

REPORT TO SUSTAINABILITY COMMITTEE – 16 FEBRUARY 2022

ROUTE MAP 2030 DEVELOPMENT UPDATE

1 Executive Summary/Recommendations

1.1 This report contains an update on progress with regards to the Route Map 2030 development that Aberdeenshire Council officers have been working on with the support of consultants. The project is looking at what is required across the Council to reach its 75% reduction in emissions by 2030 target. Carbon Dioxide Equivalent (CO₂e) emissions and financial estimates are being made for all projects identified. A part of this work is the development of a toolkit to identify a complete view of decarbonisation progress against planned CO₂e reduction. This includes a view of the capital/revenue impact and cost effectiveness (£/tCO₂e) of each reduction project so that the Council can analyse the impact on the overall budget and prioritise project selection.

1.1.1 In parallel to this work, the team are also working on the draft Carbon Budget for 2022-23 which has been developed with a current list of projects totaling an estimated 1626 tCO₂e saving. It is being brought to this Committee for consideration before going to Aberdeenshire Council on 9 March 2022.

1.2 The Committee is recommended to:

1.2.1 Consider and comment on the Route Map 2030 Development Update (Appendix 1); and

1.2.2 Consider and comment on the proposed draft Carbon Budget 2022-2023 (Appendix 2).

2 Decision Making Route

2.1 Section 44 of Part 4 of the Climate Change (Scotland) Act 2009 places duties on public bodies relating to climate change which entered into force on 1 January 2011. These duties require that a public body must, in exercising its functions, act:

- in the way best calculated to contribute to delivery of the Act's emissions reduction targets;
- in the way best calculated to deliver Scotland's statutory climate change adaptation programme; and
- in a way that it considers most sustainable.

2.2 The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 sets national emissions reduction targets as:

- At least 75% lower than the baseline year by 2030;
- At least 90% lower than the baseline year by 2040; and

- Net Zero by 2045 ('Net Zero' refers to achieving an overall balance between emissions produced and emissions taken out of the atmosphere).

- 2.3 On 18 March 2020 Aberdeenshire Council agreed a Climate Change Declaration ([item 9](#)), committing to working towards a carbon free society by reducing its own emissions by 75% (2010/11 baseline) by 2030 and to work with others across the region to ensure that Aberdeenshire reaches Net Zero by 2045.
- 2.4 On 24 June 2021, Aberdeenshire Council agreed a one-off allocation of £100,000 to support the next phase of developing the Carbon Budget setting process ([item 10](#)). A revised process will look to support the Council in developing a methodology which costs out a Route Map to 2030 and fully integrates the Carbon Budget with the financial budgets.
- 2.5 On 25 August 2021, the Sustainability Committee agreed a project outline for the one-off allocation ([item 6](#)) and consultants Arcadis began working on the Route Map 2030 development and Carbon Budget 2022-23 on 22 November 2021.

3 Discussion

- 3.1 On 29 October 2021 the Scottish Government, in partnership with Sustainable Scotland Network (SSN), published the [Public Sector Leadership on the Global Climate Emergency](#) guidance. The guidance is in part to support the Climate Change (Duties of Public Bodies: Reporting Requirements) (Scotland) Amendment Order 2020 which set out additional requirements for reporting periods commencing on or after 1 April 2021. Public bodies' annual Climate Change reports must now also include:
- where applicable, the body's target date for achieving zero direct emissions of greenhouse gases, or such other targets that demonstrate how the body is contributing to Scotland achieving its emissions reduction targets;
 - where applicable, targets for reducing indirect emissions of greenhouse gases;
 - how the body will align its spending plans and use of resources to contribute to reducing emissions and delivering its emissions reduction targets;
 - how the body will publish, or otherwise make available, its progress to achieving its emissions reduction targets; and
 - where applicable, what contribution the body has made to helping deliver Scotland's Climate Change Adaptation Programme (currently the 2019 - 2024 Programme)
- 3.2 This initial guidance is fairly high level and will be augmented with greater detail via case study examples of action already happening across the public sector. This work is currently under development with Scottish Government and SSN.

- 3.3 Aberdeenshire Council's is already very well placed to demonstrate most of the additional requirements. The development of the Route Map 2030 will aim to capture any gaps in the above reporting requirements to ensure the Council is complying fully with the Amendment Order.
- 3.4 A summary of the progress to date on the Route Map 2030, Carbon Budget 2022-23 and toolkit development can be found in **Appendix 1**. The report covers:
- Scope and Outputs to date
 - Draft Carbon Budget 2022-23 development
 - Need for feasibility work to identify delivery options for future carbon budgets
 - Route Map 2030/Future Carbon Budget development progress
 - Challenges and opportunities
 - Toolkit development update
- 3.5 **Appendix 3** demonstrates a draft marginal abatement cost (MAC) curve for the projects identified in the Carbon Budget 2022-2023 being undertaken by the Property and Facilities Service. The toolkit development will also incorporate a MAC curve of all projects from across services allowing for prioritisation of actions or interventions when developing future Carbon Budgets.
- 3.6 There has been a great deal of stakeholder engagement across services to gather data for the project. Focus has very much been on the opportunities to further reduce the Council's emissions from its operational buildings, fleet and street lighting as well as looking at additional opportunities around reuse and recycling of resources, circular economy, road resurfacing, business miles and flood lighting across our household recycling centres, sport areas and parks.

