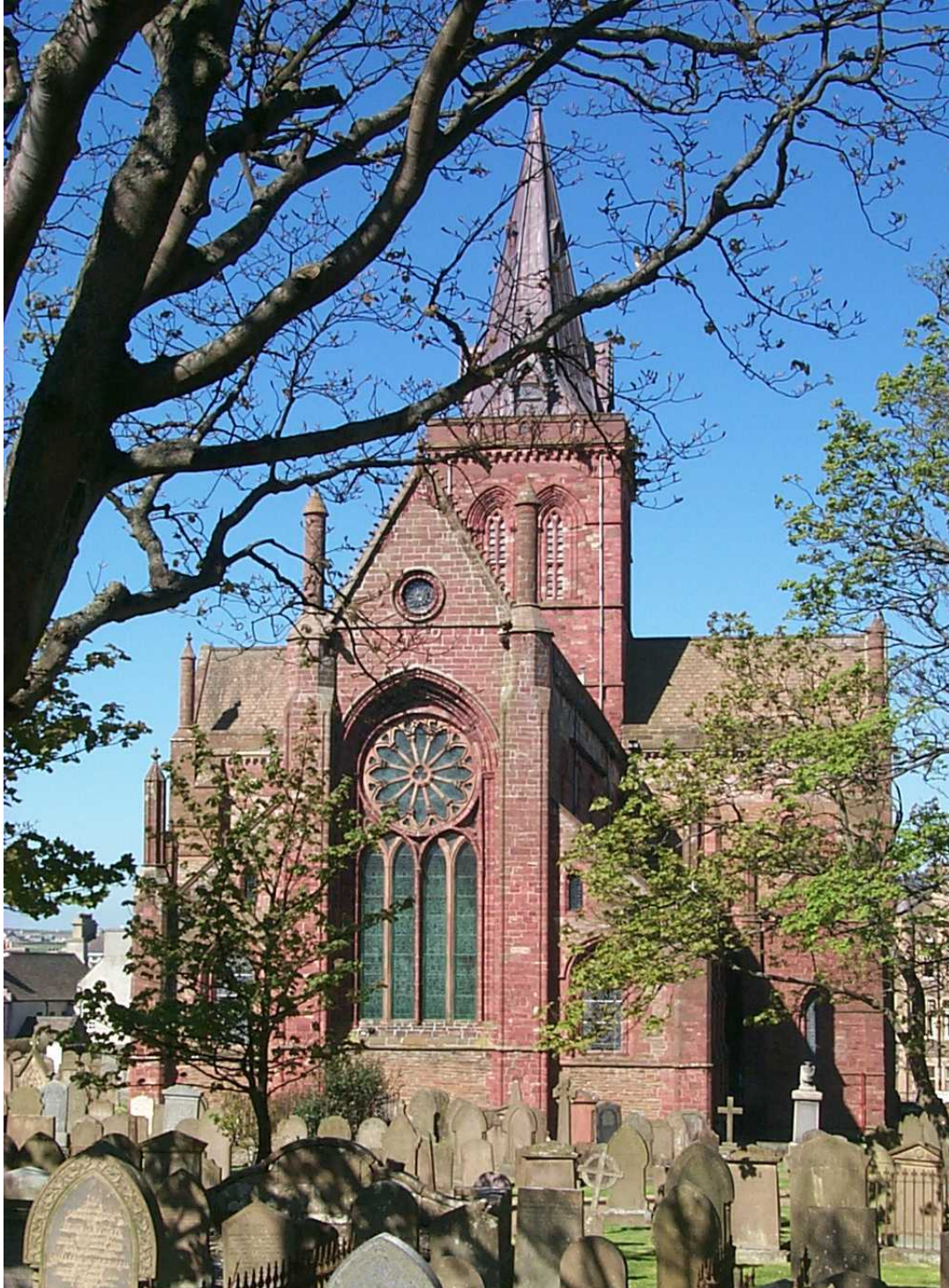


Orkney Islands Council  
Carbon Management Programme  
2016-2026

# Orkney Islands Council Carbon Management Programme



**2016-2026**

***Date: December 2015,  
Version number: 2***

Orkney Islands Council  
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2016-2026

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## 1 Foreword

Our Orkney Islands Council (the Council) is committed to reducing Carbon emissions and this is demonstrated in 'Wur Plan' The Council Plan 2013-2018, priority four which is focussed on achieving a Low Carbon economy. Reducing carbon emissions is a key priority for all local authorities. As the Council, harbour authority and deliverer of lifeline services we are in an important position to not only demonstrate leadership but to reduce consumption whilst making a positive contribution to the environment by lowering their carbon emissions.

In 2006 the Council partnered with the Carbon Trust on a programme to reduce its carbon emissions. From 2006-2014 the Council achieved 18% of emissions from a 2004-2005 baseline.

During this time local production of renewable electricity has grown and Orkney produces 105% of its electricity needs where the diesel power station is only used as a weekly test and as a backup. Due to the lack of grid capacity to export the Orkney grid suffers from curtailment and local generation is unable to reach its potential. During the same period Orkney's fuel poverty grew from 37% of all households to 58%.

The Council aims to reduce fuel poverty by supporting householders as well as demonstrating leadership as a landlord and adding low carbon housing improvements projects on its housing estate to this carbon management programme.

