WASTE CATEGORY	2012 Tonnage	Materials Recoveries Facility Mixed Waste (Only Optional)	Material Recoveries Facility (Dry Recyclables)	In-Vessel Composting (Food and Green Waste)	Windrow Composting (Green Waste only)	Carcass Incinerator	PEH Incinerator (Healthcare Waste)	On-Island Disposal (Various locations)	Waste Transfer Station (Direct Inputs)	Longue Hougue Reclamation Site	Inert Recycling	Mont Cuet Special Waste Cell	Mont Cuet - Cover Material	Mont Cuet - Site Preparation Materials	Export or On-Island Recycling	Exported for Recovery	Composting Outputs to land	Exported to an Energy from Waste Facility for Recovery	Waste Reduction (through treatment)
Inert Waste	174584									174584									
Contaminated Soil	120											120							
Inert Recycling	36661										36661								
Commercial MRF - Cover	7183												7183						
Site Prep - Hardcore/tarmac	12478													12478					
Household - Black Bag	12784		1212	1691					9881										
CA Site & Bulk Refuse - Waste	1128	1128																	
Household - Dry Recyclables	6839		6839																
Household - Green Waste	4095			2227	1868														
CA Site & Bulk Refuse - Recyclables	1284														1284				
C&I - Compacted	6544			536					6008										
C&I - Residual (Post MRF facilities)	10114	10114																	
Frag Waste - Disposal	228															228			
Frag Waste - Cover	779															779			
Special Wastes - on-island disposal	1683											1683							
C&I - Dry Recyclables	5079		5079																
C&I - Green Waste	6995				6995														
C&I - Other Recycling	7240														7240				
C&I - Waste Oil, Fuel and Car Batteries	1196															1196			
Frag Waste - Exported for Recovery	212															212			
Waste Wood	7650							7650											
Abattoir Waste	643					416													
Healthcare Waste	416						643												
TOTALS	305935	11242	13130	4454	8863	416	643	7650	15889	174584	36661	1803	7183	12478	8524	2415	0	0	0

Waste Flow for Recommended BPEO (continued)

		1. Pre-Treatment & Processing				2. On-Island Treatment				Output Management									
WASTE CATEGORY	2012 Tonnage	Materials Recoveries Facility Mixed Waste (Only Optional)	Material Recoveries Facility (Dry Recyclables)	In-Vessel Composting (Food and Green Waste)	Windrow Composting (Green Waste only)	Carcass Incinerator	PEH Incinerator (Healthcare Waste)	On-Island Disposal (Various locations)	Waste Transfer Station (Direct Inputs)	Longue Hougue Reclamation Site	Inert Recycling	Mont Cuet Special Waste Cell	Mont Cuet - Cover Material	Mont Cuet - Site Preparation Materials	Export or On-Island Recycling	Exported for Recovery	Composting Outputs to land	Exported to an Energy from Waste Facility for Recovery	Waste Reduction (through treatment)
1. Following Pre-Treatment & Processing																			
Materials Recoveries Facility Mixed Waste (Only Optional)	11242								10578	114			126		424				
Material Recoveries Facility (Dry Recyclables)	13130								657						12473				
In-Vessel Composting (Food and Green Waste)	4454																2227		2227
Windrow Composting (Green Waste only)	8863																4432		4432
TOTALS	**305935**	**n/a**	**n/a**	**n/a**	**n/a**	**416**	**643**	**7650**	**27124**	**174698**	**36661**	**1803**	**7309**	**12478**	**21421**	**2415**	**6659**	**0**	**6659**
2. Following On-Island Treatment																			
Carcass Incinerator	416											14							402
PEH Incinerator (Healthcare Waste)	643											97							546
On-Island Disposal (Various locations)	7650																		7650
Waste Transfer Station	27124														814			26310	
TOTALS	**305935**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**174698**	**36661**	**1914**	**7309**	**12478**	**22235**	**2415**	**6659**	**26310**	**15256**
Additional Waste Streams																			
Alderney Waste sent to Guernsey																		804	
TOTALS	**306739**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**		**n/a**	**174698**	**36661**	**1914**	**7309**	**12478**	**22235**	**2415**	**6659**	**27114**	**15256**

APPENDIX 4

Description of Facilities and Processes

Baled RDF Storage Site
Storage of baled RDF produced from residual household and commercial waste prior to export.

Bring Banks
Bring banks and receptacles provided for the collection of recyclables/ recyclates.

Civic Amenity Site (CA Site)
A civic amenity site (CA site) or household waste recycling centre (HWRC) is a facility where the public can deposit household waste and recyclables. Civic amenity sites are run by the local Government in a given area. Collection points for recyclable waste such as green waste, metals, glass and other waste types are available.

In-Vessel Composting (IVC)
The aerobic composting of food waste in an enclosed environment in order to control the composting process, reduce odour emissions, and maintain quality of output. Some green waste would be added to food waste to add fibrous structural material.

Kerbside Recycling
A service provided to collect recyclables put out in a prescribed manner and collected from the kerbside.

Materials Recovery Facility (MRF)
A Materials Recovery Facility houses operations that process incoming waste so that it may be recycled and/or directed to an appropriate treatment facility. Separation is achieved by a combination of manual and automated sorting.

Refuse Derived Fuel
Residual waste that has been processed in preparation for transport to an energy recovery facility under European Waste Catalogue code 19 12 10: combustible waste (refuse derived fuel).

Repair and Reuse Centre
Facilitates the transaction and redistribution of unwanted, yet perfectly usable, materials and equipment from one entity to another.

Specially Controlled Waste Disposal Cell
A Specially Controlled Waste Disposal Cell is an engineered cell to accept specific waste types which are classified as hazardous, or may create a hazardous substance when mixed with other wastes.

Waste Transfer Station
The Waste Transfer Station will accept residual waste from both household and commercial sources. It will then be prepared for export to an off-Island waste treatment facility.

Windrow Composting
Windrowing is the production of compost by piling organic matter in long rows (windrows), which are turned regularly to improve porosity and oxygen content once the required temperature is achieved (typically 65°C). This method is currently used to process both household and commercial green waste, producing a soil conditioner which can be applied to the land. It is not suitable for food waste.

(NB The Treasury and Resources Department notes there are no resource implications directly arising from this States Report as it is recommending adoption of a Waste Disposal Plan based on the Public Services Department's January 2014 States Report entitled "Implementation of the Solid Waste Strategy". However, the Treasury and Resources Department notes that there are a number of risks associated with delivery of the Strategy which could have significant resource implications should they crystallise.)

(NB The Policy Council supports the Report and considers it complies with the principles of good governance.)

The States are asked to decide:-

IX.- Whether, after consideration of the Report dated 20th May, 2014, of the Environment Department, they are of the opinion:-

1. To approve the draft Waste Disposal Plan, as attached to the Report, in accordance with section 31(3) of the Environmental Pollution (Guernsey) Law, 2004.

2. To direct the preparation of such legislation as may be necessary to give effect to the above decision.