4 Council Priorities, Implications and Risk

4.1 This report helps deliver all six of the Council's Strategic Priorities.

Pillar	Priority
Our People	<ul style="list-style-type: none"> • Education • Health & Wellbeing
Our Environment	<ul style="list-style-type: none"> • Infrastructure • Resilient Communities
Our Economy	<ul style="list-style-type: none"> • Economy & Enterprise • Estate Modernisation

4.2 The table below shows whether risks and implications apply if the recommendations are agreed.

Subject	Yes	No	N/A
Financial	X		
Staffing	X		
Equalities and Fairer Duty Scotland			X
Children and Young People's Rights and Wellbeing			X
Climate Change and Sustainability			X
Health and Wellbeing			X
Town Centre First			X

- 4.3 The financial implications in reaching carbon emission reduction targets are potentially significant and will need to be addressed on an individual project basis and identified for the organisation as a whole. This work will inform the Council's Medium-Term Financial Strategy and in doing so seek to ensure that the program of activities and projects represent best value in how the Council helps to deliver the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019. The target of 75% by 2030 is more challenging and will involve the need for considerable investment by both the Council, Government and other stakeholders. The continued development of the toolkit will support this requirement.
- 4.3.1 An example of this is the work to consider the Council's operational buildings asset. It has produced an initial broad estimate that there is a minimum requirement for circa £177m in capital expenditure for energy efficiency and heat decarbonisation across the Council estate. A need for feasibility work to look at these figures in more detail with regards to site specific requirements, opportunities, barriers, costs etc. is also highlighted for next year's carbon budget (2022-23) with indicative costs of £400,000-£500,000 depending on the amount undertaken and the requirements for each. This would help provide a more defined position on the current estimate of circa £177m. Furthermore, the Property & Facilities Management Service is aligning other capital budgets for example School Enhancement, New Building and Life Cycle Component with elements of the carbon budget to deliver on the Carbon reduction requirements.
- 4.3.2 The work on the Fleet Decarbonisation Strategy has also identified the additional costs for purchasing Battery Electric Vehicles (BEV) in the range of £23.4m to £29.6m for the vehicles identified as suitable for BEV replacements and a further £1.67m for the supporting infrastructure. Costs for Fuel Cell Electric Vehicles (FCEV) are not known for most vehicles segments and not included in these costs. The timescales for the move away from purchase of internal combustion engine powered vehicles is of course earlier than for other sectors with the Scottish Government committing to phasing out of all petrol and diesel cars from public sector fleets and removing the need for any new petrol or diesel light commercial vehicles by 2025, and to phase out the need for all new petrol and diesel vehicles in Scotland's public sector fleet by 2030. Therefore in 3 years' time we will not be purchasing new petrol or diesel vehicles for our fleet.
- 4.3.3 Although not a direct requirement under the guidance as it stands work has also been advanced to consider the decarbonisation of the predominantly

private sector fleet that operates our home to school transport. A paper was considered at the Education & Children's Services Committee on 27 January 2022 ([item 12](#)) on Home to School Transport Emissions and with such an extensive network there is a likelihood that swapping out the diesel fleet of buses will see costs passed on through contract rates. In their recent Strategic Transport Projects Review announcement, the Scottish Government did recognise this matter and are to consider the widening of existing funding criteria to include vehicles used for home-to-school and community transport services through a possible evolution of the Scottish Zero Emission Bus fund. If adopted, that would open grant support for the purchase of zero-emission coaches for the first time.

- 4.3.4 Working towards the Council's targets will also include a general evolution of staff roles to incorporate consideration of climate change as part of the day job. In the next 2 - 5 year period there is also the need to support Services and Directorates through augmenting the corporate lead team on Climate Change as well as putting in place project specific leads. The options for funding this approach will be developed further in discussion with Finance and Service leads.
- 4.4 The screening section as part of Stage One of the Integrated Impact Assessment (IIA) process has not identified the requirement for any further detailed assessments to be undertaken at this time. An IIA is not required for this report as members are only being asked to consider and comment on the Route Map 2030 development update. An IIA is being completed for the Carbon Budget 2022-23 which will be presented to Aberdeenshire Council on 9 March 2022. In addition, an IIA will be completed for the final draft Route Map 2030 which will be completed by 29 April 2022.
- 4.5 The following Risks have been identified as relevant to this matter on a Corporate Level, however it is acknowledged that working towards a 75% reduction in Council owned emissions has the potential to impact upon any number of areas across the Council risk portfolio.
- Risk ID ACORP010 as it relates to environmental challenges and Risk ID ACORP006 as it relates to reputation management within the [Corporate Risk Register](#).

The following Risks have been identified as relevant to this matter on a Strategic Level:

- Risk ID ISSR004 as it relates to Climate Change in the ([Directorate Risk Registers](#))

5 Scheme of Governance

- 5.1 The Head of Finance and Monitoring Officer within Business Services have been consulted in the preparation of this report and their comments are incorporated within the report. They are satisfied that the report complies with the [Scheme of Governance](#) and relevant legislation.

- 5.2 The Committee is able to consider and take a decision on this item in terms of Section S paragraph 1.1 (a) of the List of Committee Powers in Part 2A of the Scheme of Governance as it relates to monitoring the Council's work in respect of sustainable development and climate change.

Alan Wood
Director of Environment and Infrastructure Services

Report prepared by Claudia Cowie Team Leader Sustainability and Climate Change
Date 5 February 2022

List of Appendices:

- Appendix 1 - Aberdeenshire Council Route Map 2030 Development Update
- Appendix 2 - Draft Carbon Budget 2022-2023
- Appendix 3 - Marginal Abatement Cost (MAC) Curve for Property Projects for 2022-23

Arcadis Aberdeenshire Council Route Map to 2030 Development Update

Introduction to the project

Client need:

- The key objective of the project is to develop a Route Map to 2030 which will consist of a costed Carbon Budget, meeting Aberdeenshire Councils target of 75% reduction in carbon dioxide equivalent (CO₂e) emissions by 31 March 2031.
- This should in turn support the Council to accurately, estimate, manage, prioritise, visualise/communicate, monitor and assure the annual costs and carbon reduction potential to deliver decarbonisation projects to meet the 75% reduction target by 2030 – to analyse the impact of this cost on the Council's budget and maximise payback.

Scope & Outputs:

- The work should advance the Council's Carbon Budget setting methodology to support the production of a budget (both carbon and financial) for 1 April 2022 to 31 March 2023 and support the development of an indicative budget up to 31 March 2031 which would align to the target of a 75% reduction in CO₂e.
- A toolkit will be designed for the Council to allow for measures to be identified on a cost per tonne of CO₂e basis and needs the flexibility to be updated on a yearly basis and to extend to new data and emissions boundaries (i.e. scope 3).

Deliverables include:

- Carbon Budget Setting 2022-2023, including planned and inflight opportunities and an estimated cost for Feasibility Assessments and Studies.
- Carbon Budget Toolkit, which will support developing the Services to select sufficient interventions to achieve their annual CO₂e target.
- Future Carbon Budget will define the estimated scale of investment, to support the Council to secure the necessary funds to deliver on the 75% CO₂e reduction target. This will include identification of further feasibility and business case studies to generate the necessary insight to support a data led approach to project selection and delivery.

