# WASTE STRATEGY FOR ESSEX

## Executive Summary

Report for: Essex County Council

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# 1. EXECUTIVE SUMMARY

## 1.1 INTRODUCTION

Essex County Council (ECC), working with the twelve Essex Waste Collection Authorities (WCAs) as the Essex Waste Partnership (EWP), recognises the importance of working together to maximise the delivery of their statutory waste functions. The stated ambition of the partnership is to ensure that:

- appropriate infrastructure can be provided and utilised.
- complimentary systems and services can be implemented to deliver effective waste operations.
- resources can be used in a manner which maximises beneficial impacts.

The current joint municipal waste management strategy (JMWMS) for managing household and similar wastes was adopted in 2008 and was a 25-year strategic plan for recycling and managing household waste in Essex (expected to be in place until 2032). The waste strategy covered collection activities, Recycling Centres for Household Waste (RCHW) and Waste Transfer Stations (WTS) as well as waste treatment and disposal facilities.

The main objectives of the 2008 strategy are that:

- Essex Authorities will work hard to reduce the amount of waste produced in the first place and re-use more of the waste that is produced.
- Essex will achieve high levels of recycling, with an aspiration to achieve collectively 60% recycling of household waste by 2020. This could be achieved through a combination of further improvement in the performance of recycling and composting kerbside collection schemes and the Recycling Centres for Household Waste, and the recovery of recyclable materials through new treatment plants.
- Essex favours composting technologies such as anaerobic digestion (AD) for source segregated food waste, with windrow composting the favoured treatment option for green garden waste. (Note that AD is a form of biotreatment and produces a gas which can be used to generate 100% renewable electricity).
- Essex proposes to introduce new treatment plants using Mechanical Biological Treatment (MBT). MBT processes any 'black bag' waste and recovers further material for recycling. Part of the remaining material can either be manufactured into a fuel for energy production or can be sent to landfill.

The JMWMS has not been subject to further significant review since adoption in 2008; however, in recent years there have been substantial changes to national policy and legislation which have the potential to impact substantially on the current Strategy. These changes include the introduction of the Environment Act 2021, the publication of the Resources and Waste Strategy for England in 2018[1] that contains national targets for certain waste streams between now and 2050, as well as recent consultations commenced by Defra in 2021 relating to:

- A Deposit Return Scheme (DRS) for drinks containers where consumers will be incentivised to take empty drinks containers to return points.
- Extended Producer Responsibility (EPR) requirements for packaging where manufacturers will pay the full cost of managing and recycling their packaging waste.
- Introducing requirements for consistency in household and business waste recycling collection systems, which includes proposals for free garden waste collections, weekly food waste collection and restrictions on the collection of co-mingled dry recyclate.

The UK government have also announced a Net Zero carbon ambition by 2050 which impacts on generation of GHG emissions from waste management activities.

All of these proposals have potential consequences for the EWP in terms of how household waste is collected, managed and disposed of across the County. The EWP decided the JMWMS needs to be refreshed to take into account these recent policy announcements and updated targets for waste management.

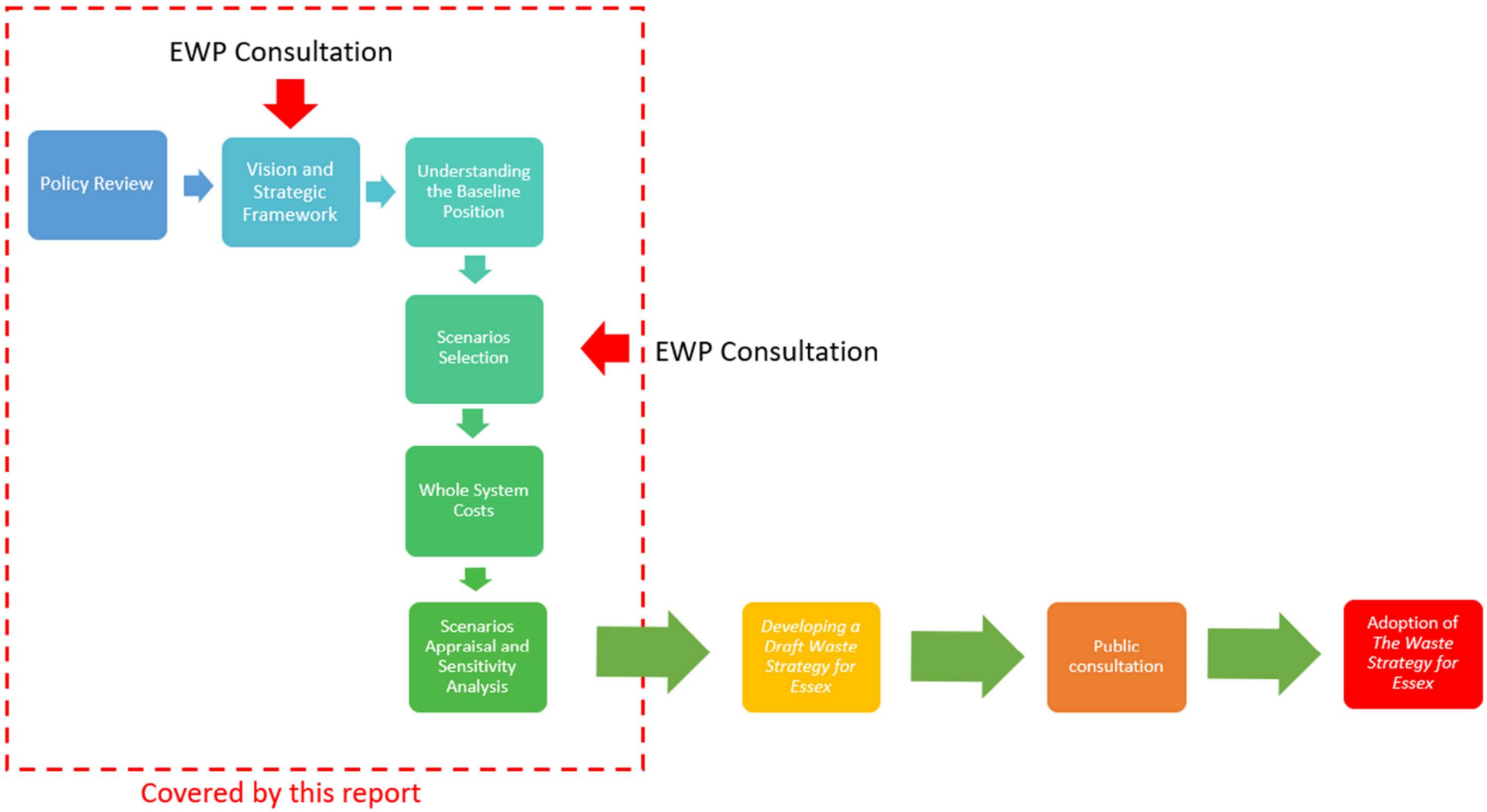
[1] Our Waste, Our Resources: A Strategy for England, Defra 2018

