

Item: 6

Development and Infrastructure Committee: 26 September 2018.

Proposed New Waste Management Facilities.

Report by Executive Director of Development and Infrastructure.

1. Purpose of Report

To consider the Stage 1 Capital Project Appraisal in respect of proposed new waste management facilities.

2. Recommendations

The Committee is invited to note:

2.1.

That, in October 2015, the Council agreed that a project to develop the “Proof of Concept” phase of exploring the feasibility of the proposal to replace the existing waste management facility at Chinglebraes be initiated.

2.2.

The Stage 1 Capital Project Appraisal in respect of the proposed new waste management facilities, attached as Appendix 1 to this report.

2.3.

That, should the project progress through the Capital Project Appraisal process, resources of up to £99,000 are available to produce the Stage 2 Capital Project Appraisal.

2.4.

That a further sum of up to £150,000 is required in order to develop the Stage 2 Capital Project Appraisal in respect of the proposed new waste management facilities.

2.5.

Options for the proposed new waste management facilities, as outlined in section 8 of this report, with the preferred options to be progressed to the detailed Stage 2 Capital Project Appraisal, namely:

- Option 2 – Residual waste resource recovery on Orkney – Energy from Waste.
- Option 4 – Separate food waste collection and processing, for example Anaerobic Digestion or In Vessel Composting.

It is recommended:

2.6.

That the Executive Director of Development and Infrastructure should submit a report, to the Policy and Resources Committee, regarding funding required to develop a Stage 2 Capital Project Appraisal in respect of the proposed new waste management facilities.

2.7.

That, subject to resources being secured, as an exception to the Capital Project Appraisal process, due to concerns over the sustainability of the current waste disposal route and the necessity of planning to meet more stringent recycling targets, the Executive Director of Development and Infrastructure should submit, to the Policy and Resources Committee, a Stage 2 Capital Project Appraisal in respect of the proposed new waste management facilities.

3. Introduction

3.1.

At its meeting held on 10 September 2015, the Development and Infrastructure Committee noted:

3.1.1.

That the Council had a statutory duty to collect and dispose of waste and to meet Scottish Government targets in respect of recycling, as detailed in section 4 of the report by the Executive Director of Development and Infrastructure.

3.1.2.

The rising costs associated with meeting the targets, referred to at paragraph 3.1.1 above, as detailed in section 5 of the report by the Executive Director of Development and Infrastructure.

3.1.3.

That the existing waste management facility at Chinglebraes was reaching the end of its useable life and required replacement, as detailed in section 6 of the report by the Executive Director of Development and Infrastructure.

3.1.4.

The proposal to undertake a full appraisal of a replacement waste management facility for Chinglebraes, as detailed in section 7 of the report by the Executive Director of Development and Infrastructure.

3.1.5.

The advantages and opportunities of widening the scope of the project, referred to at paragraph 3.1.4 above, to add more “self-financing” elements, as set out in Appendix 1 to the report by the Executive Director of Development and Infrastructure.

3.1.6.

The indicative timeline and costs for each phase of project development, in particular Phase 1 entitled “Proof of Concept”, as set out in Appendix 2 to the report by the Executive Director of Development and Infrastructure.

3.1.7.

The indicative costs of examples of project scope, as set out in Appendix 3 to the report by the Executive Director of Development and Infrastructure.

3.2.

The Committee recommended:

3.2.1.

That the Executive Director of Development and Infrastructure should initiate a project to develop the “Proof of Concept” phase of exploring the feasibility of the proposal to replace the existing waste management facility at Chinglebraes, as referred to at paragraph 3.1.6 above.

3.2.2.

That the initial cost of undertaking the “Proof of Concept” phase, referred to at paragraph 3.2.1 above, estimated at £30,000 for 2015 to 2016, be met from underspends accruing in the overall Development and Infrastructure revenue budget for 2015 to 2016.

3.2.3.

That, on completion of the feasibility element of the “Proof of Concept” phase, referred to at paragraph 3.2.1 above, the Executive Director of Development and Infrastructure should submit a report, to an appropriate meeting of the Committee, regarding progressing the proposed development to a Stage 1 Capital Project Appraisal.

4. Background and Progress to Date

4.1.

The ‘proof of concept’ stage has included two initial reports undertaken by Shearwater Consulting, the first being in March 2016 recommending a full compositional analysis to inform future waste strategy and a subsequent report in 2017. Provision of these reports was funded through existing Development and Infrastructure budgets as outlined at section 3.2.2 above.

4.2.

Further to these, the commissioning of a specialist and detailed waste composition analysis for Orkney was undertaken between September and December 2017 by Resource Futures, the results of which were provided earlier in 2018. This work is critical to inform the next stage of the project but has also been used to inform other activities in the service. The cost of the waste composition analysis was met through

an additional budget of £143,000 allocated to fund additional activity that could not be contained within existing service budgets.

5. National Context

5.1.

