Surrey Police Carbon Management Plan

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Executive summary

In 2019 the UK government declared a climate emergency and established a target to be net zero for greenhouse gas emissions by 2050. Net zero means that the UK's total greenhouse gas (GHG) emissions would be equal to or less than the emissions the UK removed from the environment[1]. The government have subsequently implemented supporting policies such as the ban of the sale of new combustion-engine vehicles in 2030 and hybrid engines in 2035. As a result, there are considerable drivers for public sector organisations to identify how they can progress towards net zero to support the government's target.

Surrey police have made a commitment to be net zero by 2030. This means that the GHG emissions from surrey polices operations need to be reduced and offset by an equal value of the residual emissions in order to achieve net zero. Surrey Police have commissioned Ricardo to develop a routemap to set out how this could be achieved and carbon management plan on how net zero can be governed and implemented.

Scope and objectives

The objective of the carbon management plan is to set out how Surrey Police's net zero commitment can be managed and to give an overview of how it can be implemented.

The objective of the net zero routemap was the development of a strategic routemap of how Surrey Police could achieve their net zero commitment. The scope of this is GHG emissions from Surrey Polices operations, primarily focussing on scope 1 (heating and transport) and scope 2 (electricity use), along with scope 3 emissions Surrey Police can more readily influence and control (waste, water, business travel and transport and distribution and well to tank emissions of fuel and energy use).

Governance

It is fundamental to have a net zero governance structure in order to drive the implementation of the net zero commitment. It is recommended the governance structure utilise the environmental board to manage the net zero commitment and the DCC Force Organisational board to provide decision making and resource support.

Ongoing monitoring and reporting

The carbon footprint will need to be calculated on at least an annual basis to verify progress and progress against sub targets reported on. This provides important data to the net zero representatives on their progress. The annual calculation will allow progress to be tracked against the net zero projections and progress included in any annual reports.

It is recommended the calculation utilise the baseline calculation method, updating the BEIS factors used in its calculation on an annual basis. The baseline spreadsheet has been provided for this purpose.

Communication

For net zero to be successfully implemented communication of action plans, action progress and emission reduction progress will be required. This ensures a common approach to net zero across Surrey Police and allows consistent branding of net zero to be utilised. Regular communications are proposed, including reporting to the boards, annual carbon footprint reports, staff newsletters and external press releases as required.

Conclusions and next steps

The following next steps should be considered by Surrey Police to implement and achieve their net zero commitment.

- Formally establish the net zero governance structure, including the identification of Green single point of contacts (SPOCs) and any new additional representatives
- Formalise the communication plan
- Formalise the ongoing monitoring process

[1] Office of National Statistics, July 2019

- Communicate a summary of the above to Surrey Police staff
- Form an action plan on how the identified decarbonisation measures can be implemented
- Utilise upcoming property changes to implement building decarbonisation measures
- Conduct a detailed assessment of how the transport fleet can be converted to low carbon vehicles
- Investigate actions that can be taken in emission areas not included in the scope of the net zero commitment.

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1 Introduction

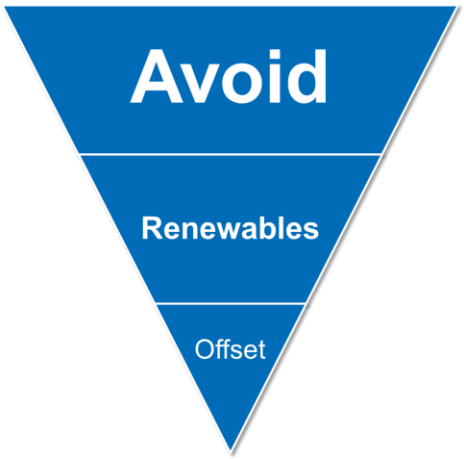
1.1 Context

In 2019 the UK government declared a climate emergency and established a target to be net zero for green house gas emissions by 2050. Net zero means that the UK's total greenhouse gas (GHG) emissions would be equal to or less than the emissions the UK removed from the environment[2]. The government have subsequently implemented supporting policies such as the ban of the sale of new combustion-engine vehicles in 2030 and hybrid engines in 2035. As a result, there are considerable drivers for public sector organisations to identify how they can progress towards net zero to support the government's target.

Surrey police have made a commitment to be net zero by 2030. This means that the GHG emissions from surrey polices operations need to be reduced and offset by an equal value of the residual emissions in order to achieve net zero. Surrey Police have commissioned Ricardo to develop a routemap to set out how this could be achieved and carbon management plan on how net zero can be governed and implemented. The purpose of the routemap is to establish the scope and boundary of this target and a strategic routemap for how Surrey Police can achieve net zero.

In order to follow a credible and cost-effective path to net zero it is recommendable to follow the emission reduction hierarchy, as shown below.

Figure 1-1: Emissions reduction hierarchy



The emission reduction hierarchy is as follows:

• Avoid / Reduce consumption: Avoid or reduce consumption through measures such as avoiding wastage, performing operations more efficiently and using more efficient or lower carbon technologies.

• Use renewables to decarbonise the energy supply: Decarbonise your energy supply) through using low carbon energy generation technologies such as solar PV or air source heat pumps, or by purchasing green energy.

