

ABERDEEN CITY COUNCIL

COMMITTEE	Zero Waste Management Sub-Committee
DATE	15 February 2012
DIRECTOR	Pete Leonard
TITLE OF REPORT	Waste Collection and Treatment Options Appraisal
REPORT NUMBER:	ZWM/12/004

1. PURPOSE OF REPORT

The purpose of this report is to provide members with the results of the an Options Appraisal undertaken by Halcrow on behalf of the Council to determine the preferred waste collection and treatment systems and to seek approval of recommendations relating to the development of a Business Case for the Zero Waste Project

2. RECOMMENDATIONS

The Sub-Committee agrees:

1. That the Zero Waste Project Board to commences the development of a Business Case in line with recommendations 2,3 and 4.
2. That commingled recycling collection is the recommended method for managing recycling waste in Aberdeen.
3. That the following model, Option CM1, is used as the reference case for waste collection services in the development of the Zero Waste Business Plan:
 - In areas provided with individual wheeled bins, use split body refuse collection vehicles to provide fortnightly collections of refuse and commingled recycling on alternate weeks with food waste collected weekly on the same vehicles.
 - In areas with gardens, use standard refuse collection vehicles to provide fortnightly collections of garden waste.
 - In areas provided with communal bin collections, use standard refuse collection vehicles to make individual collections of refuse, commingled recycling and food waste on an as required basis.

4. That Option EfW 1, 'Pre-treatment of mixed waste prior to the use of energy from waste technology' is the recommended method for managing residual or 'black bin' waste.

3. FINANCIAL IMPLICATIONS

There are no direct adverse financial impacts of this report. The activities described in this report contribute to the wider Zero Waste Management Project that will deliver the priority based budget option HE_ES_WS2. The project aims to identify the best technical and best value option to deliver the City's waste collection and treatment services and infrastructure.

The project will commission external consultants to provide technical, legal and procurement advice and expertise. These costs will be met by the 5 year business plan funds assigned to the project.

There will be capital and revenue implications associated with this project and these will be presented to the sub committee in initial form upon completion of the Business Case.

4. OTHER IMPLICATIONS

Adverse environmental impacts of landfilling waste will be reduced through the early implementation of actions arising from the Priority Based Business Option. Gaining value from all our waste either through recycling or energy recovery ensures that beneficial use will be made of the resources contained in waste.