Approach to developing the Carbon Budget 2022-23

The following process was used to develop the carbon budget 2022-23:

1. **Review** of council's documents to understand current emissions and the scale of reduction required.

Appendix 1: Route Map 2030 Development Update

2. **Identification** of opportunities through:
 - Assessment reports prepared by the Council and 3rd parties,
 - Individual discussion with a range of key stakeholders and service area leads to understand the scale and implications of potential opportunities.
3. **Assessment** of opportunities in terms of their:
 - Carbon reduction potential (total and annual),
 - Financials (capital costs and net operational costs)
 - Contrasting the scale of the carbon reduction opportunities in individual years and contrasting this with required reductions to meet the 2030/31 target.
4. **Evaluating the impact of grid decarbonisation** on carbon budgets.
5. **Developing MACC curve** to prioritise interventions.

A summary of 2022/23 planned and in progress opportunities, CO2e reduction, estimated cost and associated budget:

The Carbon Budget 2022/23 provides a considerable list of opportunities which are very cost effective as some do not require any upfront investment and those that do (buildings) have a payback of less than 8 years.

Interventions	Asset name	Carbon saving (tCO2e)	Cost (£)	Budget	Budget Line
LED Lighting	Banff Academy & Banff Swimming Pool	32	134,893	Capital	Carbon Reduction
Electronically Commutated (EC) Fan	Banff Academy & Banff Swimming Pool	9	9,598	Capital	Carbon Reduction
LED Lighting	Mackie Academy	49	213,126	Capital	Carbon Reduction
Pipework insulation	Mackie Academy	4	7,371	Capital	Carbon Reduction
Solar PV	Mackie Academy	25	176,956	Capital	Carbon Reduction
LED Lighting	Fraserburgh Academy	16	98,545	Capital	Carbon Reduction
Building Management System (BMS)	Fraserburgh Academy	12	110,646	Capital	Carbon Reduction
BMS	Fraserburgh Academy	4	0	Capital	Carbon Reduction
EC fan	Fraserburgh Academy	1	14,598	Capital	Carbon Reduction
Pipework insulation	Fraserburgh Academy	8	15,473	Capital	Carbon Reduction
Solar PV	Fraserburgh Academy	17	126,455	Capital	Carbon Reduction
LED Lighting	Mintlaw Academy	32	108,964	Capital	Carbon Reduction

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Interventions	Asset name	Carbon saving (tCO2e)	Cost (£)	Budget	Budget Line
EC Fan	Mintlaw Academy	2	9,598	Capital	Carbon Reduction
Pipework insulation	Mintlaw Academy	4	8,961	Capital	Carbon Reduction
Solar PV	Mintlaw Academy	14	102,265	Capital	Carbon Reduction
LED Lighting	The Gordon Schools	16	89,964	Capital	Carbon Reduction
Pipework insulation	The Gordon Schools	9	17,736	Capital	Carbon Reduction
LED Lighting	Westhill Academy	23	98,814	Capital	Carbon Reduction
Pipework insulation	Westhill Academy	2	4,558	Capital	Carbon Reduction
LED Lighting	Turriff Academy	12	75,886	Capital	Carbon Reduction
BMS	Turriff Academy	2	12,906	Capital	Carbon Reduction
BMS	Turriff Academy	7	0	Capital	Carbon Reduction
Pipework insulation	Turriff Academy	1	1,469	Capital	Carbon Reduction
LED Lighting	Stonehaven Leisure Centre	4	13,646	Capital	Carbon Reduction
Pipework insulation	Stonehaven Leisure Centre	2	4,524	Capital	Carbon Reduction
LED Lighting	Strathburn Primary School	5	17,604	Capital	Carbon Reduction
Pipework insulation	Strathburn Primary School	6	12,187	Capital	Carbon Reduction
EC Fan	Arduthie Primary School	0	6,131	Capital	Carbon Reduction
LED Lighting	Kemnay Primary School	1	3,236	Capital	Carbon Reduction
Pipework insulation	Kemnay Primary School	1	2,999	Capital	Carbon Reduction
Warp-it		3	7,824.96	Reserve	Renewable Energy Reserve
Recycling - Compost		16	TBD	Revenue	*waste E&CS
Energy Sparks		33	0	NA	NA
Road resurfacing		220	0	Revenue	TBD
Energy from waste (EfW)		98	TBD	Capital/ Revenue	EfW/ Waste Disposal
LED Street Lighting		436	1,460,000	Capital	Street Lighting
Grid decarbonisation		500	NA	NA	NA
Total		1,626	2,963,021		

Grid decarbonisation

We estimate grid decarbonisation will reduce emissions by another 500 tCO₂e. This is based on current energy consumption and reducing grid electricity emission factor by 0.009kgCO₂e/kWh (Defra).

Other interventions assessed:

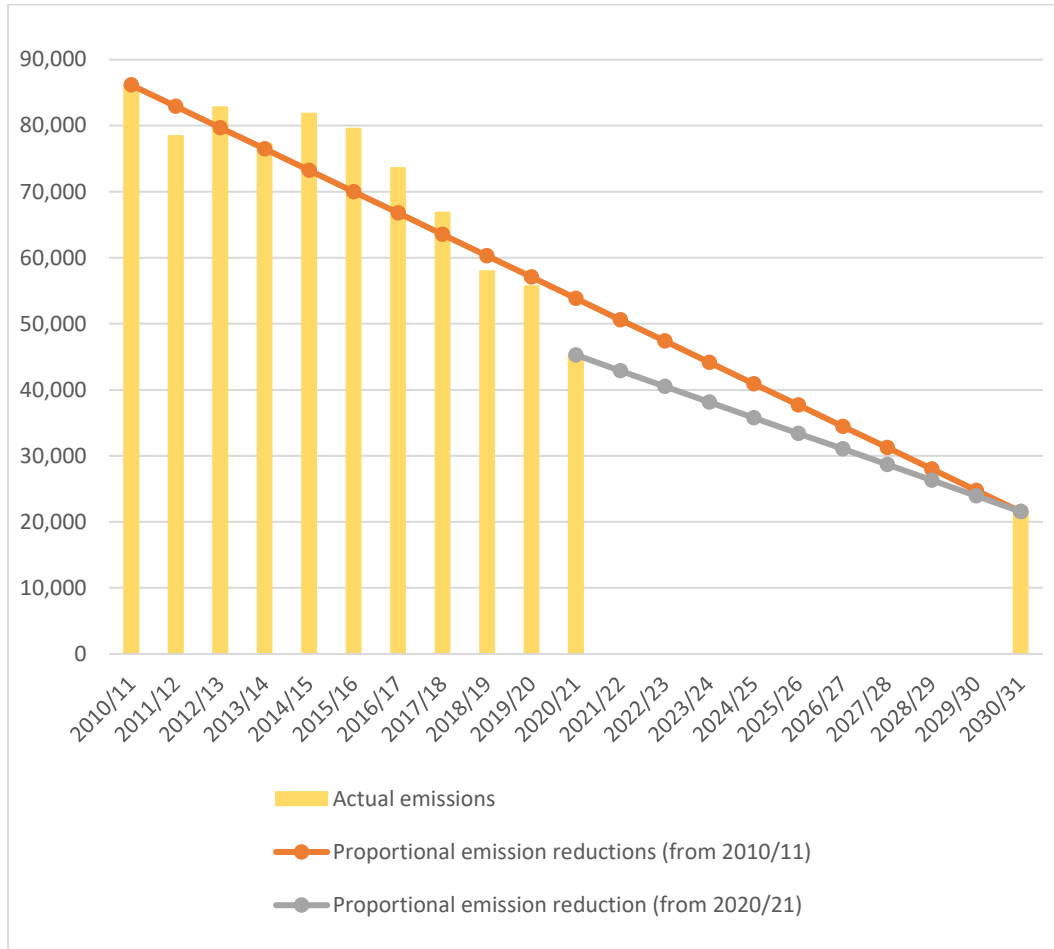
Interventions	Carbon saving (tCO ₂ e)	Estimated Cost (£)
General waste reduction and increased recycling on school sites	89	1,230,437
Formal reuse hubs for schools. Offices etc. (e.g. furniture, science equipment)	TBD	TBD
Formal reuse hubs for health and social care partnerships	TBD	TBD
LED lights - Waste management & recycling centres	TBD	TBD
LED lights- sports centres & parks	TBD	TBD

An evaluation of the draft carbon budget and what this means for the Route Map and next steps

- Carbon emissions need to be reduced to 21,539 tCO₂e by 2030/31 (from 86,155 tCO₂e in 2010/11) to meet required 75% reduction.
- On average this requires annual reduction in emissions of 3,231 tCO₂e as shown by the orange trajectory in the Figure 1.
- Due to Covid emissions in 2020/21 were significantly below the targeted emissions level. If the level of emission is maintained annual emissions reduction required to reach 2030/31 target stand at 2374 tCO₂e. This is shown by the grey line in the Figure 1.
- Decarbonisation of the grid will probably reduce the annual target requirement by around 300 – 500 tCO₂e
- We estimate the annual objective would have to be around 2000 – 2500 tCO₂e / year to reach the 2030 target.
- We recommend that focus should be on reducing emissions from three main asset types to make the most impact quickly:
 - Buildings
 - Fleet
 - Street Lighting

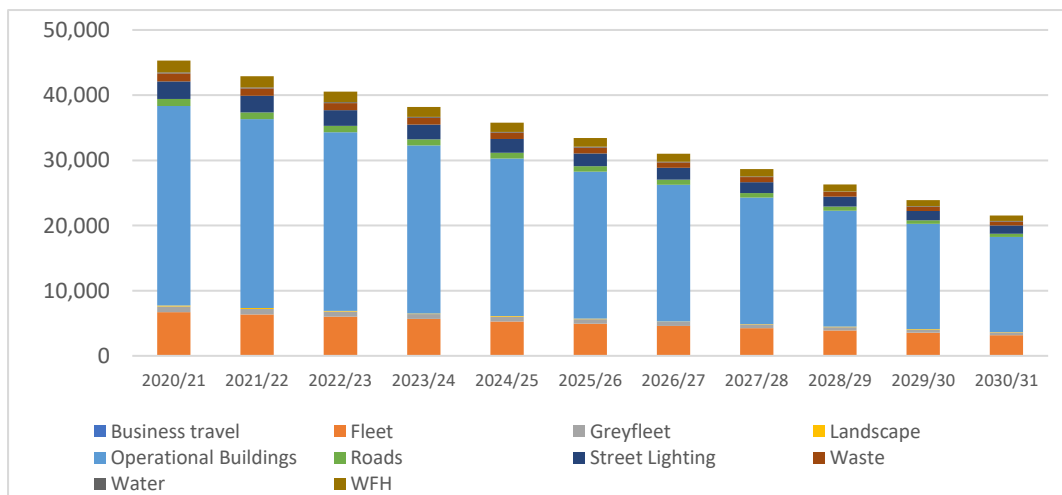
Appendix 1: Route Map 2030 Development Update

Figure 1: Reaching 75% by 2030



Year	Annual emissions (tCO2e)	Annual reductions (tCO2e)
2010/11	86,155	3,231 (linear)
2020/21	45,281	2,374 (based on 2021 footprint)
2030/31	21,539	

Figure 2: Example of Suggested Reduction Requirement by Service



The need for and aim of site feasibility assessments and studies

Site feasibility studies can provide the information required to support the development of the Carbon Budgets. Information from previous audits can be included and needs to be undertaken in conjunction with the Non-Domestic Energy Efficiency Framework that the Property Team is working within. As the NDEEF requires a return on investment within a specific time period (10 years) as a result it excludes a number of project types like heat decarbonisation which would not have a return on investment within this timeframe.