Collaboration with partners is important and the Council is involved in a range of innovative carbon reducing projects like the Surf and Turf Hydrogen Project; local wind turbine developments and as a partner in the European Marine Energy Centre. Innovation and collaboration is vital to reducing emissions and creating ongoing benefit now and into the future.

Steven Heddle

Convener  
**Orkney Islands Council**

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## 2 Management summary

The Council recognises the important role we play in protecting and developing the social, economic and environmental wellbeing of the county. In 2004-2005 our carbon emissions were 26,290 carbon tonnes (ct) which was a direct result of our operations. Our plan was to achieve an 11% reduction in carbon emissions. Since implementing our first Carbon Management Plan in 2006-2007 our emissions have reduced to approximately 21,739ct a year which is an 18% reduction.

It is important to note that during the same period Orkney now generates 105% of its own renewable electricity. The national programme does not recognise this distinction, yet, European cities like Copenhagen aim to generate 'green electricity' to meet their needs and account for these in their climate change plans..

The Carbon Management Programme gives us the opportunity to look at how we use energy, electricity and fuel and where possible look for alternative low carbon options. Our plan will be a rolling five year plan to be updated on an annual basis. By implementing the projects included in this programme, we must achieve a 40% reduction in Carbon emissions over the ten year life of this programme from a 2004-2005 baseline. Therefore this must be a five year rolling plan. Such projects will rely heavily on the Council's Asset Management Strategy which is currently under revision. As fuel costs are anticipated to reduce in the short-term we would suggest that such savings are used to finance the long term requirements when high carbon fuels are no longer affordable or available.

The Council is a signatory to the Scottish Climate Change Declaration and through this we recognise our obligation to minimise energy use and efficiently use our energy resources. We also recognise the need to ensure staff and service users understand the benefits and opportunities of energy efficiency and carbon reduction in practice. The programme takes into account opportunities to improve our vehicle fleet; reduce fuel consumption; reduce internal and municipal waste; improve recycling rates; improve our buildings and reduce electricity and energy consumption. The schools estate accounts for the largest proportion of our buildings and energy costs and awareness of good practice energy use is vital in achieving our overall goals.

By transitioning to a low carbon operation, we aim to make ourselves more resilient from the uncertainty in energy price and availability, and by increasing our ability to use local renewable energy sources; we reduce our reliance on energy systems over which we have little or no control. This programme builds on our past programme, several quick win projects have been identified and these projects have already been progressed. We will need to ensure that we have the appropriate solutions for reducing carbon on our estate that are island proofed to our needs. Other projects include feasibility studies into renewable energy sources for public buildings and inclusion of our housing estate as well as the procurement of paper.

This rolling Carbon Management Programme gives Orkney Islands Council the framework to enable all services to understand how their actions affect our energy costs and carbon emissions. In short we have three aims to ensure energy efficiency; win the 'hearts and minds' of our staff and community and implementing best practice in our new build and refurbishment programmes, we will benefit environmentally and financially from our progression towards a low carbon operation

Alistair Buchan  
Chief Executive  
Orkney Islands Council

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### 3 Introduction

This document aims to identify the environmental risk to Orkney Islands Council resulting from the use of fossil fuels in the Council's day to day operations. Over the past few years we have experienced uncertainty in future cost trends. This volatility in the cost of fuels has a two-fold impact on the Council. As a result of increases in oil and electricity costs, the cost of heating and servicing our building has increased and latterly decreased. As the Council is part of an island community, the cost of transporting materials and services to the county is an additional direct consequence of fuel price escalation.

#### Background

The Council recognises that its energy consumption has social, environmental and economic impacts on the county. As a result, the authority is committed to understanding the impact of their energy consumption and to develop a strategic plan which will maximise the social and economic benefits, whilst minimising the environmental damage resulting from their use of energy and resources. The Council's first carbon management plan allowed the Council to establish a robust base line. This baseline will be used to set realistic targets to progress to a low carbon operation into the Council's Carbon Management Programme 2016-2026.

#### Strategy Timescale

The timescale envisaged for the implementation of the Carbon Management Programme is ten years, but the programme will be run as a five year rolling plan with annual reviews. It is vital that carbon minimisation projects are built into the day to day operations of the Council and to ensure that this long term programme is achievable. The first projects to be implemented as part of this programme have been identified later on in this document, but over the coming years projects will have to be developed which meet the changing requirements of the Council, and address changes in service provision dictated by developing Council policy.

#### Approval Route

The programme will be as follows:

Document will be presented to:

The Corporate Management Team at their meeting	January 2016
The Policy and Resources Committee	April 2016
Full Council Meeting	April 2016

If agreed by the committees, the document will then be published on the Council website.

#### Carbon Management Programme

The Council is the administration for one of the most pristine environments in the United Kingdom. The Council is committed to protecting this special environment and have for many years put environmental issues high on the local agenda. With the increasing awareness of the risks resulting from Global Warming which are now starting to influence National and UK policy, the Council is committed to understanding the effect of their operations on the environment and to look into ways of minimising the adverse effects. By undertaking the Carbon Management Programme, the Council hope to benefit from the reduced expenditure on fuels while achieving the environmental benefits associated with reduced greenhouse gas emissions.

