

Birmingham City Council

Carbon Emission Reduction Study for the City of Birmingham

Interventions and Recommendations Summary

September 2020

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Sectoral Analysis Structure

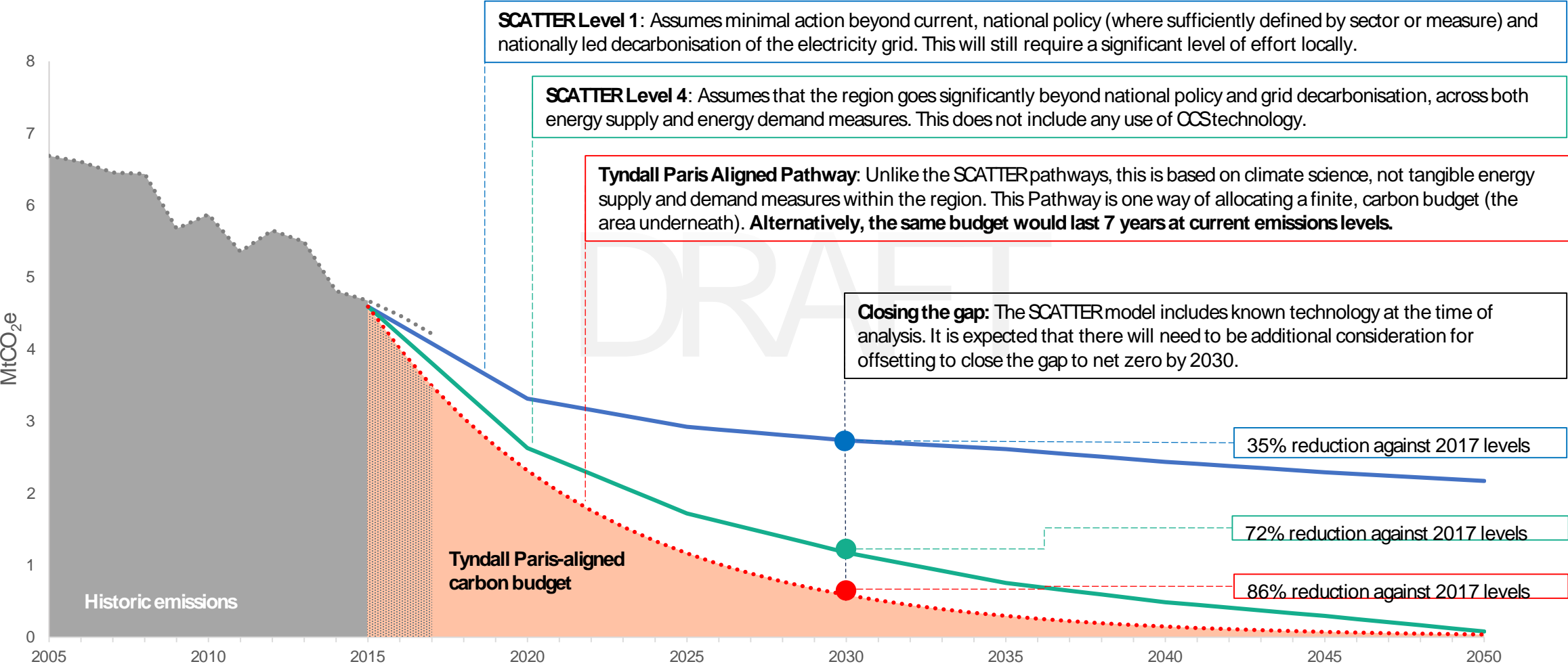


Key elements to each Sector

- **Interventions** - Based on SCATTER pathways tool to provide an indication of the scale of change required. The following tables provide proxies for the nature and extent of Birmingham specific measures. These are all assumed in order to track the green SCATTER Level 4 (L4) pathway Interventions as shown on page 29 unless stated otherwise. Where relevant, these have been linked to key recommended next steps for action.
- **Key Recommended Next Steps** – Includes some suggestions of what can be done now to work towards the SCATTER targets, plus an idea of resourcing and examples of best practice. These are not intended to be an exhaustive list. This is separated into actions specifically for the council and actions for the council to carry out in the wider city. Indicative **potential** costs of each measure have been provided where possible.

Current Emissions Profile – Birmingham City Region’s Emission Pathways

Summary



Stakeholder review

R20 Task Force Engagement

Summary notes

Following the circulation of the draft report in June 2020, Task Force members and officers have been invited to:

- 1) Provide written feedback comments on the action plan report
- 2) Engage in workshops to discuss the actions and identify key **barriers** and **enablers** to progress actions further.

This document contains a summary of key notes and observations from the workshops. It should be used in conjunction with the original report [Carbon Emission Reduction Study for the City of Birmingham, June 2020].

Workshop format

- The main workshop focused on 6 key sectors (Buildings, Transport, Waste, Industry, Natural Capital and Energy Supply).
- Attendees were divided into two groups and had 45 minutes to discuss three sectors.
- The workshop was conducted virtually and participants were invited to speak and comment on barriers and enablers for each recommended action. Participants were also asked to consider if any additional actions should be explored.
- A variety of sector representatives attended.
- After the workshop, attendees were also allowed to comment offline on any other sector areas they did not participate in.
- A final opportunity to provide feedback was provided in the August Task Force meeting.

Next steps





- Seek to allocate owners to further progress (in addition to actions that did not receive specific comment)
- Review feedback notes and apply a further filter to categorise actions (research, governance, policy, lobbying, local engagement etc.)

Sectoral Analysis: Buildings

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	Domestic buildings	Commercial / Institutional buildings
	a) Improve insulation b) Reduction of average temperature	f) Commercial space heating and cooling
	c) Decarbonisation of heat	g) Electrification of heat
	d) Improved appliance and lighting efficiency	h) Improved appliance and lighting efficiency
	e) Electrification of cooking	i) Electrification of cooking