1. Aim of Feasibility Studies

- Sufficiently detailed to support development of carbon budgets
- Support the development of cost plan
- Demonstrate improvement with EPC models
- Include Energy Efficiency/Operational Energy/Behaviour Change and Heat Decarbonisation projects

2. Prioritise Sites

- Prioritise sites based on heat decarbonisation Route Map:
 - Sites with highest carbon savings/off-grid sites/site clusters to optimise process

3. Approach

- Develop an approach that is more detailed than simple energy survey but not quite as Investment Grade Audit as this would be undertaken by the contractor before works, but provide sufficient information for decision making
- Site energy survey
- Whole building model
- Review technical opportunities with barriers based on condition and systems
- Information collected to support cost assessment
- 5 pilot studies with key suppliers (ASHP/Lighting) to confirm costs for Aberdeenshire Council

Estate feasibility assessments required to develop the 2023 – 2025 pipeline of investment grade projects

4. Likely Coverage

- Fabric improvements (roof, wall, windows)
- Internal and external lighting and lighting controls
- Decarbonisation of heat – heat pumps, hydrogen biomass (and thermal readiness)
- Hot Water, Ventilations and cooling (although likely to be minimal)
- Renewables
- Equipment – e.g. School kitchens)

Appendix 1: Route Map 2030 Development Update

- Metering and Building Controls
- Operational Energy Behaviour Change

5. Outputs

- Audit report – summary of opportunities, costs, savings, and technical feasibility
- Existing systems
- EPC model and recommendations for improvement
 - Sites with highest carbon savings/off-grid sites/site clusters
- Aligned with operational energy
- ECM recommendations
 - Costs
 - Technical overview

6. Estimated costs for feasibility assessment of the top 30 sites

- Approximately £7.5-15k per site depending on the size of the site and complexity
- The exact cost is depending on the number sites Property & Facilities Service would like to get investment grade ready for procurement for 2023/24 and 2024/25. We are currently speaking to this Service to confirm the number of studies.

***The cost for the 2022/23 carbon budget could be around £250k - 300k.**

Other studies we would recommend to support the future carbon budgets and further refine costs and revenue savings

Measure specific in-depth assessment:

- Recommend additional in depth analysis/pilots of specific opportunities
- Inform wider site-specific studies
- Initial assessment could be Air Source Heat pumps
 - Supply chain readiness & skills gap
 - Fabric suitability
 - Technology integration
 - Costs and implementation
 - Operational review
- Results of these studies will inform the feasibility assessments
- Future studies for building controls, hydrogen heating/vehicles considered

Additional costs for in-depth assessment:

- Additional costs of these studies would need to be finalised but around £25k per pilot study

Appendix 1: Route Map 2030 Development Update

- We estimate in 2022/23 a further 6 - 8 studies would be required to support the future carbon budget and further refine costs and revenue savings

***This would add a further £150 - £200k to the 2022/23 budget.**

Future Carbon Budget Development

Carbon Footprint Baseline and annual theoretical reduction:

1. The 86155 tCO₂e Carbon Footprint of 2010 is used as baseline to define the 75% reduction target or 21538 tCO₂e by 2030. A linear reduction would mean an estimated 3200 tCO₂e to achieve the 75% reduction by 2030. However, this would not take into account decarbonisation of the grid as well as fluctuations due to changes in context, like Covid. In 2021/22 the Council's Carbon Footprint was 8566 reduced from the estimated Carbon Footprint for that year.

Our approach to future carbon budget development:

2. Our approach to developing both the future annual target CO₂e reduction and carbon budget, aims to reflect how Services would design their annual prioritised programme of interventions. We have chosen a two dimensional approach to developing the future carbon budget which involves provide a two year look-ahead programme of interventions up to and including 2024/25 and beyond that a recommendation of an annual target CO₂e for each Service area. This exercise will involve estimating the reduction potential for opportunities that are not yet identified. These have to be estimated at different levels of accuracy and modelled how this will improve with feasibility studies and in depth data over time. Feasibility assessments and studies would have to be procured each year to confirm the data of the assumptions made to estimate the budget.

Two elements of the future carbon budget

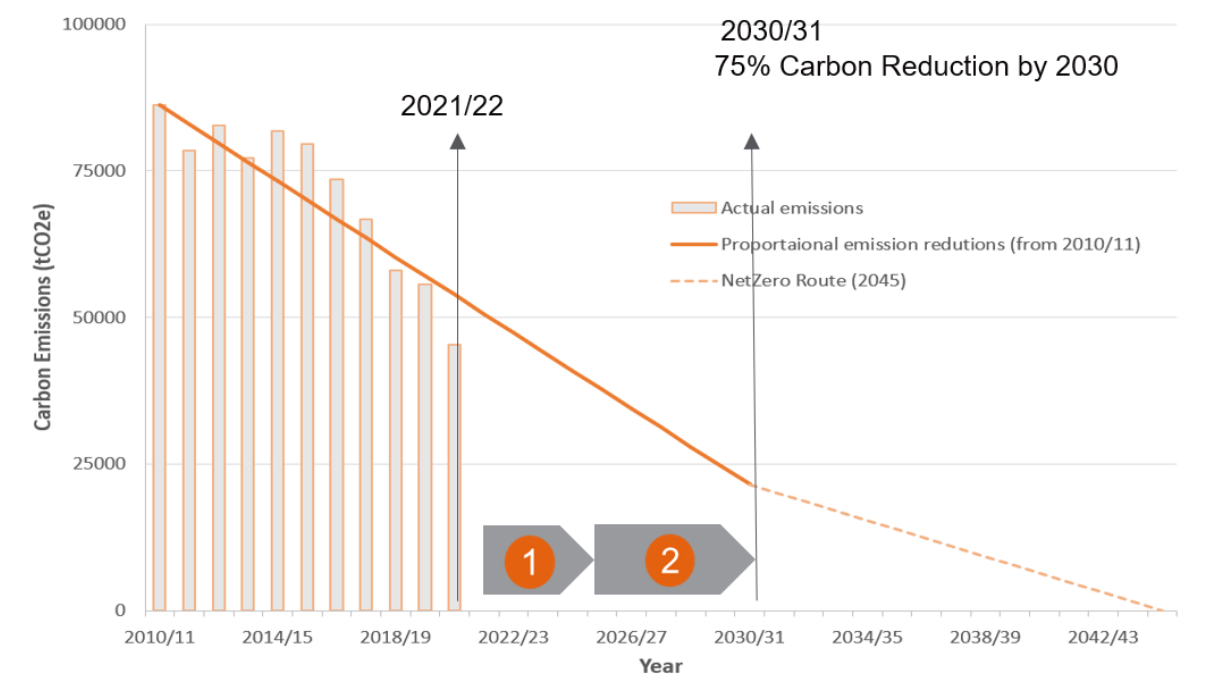
1. A prioritised two year look-ahead programme of a combination of suggested sites and measures, to support Services to define their annual programme of interventions and carbon budget for the year 2023/24 and 2023/24 respectively.