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### 3.1 Context and drivers

There are several drivers which are pushing the Council to consider how policy decisions will have an impact on the environment. In addition, legislative drivers will require changes in policy and operations in order to meet higher environmental standards. The following is a list of some of the main legislation and local strategies which may be developed further under the carbon management strategy:

#### **Draft Orkney Energy Strategy 2016-2030**

The Council is leading a strategy for the County which will identify the energy priorities. It builds on the Sustainable Energy Strategy for Orkney 2007. The strategy has been developed through workshops and informal consultation.

#### **Orkney and Shetland Area Waste Plan**

Approximately 14,000 tonnes of waste are produced in Orkney every year and 10,000 tonnes of this is shipped to Shetland, where it is processed through the Green head energy from waste plant as well as proportion landfilled on Shetland. The Council is committed to achieving the Scottish Government recycling targets of 70% by 2025, noting the significant challenge it faces in terms of both Alternate Weekly Collection was only introduced in May 2012 and several aspects are only just being rolled out or considered, such a Commercial Waste collections and possible outer island AWC roll-out. Equally the council is yet to see the additional benefits of an investment in "hearts and minds" awareness raising resource. The councils overall recycling performance has been significantly affected by the Governments view that the islands green waste does not count as recycled seeing a fall from approx. 30% to 17%. Plans will be brought forward in 2016 to address this issues as well as options to increase recycling activities in poorer performing area as part of the change management programme, as well as the progressive introduction and improvement of recycling opportunities on Orkney's outer island, subject to funding approval. Various recycling schemes have been set up in the county through Council, voluntary and community initiatives, including:-

- Bottle banks and can banks for both aluminium and steel cans
- Mini recycling centres on 10 islands and mainland rural areas
- Kerbside collection scheme for collection of glass and paper from mainland towns, villages and rural settlements
- Glass, cans and cooking oil collected from hotels, clubs and restaurants by the Council
- Alternate weekly collection
- "Bag the Bruck" campaign – to deal with coastal waste

By increasing the percentage of recycled waste, landfill or incineration is reduced as is the cost and depending on market conditions income from the sale of recyclates increases. All of which help to reduce the cost of disposing waste and from an environmental perspective reduces greenhouse gas production through avoidance of both the transport by sea and incineration.

#### **Transport**

Transport is a vital part of everyday life for Orkney. Following the National Transport Strategy 'Refresh' to be completed during 2015, the Council will undertake a review of the Local Transport Strategy which will detail how we intend to deliver on national objectives at a local level, and provides an action plan for meeting local challenges and objectives. Transport in Orkney aims to improve accessibility to/from the mainland and other isles. This will invariably necessitate more efficient ferries coming into the network, and could include a greater or lesser use of air services in the transport mix. We want to "promote, encourage and deliver an effective and efficient transportation network that supports the economic vitality, community well-being and environmental integrity of all of Orkney

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The Council approved Orkney's Electric Vehicle Infrastructure Strategy (2014) to establish an Electric Vehicle network across Orkney. This is also helpful in using Orkney electricity which is mainly produced through local wind generators. This both uses local resources and decarbonise transport emissions. The Council in 2015 attracted funding for an Electric Bus as well as a fleet of electric bicycles to be used for business and leisure purposes. The funding for the bus was achieved through the Green Bus Fund and Low Carbon Vehicle Allocation Fund from Transport Scotland in the 2014-2015 financial year. The funding for the bicycles was delivered within the Smarter Choices, Smarter Places Project in 2015-2016. These funding achievements have been a result of joint working with HITRANS, Orkney Ferries' Ferry fleet is identified a large carbon emitter. This presents an opportunity to de-carbonise the fleet as part of a future replacement programme.

### **Built Environment**

The Council aims to improve the energy efficiency of its existing building stock over the next 20 years by upgrading and improving the insulation and heating systems of existing buildings. It also aims to develop a programme of promoting energy efficiency with its staff and users to ensure a reduction in energy consumption within its buildings.

The Council's ongoing capital investment programme to provide new buildings to house extended or new services and to replace existing buildings where they no longer perform adequately. The programme is wide ranging and has seen several large scale projects in recent years. Central to this the programme must ensure the effective and efficient use of resources.

It is possible that the relative proportions of certain building types will change as a result of demographic and political changes. The Council recently made a £50 million investment into its schools and community facilities developing a replacement secondary school in Kirkwall, a replacement primary school in Stromness, replacement halls of residence and a new swimming pool.

At the other end of the age spectrum, care facilities for the elderly are becoming more and more stretched, requiring additional space provisions. Changes to Orkney's demographic make-up as well as national standards will impact upon the requirement for replacement and additional care facilities. As part of this process the Council has plans to replace care facilities in Kirkwall and Stromness.

The internal heating conditions required for residential care are far higher than those required for school buildings so it is conceivable that the balance of heating fuel consumption may at some stage swing away from the school estate to care home provision

The Carbon Footprint developed by this programme is based on the floor area of the current building stock at the base year. It is likely that the overall floor area of property owned and operated by the Council will continue to increase over the foreseeable future. New buildings will be constructed to a much higher standard of thermal performance than that of the historic building stock, so any increase in floor area will to some extent be offset by reduced fuel requirements as newer more efficient buildings replace older less efficient buildings. Going forward the Council will continue to consider the level of performance required of new buildings in order to minimise the environmental impact of future building work.