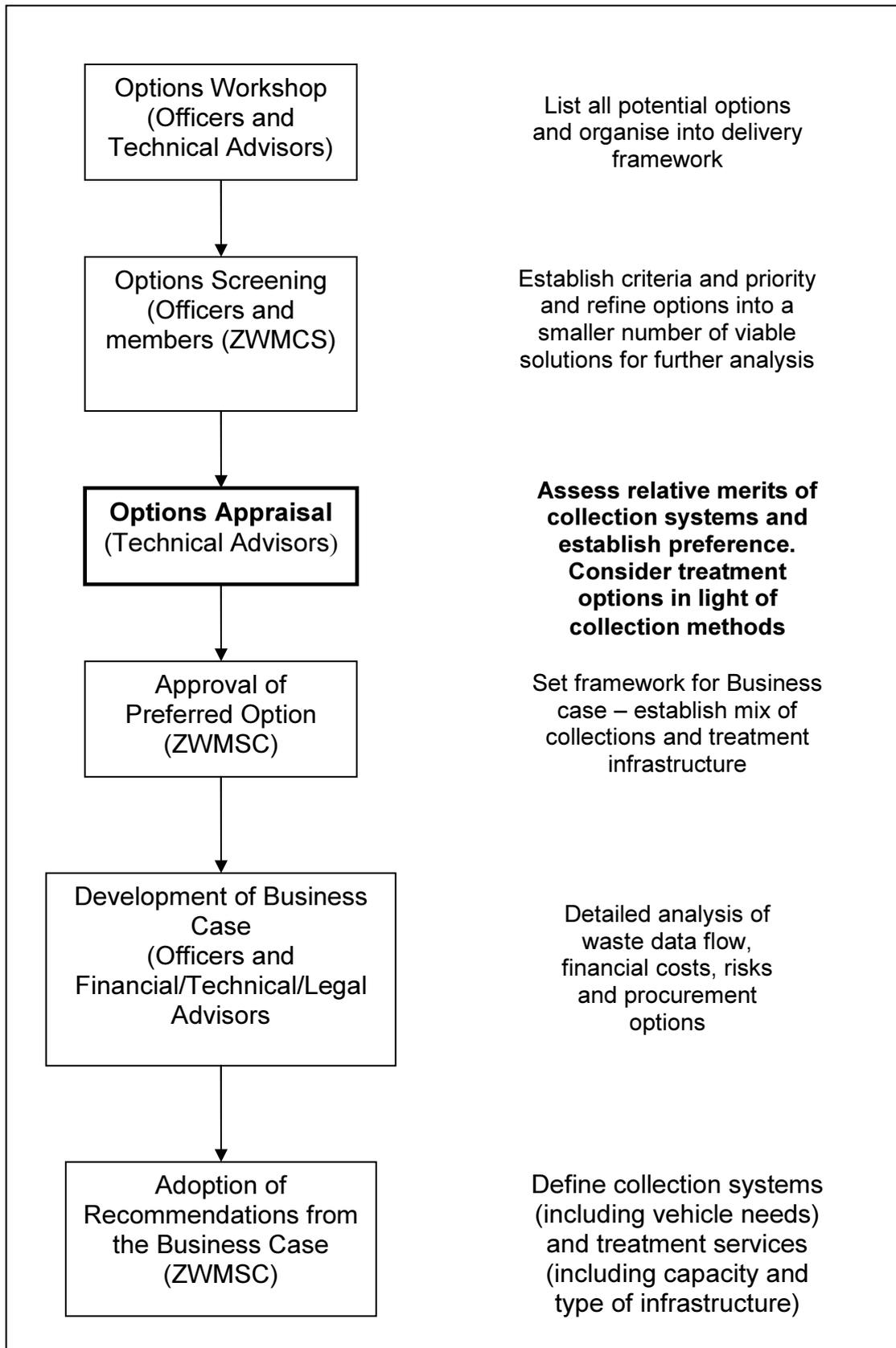
5. BACKGROUND/MAIN ISSUES

The Five-Year Priority based budgeting exercise undertaken by Aberdeen City Council in 2010 identified the need for a comprehensive review of implementation of the Aberdeen City Waste Strategy in light of an evolving regulatory and fiscal environment. This is the Zero Waste Management Project.

The following flow diagram shows the process being used to reach a decision on the mix of collection services and treatment infrastructure required to achieve the Council's aims and to comply with statutory obligations.

The process follows a 'decision-tree' approach and is designed to narrow down progressively the wide variety of inter-related options available for the collection and treatment of 7 and possibly more separate waste streams the Council will be required to collect in future years. Each stage is designed to refine the options available until a definitive mix of services and infrastructure is determined. The level of analysis is increased at each stage.

Diagram 1. Process Flow Diagram for Zero Waste Project



The Options Appraisal Stage is a largely qualitative process that focuses on the needs of the householder and recognizes the particular challenges faced by a largely urban authority with a large proportion of houses in multiple-occupancy. The purpose of this approach is to ensure that a solution is adopted which is practical and deliverable rather than theoretically optimal.

An Options Appraisal Process has been undertaken by the Council's Waste Technical Advisor, Halcrow Group Limited. Halcrow has been tasked to address two fundamental questions that will shape the development of the next stage in the process, the Business Case.

1. What is the best form of recycling collections for Aberdeen – commingled or kerbside sort?
2. How should Aberdeen City Council treat and dispose of its residual or 'black bin' waste – landfill or energy from waste?

These two questions will, in turn, influence the wider range of collection and treatment services required to form a complete transformation of waste services.

Collection Services Options Appraisal

The options screening process identified that the key decision required when considering waste collection services relates to the method of collecting dry recyclable waste. There are two main solutions for this, 'commingled' or 'kerbside sort' collections.

By commingled, we mean the use of a single compartment on a waste vehicle for the collection of all dry recyclable waste (typically this means paper and cardboard, glass bottles, plastics bottles and steel and aluminium cans. This service is often combined with wheeled bin (either small, 240 litre individual or 1100 or 1280 litre communal wheeled bins) in the same way that general refuse is currently collected.

By kerbside sort, we mean the use of a multi-compartment vehicle where individual or groups of recyclable materials are hand separated into streams which are stowed separately in the vehicle. For example, currently in Aberdeen recyclable wastes are separated at a five compartment vehicle into the following streams: paper and cardboard; green glass; brown glass; clear glass and mixed plastic bottles and cans. Container used are typically bags or boxes with a maximum size of 55 litres, which is determined by the maximum weight and bulk capable of being safely lifted by operatives on a repeated basis.

The options screening process (already completed) considered a further option of providing a mix of kerbside sort and commingled collections (i.e. a continuation of the current service and the additional of commingled in multiple-occupancy areas). This option was rejected

because it would require a mix of vehicle fleet thereby reducing efficiency of the fleet; require a probable increase in recycling collection frequency to weekly at excessive cost, result in the production of a small proportion of commingled recycling, which would not be viable to process in Aberdeen and create an environment where different recycling messages and communication would be required across the city. In short, a mixed system emphasizes the negative elements of each system and produces few of the benefits of either.