• Offset residual emissions: Offsets should be reserved for unavoidable residual emissions and can include measures such as natural sequestration (e.g. tree planting) or purchased offsets.

The benefits of following this approach are as follows:

• It provides a credible approach for achieving net zero which aligns to initiatives and policy, such as the science-based target initiative, where emissions from operations are expected to be addressed first by direct action.

• Reducing consumption as a primary step leads to ongoing cost savings, often at lower levels of capital investment than low carbon energy generation, and for Green energy procurement and offsets which have an ongoing cost.

[2] Office of National Statistics, July 2019

• Measures to reduce consumption are within Surrey Police's control and so offer greater security of emissions reductions, whereas green procurement and offsetting are dependent on external market availability and costs.

1.2 Scope and objectives

The objective of the carbon management plan is to set out how Surrey Police's net zero commitment can be managed and to give an overview of how it can be implemented.

2 Net zero target

Scope and objectives

The objective of this report is the development of a strategic routemap setting out how Surrey Police could achieve their net zero commitment. The scope of this is GHG emissions from Surrey Police's operations, primarily focussing on scope 1 (heating and transport) and scope 2 (electricity use), along with scope 3 emissions which Surrey Police can more readily influence and control, namely waste, water, business travel and transport and distribution and well to tank emissions of fuel and energy use.

Approach

The following approach was taken to developing the net zero routemap.

1. Establish the baseline emissions: Calculate Surrey Police's GHG emissions from its operations.
2. Identify measures: Conduct site audits of key buildings and liaise with the Surrey Police transport team to identify decarbonisation measures.
3. Model the bussiness as usual projection: Model what Surrey Police's emissions could be expected to be in 2030 without a net zero routemap.
4. Model the net zero projections: Model the identified emissions reductions to establish a 'best value' and 'full potential' pathway to net zero, identifying residual emissions associated with each pathway for offset.

Baseline

The figure below shows Surrey Police's baseline emissions, based upon FY2019/20 data.

This includes:

- Scope 1 transport: Emissions from Surrey Police's fleet calculated from consumed fuel.
- Scope 1 heating: Emissions from natural gas use in Surrey Police's buildings calculated from utility bills.
- Scope 1 refrigerants: Emissions from use of refrigerants in Surrey Police's buildings air conditioning systems, calculated from supplier reports.
- Scope 2 electricity: Emissions from electricity use in Surrey Police's buildings calculated from utility bills.
- Scope 3 T&D and WTT[3]: Emissions associated with the well to tank production of the fuels Surrey Police use including transport and distribution associated with electricity.
- Scope 3 Business travel: Emissions from Surrey Police's business travel calculated from data provided by Surrey Police's travel provider.
- Scope 3 Water: Emissions from Surrey Police's water use calculated from utility bills.
- Scope 3 Waste: Emissions from Surrey Police's waste use calculated from waste provider reports.

As can be seen emissions associated with transport and buildings are the greatest component of Surrey Police's emissions and so are the focus of this routemap.

[3] Transmission and Distribution, and Well to Ttank

Figure 2-1: Surrey Police baseline emissions

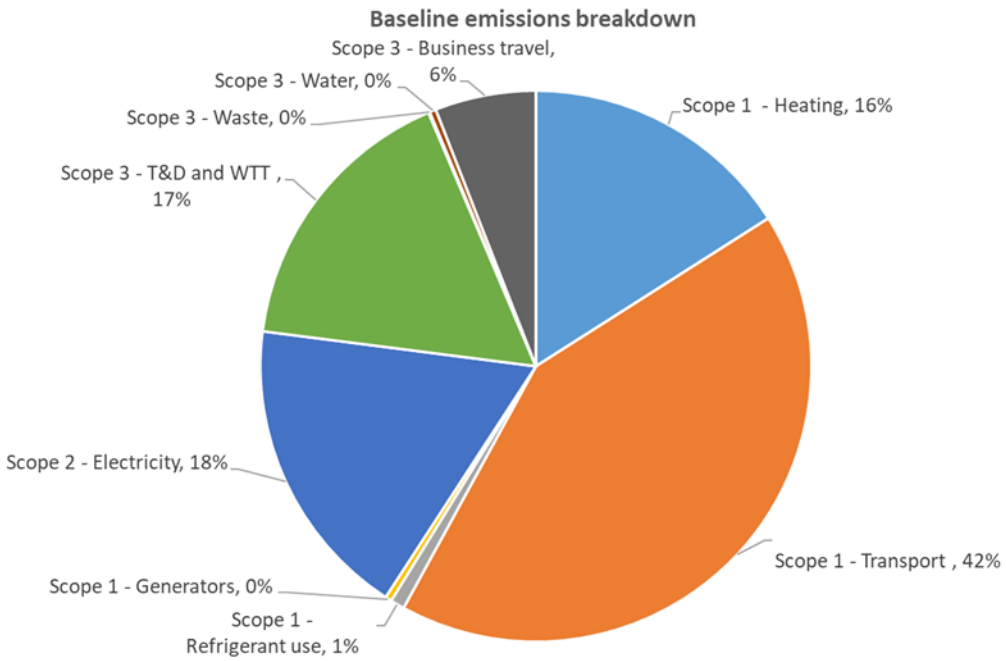


Table 2-1: Surrey Police baseline emissions, by type

Full set	kWh	tCO2e
Scope 1 - Heating	7,929,077	1,458
Scope 1 - Transport		3,832
Scope 1 - Refrigerant use		76
Scope 1 - Generators		-
Scope 2 - Electricity	6,368,257	1,628
Scope 3 - T&D and WTT	14,297,335	1,514
Scope 3 - Waste		7
Scope 3 - Water		34.8
Scope 3 - Business travel		540.1
Total	**28,594,669**	**9,089**