The impact of these changes will need to be considered when assessing future emissions against the baseline quantities and Services will be required to identify changes in emissions by sector. The aim of the Carbon Management Plan is to reduce the carbon emissions of the Council and as a result, the main focus must remain the overall emissions level and increases in estate size must be accommodated within the carbon savings achieved in other areas.

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The Council has undertaken a large social rented housing development programme since 2010. This programme has produced housing stock that is very energy efficient and aimed at reducing tenant's energy bills as well as minimising the properties carbon footprint. Designs and specifications have changed with the introduction of new technologies, both in terms of heating and insulation.

### **3.2 Aim**

Orkney Islands Councils aims to move towards a low carbon operation, through careful planning of all our energy consuming activities and by assessing future plans in terms of their Carbon Impact we aim to:

**Reduce our Total Carbon Dioxide emissions in the financial year 2025  
by 42% of the baseline year 2004-05**

### **3.3 Objectives and targets**

Over eight years the Council has achieved a 18% reduction in carbon emissions. Our ongoing CMP will include work on the building stock, staff training and transport based projects. We will also introduce procurement and housing into our programme. As Orkney has an overabundance in locally generated electricity, the Council will also consider electrifying its estate and where possible its transport. The Council will focus on specific projects that have been assessed to identify the anticipated carbon saving (See Section 5). The CMP will be a five year rolling programme which will be aligned to the Council's budgeting processes. It is accepted that on such a long timescale, changes will take place that will alter the priorities of some projects. A regular annual review of the programme will be required to identify progress and re-establish the project list to ensure the final target savings are achieved.

### **3.4 Programme**

The programme to deliver the Carbon Savings required to meet the vision will be to:

- Examine energy use within specific sectors of the organisation, e.g. Education, Ferries, Community Social Services. Benchmarking will be used to identify opportunities and projects will be implemented to achieve reductions.
- Work alongside existing and proposed strategies to embed Carbon Management in the day to day operation of the Council. The Council is also currently developing a Sustainable Energy Strategy which this programme will feed into.
- New policies will be proposed as a result of the Carbon Management programme. Several policy suggestions have been included in section 5.2 including the adoption of whole life costing analysis for new build projects.
- Seek additional funding where possible budget to develop project work. External Funding will be sought through various sources including the Scottish Government schemes; European Union opportunities and United Kingdom Government schemes.
- Publish an annual update demonstrating progress toward the vision of a 40% reduction and updating projects.



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## 4 Emissions baseline and projections

This section will identify the data and sources used to produce the baseline information on which the Council's Carbon Footprint is based. The Carbon Management Programme has looked at all aspects of the Council's operations which have an impact on the production of greenhouse gasses. Data has been collected from various sources from within the Council and from external operators providing services to the Council.

The scope of the initial Carbon Management programme included the ferries and harbour craft in the emissions, over the course of the initial programme it became apparent that the emissions resulting from the tugs and harbour craft fluctuated greatly from year to year as a result of the oil port traffic activity level. A new pilot vessel was commissioned and was brought into service over the period of the plan and as a result of the far more efficient engines significant fuel saving were achieved compared to the older vessels, however any savings resulting from this energy efficiency were swamped by the downturn in activity.

The Ferries also contribute a large proportion of the councils overall emissions but due to the fact that the replacement of the fleet will form part of a long term transport plan and it is unlikely that alternative low carbon fuel sources will be commercially available within the required timescale the options for carbon saving on propulsion systems remains limited.

For the reasons outlined above it is proposed to locally target, monitor and report the Harbour craft and Ferry fuel use but not to include the figures in external reporting. The Harbour craft and Ferries do use shore power when not at sea and this energy use will continue to form part of the targets, as improvements to this energy use can be achieved without considering replacement of major plant

### 4.1 Scope

The following table will outline the council's carbon emissions and identify where the scope has changed from the initial programme to this.

Carbon Production Activity	Service	2007 to 14	2014 to 25
Council Buildings (Operational)	All Services	Yes	Yes
Council Buildings (Tenanted)	Tenants	Limited	Limited
Transport - Council Fleet	Dev & Env	Yes	Yes
Transport - School Buses	Education	No	No
Transport – Public Bus Service	Dev & Env	Limited	Reporting only
Transport – Island Ferries	Orkney Ferries	Yes	Reporting only
Transport – Air links (North Isles)	Transport Services	Yes	Reporting only
Transport – Mainland Ferry Links		No	No
Marine - Tugs & Harbours Craft	Marine Services	Yes	Reporting only
Council Housing	Tenants	No	Yes
Quarry Operations	Dev & Env	Yes	Yes
Business Travel	All Services	Yes	Yes
Commute	All Services	Limited	Yes
Procurement	All Services	No	Expanding
Waste (Domestic)	Tenants	Limited	Yes
Waste (Commercial)	Business Tenants	Limited	Yes
Waste (OIC properties)	All Services	Yes	Yes
Street Lighting	Dev & Env	Yes	Yes

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Council housing has been added to the scope of the revised plan, at the time of the previous plan there was insufficient data to enable a good understanding of the emissions of this sector, however with the implementation of a 100% SAP energy survey of the housing estate we now have robust data on which to base an assessment. Over the coming years it is anticipated that the council housing sector will continue to expand, with new property development underway or in the pipeline, new property are also be assessed using the same SAP process allowing comparison on a similar baseline. It will probably be necessary to report emissions on a per meter basis to compensate for the increasing estate.