The EWP, with the support of Ricardo Energy and Environment, defined a robust and structured methodology (see Figure 1) to refresh the strategy, to be called the *Waste Strategy for Essex*. The aim of the process was to provide EWP with a framework for managing local authority collected waste, including maximising resources, working closely together and being aligned with national policy and legislation requirements.

The process has involved:

- Reviewing the current policy situation so that strategic priorities are aligned.
- Working with Councillors and officers to define ambition for waste management services in the next 25 years as well as the key scenarios assessment criteria and weightings.
- Setting a Vision Statement for the Strategy.
- Extensive analysis and modelling of the current baseline position for collection and disposal services for all EWP members so that future improvements can be accurately modelled.
- Defining future scenarios for collection, treatment and disposal.
- Assessing the Whole System Cost of each of the scenarios across the EWP.
- Assessing the Scenarios through a best practicable environmental scenario (BPES) assessment process, that takes environmental impacts, cost, performance against targets and technical deliverability of the scenarios into account.

Figure 1: Development of the Waste Strategy for Essex



At each stage of the process there has been consultation with Councillors and officers and key decisions have been taken together as the EWP.

This document summarises the outputs of the process detailed in Figure 1. The process followed to agree a Vision Statement and Strategic Framework and the outputs of the Scenario Appraisal has been summarised below. Detailed information on the modelling and scenario appraisal process is contained within the accompanying report. The EWP have used the outputs of this process to help shape the development of the Waste Strategy for Essex.

## 1.2 VISION STATEMENT

At the early stages of the *Waste Strategy for Essex* development, a series of workshops were held, to gain insight and direction from key stakeholders on the strategy vision, the level of strategy ambition and the boundaries for the *Waste Strategy for Essex*. Workshops were held for EWP officers, Directors and Councillors.

The aim of the workshops was to develop, shape and guide the vision, objectives and priorities for the *Waste Strategy for Essex*, with the goal of understanding and capturing the diverse views across the EWP and to identify areas where there is consensus already within and across the groups.

*Vision Setting* – As part of setting the vision the workshops explored views on the level of leadership being achieved by the EWP, future aspirations, level of ambition as well as the favoured level of recycling targets. Views expressed were used as a basis for establishing the content of the Vision Statement. The vision is a simple statement of the priorities and driving issues for the strategy development and is set out in Figure 2.

Figure 2: Vision Statement

**Vision Statement**

**Through leadership and innovation, enable a sustainable environment that reduces the amount of waste and carbon generated across Essex**

*Priorities* were also established for the development of the *Waste Strategy for Essex* through a word cloud identification and ranking process. Overall, waste reduction, carbon reduction, high performance and costs reduction/value for money were identified as broad areas of consensus across officers and Councillors. Practical areas of focus for the strategy were identified as decarbonisation of waste management practices, waste reduction, recycling and landfill diversion rates.

*Key areas of collaboration* explored included the standardisation of collection systems across EWP, including segregated food and garden waste collections and treatment of food waste and residual waste through a variety of methods. For each system stage a ranking exercise was carried out to identify officer and Councillor views.

There was a general openness regarding changes to current collection systems where benefits to recycling rates, landfill diversion and the overall cost of service provision can be demonstrated. As part of considerations of the management of organic waste, concerns were expressed regarding the regional capacity for AD if mandatory separate food waste collection is introduced by government.

Stakeholders agreed that more can be done to minimise waste arisings and increase recycling rates. However, it was also agreed that even if world leading waste minimisation and recycling was achieved in Essex, there would still be significant quantities of waste requiring disposal.

There was extensive consideration of different residual waste treatment options, including energy from waste (EfW), high specification Energy from Waste (combined heat and power (CHP), carbon capture, utilisation and storage (CCUS)), Mechanical Biological Treatment (MBT), Fuel Preparation and Export and Landfill. Each technology was discussed in detail and the conclusion was that EfW has a role to play and should be considered as part of the strategy, particularly where CHP is included in the solution.

Across all workshops, there was unanimous agreement of the need to avoid landfill disposal as a main residual waste treatment option.