Net Zero projections

Two net zero projections have been modelled, best value and full potential. The building measures have been categorised as best value if they offer a £/tCO_2e saved per annum of under £10,000 and full potential where the £/tCO_2e is above this, or there is a constraint meaning the measure is less suitable for implementation in the routemap timeframe. The two scenarios for transport are discussed in the transport section of this routemap. The following graph shows the remaining emissions associated with each pathway and the table discusses the potential reduction and costs.

Figure 2-2:Net Zero projections

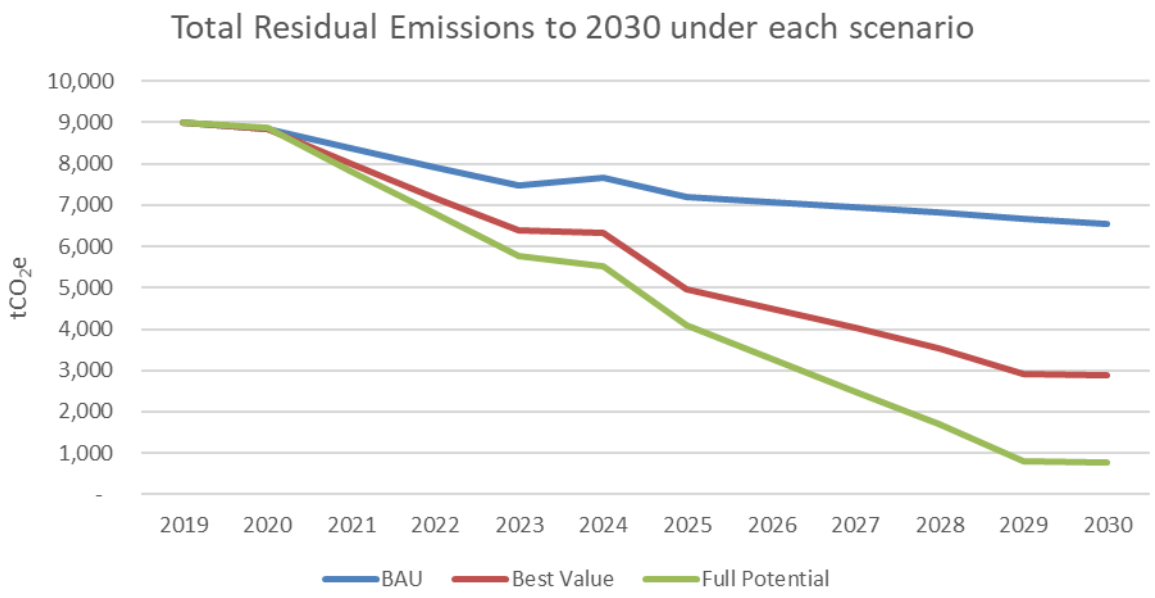


Table 2-2: Net zero projections

	Best Value	Full potential
Reduction compared to baseline	68%	91%
Residual emissions	2,883 tCO_2e	782 tCO2e
Building measures cost	£2,405,811	£6,135,776
Building measures annual savings	£213,939	£148,368*
Buildings Payback	11	41
Transport measures cost	£21,247,929	£26,777,228
Transport measures annual savings	£613,064	£847,702
Transport payback	35**	32**

It should be noted that these costs are estimates based on assumptions and should be treated as such.