Procurement has also been added to the scope of the project, the plan is to introduce the emissions resulting from some of the consumable commodities used by the council. This could include all manner of equipment such as computers or new vehicles down to the purchase of fruit and veg for school meals. The procurement process can include specifications and requirements which impact on the level of emissions generated in the production and supply of the materials and in the emissions resulting from their use. The council has a Sustainable Procurement Strategy which is currently under review. Future contracts could include carbon targets where these can be shown to provide benefit to the council in the form of lower operating costs or avoidance of carbon taxation. Initially it is proposed to look at the procurement of paper for use in the council offices, paper has a high embodied carbon factor and is also a high cost commodity, careful specification of requirements could resulting carbon and cost savings for the council.

The Climate Change Act (UK) 2008 and the Climate Change Act (Scotland) 2009 focus on reducing carbon emissions. Where it is practical and adds value, embedded carbon will also be considered in this Carbon Management Programme.

## 4.2 Baseline

The following sections will look at the data sources and the expected accuracy of the data collected. It is vital that the data used to develop the baseline Carbon emission is available in future to allow comparison of future emissions with the base line year.

### Data and forecasting

The data to form the base line, monitoring and targeting process was gathered together from various sources within and out with the Council. The following table identifies the sources of data and gives an indication of the data quality and level of accuracy within the data collected.

Access		Accuracy	
1	Easily accessible – records are readily available in the correct format	1	Very Good kWh / L etc.
2	Available – records are available but may need re-formatting or adjustments	2	Good based on financial data but accurate conversion possible
3	Possible – Data should be available, but format not known	3	Fair, based on financial data but only general conversion factors available
4	Doubtful – Data is unlikely to exist or is unlikely to be shared	4	Based on estimate only

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Carbon Production Activity	Data Owner	Access	Accuracy	Note
Council Buildings (Operational)	D&I	1	1	
Council Buildings (Tenanted)	Tenants	4	4	Data not required
Transport - Council Fleet	Dev & Env	1	1	
Transport - School Buses	Education	4	4	Data not required
Transport – Public Bus Service	Dev & Env	4	4	Data not required
Transport – Island Ferries	Orkney Ferries	1	1	
Transport – Air links (North Isles)	Transport Services	4	4	Data not required
Transport – Mainland Ferry Links		4	4	Data not required
Marine - Tugs & Harbours Craft	Marine Services	1	1	
Council Housing	Tenants	1	2	
Quarry Operations	Dev & Env	1	1	
Business Travel	All Services	1	3	
Commute	All Services	4	4	
Procurement	All Services	1	2	
Waste (Domestic)	Tenants	2	2	
Waste (Commercial)	Business Tenants	1	1	
Waste (OIC properties)	All Services	1	1	
Housing	Housing Services	2	2	EPC data on the Council's housing stock.
Street Lighting	Dev & Env	1	1	

### Accuracy of data

Over the period of the first Carbon Management programme great efforts have been made to enable accurate measurement of fuel and energy consumption within the organisation. All new build projects are provided with increased levels of monitoring in line with the new building standards. Billing and verification of billing has improved with consolidated billing now in place for Electricity, Water and Waste and Heating Oil. All our utility suppliers can now provide billing data in electronic format which together with increased IT connection speeds will enable the full implementation of the Utilities Database over the coming year as a result it is anticipated that all the emissions used in the assessment will be based on actual consumption figures.

### Buildings

The data available for the buildings was built up from a combination of utility billing information and from onsite meter readings. As these figures are quite specific to individual properties it is fair to assume the overall accuracy will be good for this element. The CRC requires a penalty of 10% of consumption to be added to any site where estimated billing has been used, this encourages building users to provide actual reads.

### Transport

We have actual fuel consumption figures for the Tugs, harbour Craft and Ferries, although these figures will not form part of the targets the emission figures are accurate and may be useful in future funding applications or transport assessments.

The Fuel used by the DERV Fleet vehicles is dispensed via a card access pump, as a result accurate records are available providing fuel use down to an individual vehicle.

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### **Business Travel**

The accounting system holds detailed information on Business travel costs for Air and Sea Travel including destination, so it is possible to accurately assess both the actual mileage travelled and cost associated with the trip. The Payroll system records business mileage and it was possible to draw these figures out to give an accurate figure for actual mileage travelled. To assess the emissions level, the type of vehicles used were based on the car size and fuel split identified in the staff travel survey has been used, however this emission factor may require to be updated when more data on staff travel is available.

### **Street lighting**

The costs and emissions from street lighting is based on the inventory of street lighting points. Over the past few months we have been working with our suppliers to update the data and this has resulted in a few additional points being added to the total. With new build housing still continuing to expand it is probable that the quantity of lighting points will increase over the coming years. Accurate inventories will be maintained to ensure savings from improved efficiency are reflected in cost reductions.

### **Waste**

Where possible on OIC properties we endeavour to recycle and reduce waste. and from commercial customers is assessed and how we can monitor recycling from our buildings.