By 2035, the Scottish Government expect the principles of a circular economy to be well established across Scotland. Consumer pressure, climate change, raw material scarcity and a plethora of other factors together create a ground swell of change and behaviour shift, moving from one where waste is thought of as “rubbish” to one where waste is proven to be a valuable resource.

5.2.

The Council will need to ensure, subject to funding and the Capital Project Appraisal (CPA) process, that any final option agreed is aligned to this direction of travel to essentially ‘future proof’ the Council’s waste management services.

5.3.

Amongst several future report considerations in risk management terms, the current derogation on food waste in Orkney given its rural status will be reviewed in the not too distant future. Should this be lifted, this would mean all food related businesses producing more than 5kg per week food waste would need to separate it from their residual waste. The Scottish Government is considering a comprehensive food waste action plan to achieve its target due for publication imminently which could include legislative measures. This alone would greatly impact on collection systems if viable for the council to consider in overall economic terms. These areas are significant topics of discussion with Zero Waste Scotland to understand how practical such a move would be for Orkney.

5.4.

The current national targets the Council is expected to work towards are set out below:

- 70% recycling by 2025
- 15% Reduction in waste arisings by 2025
- Maximum of 5% of biodegradable waste to landfill by January 2021
- 33% reduction in Food waste across Scotland by 2025 (Baseline = 1.35m tonnes, 2015)

6. Local Context – Disposal Arrangements to Shetland

6.1.

Chinglebraes has been operating for 42 years (1976). Despite significant additional investment in 2017 to 2018, in the medium term the facility is not fit for purpose. Looking forward it simply is not able to support the future direction within which Orkney needs to take its waste management and resource recovery plans.

6.2.

This situation is exacerbated by the uncertainty of how Orkney's waste is disposed, in terms of both volatility of cost (price increases) and future years' provision given changes planned by Shetland Islands Council on the running of their facility and the introduction of alternate weekly collections, introducing a recycling kerbside collection scheme.

6.3.

In terms of costs for Orkney, 10,000 tonnes per annum of waste is shipped to Shetland, 8,000 to Energy from Waste and 2,000 to landfill, costing up to £560,000 in disposal fees and £420,000 in transport/shipping. In addition, approximately £0.5million can be added in terms of operating costs at Chinglebraes. Costs have risen above inflation (re-based by Shetlands Islands Council in 2016 by 26%), typically 3 to 5% each year thereafter.

6.4.

Ongoing discussions with Shetland Islands Council continues to highlight the challenges faced and thereby the uncertainty of both the "plant" in the longer term and ongoing costs. Recently Shetland Islands Council has introduced an Alternate Weekly Collection scheme and importantly made major organisational changes through the transfer of the Energy from Waste Plant to SHEap. The current Orkney and Shetland Area Waste Management Plan is coming to an end and a new Waste Strategy for Orkney will need to be considered aligned to this project should approval to proceed be granted.

6.5.

Orkney's waste inputs to the plant in Shetland make up approximately 40% of the operating requirements which requires approximately 22,000 tonnes to operate efficiently. The impact of changes to their internal operations has significantly delayed resolution of a new contractual agreement with the Council. The Council has been advised this cannot be completed until negotiations are concluded with SHEap.

6.6.

The Shetland Energy from Waste facility has an anticipated lifespan of 10 to 15 years under current maintenance programmes, with potentially later refurbishment work required to extend this further. This creates high levels of uncertainty for the Council in terms of predicting future years costs and, that there is a long-term solution that reduces the Council's costs rather than sees year on year increases.

6.7.

The gate fee for the disposal of the Council's waste to Shetland's Plant, a primary concern and a key principle of why we seek a positive outcome with Shetland, is £46 per tonne, and currently the lowest available gate fee known in the UK. In contrast rates typically vary from £95 to £160 per tonne fees (demanded for more modern Energy from Waste mainland facilities). With no contractual arrangement in place, SHeaP (Shetland Heat and Power) can choose to increase this gate fee at any point.

7. Local Context – Waste Arisings, Composition and Performance

7.1.

The total waste arisings in Orkney have remained fairly stable with no significant growth or reductions being reported since 2009 to 2010. Recycling performance has changed over the years as “goalposts” have shifted and Orkney’s green waste can no longer be included without investment in plant and improvements to the site at Bossack. Orkney’s household recycling performance stands at 18.3% (2017). In contrast, the top performing Council in Scotland in 2016 was East Renfrewshire at 60.9%, although difficult to make direct comparison as Renfrewshire have a separate food waste collection in place and have a different approach to recycling collections.

7.2.

With regards to the government’s commitment to reduce food waste in Scotland by one third, Orkney’s food waste (household only) currently stands at 32%. The other main and larger components are Paper and Card (15%), Healthcare waste (14%) and Plastic (dense/film/bottles) accounts for approximately 15%. Orkney benefits from a current derogation on a separate food waste collection.