Buildings

Key Recommended Next Steps

Source	Carbon Reduction Measure	Barriers	Enablers	Timing and Resource	Portfolio Responsibility
Domestic Properties -Council	a&b) Review investment plans for stock with Energy Performance Certificate (EPC) rating E,F or G (15% of social housing) to maximise Energy Company Obligation Round 3 (ECO3) funding available for wall, roof, floor insulation, glazing and first time central heating installed by April 2022. These present 'quick win' opportunities that should be taken as a priority.	<ul style="list-style-type: none"> Need clarity on what has been undertaken to date across council's stock Clarify if social housing or privately owned – All social housing will qualify – privately owned will too if the tenant can demonstrate they meet the income criteria Funding issue is still significant beyond (Energy Company Obligation)ECO measures New grants may be down to individual to claim in respect of COVID-19 recovery support, where council may have a promotional role (details not yet published) 	<ul style="list-style-type: none"> Recent COVID-19 recovery matched funding may push uptake further BCC need to connect up with other net zero housing activity nationally BCC could play a role in asking government to increase penalties/taxation on poor performing homes Potential £3.2bn additional funding available if the right projects are sourced This could enable local employment and bring people back into work. Consider retrofit being managed by a Social Enterprise owned by the Council This could be re-enforced with other available, or soon to be available, data like Streamlined Energy and Carbon Reporting (SECR), Display Energy Certificates (DECs) etc. 	<p>This review can be undertaken now within existing resource to ensure we are maximising access to available funding. However, significant additional funding will be required for a full retrofit of all homes and this will not be achievable without Government funding.</p> <p>Lobbying for increasing the penalties on poorer performing homes needs to be carefully considered to ensure that it does not have a detrimental impact on tenants who are likely to be in lower income groups.</p>	Clr Sharon Thompson
	a-e) Engage with social housing providers as they will have influence over a significant proportion of properties and can independently help to support the city's goal. See MHPP Case Study as an example.	<ul style="list-style-type: none"> Knowing where to start; Vast quantity just within the council. Need good data/modelling. Co-ordination is needed of various activities pre-retrofit, let along within the installation process where skills are much more specialist & lacking in supply 	<ul style="list-style-type: none"> If the right projects are put forward, the government may support Opportunity to incorporate energy efficiency within social housing design guides 	<p>This would require additional staffing resource which would need to be funded.</p>	Clr Sharon Thompson

Key Recommended Next Steps

Source	Carbon Reduction Measure	Barriers	Enablers	Timing and Resource	Portfolio Responsibility
	a-f) Introduce total cost of occupation approaches to procurement evaluation of new build projects to include not only the initial costs of investment but also the ongoing maintenance and the day to day running costs. These models support investing more up front to secure long-term cost savings and quality outcomes.		<ul style="list-style-type: none">• Could link with an Energiesprong type methodology to enable social housing retrofits e.g. what is being developed in Nottingham	<ul style="list-style-type: none">• This would require additional staffing resource which would need to be funded.	Clr Sharon Thompson

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Buildings

Key Recommended Next Steps

Source	Carbon Reduction Measure	Barriers	Enablers	Timing and Resource	Portfolio Responsibility
	c) Contact Energy Companies Obligation ECO obligated utilities direct to secure a strategic funding partner	<ul style="list-style-type: none"> Important to make visible who owns this work. 	<ul style="list-style-type: none"> Has the council maxed out Energy Companies Obligation (ECO) funding? If not there could be some quick wins. 	This could be undertaken now within existing staffing resources.	Cllr Sharon Thompson
Domestic Properties - Council	a-e) Review asset management plans and align with zero carbon. This may involve shifting the timing of planned maintenance and calculating the just the additional cost of replacing assets with alternative technologies or performing other efficiency work (relative to what was planned to be incurred already). Stock modelling platforms may support the quantification of costs for technologies required.	<ul style="list-style-type: none"> Modelling will be needed Infrastructure challenges – Grid reinforcement may be needed if heavier electrification / hydrogen is being considered. Planning co-ordination requires sufficient capacity and expertise. 	<ul style="list-style-type: none"> This will help justify net zero carbon building retrofits within existing planned maintenance budgets. 	This would require additional funding and staff resource to undertake the modelling work and buy-in the necessary expertise.	Cllr Sharon Thompson
	a-e) Re-evaluate the case for solar photovoltaic (PV) given the introduction of the smart export guarantee and technological advances in home battery storage		<ul style="list-style-type: none"> Smart export guarantee could be a partial funding mechanism to support community energy schemes 	This would require an additional staffing resource which would need to be funded.	Cllr Sharon Thompson
	a-e) Formally adopt PassivHaus standard for new builds owned by the council within planning policy and local plan			The Council could adopt Passivhaus for its own new build stock without amendments to planning policy, however there is a cost element per home delivered and this is likely to result in a lower number of affordable homes being delivered. A trial scheme is being delivered, following that, recommendations will be made in relation to the specification of future BMHT properties.	Cllr Sharon Thompson

Buildings

Key Recommended Next Steps

Source	Carbon Reduction Measure	Barriers	Enablers	Timing and Resource	Portfolio Responsibility
Domestic properties – non Council.	a&b) Utilise powers under ECO3 Local Authority Flexible Eligibility to enable the Council to qualify private sector residents as eligible for funding and increase homes able to access funded energy efficiency improvements, working with energy companies.	<ul style="list-style-type: none"> Most people who qualify for this will likely be in social housing. 	<ul style="list-style-type: none"> Consider retrofit being managed by a Social Enterprise owned by the Council For on gas-grid customers there's potential for hydrogen to act as a gateway to net zero. 	This would require a dedicated staff resource.	Cllr Sharon Thompson
	a&b) Continue to monitor and utilise existing EPC and fuel poverty data to develop a segmented approach to improvement, initially targeting areas of high need and high opportunity	<ul style="list-style-type: none"> Requires ownership and dedicated resource 		This would require a dedicated staff resource.	Cllr Sharon Thompson
	a&b) Be a trusted source of advice for deep retrofit and low carbon technologies through exemplar projects, supporting investment from home owners.	<ul style="list-style-type: none"> Information on this is quite outdated – 2007 is the latest information. There is a need to develop the supply chain further to support retrofit The council does not have the scale of capacity to deliver this. Skills gap Private rental sector – landlords engagement reluctant to invest and tenants do not have ability to make changes Finance is the issue, national funding needs to support 	<ul style="list-style-type: none"> Tap into advice networks (e.g. CSE, UKGBC, Connected Places Catapult, Passivhaus Trust etc) to get best practice advice – don't reinvent the wheel Needs a dedicated task force just on this topic – such a vast challenge Consider retrofit being managed by a Social Enterprise owned by the Council There is potential to develop a network of SMEs to support delivery which could support local jobs and businesses, for example using a co-operative of SMEs to deliver the work e.g. https://retrofitworks.co.uk/ Raising awareness of step-by-step retrofit approach and avoiding carbon lock-in. 	An action plan could be developed for taking this forward within existing staff resources.	Cllr Sharon Thompson

Key Recommended Next Steps

Source	Carbon Reduction Measure	Barriers	Enablers	Timing and Resource	Portfolio Responsibility
	a&b) Revisit 2007 “Extending your home” SPD through the Birmingham Design Guide to improve recommendations on insulation and energy efficiency.		<ul style="list-style-type: none"> Wider opportunities for new builds and extensions/refurbishment projects within planning policy 	The Birmingham Design Guide is being updated and will replace the Extending your Home SPD – consultation is expected to take place during 2020.	Cllr Sharon Thompson
	a&b) Subject to government consultation outcomes, require new homes to meet net zero emissions and be future-proofed against climate impacts (e.g. over-heating, floods)	<ul style="list-style-type: none"> Potential regulatory issues – relaxation on housing regulation e.g. conversions do not need full planning consent 	<ul style="list-style-type: none"> Prepare a response to government consultation if there is the opportunity 	<p>The first steps are to await the outcome of the Government's Future Homes Standard consultation – this will clarify whether authorities will have the ability to set their own targets or whether a national approach will be taken. Following this should the Council be able to set its own targets this could be progressed through a review of the Birmingham Development Plan.</p> <p>The City Council will also prepare a response to the 'Planning for the Future' White Paper on planning reform by the 29th October 2020.</p>	Cllr Sharon Thompson