### **Assumptions**

Over the period of the previous carbon management programme we have used constant carbon emission factors. The emissions resulting from different commodities change over time with new legislation and market trends having an impact on the way fuels are produced and there embodied carbon. Going forward it is proposed to report based on the DEFRA carbon factors published annually. A commentary will also be included to explain the impact of the annual changes and trends in factors.

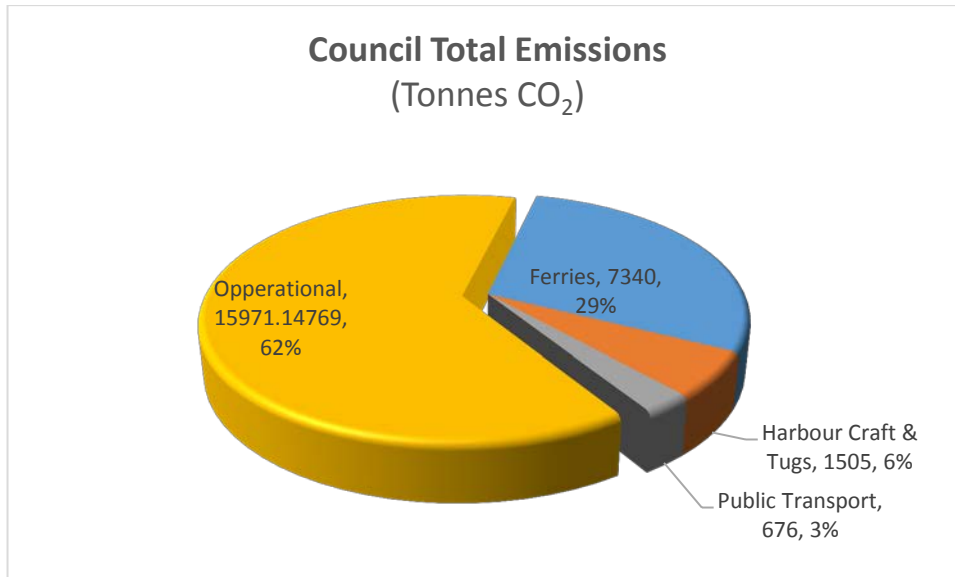
### **Future data gathering**

The data collection baseline contained in Appendix B will be used as the basis for measurement of future year's performance. It is appreciated that the building's estate will develop over the years with some new build projects adding to the stock while some older properties may be sold or otherwise disposed of. The property list will be adjusted to match these alterations to identify the overall CO<sub>2</sub> production levels over future years. The original emissions level will be benchmarked against floor areas to provide an indication of changes in energy performance of the stock; however this will be a secondary function of the data collection process, with the primary function being the identification of year on year changes in overall emission levels.

### **Breakdown of emissions**

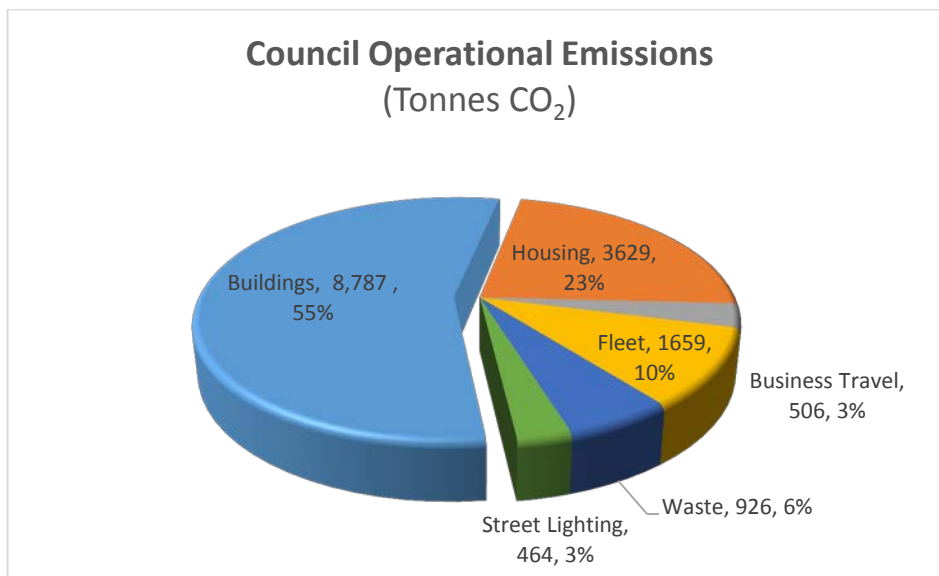
The following tables and charts show the baseline emission levels for Orkney Islands Council. The baseline has been produced using data on fuel and utility consumption for the areas of the Council's operations.

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From the above chart we can see that almost 40% of the councils top line emissions can be attributed to the three sectors covering Ferries, Harbour Craft and public transport which in turn includes the public bus service and the North Isles air service. As discussed earlier it is proposed to set local savings targets, monitor and report on this sector. It should be noted that without technological change the emission levels cannot be addressed without loss of service. As Orkney is one of the few Local Authorities to report on its aircrafts, ferry fleet, tugs and harbour crafts, these figures will be reported and monitored but be excluded from the externally reported savings.