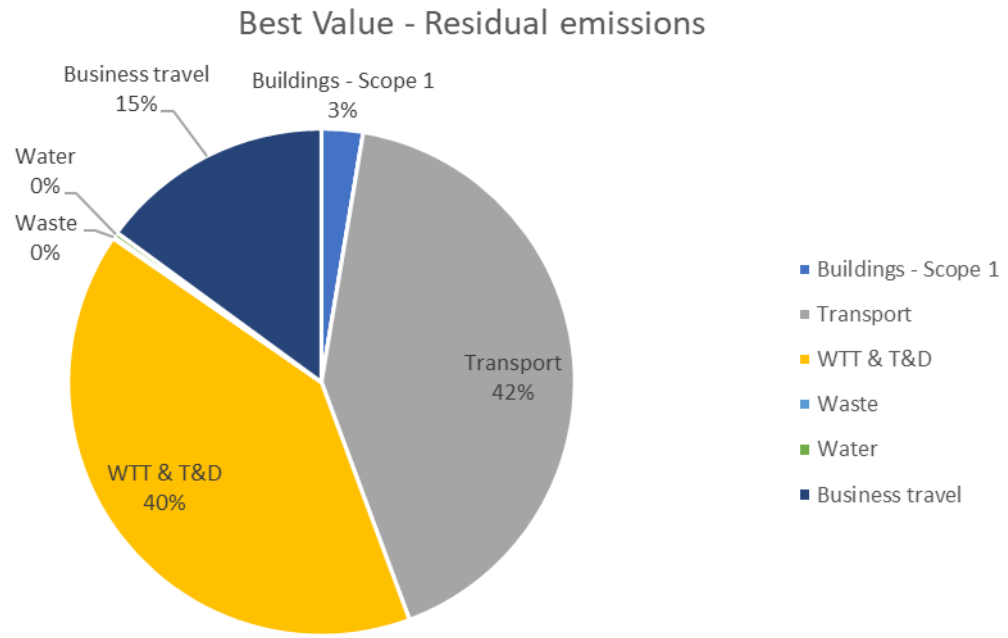
*The inclusion of converting hot water to electric point of use, which is not currently economic on the current gas and electricity tariffs but may be made more so by the installation of PV which would supply lower cost electricity. Some of the building fabric improvements, such as window replacement, have a high cost and long payback.

**The transport costs include total vehicle cost, chargers, and network upgrades. If these were to be based upon the additionality of the cost of an electric vehicle compared to a combustion engine vehicle these paybacks would be improved.

Residual emissions

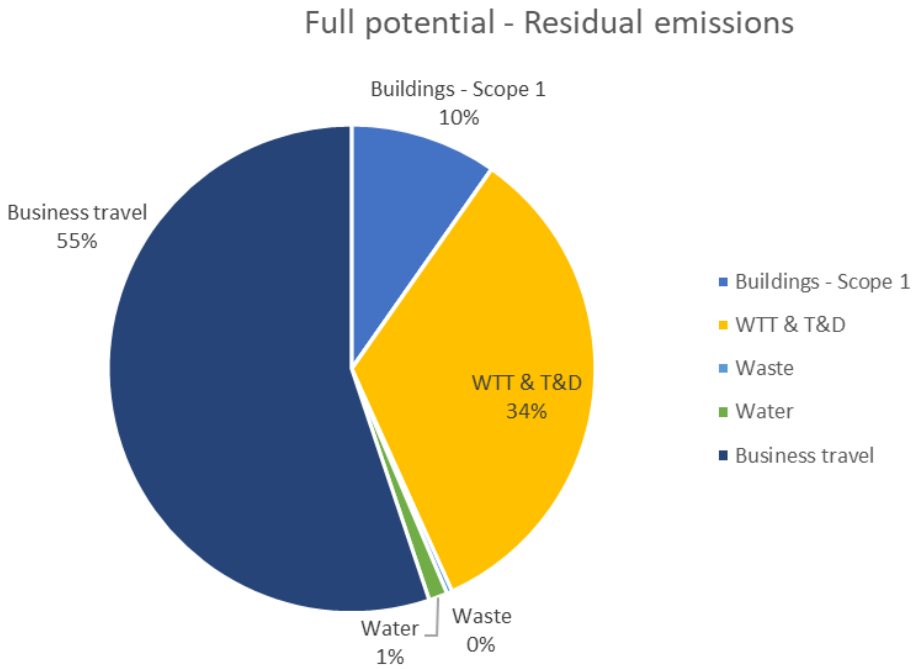
The residual emissions from the best value scenario (2,883 tCO_2e) are shown below. The largest of these are remaining transport emissions and WTT emissions. It is important to note the WTT emissions are based on 2019 factors as suitable 2030 projections of these are not available. There is potential that these will decrease over the routemap timeframe as the UK decarbonises.

Figure 2-3: Breakdown of best value scenario 2030 residual emissions



The residual emissions from the full potential scenario (782 tCO_2e) are shown below. The largest of these is business travel, followed by WTT. Remaining scope 1 emissions are from refrigerants and gasoil used in generators. In order to reduce these further refrigerant replacements could be investigated along with biofuel or fuel cell options for the generator as they become commercially available.

Figure 2-4: Breakdown of full potential scenario 2030 residual emissions



Conclusions

The net zero projections show that a reduction of emissions in the range of 68% for the best value scenario to 91% for the full potential scenario could be achieved by Surrey Police. The best payback is offered by the best value scenario building measures with the full potential transport measures;

however, the financial performance of the full potential building measures may be improved by lower costs electricity being supplied by PV. Both scenarios have some residual emissions where further mitigation measures could be investigated, or offsets used to mitigate.

It should be noted these projections have included assumptions and estimates of future emission factors and so should be treated as estimates. The annual savings have been calculated based on the current electricity tariff. Moving to lower cost electricity, such as by installing PV, would improve the annual savings of measures such as the electronification of heating and hot water provision.