Key Recommended Next Steps

Source	Carbon Reduction Measure	Barriers	Enablers	Timing and Resource	Portfolio Responsibility
Domestic properties – non Council	a-e) Better communicate energy efficiency standards, behaviours and activities in the private rental sector by: <ul style="list-style-type: none"> - Offering advice and financial support to those looking to improve property energy efficiency - Effectively enforce Minimum Energy Efficiency Standards 	<ul style="list-style-type: none"> • Requires resource to develop materials and ensure engagement is continuous • Skills gap to implement measures 	<ul style="list-style-type: none"> • Marketing campaign on the proposed Green Home Grants and Clean Heat Grants. Encourage groups of home owners to apply so benefit is maximised and not short circuited through thermal bridging. • Use council's own as an example to lead by 	This could be commenced now but staff resources would need to be made available.	Clr Sharon Thompson
	a-e) Explore opportunities for private rental sector policies as a high priority sector for energy efficiency improvement.	<ul style="list-style-type: none"> • Clarify ownership • Difficult to engage with private rental sector 	<ul style="list-style-type: none"> • Explore innovative engagement methods, e.g. webinars, competitions. Look at Bristol Green Open Doors as an example. 	This would require additional staff resource.	Clr Sharon Thompson
	a-e) Develop a Sustainable Design and Construction SPD to dispel cost misconceptions (see Passivhaus Trust case study), promote whole life cost models and support higher development standards	<ul style="list-style-type: none"> • Requires resource to develop materials and analysis 	<ul style="list-style-type: none"> • Review and align with the resources from the UK Green Building Council, e.g. Retrofit for the Future 	A Sustainable Design and Construction Supplementary Planning Documents (SPD) could be developed but staff resource would need to be identified. It may not be able to address whole life cost models and 'support higher development standards' as it would need to be aligned with the existing Birmingham Development Plan (BDP) policies. Changes to the BDP policies would need to be addressed through a review of the BDP.	Clr Ian Ward

Buildings

Key Recommended Next Steps

Source	Carbon Reduction Measure	Barriers	Enablers	Timing and Resource	Portfolio Responsibility
Council buildings and estate	f) Implement standardised monitoring plus annual reporting of energy use and results of Display Energy Certificates (as applicable) at all council sites, including those not covered by centrally procured energy contracts.			Existing Council resource.	Cllr Sharon Thompson
	f-i) 3-year portfolio plans to detail achievement of reduction in line with budget and include a way of assessing and monitoring the carbon impact of actions.			Existing Council resource	Cllr Sharon Thompson
	g) Investigate the potential to decarbonise the heat supply to council offices, for example by connecting Birmingham District Energy Centre (BDEC) network to the Tyseley Energy Park and Tyseley Energy from Waste plant.	<ul style="list-style-type: none"> Clarification needed on priorities – opportunities are being missed 		Further staff resource would need to be identified and funded.	Cllr Sharon Thompson
	g) Investigate the potential of implementing combined heat and power networks across the city, and identify opportunities where the Council can work with both public and private sector bodies regionally to maximise Combined Heat and Power (CHP) systems.	<ul style="list-style-type: none"> District heating – challenges around concessions As the grid decarbonises Combined Heat and Power (CHP) may not work / provide low carbon solution 	<ul style="list-style-type: none"> This should only consider low or zero carbon heat supply options such as energy from waste or hydrogen Combined heat and Power (CHP) 	Existing Council resource	Cllr Sharon Thompson
	f-i) Build climate change targets into the Property Strategy 2018/19 – 2023/24. Allocate a carbon reduction target to each portfolio matching the city's carbon budget.			Existing Council resource	Cllr Sharon Thompson
	f-i) Provide clearer detail on how property portfolios will demonstrate low environmental impact and follow good practice in sustainability.			Existing Council resource	Cllr Sharon Thompson

Key Recommended Next Steps

Source	Carbon Reduction Measure	Barriers	Enablers	Timing and Resource	Portfolio Responsibility
Comm ercial and industri al	f) Develop and implement a pathway for increased measurement and reporting of i) energy demand and ii) improved energy efficiency in privately owned commercial buildings.	<ul style="list-style-type: none"> No legal mechanism/ statutory policy in place to require this. 	<ul style="list-style-type: none"> All new planning policy to report energy consumption data in a standardised format e.g. kWh/m2/year and KwhCO2/m2/year 	Will require new planning policy to be developed to require measurement and reporting and this can only be done through a review of the Birmingham Development Plan (BDP).	Cllr Ian Ward
	f) Use energy monitoring and Energy performance certificate (EPC) data to drive a segmented approach, tackling those with largest impact and biggest opportunity.		<ul style="list-style-type: none"> Use the council's ability to influence key organisations e.g. universities and hospitals to encourage action in the highest emitters 	This would require an additional staff resource.	Cllr Waseem Zaffar
	f) Explore the potential for introducing requirements for new commercial developments to report on operational energy performance, and as part of that, on space heating demand.	<ul style="list-style-type: none"> Regulatory restrictions 	<ul style="list-style-type: none"> This should be part of planning policy. Look into the potential for carbon buy out fund for new build e.g. Greater London Authority (GLA) policy 	This would require lobbying for a Government policy change.	Cllr Sharon Thompson
	f-i) Showcase leading examples of decarbonisation from key commercial players to spread knowledge and promote ambition and joint working.		<ul style="list-style-type: none"> Engage with the Local Enterprise partnership (LEP), private sector, UK GBC, Chamber of Commerce and develop mutual vehicle to promote net zero carbon retrofit/new build in the local area. Potential to engage and communicate through WMCA with wider business network across sectors. 	This could be progressed now with existing resource.	Cllr Waseem Zaffar








Key Recommended Next Steps

Source	Carbon Reduction Measure	Barriers	Enablers	Timing and Resource	Portfolio Responsibility
	f-i) Engage with businesses and embed energy efficiency into business support programme – link to University business support programmes.	<ul style="list-style-type: none"> Requires resource to manage and co-ordinate 	<ul style="list-style-type: none"> Private non domestic market is very interested in net zero carbon retrofit. WSP is interested in supporting. BCU – have networks with businesses through STEAMhouse. 	This could potentially be delivered now with resource from the Task Force.	Clr Waseem Zaffar
	f-i) Explore opportunities for carbon credits scheme for local businesses to pay for local offsetting projects through net zero buildings framework.	<ul style="list-style-type: none"> Resource and co-ordination required, identification of businesses and scoping of market appetite 	<ul style="list-style-type: none"> This could draw much needed funding into upgrading local social housing or other local carbon reduction measures. 	Exploratory work can begin now subject to an additional staff resource being identified.	Clr Waseem Zaffar
	g) Investigate feasibility of decarbonising heat supply to Cambridge and Crescent Towers by connecting Birmingham District Energy Centre (BDEC) network to the Tyseley Energy Park and Tyseley Energy from Waste plant	<ul style="list-style-type: none"> Requires clarity on the future of Tyseley Energy Park Energy from Waste plant. Pilot projects can risk being one-offs – perhaps a different approach needed to ensure scalability. 	<ul style="list-style-type: none"> Steering group has been set up engaging communities around Tyseley (on Hydrogen). Demonstration projects need definition and learnings to be shared. 	This can not be progressed until the future of Tyseley Energy Park is clear. Additional resource will be required.	Clr Waseem Zaffar
	h) Explore options for mass roll out of energy efficient lighting, the most frequent improvement recommendation in non-domestic Energy Performance Certificates (EPCs) in the city (21%).	<ul style="list-style-type: none"> Requires resource to manage and co-ordinate 		This would require Government policy change. The Council can only encourage businesses and provide information about the benefits.	Clr Waseem Zaffar