8. Options Identification and Appraisal

8.1.

The preferred route is to realise a consolidated waste recovery and treatment plant, potentially with operating depot that replaces both Chinglebraes and the Hatston Depot. The detailed business case that would be undertaken as part of the Stage 2 Capital Project Appraisal would assess the viability and deliverability of two of the options outlined in Table 1 below and attached as Appendix 2 to this report. These were presented to members at a meeting of the Roads and Environmental Services Consultative Group in November 2017 and an all Members’ Seminar in April 2018.

8.2.

The scale of development being considered is such that it is not possible at the Stage 1 Capital Project Appraisal stage, without additional significant investment, to narrow the options down to just one. There are a number of potential combinations and synergies between options that the Stage 2 process of the project is better placed to consider.

8.3.

The ‘long list’ of options are set out in the table below, with some associated background information on each of these detailed in Appendix 2. The Business Case to be developed during the next stage will include consideration of circular economy approaches for Orkney, working with the local business community to develop innovative solutions for the treatment and recovery of resources within Orkney’s waste streams. The purpose being to reduce the amount of residual waste remaining for final treatment through one or a combination of options.

Table 1: Options

Option	Description	Include/Exclude at CPA2
1	Do nothing – continue to ship to SIC (would still need to replace Chinglebraes in the short term)	Exclude
2	Energy From Waste (EFW)	Include
3	Landfill	Exclude
4	Introduce a separate food waste collection using either Anaerobic Digestion Technology or In Vessel Composting	Include
5	Residual Waste Recovery Off Orkney	Exclude

9. Zero Waste Scotland

Zero Waste Scotland, acting as critical friends throughout the Stage 1 Capital Project Appraisal process, has recently scrutinised the work carried out both by officers in the service and by external consultants. Having appraised themselves also of the Council's Capital Project Appraisal process, Zero Waste Scotland have indicated the work already undertaken as part of the Stage 1 Capital Project Appraisal provides a very good and sound basis from which to move to a detailed Stage 2 Capital Project Appraisal. They have also indicated they can provide a greater level of support as part of Stage 2 with respect to the more detailed modelling of waste treatment options, noting an obvious need to seek greater alignment to national strategy if viable and deliverable for the Council to do so.

10. Capital Project Appraisal

10.1.

There is funding available through Zero Waste Scotland to support local authorities some of which is available through a commitment to delivering improved recycling performance through the household recycling charter, which the Council signed up to at the end of 2016. Shetland Islands Council for instance, were awarded half a million pounds to introduce Alternate Weekly Collection. Other funding from Zero Waste Scotland to implement Circular Economy approaches is also potentially available.

10.2.

The Service is not in a position to predict the amount of external funding that may be available to the Council until the outcomes of Stage 2 are clear. Globally there is private sector investment available, such as from the Green Investment Bank, but

given the scale of the operation in Orkney, particularly if the scope of the project were to only consider the Municipal Solid Waste collected by the Council currently, would not lend itself to this type of private sector investment. As identified above, there is funding available through the Scottish Government, but only an estimation can be provided at this time.

10.3.

Land has already been purchased by the Council and a potential area has been identified at Hatston outlined in the Local Development Plan Kirkwall heatmap, potentially for a waste plant.

11. Human Resource Implications

11.1.

At present, the project co-ordination role has been contained within existing Development and Infrastructure revenue budget and overseen by an existing member of staff within Environmental Services. Going forward, the Stage 2 phase will require a dedicated resource, in particular, a dedicated 'Technical Adviser' on the project to work alongside the project manager/co-ordinator.

11.2.

This would involve an internal recruitment process, potentially through a secondment opportunity, initially for up to 1.5 years. The cost implications to fund this are outlined at Appendix 1 and are outwith existing service budgets.

11.3.

The Job Description and Person Specification for the post of Technical Adviser will need to be drafted and graded through the Job Evaluation process to establish the Grade for this post.

11.4.

The post will be recruited to in accordance with the Council's policy on Recruitment and Selection.

12. Environmental Implications

A Strategic Environmental Appraisal will be carried out as part of the Stage 2 Capital Project Appraisal.

13. Links to Council Plan

The proposals in this report support and contribute to improved outcomes for communities as outlined in the Council Plan strategic priority of Enterprising Communities.

14. Links to Local Outcomes Improvement Plan

The proposals in this report support and contribute to improved outcomes for communities as outlined in the Local Outcomes Improvement Plan priorities of Strong Communities and A Vibrant Economy.

15. Financial Implications

15.1.

A Stage 1 Capital Project Appraisal is attached at Appendix 1 to this report with an overview of estimated costs to complete the Stage 2 Capital Project Appraisal phase.

15.2.

With £143,000 of funds initially set aside to develop this project beyond concept stage, £44,000 has now been applied to develop an outline Stage 1 CPA leaving a balance of £99,000 available within the project budget.

15.3.