This leaves a total operation emissions of 14,842 ct per annum and this can be broken down into the following components:

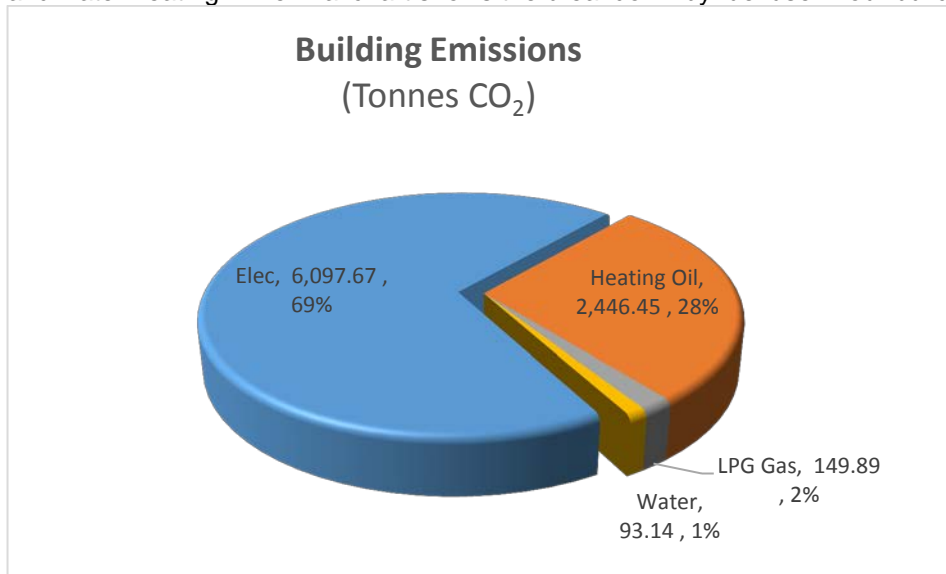


The chart above shows the breakdown of each component of the operational emissions. Housing contributes to approximately 23% of the total this figure is assessed on the building fabric and heating system. This excludes the energy used to power household appliances. This is the preferred method of assessment as the measure focussed on emissions which are in the direct control of the council, being the efficiency of the heating systems and the building fabric condition. Business travel covers both the

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mileage travelled on Orkney in day to day travel as well as travel out with Orkney. The fleet emissions refer to those resulting from quarry operations waste collection and construction works undertaken by the council. The waste emissions are the emissions resulting from the processing of the waste itself which also includes processing and shipping the waste. Street lighting also contributes 3% to the mix, the quantity of street lighting in Orkney is continuing to increase year on year, but improvements in lighting technology mean the emissions are still able to be reduced over the medium term.

The operation of our buildings contribute to the majority of the carbon emissions with 55% of the total operational emissions, the fuel use in buildings is used for heat, light and power for equipment, space and water heating. The final chart shows the breakdown by fuel use in our building stock:

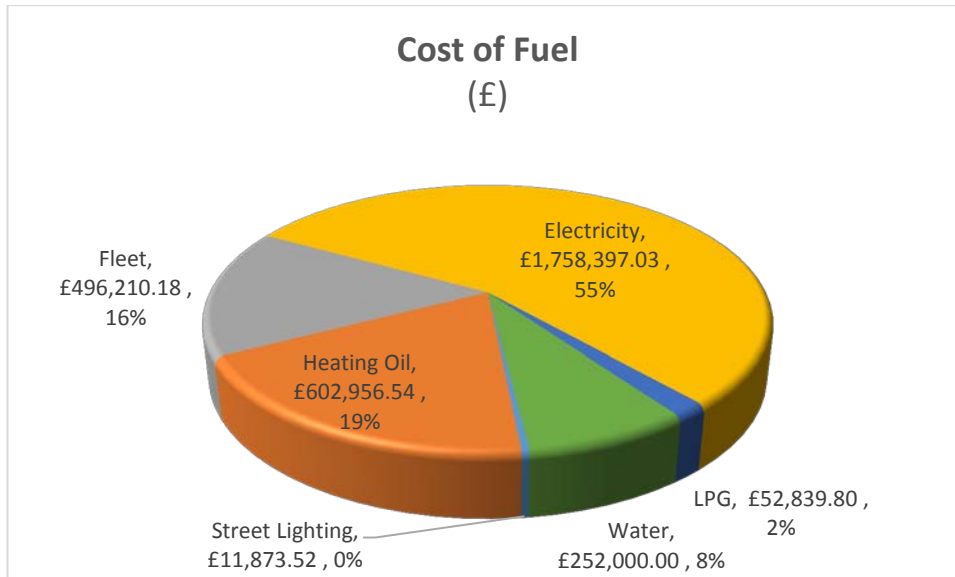


Over recent years the council have invested in renewable heating technology on several of our larger properties, this has helped reduce the heating oil consumption figures but has pushed up the electricity a little, as heat pumps can deliver more energy than the primary fuel itself the amount kWh of electricity is far less than the number of kWh of heating oil displaced and as a result the net effect is a carbon saving.

#### 4.3 Cost and Carbon Emissions

From the chart below we can see the relative cost of the fuel we consume as a council, the majority cost is electricity with 55% of the total cost, Heating oil accounts for a further 19% the cost of heating oil is relatively low at the moment, heating oil costs have continued to fall from a high of 71 pence per litre (ppl) in February 2013 to the current price of 39ppl a drop of over 40% this drop is a welcome relief from the relentless increase in utility prices. Government predictions are that the oil cost will continue to remain at the current low levels for at least the next four to five years, however the oil market is notoriously volatile and frequently defies prediction.