3 Implementation of decarbonisation measures

A range of measures were proposed in the net zero routemap including:

- **Energy management**: Energy management is the practice of proactively reviewing energy data, metering and Building Energy Management Systems (BEMS) data in order to identify areas where energy consumption can be reduced. This is applicable to all Surrey Police's buildings.
- **Building controls**: This is the implementation of technology to both manage and optimise the operation of energy using equipment and includes building management systems (BMS) / building energy management systems (BEMS) systems, timers, schedulers, thermostatic radiator valves, environment sensors and more. Optimising set points, control methods and algorithms, schedules, and the like in favour of optimising energy use can lead to substantial savings.
- **Lighting**: Reducing lighting energy consumption includes measures such as upgrading existing lights to LED alternatives and including controls such as occupancy sensors, daylight sensors and zone controls. This is applicable to all Surrey Police's buildings, with the exception of Caterham where an LED upgrade has already been implemented.
- **Building envelope improvements**: Building envelope improvements are improvements to the building envelope in order to reduce heat loss. This is applicable to all Surrey Police's buildings, with some sites having specific additional measures identified.
- **HVAC Optimisation**: HVAC optimisation entails improvements to the HVAC system to reduce the energy use associated with its operation. This is applicable to all Surrey Police's buildings, with some sites having specific additional measures identified.
- **Heating replacement**: Heating commonly uses natural gas, (as is the case with the Surrey Police sites except for one small site with electric heating). As the UK gas grid is not expected to decarbonise as rapidly as the electricity grid, moving from gas heating to electric heating (either direct or through the use of heat pumps) offers an option for decarbonisation, and this is a key component of the Committee for Climate Change (CCC) plans for the UK achieving net zero. The focus has been air source heat pumps (ASHPs) which are widely available and are a more reasonable cost. The heating replacements are specific to each site, although conversion from a gas system to ASHPs was found to be feasible at most.
- **Hot water heating replacement**: Domestic hot water (DHW) heating commonly uses natural gas, (as is the case with the Surrey Police sites except for some where electric point of use heaters are present). As the UK gas grid is not expected to decarbonise as rapidly as the electricity grid moving from gas water heating to electric point of use water heating offers an option for decarbonisation. This has been considered, where applicable, for the Surrey Polices sites.
- **Solar PV:** An assessment of the PV generation potential for Surrey Police buildings has been conducted. This assessment focuses on rooftop PV. Car park PV could also be considered but is more expensive due to the additional structural elements required. PV installations were found to be feasible at most sites.
- Transport decarbonisation: Replacement of the current fleet with low carbon alternatives, primarily electric vehicles.
- **Water reduction measures**: Potential measures to reduce water consumption include replacement of fittings with water efficient equivalents (e.g. shower heads, duo flush toilets, low flush toilets, waterless or motion sensor urinals, motion sensor taps, water efficient

dishwashers), greywater use and a proactive leak reduction and maintenance programme including monitoring water use.

- **Waste reduction measures**: Reducing waste. This can be done by a range of measures sure as moving to digital alternatives to physical materials, (such as electronic reports rather than paper) and providing reusable alternatives (such as mugs to displace disposable cups). Increasing the proportion of waster recycled: This can be done by moving to recyclable alternatives of products used, providing recycling bins and education on what can be recycled. Increasing the proportion of waste disposed of by a less carbon intensive method. This can be done by speaking to the waste provider or sourcing an alternate waste management provider.
- **Business travel measures**: Travel Policy including a preferred hierarchy for how a journey should be made, starting from removing the need for the journey by conducting the activity remotely / virtually, followed by zero carbon transport modes, then low carbon transport modes. Rules can be included on when air travel can be used (such as domestic and short European journeys must be done by train) and emission vehicle limits for car rentals. The policy can be supported by the provision of technologies to facilitate virtual working and requests for journey justification when booking journeys. Increasing the amount of training / meetings that are done virtually and agile working can also reduce business travel emissions, and is something Surrey Police are already progressing with. It would be recommendable to capture mileage data for bus / rail travel and taxi journeys in order to obtain a more accurate emission figure for these.

The diagram below shows an indicative timeline for implementing the measures. Key points of note are:

- Efficiency measures should precede energy generation technologies, such as heating replacements and PV, in order to ensure the system is only sized for the necessary demand, avoiding unnecessary extra capital spend.
- The efficiency measures can be implemented in the early years of the timeframe, with monitoring for new technologies that could be utilised in the later years of the timeframe.
- Emissions management needs to occur throughout the timeline to ensure savings are maintained.
- PV installations should be undertaken before the full potential heating replacement and hot water replacements in order to improve their financial viability.
- The last step is to offset residual emissions