Based on an estimate of £249,000 to develop a detailed Stage 2 CPA, it is therefore anticipated that an additional but estimated £150,000 would be required to complete a robust Stage 2 CPA phase across three financial years 2018 to 2021 as outlined at Appendix 1.

15.4.

On the basis that the outline Stage 1 CPA is to be supported by the Service Committee, any recommendation to the Policy and Resources Committee to develop a detailed Stage 2 CPA would include a request to allocate additional funds, as identified at section 10.2 above, for this purpose. Although such a request would normally be considered against the background of other competing projects, it is notable that an annual allocation of CPA resources is set aside or earmarked for this purpose within the finance and loan charges budget for General Fund Services. There is no scope at this present time within Development and Infrastructure budgets to absorb these costs noting budgetary pressures faced by the service.

16. Legal Aspects

16.1.

There are no legal implications arising directly from the recommendations in the report.

16.2.

The Council does have a statutory duty under the Environmental Protection Act 1990 to provide a kerbside household waste and recycling collection to households within its areas. Further, these services must be provided on demand and at cost to

commercial premises. Progressing the proposed waste management facilities would assist the Council in discharging such statutory duty.

17. Contact Officers

Gavin Barr, Executive Director of Development and Infrastructure, extension 2301, Email gavin.barr@orkney.gov.uk

Darren Richardson, Head of Infrastructure and Strategic Projects, extension 2310, Email darren.richardson@orkney.gov.uk

Jayne Venables, Project Co-ordination Manager, extension 2315, Email jayne.venables@orkney.gov.uk

Jonathan Walters, Environmental Services Facilities Manager, extension 2702, Email jonathan.walters@orkney.gov.uk

18. Appendices

Appendix 1: Stage 1 Capital Project Appraisal – Proposed New Waste Management Facilities.

Appendix 2: Background detail on options.

Appendix 3: Outline Waste Composition Analysis for Orkney.

Appendix 1 – Stage 1 CPA

Capital Programme: General Fund Services

Client Service: Development and Infrastructure

Project Name: Proposed New Waste Management Facilities

1. Background

This project seeks to develop a detailed business case for the development of a replacement waste transfer facility, potentially including a replacement depot to replace Chinglebraes and Hatston Depot. The first steps in this process have been undertaken as part of CPA 0 and CPA 1 through the commissioning of a detailed waste composition analysis for Orkney and some outline briefs commissioned through Shearwater Consulting as well as work with Zero Waste Scotland.

This next stage, should the recommendations be approved will see the development of a detailed business case, providing a cost benefit analysis of a range of options as well as a collections method study in order to arrive at a final recommended solution that provides a value for money solution but also the best practical environmental option for Orkney with respect to resource recovery from waste. This to replace the current Orkney and Shetland Area Waste Management Plan.

2. Financial Implications

The table below sets out costs for the next stage (CPA2) and a projection of indicative savings that could be realised.

CPA1 Summary Tables

Option 1 – Do Nothing – Chinglebraes replacement	Total	2018/19	2019/20	2020/21	2021/22	2023/24
	£000	£000	£000	£000	£000	£000
Capital Expenditure	8,200			1,000	5,000	3,200
Less: Anticipated Grants or Other Contributions	1,000				1000	
Net Capital Expenditure	7,200			1,000	4,000	3,200
Associated Revenue Implications				-100*	-200*	-200*
Associated Finance and Loan Charges						
Estimated cost to reach Stage 2 of detailed Stage 1 CPA	246.75	48	100	98.75		

- Additional potential savings in the long term given ability to redesign Chinglebraes layout to deal with future capacity.

Option 2 – Energy from Waste Plant (EfW)	Total	2018/19	2019/20	2020/21	2021/22	2023/24
	£000	£000	£000	£000	£000	£000
Capital Expenditure	23,500			2,000	10,000	11,500
Less: Anticipated Grants or Other Contributions	1,000				1000	
Net Capital Expenditure	22,500			2,000	9,000	11,500
Associated Revenue Implications				-500	-1,000	-1,000
Associated Finance and Loan Charges						
Estimated cost to reach Stage 2 of detailed Stage 1 CPA	246.75	48	100	98.75		

Option 4 – Anaerobic Digestion	Total	2018/19	2019/20	2020/21	2021/22	2023/24
	£000	£000	£000	£000	£000	£000
Capital Expenditure	9,000			1,000	5,000	3,000
Less: Anticipated Grants or Other Contributions	1,000				1000	
Net Capital Expenditure	8,000			2,000	4,000	3,000
Associated Revenue Implications				-500	-1,000	-1,000
Associated Finance and Loan Charges						
Estimated cost to reach Stage 2 of detailed Stage 1 CPA	246.75	48	100	98.75		

3. Policy Aspects

Development of an Integrated Waste Facility with Depot in Orkney is anticipated to aid in a number of strategic levels, whilst these will be subject to the final design, it is anticipated the IWF supports the Council Plan 2018-23 shared values of:

- resilience
- enterprise
- innovation
- leadership
- sustainability

4. Statutory Responsibility

These are outlined in the main body of the report.