For the estate, the top 30 projects are being selected from two main groups of sites: the high consumers in both kWh and kWh/sqm and the gas off-grid properties. For the other services, the approach to prioritisation is still to be developed,

Appendix 1: Route Map 2030 Development Update

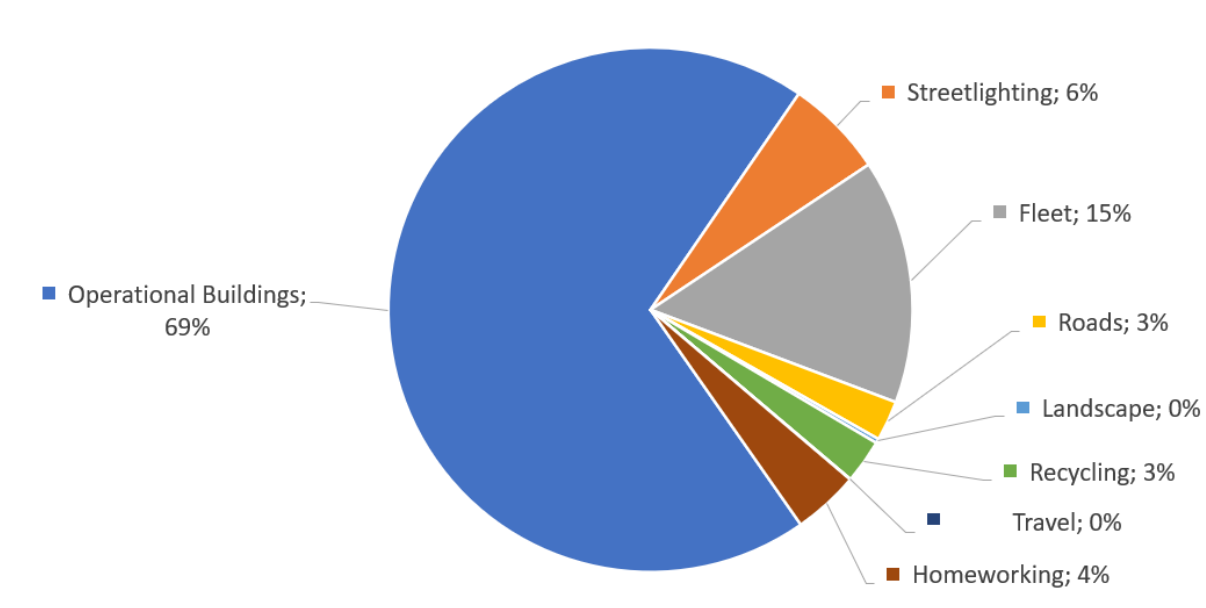
2. A recommended annual target and budget estimate, necessary to support Services to define their annual programme of interventions for the years beyond 2024/25.

Figure 3: Decarbonisation Trajectory



Decarbonisation contributions

Not all Services will have the ability to influence and contribute to achieving the decarbonisation targets in both 2030 and 2045. It is clear that some Services will require more support including financial than others to plan, design, procure and deliver on the interventions. In 2020-21 the Council’s footprint was 45,282 tCO₂e which was split up as per Figure 4 below. This clearly demonstrates that Property & Facilities Service have a key role in realisation of the targets, as they can influence over 65% of the Councils total CO₂e footprint. Because property is also the most complex area, we started to develop the future carbon budget in collaboration with this.

Figure 4: Breakdown of Council's Carbon Footprint in 2020-21 of 45,282 tCO₂e

The opportunity offered by decarbonisation of the grid

Government has set a new target for carbon emissions to reach 75% of what they were in 1990 by the end of 2030. To maximise the opportunity offered by grid decarbonisation, the Council will have to focus on replacing fossil fuelled energy and heat generation. We have used data of the Property & Facilities Service operational estate to indicate the opportunity offered by decarbonisation of the grid.

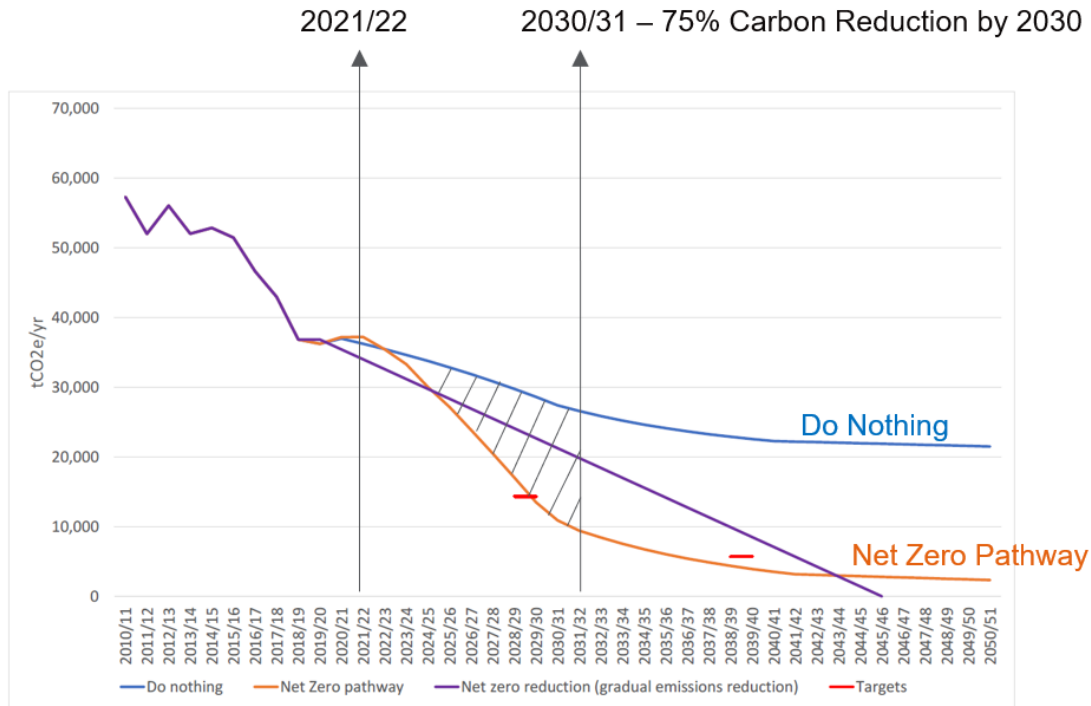
As part of the phase 1 report, Arcadis looked at the Council's Property & Facilities Service operational estate.