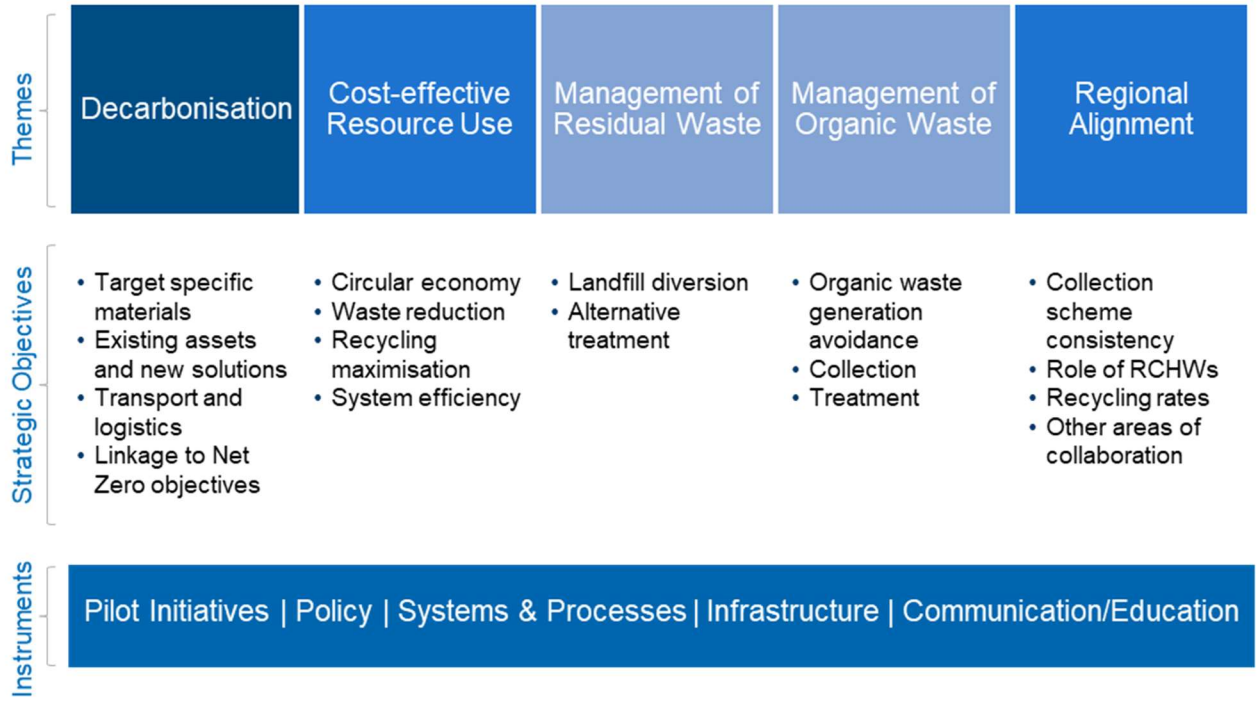
*Red lines* for the strategy were also identified and agreed. Practices to be excluded from the *Waste Strategy for Essex* included unproven/novel technologies and incineration without energy recovery. Consequently, landfilling and incineration without energy recovery were not considered as residual waste treatment options during the next stages of the strategy development. Landfill was modelled as part of the baseline assessment as it is the current waste disposal technology used in Essex.

### 1.2.1 Strategic Framework.

The work carried out at the consultation workshops allowed a strategic framework for the *Waste Strategy for Essex* to be developed. The strategic framework expands upon the vision statement and sets out the themes and strategic objectives of the strategy to assist the EWP with developing its strategy.

The strategic framework, see Figure 3, is broken down into 5 themes and each theme has an aligned strategic objective. The main themes are decarbonisation, cost-effective resource use, management of residual waste, management of organic waste and regional alignment. Instruments and tools that will enable the implementation of the *Waste Strategy for Essex* are also included in the Strategic Framework. The strategy will explain how any final targets or objectives are to be achieved.

Figure 3: Strategic Framework

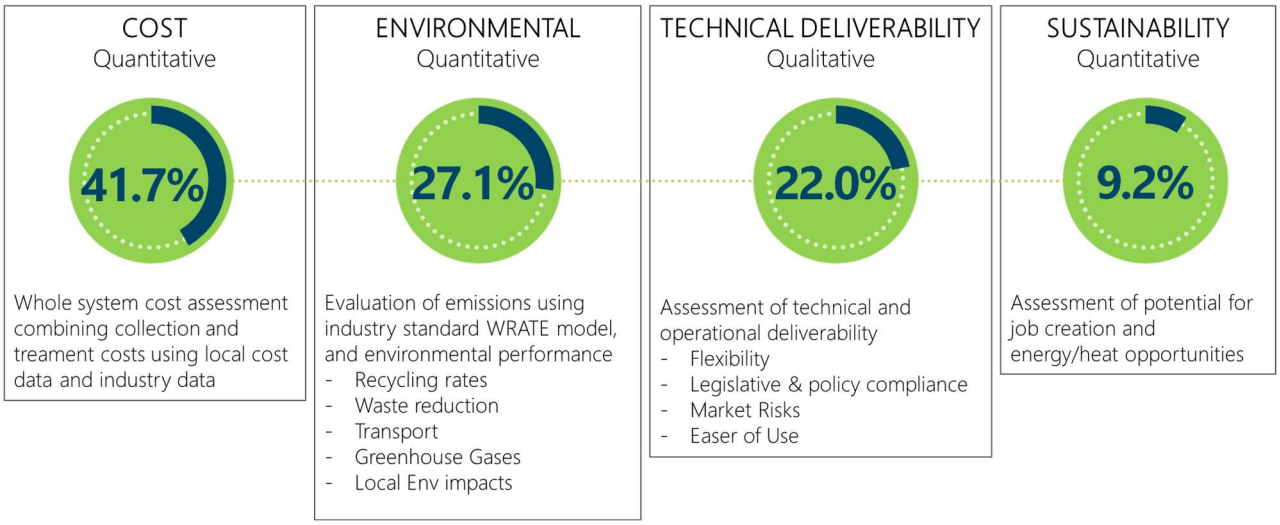



It is anticipated that further conversations regarding themes and strategic objectives will take place during the finalisation of the *Waste Strategy for Essex,* and this list may be expanded.

## 1.3 EVALUATION CRITERIA AND SELECTING SCENARIOS FOR MODELLING

An interactive Workshop of EWP officers and Councillors was held in November 2021 to agree a comprehensive ("long") list of collection scenarios and treatment options. The Workshop also developed the evaluation criteria for judging the relative benefits of each of the scenarios. The evaluation criteria included the following themes - Technical and Deliverability, Cost, Environmental and Sustainability. Workshop participants provided their views on the relative weighting of these criteria for both collection scenarios and treatment options. A summary of the agreed evaluation criteria and weighting is provided in Figure 4 below.

Figure 4: Approved Evaluation Criteria




Following the workshop, the EWP members assessed the long list of collection scenarios and treatment options using the agreed evaluation criteria. The resulting scores produced a short list of collection scenarios and treatment options which were combined into theoretical whole system waste management scenarios for modelling. The shortlisting process removed collection scenarios or treatment options that were not considered to be deliverable or were untested and also ensured a manageable number of scenarios were taken forward for more detailed analysis. The whole system scenarios for modelling, see Figure 5, were agreed with the EWP in January and February 2022. The purpose of the scenario modelling is to provide further insight to guide and assist the EWP in the development of a Waste Strategy for Essex. The scenarios modelled are not intended to be exhaustive or to limit future local decisions, but to provide a range of different approaches that are aligned with the agreed vision and priorities.