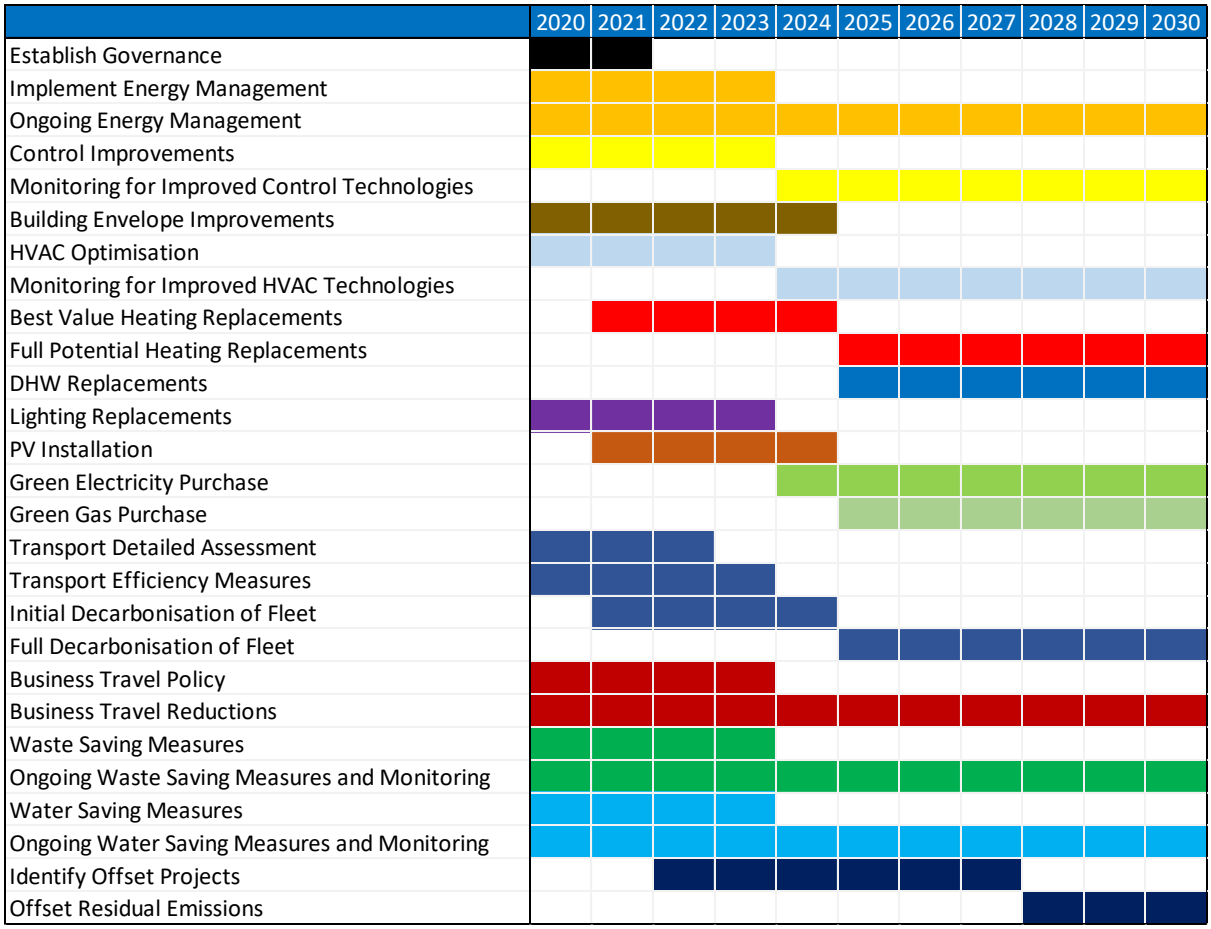


Figure 3-1: Timeline for implementation

In order to encourage the reduction in emissions from buildings, sub targets could be set for each building. Staff can support this by:

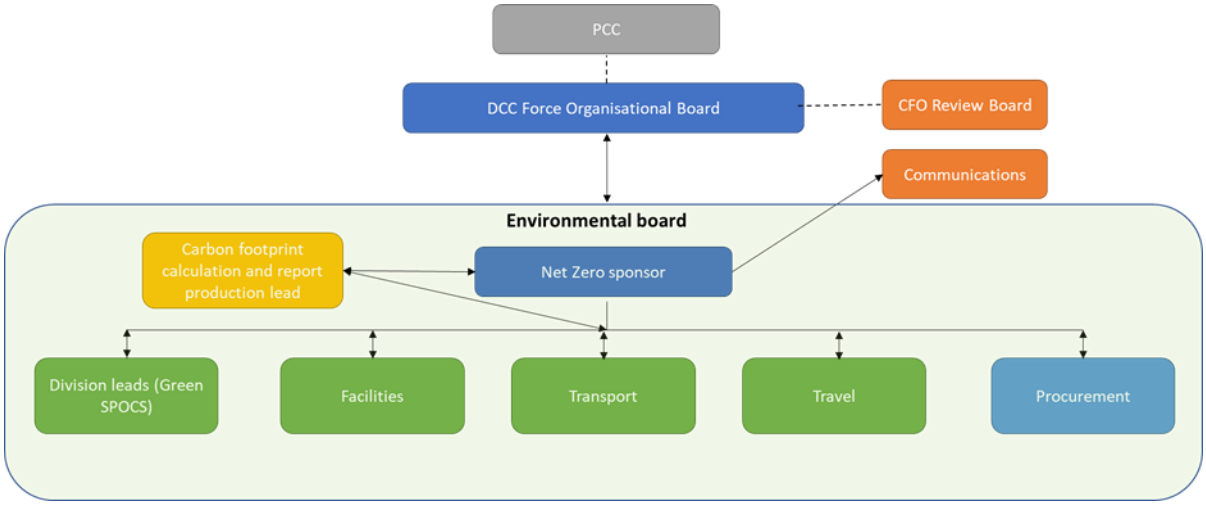
- Turning off appliances when not in use.
- Rationalising utilisation of appliances.
- Supporting heating / cooling control policies.
- Closing doors / windows when heating or cooling systems are on.
- Raising ideas and issues.