Aberdeenshire Council operates 864 building assets which includes schools and leisure centres, but also covers depots, small workshops and other sites which may have low or no energy consumption. Over 75% of the energy consumption and carbon emissions from Aberdeenshire Council assets originates from schools, sheltered housing and leisure centres.

Expected decarbonisation of the grid will contribute to approximately 6,000 tCO₂e/yr decarbonisation of the Property & Facilities Service footprint over the period between 2021 – 2031.

In Figure 5, the hatched area between the Do Nothing and Net Zero Pathway and 2021 - 2031 presents a decarbonisation challenge in addition of decarbonisation of the grid which is approximately 18k tCO₂e/yr, or 1.8k tCO₂e/yr annually. This is an estimate for Property & Facilities Service alone which is equivalent to approximately 65% of the Council's total CO₂e footprint.

Figure 5: Property Portfolio Decarbonisation Trajectory



Challenges and opportunities

Successful implementation and management of the Route Map and Toolkit will depend on all people being clear on the benefits and buy-in into the necessary new ways of working to support realisation of the 75% CO2e reduction. As part of this project we started to gather data through both desktop research and interviews, to analyse the current ways of working and anticipated challenges and opportunities to implement the Route Map and Toolkit effectively across the wider organisation. The below points summarise the key challenges we identified and which need to be addressed as part of the transformation:

Strategic Planning:

1. There is no clear budget line for Climate Change action or a plan at present to deliver on the vision to reduce 75% CO2e by 2030.
 - As a result it is unclear how such a budget would impact annual budgets & resource needs for each Service.
 - The development of the Route Map and Toolkit will address this challenge.

Delivering on the plan:

2. Limited consolidated view of:
 - The baseline of planned as well as progress of decarbonisation initiatives already underway.

Appendix 1: Route Map 2030 Development Update

- How different projects contribute to CO2e reduction – linked to the footprint.
 - Cost and revenue saving of these initiatives.
3. There is a need for more:
- Key asset data to generate the benefits case for new decarbonisation initiatives
 - Skills and expertise across the organisation how to consistently identify, prioritise, track and calculate decarbonisation initiatives
4. There is a need for more:
- Systems which are user friendly and provide good quality data
 - Mature local supply chains with the necessary skills, expertise and size to support both installation as well as maintenance of the new systems
5. There is a need for:
- Clearer governance which defines accountability for action to reducing the Council’s emissions
 - Empowering of individuals through provision of sufficient time, capacity (on top of current workload) and funding to plan, design and deliver measures

Following analysis, the project team will start to define the solution areas which need to be considered to support delivery of the Route Map 2030.

Toolkit business requirements

We have delivered a workshop and co-created the following specification and business requirements for the toolkit which we have started to develop. A full list of the requirements is listed below:

Business Requirement 1	<p>Solution should be able to present:</p> <ul style="list-style-type: none"> • a comprehensive view of decarbonisation progress against planned CO2e reduction. • a comprehensive view of the capital/revenue impact and cost effectiveness (£/tCO2e) of reduction projects - to allow Finance to analyse the impact on the overall budget and prioritise project selection. • implying cost effectiveness/cost abatement. • reporting on the basis of charts.
Business Requirement 2	<ul style="list-style-type: none"> • The solution be a repository of projects identified and recorded by the Services (outside the tool). • The solution should support Services to optimise their annual decarbonisation projects delivery programme through identifying the best projects going forward that year – supported by an agreed list of rules and metrics. (e.g. cost/benefit (£) per CO2e saving, prioritise buildings based on energy

Appendix 1: Route Map 2030 Development Update

	<p>intensity/total energy consumption, or certain type of fuels, stage of the project, financial savings, easy to procure).</p> <ul style="list-style-type: none"> • The solution should refer to guidance about best practice and innovations which Services can consider for identifying opportunities and define the scope based on whole life cost thinking. <p>Note: The selection/calculation of the projects would be identified by the services, rather than the tool – this is led by the Services. Previous work informs the start of this. Arcadis can share any calculations/methodology (see next point) done as part of the project.</p>
Business Requirement 3	<ul style="list-style-type: none"> • All interventions need to be calculated on a like-for-like basis – interventions should be consistent with the structure of the CO2e baseline assessment and categories to clearly identify projects that are in and out of scope. • The solution should also be able to record and track stock replacements/improvements which are out with the Council baseline
Business Requirement 4	<ul style="list-style-type: none"> • The solution shall offer a functionality to filter opportunities in order to create a repository of investment grade projects. This will allow the Council to quickly identify opportunities and enable them to respond to any funding opportunities – this assumes that services have such mature projects available.
Business Requirement 5	<ul style="list-style-type: none"> • The solution should support both internal and external reporting and comms. To align services around a single version of the truth, to generate support for the decarbonisation projects and encourage collaboration internally and externally. • This includes where possible generate data which the Council can use to demonstrate compliance and other reporting KPI's. The Council should be able to report to the new Scottish Government Climate Change (Duties of Public Bodies: Reporting Requirements) (Scotland) Amendment Order 2020, new requirements for non-domestic Council estate within the Heat in Buildings Strategy demonstrating that the Council is aligned to the requirement that buildings have to be zero direct emissions by 2038.