Figure 5: Shortlisted Whole System Scenarios for Modelling

| Options | | Dry recycling | Residual Waste | Food waste | Garden waste |
|---|---|---|---|---|---|
| | |  |  |  |  |
| Scenario 1 | Collection | **Commingled, fortnightly** | Fortnightly | Separate Weekly Collection, Anaerobic Digestion | Separate Fortnightly Collection, (no subscription), Open Air Windrow Composting |
| | Treatment | Materials Recycling Facility | Energy from Waste | | |
| Scenario 2 | Collection | Commingled, fortnightly | Three weekly | | |
| | Treatment | Materials Recycling Facility | Energy from Waste | | |
| Scenario 3 | Collection | **Multistream, fortnightly** | Fortnightly | Separate Weekly Collection, Anaerobic Digestion | Separate Fortnightly Collection, (no subscription), Open Air Windrow Composting |
| | Treatment | Materials Recycling Facility | Energy from Waste | | |
| Scenario 4 | Collection | Multistream, fortnightly | Three Weekly | | |
| | Treatment | Materials Recycling Facility | Energy from Waste | | |
| Scenario 5 | Collection | Multistream, weekly | Fortnightly | Separate Weekly Collection, Anaerobic Digestion | Separate Fortnightly Collection, (no subscription), Open Air Windrow Composting |
| | Treatment | Materials Recycling Facility | Energy from Waste | | |
| Scenario 6 | Collection | Multistream, weekly | Three Weekly | | |
| | Treatment | Materials Recycling Facility | Energy from Waste | | |
| Scenario 0+ | Collection | Current waste collection and disposal service mix operating in Essex (i.e. baseline projected to 2027/28) | | | |
| | Treatment | | | | |

In addition to the scenarios modelled, it was proposed to carry out further modelling of additional variations (or 'sensitivity' modelling) on the BPES. The sensitivity scenarios were as follows:

- residual waste treatment of EfW with the addition of:
    - use of pre-treatment prior to combustion to pull out further recyclable materials and maximise recycling
    - Combined Heat & Power (CHP) enabled
    - Carbon capture, utilisation and storage (CCUS) in line with industry best practice and Net Zero Strategy
- garden waste collections with a householder subscription service

## 1.4 THE SCENARIOS APPRAISAL PROCESS

The scenarios appraisal process is a staged process, see Figure 6, that includes analysis of the current performance of waste collection and disposal systems to be able to project likely future performance of the waste management systems. Waste flows across all EWP infrastructure are also mapped. Detailed modelling of the collection resourcing requirements, in terms of vehicles and staffing levels and other capital items was carried out. All of this data is combined to generate a whole system cost model for each scenario, showing the cost across the whole EWP area.

Environmental assessment is carried out using the Environment Agency's approved life cycle model, WRATE, which is used to estimate the environmental impacts arising from waste management systems, including embodied emissions from bins, sacks and collection vehicles along with collection, transport and treatment of waste by EWP members.

Following this methodology makes sure that the impacts of the scenarios have been fully considered from a sustainability and technical perspective, and is considered to be good practice.

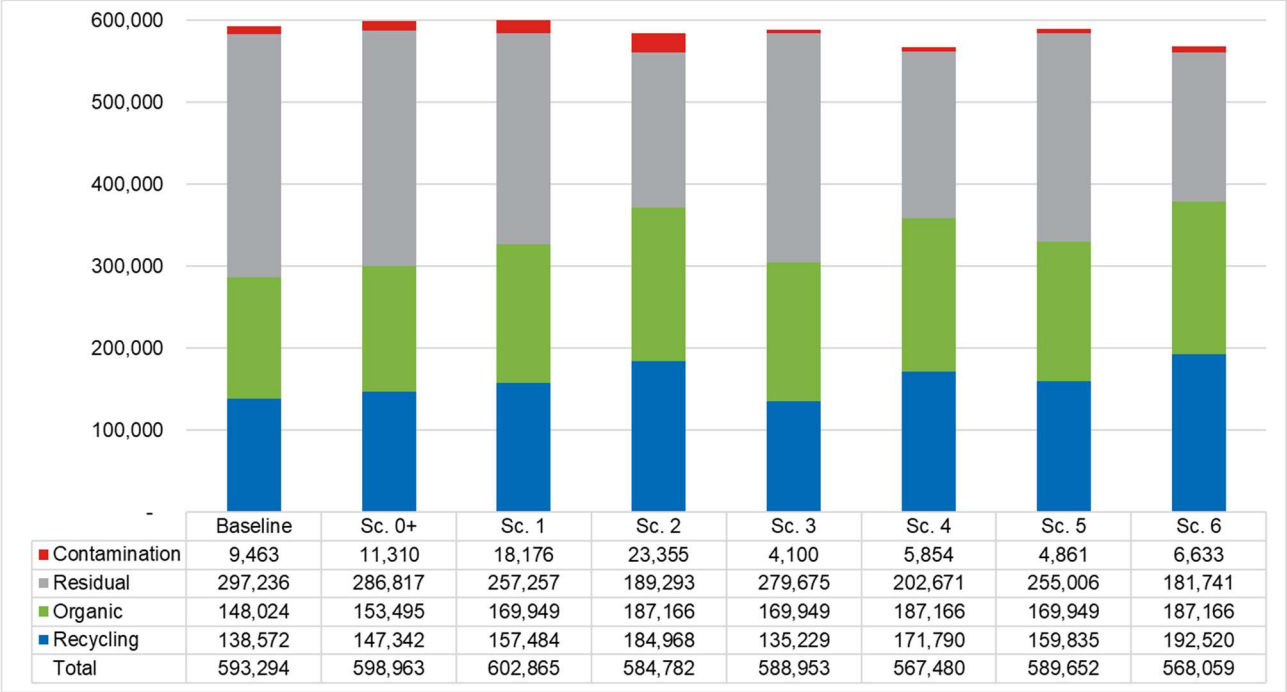
Figure 6: Modelling Methodology


## 1.5 SCENARIOS MODELLING OUTPUTS – WASTE AND COST

The combined scenarios modelling outputs for the EWP for each of the six shortlisted scenarios are summarised in this section. The Baseline represents the current situation, while the Scenario 0+ shows what the outputs would be for the same collection system in 2027/28. Allowing for demographic changes (ie population growth). All scenarios are modelled on a 'per authority' basis in terms of waste flows, recycling performance, collection infrastructure and resourcing, again based on 2027/28 to allow for growth and presumed implementation of legislative changes such as DRS. This per-authority modelling enables the whole system costs across the EWP to be determined.