Staff can support reductions in transport emissions by attending driver training and following guidance, maintaining vehicles, utilising the low carbon vehicles and raising any issues that occur with the low carbon vehicles so they can be addressed.

4 Governance

It is fundamental to have a net zero governance structure in order to drive the implementation of the net zero commitment. The following governance structure for the net zero commitment is proposed, utilising the existing Surrey Police governance structures and teams where possible.

Figure 4-1:Net zero governance structure



The purpose and role of each of the governance board elements are as follows:

Table 4-1: Net zero governance

Governance board element	Purpose and role
PCC	Provide support to net zero commitment as the PCC and Chief Constable jointly set the net zero ambition and the PCC owns all of the assets. A net zero section could be included in the regular paper to them.
DCC Force Organisational Board	Provide resources and support to the net zero commitment. Make decisions on the ongoing net zero implementation.
CFO Review Board	Provide financial support to the net zero commitment as required
Net Zero sponsor	A senior sponsor can assist in driving the project and resolving decisions when the board is divided and takes primary responsibility for driving net zero progress Director of estates and facilities proposed to fulfil this role
Communications	Net zero implementation needs to be supported by internal communications. Surrey may also wish to make external announcements. It would be recommendable to have a net zero lead in the comms team.
Carbon footprint calculation and report production	The carbon footprint (GHG emissions) will need to be calculated on at least an annual basis to verify progress and progress against sub targets reported on. This provides important data to the net zero representatives on their progress. This will be done by the environmental manager
Environmental board	The net zero working group where net zero implementation and progress is discussed including request for resource and examples of best practices from departments that could be considered for wider rollout.
Division leads (Green SPOCS)	Provides on the ground influence and knowledge for identifying and implementing measures in their division. Sends out useful hints and tips, fun facts (keeps people engaged) and monitors for better compliance for doing ‘their’ bit.

Governance board element	Purpose and role
Facilities	Responsible for implementing building decarbonisation measures and for data for areas such as refrigerant and utilities
Transport	Responsible for decarbonisation of travel
Travel	Responsible for emissions reductions in business travel This may be a HR representative
Procurement	Responsible for procurement policies and actions to create a lower carbon and more sustainable supply chain

4.1 Ongoing monitoring and reporting

The carbon footprint will need to be calculated on at least an annual basis to verify progress and progress against sub targets reported on. This provides important data to the net zero representatives on their progress. The annual calculation will allow progress to be tracked against the net zero projections and progress included in any annual reports.

It is recommended the calculation utilise the baseline calculation method, updating the BEIS factors used in its calculation on an annual basis. The baseline spreadsheet has been provided for this purpose.

In order to communicate net zero progress well the following should be considered for inclusion in the report:

- Comparison of the annual carbon footprint to the net zero projection
- Reporting emissions by area, including division and buildings
- Translating into comparisons easily understood i.e.: CO_2 equivalent cars off road, houses heated, water and pools etc work well
- Utilising graphics and comparisons to previous years

4.2 Communication

For net zero to be successfully implemented communication of action plans, action progress and emission reduction progress will be required. This ensures a common approach to net zero across Surrey Police and allows consistent branding of net zero to be utilised. The table below sets out a potential communication plan. It would be recommendable to have a net zero lead in the communications team to support these.

Table 4-2: Net zero communications

Communication	Recipient	Purpose	Frequency
Environmental governance board meeting	Environmental governance board	• Discuss progress towards net zero • Discuss implementation of decarbonisation measures	Quarterly
Reporting to PCC / BTF Board	PCC / BTF Board	• Reporting net zero progress to PCC • Requests for support where applicable	6 monthly (though a section could be included in the estates and facilities monthly report)
Annual carbon footprint reports	All stakeholders	• Report annual carbon footprint • Report actions taken in the year • Report progress to net zero	Annually

Communication	Recipient	Purpose	Frequency
Staff net zero newsletter	All staff	• Net zero newsletter • Share actions and progress • Share best practice examples, good news stories and leadership blogs • Share how to get involved • Consider displaying in comms area • Include governance structure / points of contact • This could be posted on the Surrey Police intranet	Quarterly or 6 monthly
Section in monthly comms	All staff	• Provide a quick net zero update, highlight good work	Monthly
New starter inductions	New starters	• Included net zero commitment and action in new starter inductions	As training occurs
External press releases	Public	• Communicate progress, good news stories and best practice examples	6 monthly or more frequently as they occur

4.3 Staff engagement

In order to achieve net zero sustainability practices, need to be embedded into the everyday and there to be a cultural change. This requires staff engagement.

The purpose of staff engagement is to facilitate behavioural change.