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	Measures
	a) Distance reduction
	b) Significant modal shifts
	c) Modal shift of freight and increase in efficiency
	d) Phase out of fossil fuel cars and shift to zero carbon cars
	e) Phase out of fossil fuel buses and shift to zero carbon buses
	f) Rail electrification, with a view to clean electricity use
	g) Hydrogen powered rail

Key Recommended Next Steps

Source	Carbon Reduction Measure	Barriers	Enablers	Timing and Resource	Portfolio Responsibility
Council's own transport	a) Equip all drivers of council vehicles with the necessary knowledge to more appropriately plan journeys in order to minimise disruption and maximise carbon saving.	<ul style="list-style-type: none"> Current decision process for procuring vehicles, e.g. cost vs. environmental performance 	<ul style="list-style-type: none"> Take a more holistic approach on the most effective way to moving products/people around the city e.g. sharing vehicles across organisations Use carbon cost of journeys to build the case to eliminate or reduce journeys. Use GIS mapping to support low emissions alternative considerations prior to procurement of vehicles 	This would require an additional resource to be identified and funding.	Clr Waseem Zaffar
	b) Work with Council Behaviour Change task force to reduce emissions from staff commute, including encouraging car-sharing, active travel and public transport.	<ul style="list-style-type: none"> Each department will work differently on this. 	<ul style="list-style-type: none"> Remote working is becoming more common – consider long term strategy for this. Use local office spaces to have meetings. Ask task force to encourage standardised ways of working across all departments. 	Work is on-going to look at greater agile and remote working across the Council, This work could be embedded within that project.	Clr Waseem Zaffar
	d) Review and update fleet management plan: For each category of vehicle how Ultra-Low-Emission Vehicles (ULEV) will be used.	<ul style="list-style-type: none"> Procurement changes needed 	<ul style="list-style-type: none"> Opportunity to influence supply chain, influence businesses 	This is dependant of procurement changes.	Clr Waseem Zaffar
	d) Develop strategic plan to introduce low emission vehicles into the HGV fleet (including waste and highways). Consider all low emissions vehicle options in terms of their CO2 emissions, impact of energy systems and potential to enable market expansion.	<ul style="list-style-type: none"> Challenge is implementing route map set out by the commission. Existing plans already underway for the council to buy carbon intensive vehicles. 'A city blueprint for low carbon refuelling infrastructure' policy document was developed in April 2015 but work stopped due to resourcing constraints. 	<ul style="list-style-type: none"> Work has been done at looking at green fleet. BOC Waste department should produce a green fleet strategy for scrutiny. Consider the potential to generate low and zero carbon transport fuels from waste Explore hydrogen capability further 	This would require additional staff resources.	Clr Waseem Zaffar

Key Recommended Next Steps

Source	Carbon Reduction Measure	Barriers	Enablers	Timing and Resource	Portfolio Responsibility
Council's own transport	d&e) Review opportunities for the installation of Electric Vehicle (EV) charging points on council premises.	<ul style="list-style-type: none"> Grid constraints 	<ul style="list-style-type: none"> Tyseley Energy Park could be a resource to facilitate and encourage EV use – potential to support the council's EV uptake. Infrastructure needs to enable market expansion and wider private sector involvement. Consider lowest carbon option for vehicles including, biofuels, etc. to enable the quickest route to net zero. 	The City Council are rolling out 394 EV charging points across the City over the next two years. This work is on-going.	Clr Waseem Zaffar
	a) Equip all drivers of council vehicles with the necessary knowledge to more appropriately plan journeys in order to minimise disruption and maximise carbon saving.	<ul style="list-style-type: none"> Current decision process for procuring vehicles, e.g. cost vs. environmental performance 	<ul style="list-style-type: none"> Take a more holistic approach on the most effective way to moving products/people around the city e.g. sharing vehicles across organisations Use carbon cost of journeys to build the case to eliminate or reduce journeys. Use Geographical Information Systems (GIS) mapping to support low emissions alternative considerations prior to procurement of vehicles 	This would require an additional resource to be identified and funding.	Clr Waseem Zaffar
	b) Work with Council Behaviour Change task force to reduce emissions from staff commute, including encouraging car-sharing, active travel and public transport.	<ul style="list-style-type: none"> Each department will work differently on this. 	<ul style="list-style-type: none"> Remote working is becoming more common – consider long term strategy for this. Use local office spaces to have meetings. Ask task force to encourage standardised ways of working across all departments. 	Work is on-going to look at greater agile and remote working across the Council, This work could be embedded within that project.	Clr Waseem Zaffar
	d) Review and update fleet management plan: For each category of vehicle how Ultra-Low-Emission Vehicles (ULEV) will be used.	<ul style="list-style-type: none"> Procurement changes needed 	<ul style="list-style-type: none"> Opportunity to influence supply chain, influence businesses 	This is dependant on procurement changes.	Clr Waseem Zaffar

Transport

Key Recommended Next Steps

Source	Carbon Reduction Measure	Barriers	Enablers	Timing and Resource	Portfolio Responsibility
Council's own transport	d) Develop strategic plan to introduce low emission vehicles into the HGV fleet (including waste and highways). Consider all low emissions vehicle options in terms of their CO2 emissions, impact of energy systems and potential to enable market expansion.	<ul style="list-style-type: none"> Challenge is implementing route map set out by the commission. Existing plans already underway for the council to buy carbon intensive vehicles. 'A city blueprint for low carbon refuelling infrastructure' policy document was developed in April 2015 but work stopped due to resourcing constraints. 	<ul style="list-style-type: none"> Work has been done at looking at green fleet. BOC Waste department should produce a green fleet strategy for scrutiny. Consider the potential to generate low and zero carbon transport fuels from waste Explore hydrogen capability further 	This would require additional resources.	Clr Waseem Zaffar
	a) Request developers through planning conditions (linked to policies in the Birmingham Development Plan (BDP) and Parking Supplementary Planning Document (SPD) to include charge points and incorporate infrastructure for low-carbon travel e.g. segregated cycle lanes.			This is addressed to an extent in current planning policies. Any change to the current policy approach would need to come through a review of the Birmingham Development Plan (BDP) unless national policy is implemented in this area.	Clr Waseem Zaffar