The options appraisal (Appendix 1) compares these two systems with the criteria set by the Council. On the basis of this comparison, Halcrow finds that a commingled collection system is the most appropriate for Aberdeen. The main determining factor is the ability to provide a service to all residents in Aberdeen. A commingled system is not deemed practicable in many multi-occupancy areas and, if introduced, would not have high levels of participation and therefore generate sufficient recyclables for the city to meet its targets.

Halcrow identifies that there are more consequential issues associated with a commingled collection rather than kerbside sort. The markets for commingled recyclables are less reliable than for kerbside sort and therefore, it is likely that the Council would need to develop a Materials Recycling Facility (MRF) specifically designed to accept these wastes and, in order to comply with the Zero Waste Regulations, include glass colour sorting processes in the MRF or as a separate process.

Further to the preference for commingled recycling, Halcrow has undertaken a further Options Appraisal relating to the mix of all collection services. The recommended solution is as follows:

- In areas provided with individual wheeled bins, use split body refuse collection vehicles to provide fortnightly collections of refuse and commingled recycling on alternate weeks with food waste collected weekly on the same vehicles.
- In areas with gardens, use standard refuse collection vehicles to provide fortnightly collections of garden waste.
- In areas provided with communal bin collections, use standard refuse collection vehicles to make individual collections of refuse, commingled recycling and food waste on an as required basis.

The main advantage of this system is a reduced cost of collecting food waste as it is collected at the same time as either recycling or refuse. By separating the food waste from garden waste there will also be added benefits of reduced processing costs for garden waste and more opportunity to 'flex' collection capacity with seasonal garden waste changes.

The Options Appraisal for this element of work has been undertaken comprehensively but without the opportunity to fully cost and model the specific fleet and container mix. This work will be undertaken as part of the Business Case, however, it is recommended that the Council adopt this Option as the Reference Case for future work. This allows the direction to be set but for variants on the Option to be developed further if it becomes apparent during the Business Case phase that there are advantages to be gained by considering amendments or innovations compared to the Reference Case.

Residual Treatment Systems

The second major element of the Options Appraisal is to consider the outcomes for residual or black bin waste, also referred to as 'refuse'.

The Options Appraisal makes it apparent that there is no one single process that will deal with residual waste. In the past, landfilling was such a solution but regulatory and fiscal changes are such that this option will not longer be available to the Council. The alternative to landfill is combustion or the generation of energy from waste. Again, as the appraisal makes clear, simple burning of waste is longer an option as a result of regulatory changes.

Both approaches remain viable options provided that the additional processes now required by regulation are undertaken prior to either landfill or energy from waste. Halcrow was asked to consider the implications of the changing regulatory environment and appraise the relative merits of landfill or energy from waste as the ultimate destination for residual waste.

Halcrow's conclusion is that Energy from Waste with pre-treatment to recover recyclable materials is the most appropriate option for Aberdeen City Council.

Landfill sits at the bottom of the waste hierarchy and will, in future, be subject to regulation that requires the biodegradability of residual waste to be significantly reduced before it can be sent to landfill by 2020. Furthermore, the Scottish Government has set a limit on disposing of municipal waste to landfill of no more than 5% by 2025. This timeframe is within the lifetime of the Zero Waste Project and therefore the Options Appraisal recognizes that landfill cannot form any meaningful part of the long-term future for residual waste.

In light of Halcrow's conclusion, adopting Energy from Waste is the preferred option for Aberdeen. How this is delivered is a complex matter and not addressed in the Appraisal; this will form part of the Business Case development. Options for Aberdeen City Council extend from developing a pre-treatment facility in Aberdeen combined with a waste-fired combined heat and power plant in Aberdeen to

simply exporting Aberdeen's waste to other facilities in Scotland, the rest of the UK or abroad.

Next Steps

The next stage of the Zero Waste Project is to develop a detailed Business Case. The Business Case will use the recommendations of the Zero Waste Sub Committee as the basis for development of detailed waste data flow analysis, construction of a financial assessment model, assessment of commercial contracting and procurement options and provide recommendations to the Sub Committee.

6. IMPACT

This project supports the Council's Single Outcome Agreement to meet National Outcome 14 "we reduce the local and global environmental impact of our consumption and production". The project aims to deliver the waste management strategic review option of the 5 year corporate business plan.

The project will review and identify new options for the City's waste collection and treatment services and infrastructure. This will potentially have an implication on the services provided to the public when the preferred option is implemented. An Equality and Human Rights Impact Assessment is being undertaken as part of the options appraisal process.

7. BACKGROUND PAPERS

Appendix 1. Waste Options Appraisal Document GACWSR/02, Halcrow Group Limited, 3 February 2012

8. REPORT AUTHOR DETAILS

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