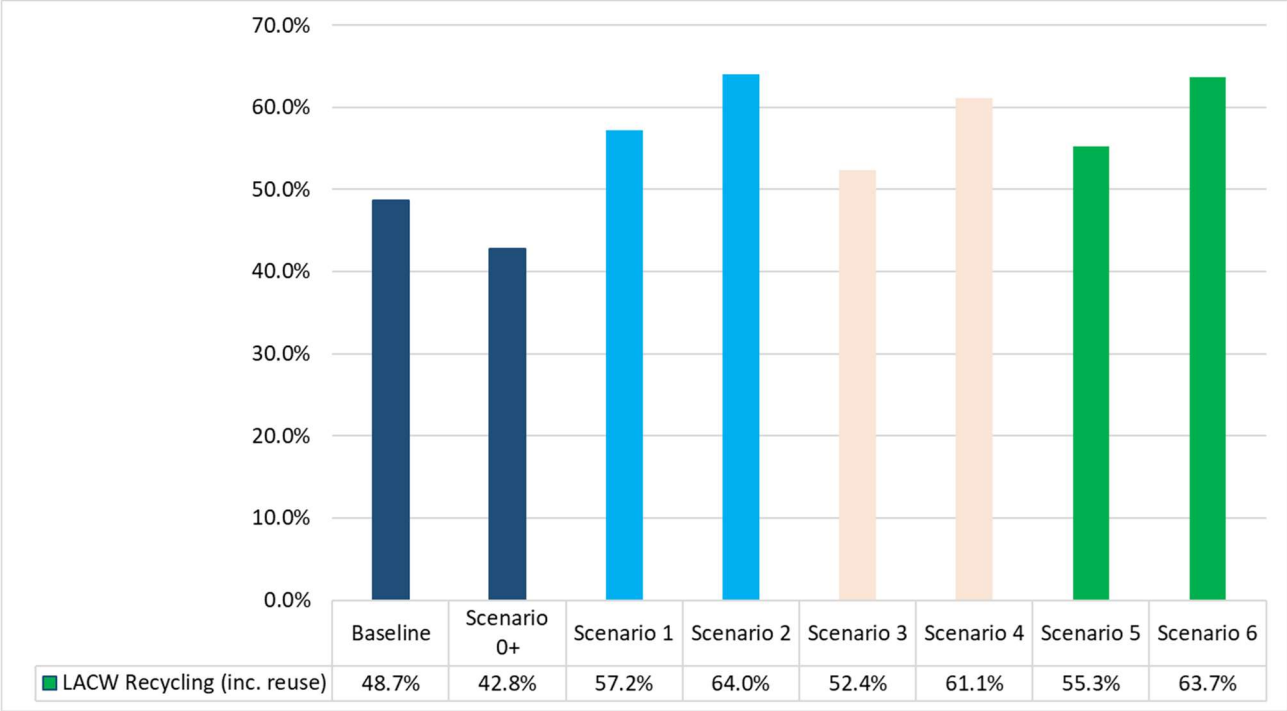
Modelling outputs summarise the anticipated impact on waste and recycling levels for the various scenarios (Figure 7). In terms of recycling performance, all scenarios except Scenario 3 have an increased recycling rate compared to the Scenario 0+ with Scenario 2 having the highest recycling rate at 64%. This recycling rate is based on what is currently being achieved by high performing Councils similar to Essex and does not include possible improvements brought about through non-modelled changes such as public awareness campaigns or further changes to national policy. The three scenarios with 3-weekly residual collections (Scenarios 2, 4 and 6) have a higher recycling rate than those scenarios with a fortnightly residual waste collection, increasing by over 10%. Scenario 3, a combination of multi-stream collections and fortnightly residual waste collections, has the lowest recycling rate. Figure 8 shows the combined EWP recycling rate for each Scenario.

Figure 7: Total arisings per Scenario - EWP




| | Baseline | Sc. 0+ | Sc. 1 | Sc. 2 | Sc. 3 | Sc. 4 | Sc. 5 | Sc. 6 |
|---|---|---|---|---|---|---|---|---|
| Contamination | 9,463 | 11,310 | 18,176 | 23,355 | 4,100 | 5,854 | 4,861 | 6,633 |
| Residual | 297,236 | 286,817 | 257,257 | 189,293 | 279,675 | 202,671 | 255,006 | 181,741 |
| Organic | 148,024 | 153,495 | 169,949 | 187,166 | 169,949 | 187,166 | 169,949 | 187,166 |
| Recycling | 138,572 | 147,342 | 157,484 | 184,968 | 135,229 | 171,790 | 159,835 | 192,520 |
| Total | 593,294 | 598,963 | 602,865 | 584,782 | 588,953 | 567,480 | 589,652 | 568,059 |