Transport

Key Recommended Next Steps

Source	Carbon Reduction Measure	Barriers	Enablers	Timing and Resource	Portfolio Responsibility
City-wide transport	b) Further encourage cycling through expanding and increasing strategic high-quality walking and cycle routes	<ul style="list-style-type: none"> Badly planned or not connected routes Access to bikes for all – build on the work on free bikes that has been done Storage issues with smaller homes and parking constraints Varied street/cycle path lighting 	<ul style="list-style-type: none"> Re-allocation of space also improves safety and air quality Look at innovative bike/bus solutions to combine modes E-scooter trials, e-cargo bikes are under way Opportunity to work with planning on bike storage space Consider low speed traffic zones to improve cycle / walking safety 	Work is already underway on this and will continue.	Clr Waseem Zaffar
	b) Further roll out of emissions-based parking permits & charges for most polluting vehicles			This would require additional resources.	Clr Waseem Zaffar
	b) Active campaign to limit short trips to discourage people driving for commute and school run		<ul style="list-style-type: none"> Trial out different metro pass offers for shorter durations Park & ride Public engagement program to understand how people move around the city before decisions are made 	There is already work on going in this area, further work would require additional resources.	Clr Waseem Zaffar
	d) Encourage taxi companies to move to low emission vehicles by supporting grants and by providing incentives			This would require additional resources.	Clr Waseem Zaffar
	e) Enable the rapid shift to electric vehicles through increased Electric vehicle (EV) charging and facilitate through bus fleet, and LGV/HGV licensing		<ul style="list-style-type: none"> Facilitate knowledge sharing amongst businesses on Electric Vehicle (EV) uptake Review potential for a vehicle scrappage schemes to encourage EV take up 	BCC are rolling out 394 EV charging points over the next two years.	Clr Waseem Zaffar
	a-e) Analyse different journeys to determine patterns for improving Public transport use, infrastructure and policy		<ul style="list-style-type: none"> Opportunity to tackle socioeconomic inequality for travel, consider fare free public transport Consider impact on modal shift of future technology such as self driving cars Investigate the potential to increase the provision and use of car clubs within the City. 	This would require additional resources.	Clr Waseem Zaffar

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	Measures
A dark blue icon of a trash can with a lid and three vertical lines on the body.	a) Waste reduction
A dark blue icon of a recycling symbol, consisting of three arrows forming a triangle.	b) Increased recycling

Waste

Key Recommended Next Steps

Source	Carbon Reduction Measure	Barriers	Enablers		Portfolio Responsibility
Council Waste	a&b) Lead by example and report on waste and recycling and develop a council's own strategy.	<ul style="list-style-type: none"> Need clear vision on what the city could achieve. Need to get more value out of the waste stream by better segregation Vision should be for zero waste Food waste collection regulations are still uncertain – awaiting central government confirmation. BCC has not been proactive due to the infrastructure cost. Resident communications may currently be confusing – needs to be super simple Need to consider specific measures to manage construction waste 	<ul style="list-style-type: none"> Behaviour and cultural change – need to rely on expert recommendations if capacity is limited 	This would require additional staffing resources.	Clr John O' Shea
City-wide waste	a) Develop continued community engagement strategy on waste reduction in the home		<ul style="list-style-type: none"> Communications of waste/climate change – platforms and mediums can help to engage Need more discussion to highlight the challenge of the journey High cost to deliver a weekly service. Explore different options for waste collection frequency, while balancing the emotional impact – the financial savings of lower frequency offer incentives. Need a consensus on how to move away from this but requires political leadership. Make the link to climate change clear. Opportunity to work with other councils. Consider what can be offered in return if reducing frequency (people will expect to see something tangible) Community engagement, involve schools and families on issues of fly tipping etc. analysis of different recycling rates in different areas and target outreach. Look for testimonials where fortnightly approach is working well. 	This would require additional resources.	Clr John O' Shea
	a) Work with businesses on eliminating or reducing single use packaging and encouraging sustainable packaging options.		<ul style="list-style-type: none"> There is potential for STEAMhouse involvement and creating some case study examples that would positively promote Birmingham businesses. 	This would require additional resources.	Clr John O' Shea

Waste

Key Recommended Next Steps





Source	Carbon Reduction Measure	Barriers	Enablers	Timing and Resource	Portfolio Responsibility
City-wide waste	a) Develop a 'waste heroes' competition to highlight best practice from local businesses reducing waste.	<ul style="list-style-type: none"> Need to think responsibly around Tyseley Energy from Waste (EfW) carbon impact EfW incineration locations have a disproportionate impact on lower socioeconomic areas of the community Timing of waste contracts is long (c. 10 years) so hard to affect change rapidly Capacity challenges Since 2014 there has been no dedicated/specialist expertise – hard to challenge the waste provider during contract renegotiation COVID-19 shortfall – emphasises need for innovative funding Political will needed Incineration needs to be justified from a commercial perspective and carbon perspective – need to demonstrate that a more efficient plant addresses other areas of the climate challenge 		This would require additional resources.	Cllr John O' Shea
	b) Develop a waste strategy in line with WMCA and improve recycling reporting for the city.		<ul style="list-style-type: none"> Procurement of waste contract negotiation is a critical opportunity to pilot low carbon action Innovation in finance could help More joined up thinking – can be built into a climate emergency approach Need for simplicity is key Waste flows analysis & modelling is being done by Aston Uni for policy commission on EfW – further work could be done with this. BOC could work with 2022 Games to develop a strategy for long term shift in waste avoidance e.g. single use plastic. 	This would require additional resources.	Cllr John O' Shea
	b) Utilise road-level data (logging degree of contamination from last 12 months) to launch communication/educational campaign on recycling with support of community leaders.			This would require additional resources.	Cllr John O' Shea
	b) Develop anaerobic digestion (AD) plants to treat food waste which is likely to be segregated in the future.		<ul style="list-style-type: none"> (In vessel Composting) IVC may allow garden waste to be free – can be creative, therefore anaerobic digestion (AD) may not be optimal 	This would require additional resources.	Cllr Jon O' Shea

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Industry

Interventions: Industry

	Measures
	a) Industry efficiency
	b) Electrification of industry
	c) Carbon Capture and Storage (CCS) on industry
	d) Oil production