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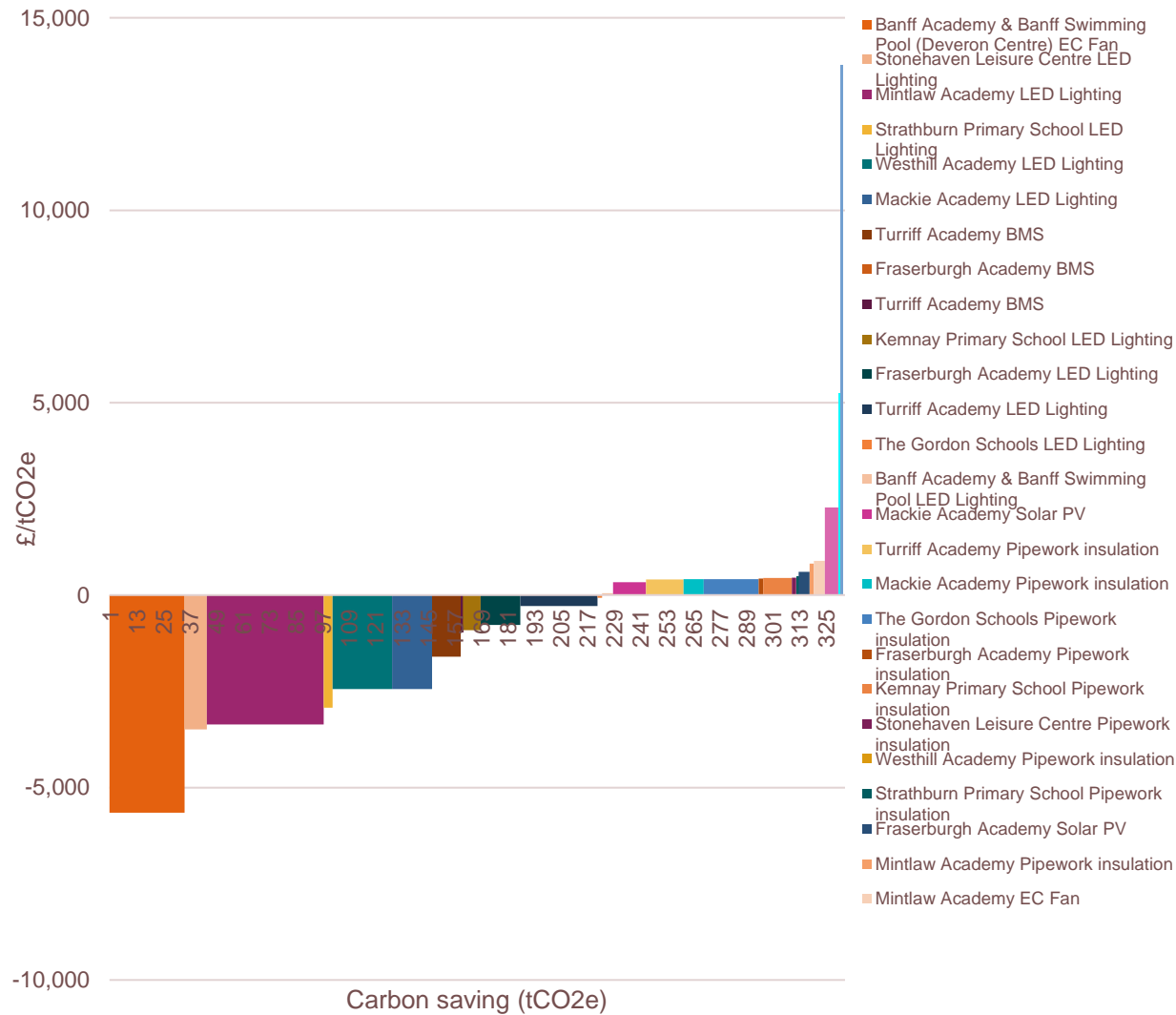
Business Requirement 6	<ul style="list-style-type: none">• The solution should be user friendly and easily updated when the Council estate changes (e.g. when buildings are sold or newly developed).• It should be clear that the Council can take responsibility for maintenance and who.• It should be clear that the Council can take responsibility for assurance of the toolkit and the data within – quality control role.• It should be clear how the Council would approach further development and who bears the costs for that.• The toolkit needs the flexibility to be updated on a yearly basis and to extend to new data and emissions boundaries (i.e. scope 3).
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	Proposed Identified CO2e Savings (tonnes) 2022/23
BUSINESS SERVICES	
LED Lighting	190
EC Fan	12
Pipework insulation	37
Solar PV	56
BMS	25
Business Services Total	320
ENVIRONMENT & INFRASTRUCTURE SERVICES	
Introduce/trial more electric landscaping equipment	TBD
Roads Resurfacing – Warm Mix	220
Energy from Waste	98
LED street lighting	436
Warp-It	3
Environment & Infrastructure Services Total	757
EDUCATION AND CHILDREN SERVICE	
Energy Sparks	33
Improved Recycling/Composting	16
Education & Children Services Total	49
HEALTH & SOCIAL CARE PARTNERSHIP	
Reduction in business miles	TBD
Resources and Circular Economy Frameworks	TBD
Health & Social Care Partnership Total	TBD
Grid Decarbonisation	500
Total Reductions Identified (tCO2e)	1626

*TBD = Data to be determined for tCO2e savings

Appendix 3: Marginal abatement cost (MAC) curve for property projects for 2022 - 23 (draft)



We have developed a simplified MAC curve, which presents the costs or savings expected in £/tCO₂e from different opportunities, alongside the potential volume of emissions in tCO₂e that could be reduced if implemented. This allows the audience or user community to measure and compare the financial cost and abatement benefit of individual actions.

This curve is based on a number of assumptions:

- Lifespan for technologies is the same (8 years)
- Discount rate of 10% used for all projects
- Account for capex and energy savings over a project lifetime

The new toolkit will also incorporate a MAC curve, to support the services to prioritise actions or interventions and develop the annual carbon budgets.

Boxes seen above the axis indicate there is a cost to that action – the higher the box, the higher the cost. Boxes seen below the axis indicate a saving from that action – this time the lower the box, the greater the savings.

This project will be developing a more detailed and accurate MAC curve once we have received the relevant data. To bring to life what a MAC curve looks like, we have developed this visual which represents the property interventions in 2022-23