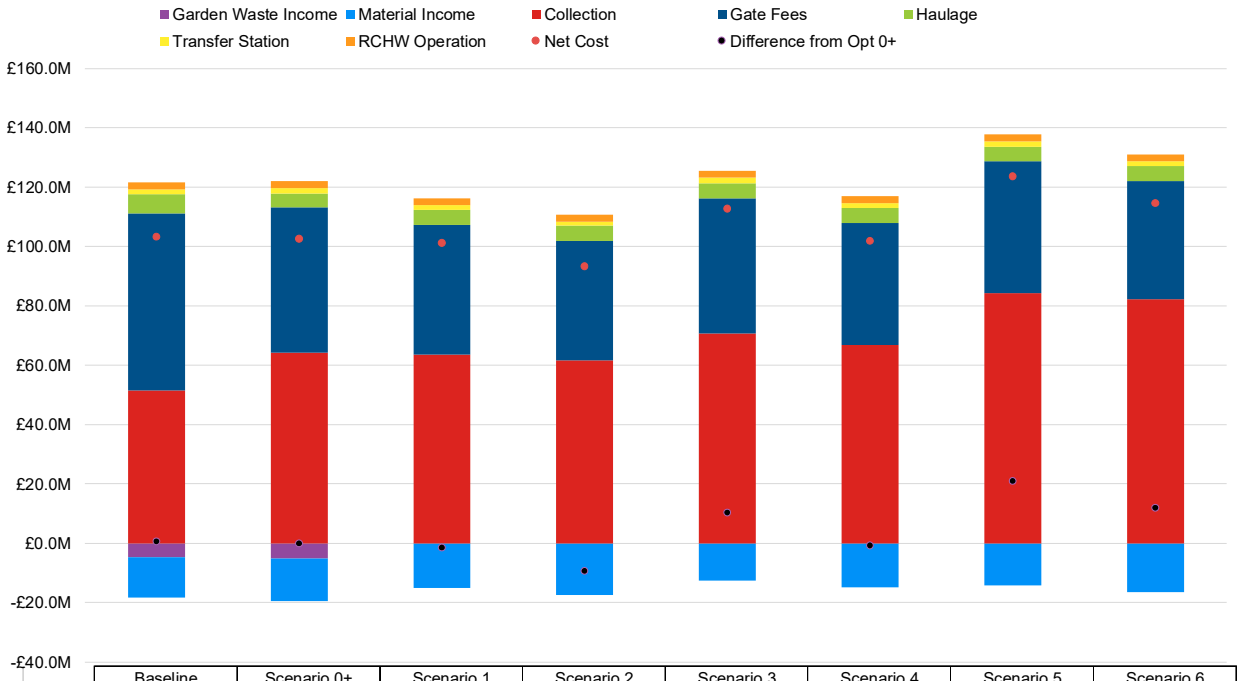
Figure 8: EWP combined recycling rate




| | Baseline | Scenario 0+ | Scenario 1 | Scenario 2 | Scenario 3 | Scenario 4 | Scenario 5 | Scenario 6 |
|---|---|---|---|---|---|---|---|---|
| LACW Recycling (inc. reuse) | 48.7% | 42.8% | 57.2% | 64.0% | 52.4% | 61.1% | 55.3% | 63.7% |

Whole system cost modelling outputs (Figure 9) illustrate that collection and treatment gate fees account for over 75% of the total system costs. Overall Scenario 2 is projected to provide cost savings compared to the Scenario 0+. Costs for Scenarios 3, 5 and 6 are anticipated to be higher than the baseline, at between £13 million and £24 million more than the baseline, due to the additional number of vehicles required to enable more frequent collections. Scenario 4 is more expensive than Scenario 0+, but by a smaller amount.

Figure 9: Whole System Costs EWP (Total Cost per Annum)




| | Baseline | Scenario 0+ | Scenario 1 | Scenario 2 | Scenario 3 | Scenario 4 | Scenario 5 | Scenario 6 |
|---|---|---|---|---|---|---|---|---|
| Total Gate Fees | £59,554,000 | £48,894,000 | £43,775,000 | £40,146,000 | £45,568,000 | £40,977,000 | £44,264,000 | £39,870,000 |
| Gross Cost | £121,519,000 | £121,875,000 | £116,238,000 | £110,633,000 | £125,441,000 | £116,823,000 | £137,702,000 | £131,016,000 |
| Income | -£18,287,000 | -£19,338,000 | -£15,071,000 | -£17,323,000 | -£12,585,000 | -£14,893,000 | -£14,050,000 | -£16,409,000 |
| Net Cost | £103,232,000 | £102,537,000 | £101,167,000 | £93,310,000 | £112,856,000 | £101,930,000 | £123,652,000 | £114,607,000 |
| Difference from Scenario 0+ | £694,000 | £0 | -£1,371,000 | -£9,228,000 | £10,317,000 | -£609,000 | £21,113,000 | £12,068,000 |

The results of the scenarios modelling were then used in the scenarios appraisal process to identify the Best Practicable Environmental Scenario (BPES).

## 1.6 SCENARIOS APPRAISAL RESULTS – BEST PRACTICABLE ENVIRONMENTAL SCENARIO

Following the scenarios modelling process, the six short-listed whole system collection and treatment scenarios were evaluated using the quantitative and qualitative evaluation criteria agreed by the EWP, considering technical and deliverability, cost, environmental and sustainability aspects. Weighting criteria created during the officer and member consultation workshops was also applied. A score of 0 (red), 2 (yellow) or 3 (red) was allocated to each criterion prior to applying the weighting.

The weighted outputs from the assessment process are summarised in Figure 10 which incorporate the weightings approved by the EWP in February 2022 during workshop processes. The outputs identify the BPES according to the criteria assessed and the weightings applied to them. As the strategy develops, it will be necessary for the EWP to review assessment criteria and weightings used to ensure they continue to reflect what is important to the partnership. This will ensure any future decisions taken support the ambitions of the partnership. This would also incorporate any updates to policy or legislative changes emerging from the ongoing evolution of the government's Resource and Waste Strategy, with particular regard to the impact of EPR, consistency and DRS.