Industry

Key Recommended Next Steps

Source	Carbon Reduction Measure	Barriers	Enablers	Timing and Resource	Portfolio Responsibility
City-wide Industry	a) Through WMCA industrial strategy and Chamber of commerce: encourage industry to report emissions, risks and opportunities, and develop a strategy.	<ul style="list-style-type: none"> European Union Emissions trading System (EU ETS) is not effective Difficult to transition to more progressive steps on energy (despite collaborations with Universities/access to Uni e.g. Mondelez) Is Corporate Social responsibility (CSR) the best route? Carbon focus of Industrial Strategy may be possible to strengthen? Could be centralised. 	<ul style="list-style-type: none"> Need to incentivize more or reward and celebrate good achievements. Many smaller businesses are in crisis mode – this can help reduce energy bills. Need to appeal to the customer base – consumers can apply pressure to businesses. Reporting under Streamlined Energy and carbon reporting (SECR) will be mandatory Collaborate or seek advice from other advisers e.g. Chamber of commerce and other related bodies/accounting bodies 	This would require additional resources.	Cllr Brigid Jones/ Cllr John Cotton
	a) Support the setting up of forum for industry and consider existing forums as a platform for engagement on carbon reduction action.	<ul style="list-style-type: none"> Just transition – needs to be 'sold' to smaller businesses, must be something in it for them Need to have a reason for businesses to engage Too broad at the moment, don't have the focus to deliver projects Buildings could be a vehicle to take this forward 	<ul style="list-style-type: none"> Access to innovation / knowledge there are many smaller family businesses in the city Raise awareness of funding pots to help industries in transition Universities in the region can support Holistic engagement with businesses across a number of topics will be key Use 'cluster' model so that this engagement has a practical edge Link with STEAMhouse work – this includes relevant organisations and business networks already Opportunity to develop circular economy frameworks for industrial organisations to embed broader sustainability Trade unions have an opportunity to engage with the workforce to engage with just transition 	This would require additional resources.	Cllr Brigid Jones/ Cllr John Cotton

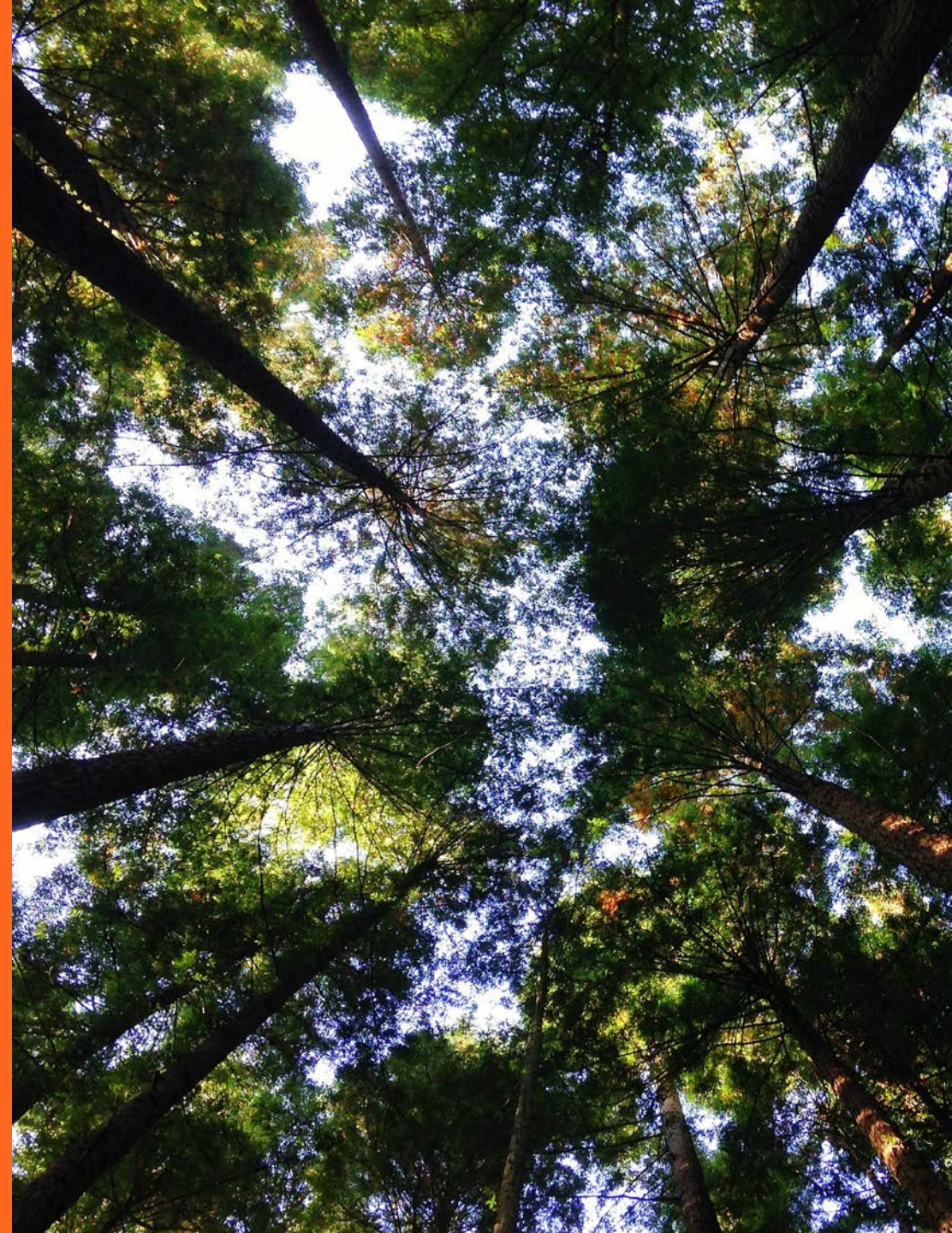
Industry

Key Recommended Next Steps



Source	Carbon Reduction Measure	Barriers	Enablers	Timing and Resource	Portfolio Responsibility
	a) A requirement to pursue clean growth should be written into guidance on local industrial strategy to identify opportunities for low carbon investment.	<ul style="list-style-type: none"> Diversity in business types/sizes 	<ul style="list-style-type: none"> Simplicity needed to encourage access Co-ordination with energy strategy will benefit this Knowledge sharing opportunity – quick wins and learnings of bigger companies may not be known by smaller businesses, bigger may possess greater expertise 	Work would need to be undertaken with the LEP to progress this.	Cllr Brigid Jones/ Cllr John Cotton
	b) Set guidance and provide training for promoting zero and low-carbon infrastructure when assessing industrial/commercial planning applications.	<ul style="list-style-type: none"> Real-time monitoring is both a challenge and an opportunity 		An element of this is already happening however, we can only implement the current policy requirements unless applicants are willing to achieve higher standards of energy efficiency and carbon reduction.	Cllr Brigid Jones/ Cllr John Cotton

Sectoral Analysis: The Natural Environment

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	Measures
	a) Managing existing tree stock
	b) New tree planting

The Natural Environment

Key Recommended Next Steps

Source	Carbon Reduction Measure	Barriers	Enablers		Portfolio Responsibility
City Council Land	a) Protect and manage existing trees and woodland.	<ul style="list-style-type: none"> Planning and development e.g. new developments requiring removal of trees Allotments are not currently being considered, some are owned by the council 	<ul style="list-style-type: none"> Ensure protection of mature trees Tap into local experts to explore best practice Communication with communities is needed from a biodiversity perspective Tree protection policy could be enhanced Potential to change roadside verge and other green space management which could help improve biodiversity 	<p>Protection of trees within BCC control easy and deliverable. Those outside of BCC ownership restricted by Tree preservation Order (TPO) / Conservation Area (CA) regs. If TPO protection is to be expanded greater staffing resource needed – needs Government change to legislation.</p> <p>Allotments have their own regulations restricting tree planting. Unless permaculture is pushed / required unlikely to get take up</p> <p>Change of roadside verges needs reductions in private car ownership to halt / reverse loss of verges plus additional financial resource to manage additional space. Changes could result in good biodiversity gains.</p>	Cllr John O'Shea/Cllr Waseem Zaffar
	a&b) Manage Green Waste Effectively for Carbon Sequestration.			Investigation of Biochar is in place - better than open windrow composting but needs partner organizations to deliver as requires capital investment	Cllr John O'Shea