5. Land Purchase Requirement

Land is purchased and outlined within the Kirkwall heatmap within the local development plan for a potential waste facility. Dependant on the final treatment options, an area of between 26,000 and 39,000 metres squared will be required.

6. Impact on Local Business, Employment and the Economy

Dependant on the final model and total investment, impacts will be variable in size. It is anticipated to develop a final design to provide long term sustainable options for the Council to meet its statutory obligations for the collection, and treatment of waste and recycling from the community as well as working with the community and local businesses to assess the potential for innovative community led projects that could see residual waste requiring final treatment reduce, whilst having potential to create additional employment opportunities in Orkney.

7. Risk Assessment

The risk of proceeding to the next stage of the project is negligible. This stage 1 application, should it be approved, would then enable a full assessment of risks for the various shortlisted options identified.

Currently, the risks to the Council not progressing development of an integrated waste facility with depot are significant and summarised below;

- Ongoing annual costs of £1.5 million with typically 3% - 5% annual increases. Further risk of additional costs levied by suppliers to offset growing operational costs for existing facilities, noting 2014/15 saw additional supplier fees increases by 26%.
- Inability to provide revenue saving via redesign of both treatment methods and collection models due to the lack of flexibility provided by existing and ageing facilities.
- Failure to meet both Scottish government recycling and landfill diversion targets (Political and financial risk) and fulfil the objectives of Orkney Islands Councils priorities on improving and providing sustainable services.
- With existing arrangements, an increase in costs for further treatment and diversion of material from landfill to meet the requirements of the Biodegradable ban to landfill in January 2021.

8. Conclusion

The arguments to support the options are outlined in Appendix 2 to the main report. The report seeks approval of a Stage 1 CPA and outlines the need to develop a CPA 2. The next stage of the project is reliant on additional funding of £150,000 over three financial years placing the Council in a strong position from which to make a final decision on the preferred option for the management of waste and improved extraction of value from waste streams. Doing nothing still commits the council to replacing an ageing waste transfer station within 5 years and still leaves the council open to uncontrolled increases in costs in respect of shipping waste to Shetland for treatment.

9. Recommendations

The two options recommended are options 2 and 4 as noted in Table 1 in the main body of the report. The cost to develop the CPA 2 stage is an estimated £249,000, of which £99,000 is available within existing budget, leaving a requirement of an estimated £150,000 over three financial years from within the finance and loan charges budget for General Fund Services.

10. Accountable Officers

The Lead officer with delegated responsibility for the project is Darren Richardson, Head of Infrastructure and Strategic Projects, supported by a Project Board comprising the following members responsible for progressing the proposed development. Internal contractors responsible for delivery of aspects of the CPA 2 stage will include officers from engineering and property services and planning.

Jayne Venables	Project Co-ordination Manager, Environmental Services - Strategic
Peter Bevan	Engineering Services Manager
Ian Rushbrook	Capital Programme Manager
Jonathan Walters	Environmental Services Facilities Manager
Billy Johnstone	Roads and Environmental Services Operations Manager
John Wrigley	Roads and Environmental Services Manager
Rosemary Colsell	Procurement Services Manager
Graeme Christie	Estates Manager
Colin Kemp	Corporate Finance Senior Manager
Sweyn Johnston	Strategic Projects Director
Alistair Morton	Energy and Utilities Officer

Appendix 2

Background detail on options

The following paragraphs provide an outline **only** of options that could be considered as part of the next Stage of the project and a recommendation as to which option(s) should go forward for further study as part of the development of a business case during the CPA 2 stage. Notably Options 2 and 4.

Collection methods to support these options are not included here as these could vary significantly, subject to final option selected and will be included as part of the next stage of the project. To this end a collections methods study would need to be undertaken and is accounted for in the costs presented.

Each option can also include the possibility of putting in place a materials recycling facility (MRF) which would enable the Council to recover additional resources from the residual waste prior to final treatment. Again, this is something that would be attended to as part of a detailed analysis of the options in the development of a final business case as part of Stage 2.

The Business Case will also consider the feasibility of developing innovative solutions, working with the local business community to recover additional materials from Orkney's waste streams with the added potential to develop local markets and create employment as outlined in the Council's new strategic plan.

Option 1. Do nothing

This option simply gives no potential for improvement resulting in no change to current revenue and capital implication. It does not support direction of travel set by Government and presents a risk to OIC of increasing disposal costs and continued below average performance in comparison with the rest of the UK and Scotland.

Noting there continues to be growth in residential and business demands therefore the existing facility will, in future years, require expansion or replacement to cope requiring land and buildings as well as equipment. Investment in 2016/17 and 2017/18 topped £640k for relatively minor improvements, an expansion to cope with growth for the next 10 – 20 years would be a multi-million pound investment, if at the existing site, potentially in the region of £4-6 Million.