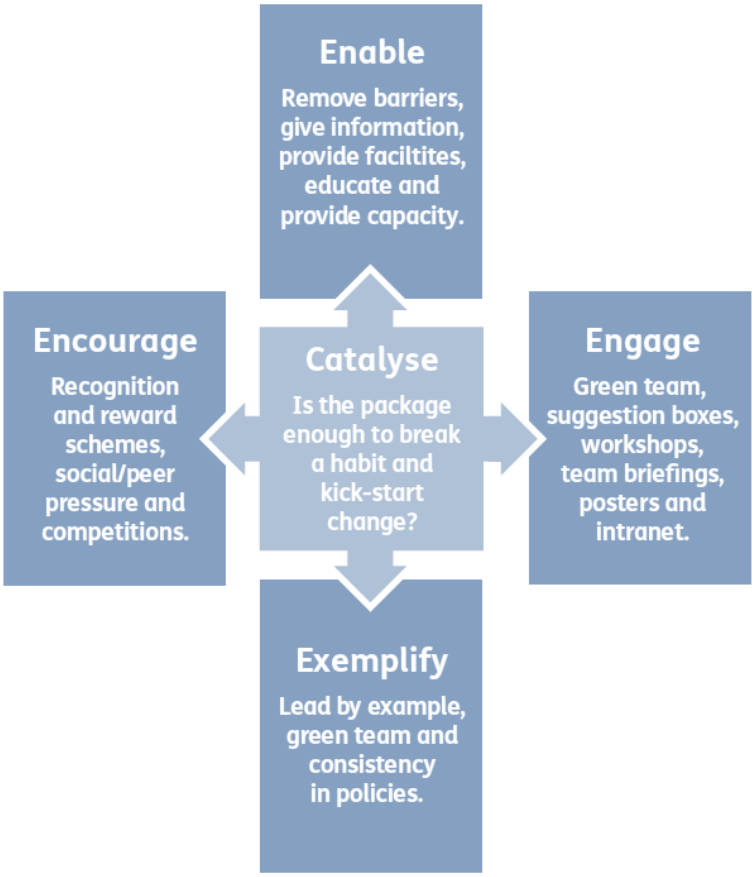
- Behaviour change, in a business setting, is the process by which change is communicated and adopted by organisations and their staff
- The complexity of behaviour change lies in the difficulties in changing behaviours - as opposed to changing attitudes
- You need to understand why people behave in certain ways and then communicate the benefit of making the change
- And the ultimate goal is not just to change behaviour but to **ESTABLISH & SUSTAIN IT** over time

There are three key drivers to staff changing their behaviour.

Figure 4-2: Drivers for behavioural change

In order to facilitate behavioural change the points in the diagram below should be considered.

Figure 4-3: Facilitating behavioural change



Ricardo held a staff behavioural change workshop with Surrey Police, which Surrey Police can draw from in order to develop materials to share with their wider staff. These messages can be disseminated through the Green Spocs. Ideas raised in the staff behavioural change workshop are included in appendix 1.

5 Conclusions and next steps

The following next steps should be considered by Surrey Police to implement and achieve their net zero commitment.

- Formally establish the net zero governance structure, including the identification of Green SPOCs and any new additional representatives
- Formalise the communication plan
- Formalise the ongoing monitoring process
- Communicate a summary of the above to Surrey Police staff
- Form an action plan on how the identified decarbonisation measures can be implemented
- Utilise upcoming property changes to implement building decarbonisation measures
- Conduct a detailed assessment of how the transport fleet can be converted to low carbon vehicles
- Investigate actions that can be taken in emission areas not included in the scope of the net zero commitment.

Appendices

Appendix 1: Emission reduction ideas from staff behavioural change workshop

Appendix 1 – Emission reduction ideas from staff behavioural change workshop

Below is a summary of the ideas from the staff behavioural change workshop held with Surrey Police.

Buildings

- Promote agile working
- Including energy efficiency in facilities management contracts
- Being prepared for grant applications for energy efficiency measures so as to be able to move quickly on these when they become available
- Hot water taps to limit kettle use
- Additional signage on good practice
- LEDs with sensor controls
- *Challenge – limited by existing buildings and availability of funds*
- *Challenge – Limited influence in collocated buildings, but these may not be needed as much if agile working is promoted.*

Travel

- Encouraging use of electric vehicles by providing training and using these for between station trips.
- Conducting a survey on barriers to use of electric vehicles
- Conduct more meetings and training virtually
- Promote agile working
- Showers for cyclists and bike storage
- Fit more vehicles with telematics
- *Challenge – combustion engine vehicles are currently cheaper to hire than electric*
- *Challenge – encouraging use of electric vehicles*

Waste

- Increase recycling (some departmental examples of bin labelling and crisp packet bins)
- Bin for clothes recycling
- Recycle IT equipment at end of life

Material use

- Increase the use of electronic materials (use of printing flagged as a challenge as difficult and costly transition to electronic recording, use of tablets instead of paper)
- Procure more sustainable equipment
- Look at working on collaboration with other police forces, especially around procurement and engaging with the supply chain (e.g. uniforms)

Staff behaviour

- Reward good practice and behaviours
- Reinvigorate green committee
- Support younger staff with getting involved
- Include environmental impacts in all business cases. For any change or activity need to think about the environmental impacts

- *Challenge – Sharing best practice across departments*
- *Challenge – lack of visibility of performance data*
- *Challenge – Posters becoming out of date*

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