The Natural Environment

Key Recommended Next Steps

Source	Carbon Reduction Measure	Barriers	Enablers		Portfolio Responsibility
	b) Identify and cost opportunities for new tree planting.	<ul style="list-style-type: none"> Lowest tree cover areas correlate with social deprivation and health inequalities Important to consider what type of trees are being planted – short life span vs. longer 	<ul style="list-style-type: none"> Ensure longer life tree-planting is encouraged Revising tree canopy policy – there is a big disparity in tree cover across the city Enforce a minimum 25% coverage for every ward in Birmingham. Tree planting can protect against surface water flooding to support from adaptation and drainage perspective Explore opportunities through the NUS tree planting program for universities connecting with landowners. Opportunity to work with River Trust and other orgs part of Greener Birmingham. Voluntary and third sector have many people who are involved in this. 	<p>Right tree right place is required not based on life expectancy. Shorter lived trees generally quicker growing while longer lived slower growing could get 2 or 3 rotations of quicker growing if needed (not advocating this everywhere but there will be situations where this is needed)</p> <p>Ok to have ideal target levels but not practical to have "enforced" minimum canopy cover for every ward. Will probably take 75 year plus development cycle to establish this in some locations.</p> <p>Birmingham Tree board still to be set up and that group will guide and advise on tree planting (R20 Tree policy review)</p> <p>Staffing resource to deliver is an issue</p>	Cllr John O'Shea/Cllr Waseem Zaffar
	b) Further develop plans for wider green space management		<ul style="list-style-type: none"> Opportunity to tackle climate adaptation e.g. risks around surface water run off. 	<p>Ongoing as part of R20 and Future Parks Accelerator (FPA) works. Natural Capital mapping and 25 year natural environment plan – needs additional staff resource</p>	Cllr John O'Shea/Cllr Waseem Zaffar

The Natural Environment

Key Recommended Next Steps

Source	Carbon Reduction Measure	Barriers	Enablers	Timing and Resource	Portfolio Responsibility
Private land	a) Carry out ongoing inventory and report on tree abundance, diversity and cover statistics.	<ul style="list-style-type: none"> Not enough resource in the council, large tree asset Private allotments 	<ul style="list-style-type: none"> Existing tree cover analysis could go deeper Birmingham's 'World tree city' status Regular reporting of tree statistics Eco record project which encourages people to record tree & flora Aston University tree surveys. Ask private land owners for data 	Staffing resource needed. Skills and knowledge within existing staff resource available. Volunteers available through Birmingham Tree People – I tree eco survey - cost to train them and cost for equipment (need a separate budget for this type of work). This would collect some private landowner data.	Cllr John O'Shea/Cllr Waseem Zaffar
	a) Expand Enforcement of Tree Preservation Orders.			Staff resource and legislative changes needed	Cllr John O'Shea/Cllr Waseem Zaffar
	a) Ensure that existing guidance on protection and enhancement of natural capital is communicated effectively in the context of the Environment Bill and Biodiversity Net Gain.	<ul style="list-style-type: none"> Not enough clarity on public spaces and the process for new tree planting 	<ul style="list-style-type: none"> Opportunity to improve communication on this 	Work being done with WMCA on Virtual Forest. Cost involved in long term adoption of new trees on public land – often this is the funding that is missed in all tree planting projects. Additional staff resource required for effective working	Cllr John O'Shea/Cllr Waseem Zaffar

The Natural Environment

Key Recommended Next Steps

Source	Carbon Reduction Measure	Barriers	Enablers	Timing and Resource	Portfolio Responsibility
	a&b) Develop a city-wide Emergency Tree Plan.	<ul style="list-style-type: none"> Not enough cohesion across departments within the council 	<ul style="list-style-type: none"> Workshops were conducted to create a tree plan for the city, this could be expanded on Look to world tree city standards and ensure this is maintained 	Ideally need a single person with responsibility and authority over tree management / policy direction across departments although formation of Tree Board will overcome some of these issues. Already meet Tree Cities of The World standards. BOC is a Pioneer city	Cllr John O'Shea/Cllr Waseem Zaffar
	a&b) Work with other landholders including developers to maximise the potential for tree planting and land management.	<ul style="list-style-type: none"> Limited green land, densely populated neighbourhoods 	<ul style="list-style-type: none"> Can we enhance the policy and protect green space in the city? 	Policy change in Development Management in Birmingham Development Plan Document (DMBDPD)	Cllr John O'Shea/Cllr Waseem Zaffar

The Natural Environment

Key Recommended Next Steps

Source	Carbon Reduction Measure	Barriers	Enablers	Timing and Resource	Portfolio Responsibility
Private land	b) Develop a Natural Capital Investment Plan including plans for a Tree Bank and Green Bonds.	<ul style="list-style-type: none"> Prioritising clean air zone funds between natural capital investment and public transport infrastructure 	<ul style="list-style-type: none"> Using clean air zone revenue and workplace parking levy as income streams to improve air quality Look into repurposing the canals network to make the most of its biodiversity and transport potential. 	Canals outside of BCC ownership but joint plans for Biodiversity enhancements/ public realm in progress. Additional staff resource required to manage/ liaise. Investigate the potential to use Community Infrastructure levy (CIL)/S106 or Clean Air Zone (CAZ) income.	CIr Waseem Zaffar
	b) Facilitate community sequestration schemes.		<ul style="list-style-type: none"> Community land ownership – make growing spaces for redundant land owned by the community 	Community land ownership needs careful consideration. Millenium greens are an example of that allocation / transfer. Would require staff resource to ensure good liaison	CIr Waseem Zaffar
	b) Mandate that developers include within all developments either a minimum of 30% tree canopy cover; or a minimum 50% coverer of 'soft landscape' (incl. trees, green roofs, green walls, etc.).	<ul style="list-style-type: none"> Tree cover mandate may be too ambitious Different levels of potential depending on the size and scale of developments 	<ul style="list-style-type: none"> Engage with developers/planning officers on what is practical, this needs to be considered holistically Consider soft measures inside buildings where large scale tree cover is not possible. Work with organisations to encourage offices to consider green rooves 	<p>Partly within the development management policy changes and will be part of design code and presumable Green Infrastructure (GI) section of Big City Plan.</p> <p>Exploration of a Greening Factor may be a way forward – being explored as part of Future Parks Accelerator (FPA).</p> <p>Monitoring of delivery would require additional staff resource</p>	CIr Waseem Zaffar