The Council would continue to ship residual waste to Shetland mainly for treatment through the Energy from Waste Plant (EfW), but some is landfilled, exposing the council to increased costs as outlined in the main report and noting the plant has been operating for 20 years already there will come a point when it will require extensive maintenance and refurbishment.

A replacement for the operations at Chinglebraes, incorporating elements of operations at Bossack, namely, composting and hazardous waste, would cost in the region of £8.2m. This is based on an industrial building of approx. 2,500m² and a site area of approx. 11,700m². There is an option to replace the existing Hatston depot

and incorporate this within the new Integrated Waste development and if this option is included an additional £9.5m would be required.

Recommendation:-

We feel this option should not be considered going forward to the next stage.

Option 2. Residual waste resource recovery on Orkney – Energy from Waste (EfW)

There are mixed messages on EfW, with Scottish Government officials suggesting these should only be considered as an option to treat 'leakage' after pre-treatment and other forms of waste reduction have been exhausted. However, with the landfill ban commencing in January 2021, (95% of all waste must be treated – only 5% permitted to landfill) it is estimated that Scotland alone will have a 950,000 tonne capacity gap in waste treatment options in 2021/2022 and panic is beginning to set in compounded by the China Ban, local authorities are finding themselves with additional materials and no outlet. Perhaps one of the options that carries with it the highest degree of risk, both in terms of cost, operation and public discontent. It is unlikely to receive support from the Scottish Government unless the Council can first demonstrate a range of pre-treatment options have been exhausted. Pre-treatment options typically means taking waste out, therefore this would further reduce the feedstock to the plant also potentially rendering it less viable or a reduced scale on top of a small scale operation given Orkney's tonnages. This option would have significant impact on the Shetland EfW Plant, as they would need to cover the 40% residual waste taken out by Orkney thus would need to import additional waste from the Scottish mainland. In addition to the plant, the site would require storage areas for the laydown and potential additional treatment of recyclates through a MRF (Materials Recycling Facility) to extract greater value than we do currently. As an indication Shetland Islands Council has a new warehouse building to house the new MRF, (currently in the planning/construction phase) costing approximately £0.5 Million and the equipment itself a further £250,000. There would also be a need for a facility to continue the ability to landfill certain types of waste that are not appropriate for incineration. Inert materials still goes to Bossack, but some material is landfilled in Shetland.

The initial estimate for an EfW plant in Orkney, generating electricity to the grid is in the region of £23.5m. This does include for a new MRF (which would replace Chinglebraes) and is based on existing EfW plant constructed on the UK mainland and a 1000m² MRF and associated site compound (site area is based on 12,700m²).

There is an option to utilise the EfW plant to provide a district heating solution and this would an extra over cost in the region of £12m. The Hatston depot replacement could also be incorporated and if this option is included an additional £9.5m would be required.

Recommendation:-

At this early stage, Energy from Waste should be an option that is considered in more detail as part of CPA 2. A detailed analysis of whether this should include only

municipal solid waste collected by the Council or to allow for larger scale and thus improved opportunity and returns, include other types of waste from the commercial sector can be explored at this next stage.

Option 3. Landfill

With the government's statutory target introducing a 95% landfill ban to commence in January 2021 leaves the country in no uncertain terms that landfill operations will need to be downsized considerably. Orkney is in a more favourable position, it has much less waste, a high proportion of which is incinerated. Last year approximately 30% of Orkney's household waste was landfilled, but overall the tonnages of bio waste landfilled equate to approximately 1,000 tonnes per annum. The 'Bio-Ban' will need some scrutiny in this next year to ensure that Orkney's preparedness for the ban is thoroughly assessed, but this option as a potential growth option going forward is unsustainable. Orkney does not have adequate provision for landfill sites – the only remaining licensed landfill site is Bossack and this is to receive inert materials only. A new site would need identifying and taking into consideration a 20 year life expectancy and landfilling all Orkney's residual waste (10,000 tonnes) costs would be in the order of £28 Million excluding ongoing revenue costs. A very indicative total cost would be in the order of £40 - £50 Million over the 20 year life span of the site which is in excess of the Council's current costs. This option would not assist the Council in fulfilling any obligations with respect to waste resource recovery or treatment. (Figures based on Eunomia Research)

Recommendation:-

We feel this option should not be considered going forward to the next stage.

Option 4. Separate food waste collection and processing, for example Anaerobic Digestion or In Vessel Composting (AD or IVC)

Provision of collection and treatment facilities (AD/IVC). Options include **dry** AD processes and **wet** AD processes with advantages and disadvantages clear on both such as:

Dry AD plants can accept more solid waste (food and green waste) and use less heat and power and can tolerate a higher level of contaminants. It is a less complex system to run than a wet AD plant, requires less maintenance and produces agricultural digestate for use on land applications. There is also the possibility of producing heat for use nearby or the generation of electricity from biogas for export. An AD plant typically costs from an estimated half a million pounds to a million pounds. A dry AD Plant will provide greater flexibility with respect to the materials that can be treated. Should this option be progressed to final solution, the operation at Bossack Landfill Site (windrow composting) would cease, reducing costs on plant maintenance and replacement. The cost of processing, shipping and final disposal of food waste to Shetland would cease, with the reduction in revenue costs diverted to the operation of the new plant.