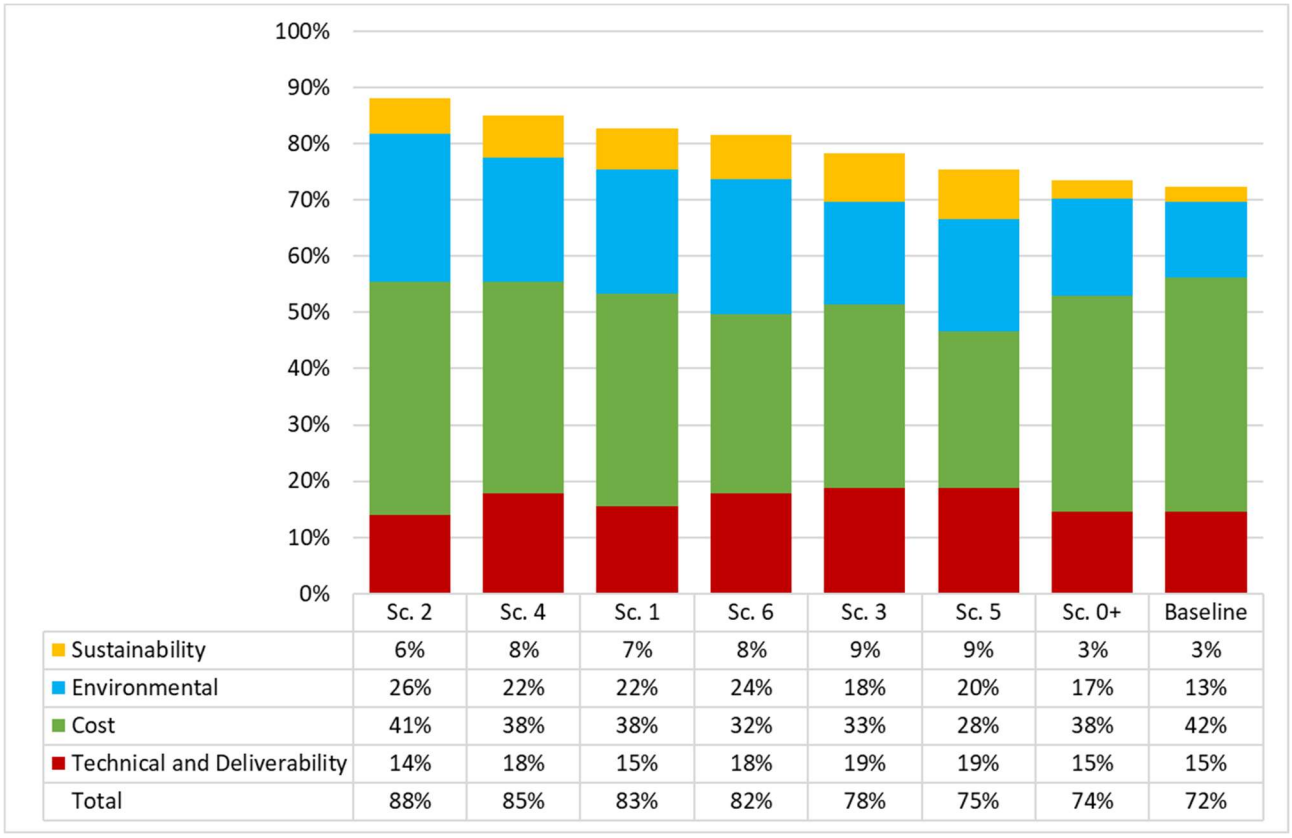
Figure 10: Weighted Options Appraisal Outputs – the Best Practicable Environmental Scenario

| Theme | Evaluation Criteria | | Baseline | Sc. 0+ | Sc. 1 | Sc. 2 | Sc. 3 | Sc. 4 | Sc. 5 | Sc. 6 |
|---|---|---|---|---|---|---|---|---|---|---|
| Technical and Deliverability | Technical Deliverability (Collections and Waste Treatment/Disposal Technology)/Reliability | | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| | Flexibility of solution | | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| | Public acceptability – Ease of Use (Collections) | | 2.00 | 2.00 | 3.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 |
| | Public acceptability (Treatment technologies) | | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | Waste Infrastructure Requirements | | 3.00 | 3.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | Market Risk | | 2.00 | 2.00 | 2.00 | 2.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| | Sympathy with local policy | | 0.00 | 0.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | Compliance with legislation | | 0.00 | 0.00 | 0.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| Cost | Total cost of option | | 3.00 | 2.76 | 2.72 | 2.98 | 2.34 | 2.70 | 1.99 | 2.29 |
| Environmental | Waste Hierarchy contribution – Waste Reduction | | 1.34 | 1.76 | 2.11 | 3.00 | 1.62 | 2.61 | 1.91 | 2.86 |
| | Greenhouse gas reduction potential – Low Carbon | | 0.34 | 1.46 | 2.08 | 3.00 | 1.48 | 2.11 | 1.80 | 2.56 |
| | Recycling rate | | 2.31 | 2.37 | 2.56 | 3.00 | 2.29 | 2.78 | 2.45 | 2.92 |
| | Transport impact | | 3.00 | 2.95 | 2.52 | 2.42 | 2.32 | 2.27 | 2.47 | 2.43 |
| | Local Environmental Impact | Acid rain potential (Acidification potential) | 1.29 | 2.11 | 2.39 | 3.00 | 1.90 | 2.32 | 2.14 | 2.62 |
| | | Water pollution potential (specifically Eutrophication potential) | 0.00 | 0.93 | 2.41 | 3.00 | 1.86 | 2.19 | 2.13 | 2.53 |
| | | Human toxicity | 1.23 | 2.13 | 2.96 | 3.00 | 2.86 | 2.89 | 2.90 | 2.95 |
| | | Resources depletion | 1.38 | 1.88 | 2.70 | 3.00 | 2.44 | 2.65 | 2.57 | 2.82 |
| | | Litter | 2.00 | 2.00 | 3.00 | 3.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| | | Noise | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| | | Odour | 0.00 | 0.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Sustainability | Local community benefits (jobs) | Quantitative assessment of jobs created or sustained | 1.95 | 2.09 | 2.06 | 1.98 | 2.39 | 2.25 | 3.00 | 2.90 |
| | Local community benefits (energy and heat) | Quantitative assessment (tonnes) of waste which could be sent to AD/EFW for energy (electricity/heat) creation | 0.31 | 0.52 | 2.56 | 2.17 | 3.00 | 2.58 | 2.82 | 2.41 |
| | | **Total Unweighted Score** | **55%** | **62%** | **79%** | **80%** | **78%** | **79%** | **81%** | **82%** |

Scenarios with a lower modelled cost perform well due to the high weighting on cost in the evaluation model. Multi-stream recycling scenarios score well from a technical perspective as emerging national policy favours the segregation of recyclate at the kerbside. From an environmental perspective, scenarios with a high recycling rate score well due to the positive impact that recycling has on reducing carbon and other emissions.

Scenario 2 is the highest ranked scenario in the BPES assessment (Figure 11) with Scenario 5 and Scenario 6 much lower in the overall ranking. The baseline and Scenario 0+ remain the lowest ranked scenarios, showing that all the scenarios considered achieved improved performance compared to the current system.

Figure 11: Scenarios Appraisal Summary Outputs, BPES ranking of Scenarios




| | Sc. 2 | Sc. 4 | Sc. 1 | Sc. 6 | Sc. 3 | Sc. 5 | Sc. 0+ | Baseline |
|---|---|---|---|---|---|---|---|---|
| Sustainability | 6% | 8% | 7% | 8% | 9% | 9% | 3% | 3% |
| Environmental | 26% | 22% | 22% | 24% | 18% | 20% | 17% | 13% |
| Cost | 41% | 38% | 38% | 32% | 33% | 28% | 38% | 42% |
| Technical and Deliverability | 14% | 18% | 15% | 18% | 19% | 19% | 15% | 15% |
| Total | 88% | 85% | 83% | 82% | 78% | 75% | 74% | 72% |

## 1.7 SENSITIVITY ANALYSIS

Scenario 2, as the BPES, was carried forward for modelling in a sensitivity analysis to allow potential technological and legislative developments to be considered. A second scenarios appraisal was then carried out on the sensitivities relative to the BPES, as shown in Figure 12.