The Natural Environment









Key Recommended Next Steps

Source	Carbon Reduction Measure	Barriers	Enablers	Timing and Resource	Portfolio Responsibility
Beyond Birmingham	b) Work with the WMCA to identify opportunities for investment on new woodland/ tree planting that retain benefits for the people of Birmingham.	<ul style="list-style-type: none"> There isn't a regional specialist and resource within WMCA to own this. 	<ul style="list-style-type: none"> Consider bringing in the Wildlife Trust to support and work with other local councils The West Midlands National Park is a key strategic project in the region: https://www.greaterbirminghamchambers.com/latest-news/news/2019/10/25/west-midlands-national-park-receives-green-light/ 	<p>The virtual forest group is working with the WMCA on this – the group are the specialists with that knowledge, Wildlife trust (B&BC) is part of that group but Solihull and Coventry covered by Warwickshire Wildlife Trust.</p> <p>Requires additional staff resource to give effective liaison/ input</p>	Clr Waseem Zaffar
	<p>b) Explore how offsetting any residual emissions from Birmingham's in regions beyond the combined authority can realise benefits for the people of Birmingham.</p> <p>This may include looking at UK national schemes such as the Woodland Carbon Code and the Peatland Code and estimating costs and timing of such initiatives.</p> <p>We advise strong caution in exploring offsetting more generally, as these should not displace or compensate for any 'lower ambition' actions.</p>		<ul style="list-style-type: none"> Aston University bioenergy research institute are looking into the potential for biochar 2022 Games are looking into carbon offset surcharge to attendees. This could fund visible offsetting projects around the city and help engage the community. Insetting vs. offsetting – local projects are more attractive in terms of co-benefits such as job creation. 	<p>Working with Energy and Biochar Research Institute (EBRI) on Biochar</p>	Clr Waseem Zaffar

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	Measure
	a) Solar PV
	b) Onshore wind
	c) Bioenergy supply (heat & electricity)
	d) Solar thermal
	e) Hydro power
	f) Wave, tidal and tidal stream
	g) Sewage gas and Municipal Solid Waste (MSW)
	h) Storage

Energy Supply

Key Recommended Next Steps

Source	Carbon Reduction Measure	Barriers	Enablers	Timing and Resource	Portfolio Responsibility
Council energy supply	a-e) Develop an investment plan for renewables to 'self supply' electricity (as well as heat network) to council buildings, estate and assets.	<ul style="list-style-type: none"> Feasibility studies of council buildings are needed. There is a lack of support from government on renewables and a high investment needed. Legal implications and barriers to lots of smaller onsite renewables. 	<ul style="list-style-type: none"> The council has the possibility of using its influence within procurement. Consider working with local stakeholders to assess their potential for renewables. A renewable energy Power Purchase Agreement (PPA) agreement could facilitate 100% renewable energy for the Council Estate and perhaps aspects of the social housing were the Council control or bought the energy for the buildings and would continue to do so in the future. Local Energy Bill is being lobbied at national government level to remove barriers to renewables at the local level. Local smart grids to use surplus energy locally rather than back to the grid. 	This would require additional staffing resources and funding.	Cllr Waseem Zaffar
	a-e) Ensure any excess demand not met by council owned renewables is from (3rd party) purchased renewables. <ul style="list-style-type: none"> Challenge the 'quality' (i.e. how additional) of green energy Explore the potential of a Power Purchase Agreement (PPA) with other local organisations 	<ul style="list-style-type: none"> Prioritisation against local renewables and carbon reduction measures. 	<ul style="list-style-type: none"> Consider whole energy systems such as an energy innovation zone to develop distributed energy or energy clusters to have centralised management. Working with organisations and community groups will help scale this. Consider further low carbon potential for the council's Combined Heat and Power (CHP) scheme which is already linked to a lot of council buildings. 	This would require additional staffing resources and funding.	Cllr Waseem Zaffar

Energy Supply

Key Recommended Next Steps

Source	Carbon Reduction Measure	Barriers	Enablers	Timing and Resource	Portfolio Responsibility
City-wide energy supply	a-e) Deliver community energy projects and provide guidance to local residents and schools	<ul style="list-style-type: none"> Make sure to reach influential voices and not just traditional routes for communication. Fuel poor households will need different engagement – the council has a role in making the funding connection. 	<ul style="list-style-type: none"> Combined heat and Power (CHP) scheme could connect to more buildings Tyseley Energy Park has strong connections with local schools through STEM outreach which could be mobilised There are community energy enablers such as https://communityenergyengland.org/pages/what-is-community-energy who can assist. 	This would require additional staff resources.	Cllr Jayne Francis and Cllr Waseem Zaffar
	a-d) Incorporate renewable energy and heat network opportunities into the local plan and provide guidance to developers. Request installation in commercial building upgrades through the planning approval process	<ul style="list-style-type: none"> Building Research Establishment Environmental Assessment Method (BREEAM) uses planning requirements that don't meet net zero by 2030 goals. Changes to planning take much longer to implement 	<ul style="list-style-type: none"> Consider local specifications 'Building Physics' to assess each building. Integrate renewable energy with the build rather than as a bolt on. Review the local plan with this in mind. Push for environmental considerations in the local plan. Regional energy systems operator research project with universities could support this. 	Will need to be developed in line with future Birmingham Development Plan (BDP) update	Cllr Ian Ward
	Engage with domestic and commercial building owners on the potential for incorporating solar PV			This would require additional staff resources.	Cllr Waseem Zaffar

Energy Supply

Key Recommended Next Steps

Source	Carbon Reduction Measure	Barriers	Enablers	Timing and Resource	Portfolio Responsibility
	a-d) Work to align the energy strategy and spatial strategy to ensure energy policies can be implemented.	<ul style="list-style-type: none"> Waste strategy needs to be defined to help underpin district heating There are some areas with significant infrastructure constraints 	<ul style="list-style-type: none"> Review Tyseley Energy Park 'Energy Strategy Report' to assess the best sources. A city-wide view on what the costs for upgrading are could help. 	This would need to be addressed through a review of Birmingham Development Plan (BDP).	Clr Waseem Zaffar
	a-d) Conduct up to date feasibility study into the potential for alternative renewable sources.	<ul style="list-style-type: none"> A more holistic approach is needed. 	<ul style="list-style-type: none"> It will be important to understand the capacity of local networks and the limits of infrastructure before we make decisions. 	This would require additional staff resources and funding.	Clr Waseem Zaffar
	a-d) Deliver support for (Small and Medium Enterprises (SMEs) to access funding and skills for energy projects.	<ul style="list-style-type: none"> COVID-19 has stopped companies engaging, funding is key to unlock action. 	<ul style="list-style-type: none"> Aston University has a low carbon SME project, EU funded, which connects to local SMEs. Tyseley Energy Park has an incubator for local energy and waste businesses which could be engaged. Green recovery funding – engage with key local partners to make the most of the available funding. 	This would require additional staff resources and funding.	Clr Waseem Zaffar

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