The composting of municipal waste (mostly garden waste and food waste) in the UK has grown rapidly in the last ten years, with the vast majority of councils now

collecting garden and other green waste separately for composting (and many introducing charging) but, the composting industry has only been scratching the surface of the total composting market. There is yet no ceiling either to the market which can consume this compost. It is estimated that the UK's arable market alone could absorb over 50 million tonnes of compost per year. In 2009 a total of less than 4 million tonnes of finished compost produced in this country annually, so there is still plenty of scope in the UK for finding sustainable markets for compost.

Although the capital cost needed for an IVC plant should not be under estimated, it can represent value for money for local authorities and is a cheaper technological solution than AD for instance. The capital value of an IVC plant compares well with rival technologies that are frequently commercially realistic only on a larger scale. Additionally, IVC operational costs are often lower than most other technologies. Analysis shows the public favours recycling and composting over alternative solutions. Source separation of waste permits high recycling rates of dry recyclables, while the organic fragment is composted to provide a high-grade product. Many people would be inclined to say that a mixture of recycling and composting is, the "people's choice".

In Vessel Composting does present a lower risk option for local authorities, although energy use required for ventilating and turning is not insignificant. IVC Plants can be odorous as can AD Plants so effective management is crucial, and it is crucial to ensure the resulting product reaches the required British Standard for onward sale to end markets, although research suggests IVCs should and do produce a good product. IVC's can only comprise up to 60% food waste as a feedstock, whereas AD Plants can comprise 100% food waste as a feedstock. With just 2,000 tonnes of green waste collected in Orkney per annum, the IVC route may not be an option unless green waste collections are an inherent part of the solution.

A challenge for Orkney for both IVC and AD would be the transport costs of the end bi-product (fertilisers etc), having no developed end market here on Orkney. Further research would be required to analyse if such a market could be supported to avoid hefty transportation costs of end products or the development of options for treatment/storage following processing. The most interesting aspect of these types of solutions would be the ability to produce energy from the bio-gas.

The AD/IVC option would require a new kerbside collection system with associated vehicle, manpower and equipment costs putting in place to collect organic materials at the kerbside (food and green waste separately). This in turn would reduce the volume of residual waste enabling the Council to consider a move to a 3 or even 4 week collections. This residual waste would still require treatment via a landfill or incineration option either to Shetland, the Scottish Mainland or indeed via a small scale EfW Plant on Orkney.

The initial estimate for a wet AD plant in Orkney is in the region of £9m. This does include for a new MRF (which would replace Chinglebraes) and is based on existing AD plant constructed on the UK mainland and a 1000m² MRF and associated site compound (site area is based on 12,700m²).

The Hatston depot replacement could also be incorporated and if this option is included an additional £9.5m would be required.

Recommendation:-

We feel this is an option that can be taken forward as part of CPA Stage 2 and indeed, an analysis provided by Zero Waste Scotland has provided initial indications that this option is potentially deliverable in Orkney with a leaning towards Anaerobic Digestion (AD).

Option 5. Residual waste resource recovery off Orkney

The export of waste from Orkney after treatment to supply Refuse-derived fuel/Solid recovered fuel (RDF/SRF) to available markets. Potential decrease in gate fees but increase in transport (Distance to Market). Existing current markets for this type of fuel are south of England or mainland Europe. The trend of RDF exports increasing year on year was confirmed for 2017, with the Environment Agency noting that 2.7Mtpa of RDF had been exported from the UK year to date (2017), slightly up on previous years. Given the recent Government Industrial Strategy launch, Business, Energy and Industrial Strategy (BEIS's) commitments to 'clean industrial growth, and the impending Department of Environment, Food and Rural Affairs (DEFRA) Waste and Resources Strategy, the situation could change quite a bit in the next 12 months. Greater policy clarity on the UK's resource productivity, the economy's resource effectiveness, and zero waste to landfill could provide the spark for new investment in UK based energy centres (and in particular England) that are fed (at least in part) by SRF, a higher quality fuel with a higher calorific value.

We feel this option is less viable owing to increased costs of transportation of waste to the mainland, and the potential requirement to pre-treat as indicated in the costs above (capital implications of build costs for a pre-treatment facility to achieve gate fee reductions or to meet the RDF market specifications). In addition, given the landfill ban commencing Jan 2021 and the evidenced 'gap' in Scotland regarding residual waste, it is felt other plants will be utilised to absorb these increases closing available capacity and markets to Orkney. This option would have significant impact on the Shetland Plant, as they would need to import additional waste materials from the Scottish mainland to secure the operation of their EfW Plant without Orkney's residual waste.