The following scenarios were modelled in the sensitivity analysis:

- Sensitivity 1: Front-end recycling added to the EfW facility
- Sensitivity 2: Addition of combined heat and power (CHP) at the EfW facility
- Sensitivity 3: Addition of carbon capture, utilisation and storage technology (CCUS) at EfW facilities
- Sensitivity 4: Introduction of householder charges for garden waste collections across EWP

Sensitivity 1 would allow the collected residual stream to be further sorted with some additional recyclate separated out, such as plastic bottles, glass, aluminium and plastic tubs and trays. However, the increased gate fees for the additional facility outweigh the income achieved from increased recycling tonnages and the reduced costs due to lower residual waste tonnages.

Sensitivity 2 assumes that the EfW would incorporate CHP technology. The efficiency of the process is reliant on the capture of heat as a by-product of electricity generation. It also relies on an appropriate outlet being available and capable of utilising this heat offtake. The availability of such offtake requirements differs for each EfW site, and it was not possible to quantify the potential cost of this sensitivity within the scope of this assessment.

Sensitivity 3 explores the potential for carbon capture, utilisation and storage systems to be incorporated into the EfW process, further improving the carbon efficiency of this disposal method and having a positive carbon impact. However, modelling suggests that costs would increase substantially due to the higher gate fees required to fund the installation and operation of this technology.

Sensitivity 4 explores the impact of the government permitting the EWP to continue making a charge to householders for the kerbside collection of garden waste. The modelling shows a reduction in the number of

collection vehicles compared to Scenario 2 (where a free service is modelled), a slight reduction in recycling rates and a substantial overall cost saving due to the additional income received from a subscription scheme.

The weighted results show that sensitivity 4 has the highest score from the BPES analysis and that sensitivity 3 has the lowest score, as shown in Figure 12 below.

Figure 12: Weighted Results for the Sensitivity Scenarios – Best Practicable Environmental Scenario

| Theme | Evalution Criteria | | Weighting | Sc. 2 | Sens 1 | Sens 2 | Sens 3 | Sens 4 |
|---|---|---|---|---|---|---|---|---|
| Technical and Deliverability | Technical Deliverability (Collections and Waste | | 4.9% | 0.15 | 0.10 | 0.15 | 0.00 | 0.15 |
| | Flexibility of solution | | 2.4% | 0.07 | 0.05 | 0.07 | 0.07 | 0.07 |
| | Public acceptability – Ease of Use (Collections) | | 1.4% | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Public acceptability (Treatment technologies) | | 3.3% | 0.07 | 0.07 | 0.07 | 0.10 | 0.07 |
| | Waste Infrastructure Requirements | | 2.7% | 0.05 | 0.05 | 0.00 | 0.00 | 0.05 |
| | Market Risk | | 2.1% | 0.04 | 0.00 | 0.04 | 0.04 | 0.04 |
| | Sympathy with local policy | | 2.1% | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 |
| | Compliance with legislation | | 3.2% | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Cost | Total cost of option | | 41.7% | 0.87 | 0.82 | 0.87 | 0.66 | 1.25 |
| Environmental | Waste Hierarchy contribution – Waste Reduction | | 5.2% | 0.15 | 0.15 | 0.15 | 0.15 | 0.16 |
| | Greenhouse gas reduction potential – Low Carbon | | 4.5% | 0.09 | 0.10 | 0.11 | 0.14 | 0.10 |
| | Recycling rate | | 4.2% | 0.12 | 0.13 | 0.12 | 0.12 | 0.12 |
| | Transport impact | | 2.4% | 0.06 | 0.06 | 0.06 | 0.06 | 0.07 |
| | Local Environmental | Acid rain potential (Acidification potential) | 1.1% | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 |
| | | Water pollution potential (specifically Eutrophication potential) | 1.2% | 0.01 | 0.03 | 0.04 | 0.00 | 0.03 |
| | | Human toxicity | 1.0% | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 |
| | | Resources depletion | 2.7% | 0.07 | 0.07 | 0.08 | 0.07 | 0.07 |
| | | Litter | 2.3% | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 |
| | | Noise | 1.4% | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 |
| | | Odour | 1.1% | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 |
| Sustainability | Local community benefits (jobs) | Quantitative assessment of jobs created or sustained | 3.2% | 0.10 | 0.10 | 0.10 | 0.10 | 0.09 |
| | Local community benefits (energy and heat) | Quantitative assessment (tonnes) of waste which could be sent to AD/EFW for energy (electricity/heat) creation | 6.0% | 0.18 | 0.18 | 0.18 | 0.18 | 0.17 |
| Total weighted score | | | | 75.83% | 71.71% | 75.86% | 64.33% | 88.92% |

## 1.8 NEXT STEPS IN THE STRATEGY REVIEW PROCESS

### 1.8.1 Strategic Environmental Assessment (SEA)

A separate Strategic Environmental Assessment (SEA) process is ongoing, which seeks to identify the potentially significant environmental effects of the Strategy and the scenarios being considered by the EWP. Statutory SEA consultation bodies, stakeholders and the wider public will have the opportunity to comment upon the potential effects of the Strategy.

As part of the process Ricardo has prepared an SEA Scoping Report which sets out the context, identifies other relevant plans and programmes, problems and opportunities, establishes the environmental baseline and sets assessment objectives.

Provision of this Scoping Report to the Consultation Bodies will allow agreement on the scope and level of detail to be included in the Environmental Report, and the consultation arrangements for the Environmental Report. This was sent for consultation in February 2023. Following feedback on the Scoping Report a full SEA Environmental Report will be developed.

### 1.8.2 Waste Strategy for Essex Finalisation

This Summary of the Interim report presents the results of the Vision Setting Process, EWP wide collection and treatment services whole system modelling and the assessment of future shortlisted scenarios for delivery of the waste management services in Essex. The outputs of the detailed work undertaken will be used by the EWP to develop and finalise the *Waste Strategy for Essex* during 2023. Public consultation on the draft *Waste Strategy for Essex* is intended to take place in the Autumn of 2023.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