Recommendation:-

We feel this option should not be considered as part of the next stage of this project.

Appendix 3

Outline Waste Composition Analysis for Orkney

Compositional Analysis, Tonnage arisings of Municipal (MSW), Construction and Industrial (C&I) Waste Arisings within Orkney.

Table 1 – Compositional analysis of Household, Commercial and Recycling centre wastes.

Category	MSW Kerbside - Household waste composition (%)	HWRC waste composition (%)	Kerbside Commercial waste composition (%)
Glass	2.94	2.5	1.77
Paper and Card	14.93	14.9	34.95
Metal	2.65	3.1	3.04
Plastic Bottles	1.92	1.1	1.54
Dense Plastic	5.60	7.8	4.59
Plastic Film	7.82	4.5	9.42
Garden Wastes	4.84	3.3	2.55
Food Wastes	31.93	10.3	23.76
Wood Wastes	0.24	14.9	3.09
WEEE	0.92	1.7	0.41
Tyres	0.00	0.1	0.00
Miscellaneous Combustible	2.27	13.3	2.66
Textiles & Footwear	2.81	7.6	4.10
Miscellaneous Non-Combustible	2.23	6.9	3.81
Hazardous Wastes	0.57	0.7	0.35

Healthcare Waste	14.37	4.8	0.44
Fines <10mm	3.00	1.7	2.63
Liquids	0.97	0.7	0.90
Total	100.00	100.00%	100.00

Table 2 - Total Residual waste (MSW) collected and received by the Authority

The total available material types contained within the authorities annual MSW arising has been taken and set against compositional data, table 1, to provide a summary of available materials within MSW collected and received by the authority.

Category	2016 HWRC MSW Tonnes	2016 Kerbside Household MSW Tonnes	2016 kerbside commercial MSW Tonnes	Total MSW Tonnes
Glass	83.93	116.55	17.53	218.01
Paper and Card	500.19	591.88	346.47	1438.5
Metal	104.07	105.15	30.18	239.4
Plastic Bottles	36.93	76.23	15.23	128.39
Dense Plastic	261.85	221.94	45.48	529.27
Plastic film	151.07	310.16	93.40	554.63
Garden Waste	110.78	191.74	25.31	327.83
Food Waste	345.77	1266.20	235.55	1847.5
Wood Waste	500.19	9.33	30.62	540.14
WEEE	57.07	36.37	4.02	97.46
Tyres	3.36	0.00	0.00	3.36

Miscellaneous combustible	446.48	90.01	26.34	562.83
Textiles and Footwear	255.13	111.33	40.61	407.07
Misc non-combustible	231.63	88.47	37.76	357.86
Hazardous waste	23.5	22.41	3.48	49.39
Healthcare waste	161.14	569.92	4.33	735.39
Fines <10mm	57.07	119.08	26.09	202.24
Liquids	23.5	38.66	8.96	71.12
Total	3357	3965.42	991.36	8313.8

Table 3 - Business engagement, to provide estimates of types, quantities and destinations of C&I waste

The Waste Compositional Analysis (WCA) collated potential C&I waste not received or not officially received (some received via Household Waste and Recycling Centre's (HWRC) or delivered direct to Chinglebraes). Information collected by direct engagement or by referral to licensed disposal route provided to business' directly by the Scottish Environmental Protection Agency (SEPA)

Destination	Tonnage
Collected by LA	3401
Disposed in other ways	4000
Slurry and manure spread to land	1033041
Fish waste disposed on site	27200

In table 3, it should be noted that;

- Slurry and fish waste, 'licensed tonnages' will not reflect actual waste arising accurately. Whilst the WCA attempted to receive feedback from a significant

number of businesses, engagement was voluntary thus not always successful.

- Tonnages 'Collected by LA' are included, in terms of tonnage and composition within other WCA studies (eg Kerbside collected waste), thus can be excluded from table 2 as available.

The WCA provider recommends further analysis of waste quantities and composition arising from this area, as providing potential to developing sustainable waste solutions for the islands. The types of waste identified requires further study to identify exact types and sustainability of current disposal methods to identify if materials may offer potential feed in to future facility proposals.

The waste compositional analysis study further identified the farm and fish waste arisings identified were currently disposed of direct to site, eliminating onward transport costs. Current authority officer experience is also aware that the licensing / or exemptions required to dispose of such wastes to site are at minimal or zero cost to the producer.

Key:

HWRC	-	Household Waste Recycling Centre
WEEE	-	Waste Electronic and Electrical Equipment
WCA	-	Waste Composition Analysis
C&I	-	Construction and Industrial
MSW	-	Municipal Solid Waste (this is household and commercial waste that is collected by the local authority including waste deposited at Household Waste Recycling Centres)