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Fleet operating costs are also linked to the oil price and are also benefiting from the current relatively low prices. Liquid Petroleum Gas (LPG) is used in Stromness Primary, Kirkwall Grammar School (KGS) and the Papdale Halls of Residence, this fuel is cleaner in use than heating oil and is used to minimise carbon emissions. LPG is significantly more expensive than Gas oil or Kerosene an assessment of the cost benefit must be undertaken to assess the value of LPG as a fuel within our building stock.

Over the last year we have had significant problems with delivery of LPG to Orkney as a result of the restrictions placed on ferry transport as the fuel is classed as a hazardous cargo. These problems add to the additional cost and push towards oil fired plant.

Water costs have dropped over recent years as a result of improvements in meter reading frequency and corrections to long running errors in billing finally being resolved. With the contract for water provision transferring to Anglian Water in the New Year we anticipate a small reduction in water costs.

#### 4.4 Project Risks

There are many factors that will impact on the councils ability to reduce its carbon footprint, we have previously discussed the volatility of the harbour operations and how changes in the level of activity have had a significant effect on the councils overall emissions. The following section will address the main risk items and identify measures which can be taken to minimise effects of mitigate against the risk

#### Anticipated Increase in Council Activity

It is difficult to predict the future changes in the activities of the Council. Changes in local, national and international policy all have an influence on the services required of the Council and this has an impact on the type of properties required and so the level of fuel consumption. The following table identifies the changes in operations and estates which may have an impact on the plan.

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Capital Project	Carbon Impact	Notes
<b>New Evie School</b>	Neutral/ Reduce	New build, current school demolished. Although the new build will be slightly larger improvements in building standards should enable a small overall saving to be achieved.
<b>St Andrews School renovation</b>	Increase	Additional space for a growing school.
<b>VAO extension of the Travel Centre</b>	Increase	Additional build for a tenant. Costs and measures will be that of the tenant.
<b>St Peter's Replacement 40 Bed Care Home, Stromness</b>	Neutral/ Increase	Replacement to the existing St Peters rest home. Although the new build will be larger improvements in building standards should enable a small overall saving to be achieved
<b>St Rognvald replacement 60-40 Bed Care Home, Kirkwall</b>	Neutral/ Increase	New build care home facilities are planned over the coming years. As with St Peters savings should be achievable.
<b>Provision of pre-school education</b>	Increase	Scottish Government policy on the increase provision of pre-school availability will place an additional demand for accommodation.
<b>Home Care and Responder Service</b>	Increase	Although savings will be achieved in operational costs through home care and first responder actions, the provision and expansion of this service will increase business mileage.
<b>Scottish Housing Quality Standard</b>	Reduce	By improving our housing stock to meet the SHQS energy requirements will both reduce our emissions and will minimise the risk of fuel poverty for out tenants.

Where we are looking at replacement facilities it is vital that we consider the future use or disposal of the existing buildings. The Evie primary school project involves building the new school on the existing site and then demolishing the old building to create space for the new playground and parking, the net result is that we have only a small increase in the estate floor area and no emissions from the old build. The replacement of Stromness Primary however has resulted in a 'spare' building although there are plans to look at reuse of the old building we have increased the floor area of the estate and although minimised the old building will have energy requirements to keep its fabric in a recoverable condition.

The floor area of the built estate will be used to monitor the baseline and future energy and emissions levels, although the programme is designed to achieve an absolute reduction in carbon emissions it is useful to measure the operational activities and the extent of the estate in order to assess how these changes are affecting the programme outcomes.



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## Projected Costs

Fuel costs are notoriously difficult to predict and are generally the result of political action rather than simply a function of resource availability. At present we are enjoying a drop in oil prices, and although this is welcome it is only a minor drop compared the cost trend over the past 10 years.

Our main building fuel is electricity and although we have not experienced a continuation of the large increases in price that were imposed around 2010 we continue to see incremental rises year on year.

Fuel source	Units	2015/16	2016/17	2017/18	2018/19	2019/20	% increase
Grid Electricity (kWh)	£/kWh	0.0960	0.1050	0.1130	0.1130	0.1140	19%
Gas oil (kWh)	£/kWh	0.0600	0.0560	0.0540	0.0540	0.0550	-8%
Fuel Oil (kWh)	£/kWh	0.0600	0.0560	0.0540	0.0540	0.0550	-8%
Water - Supply (m3)	£/m3	0.3000	0.3100	0.3203	0.3310	0.3420	14%
Water - Treatment (m3)	£/m3	0.7000	0.7200	0.7406	0.7617	0.7835	12%
Diesel (litres)	£/litre	1.3200	1.2700	1.2600	1.2600	1.2800	-3%
Petrol (litres)	£/litre	1.3200	1.2700	1.2600	1.2600	1.2800	-3%
LPG (kWh)	£/kWh	0.0650	0.0650	0.0650	0.0650	0.0650	0%

DECC Updated Energy & Emissions Projections  
Based on Annex M Growth assumptions and prices XLS (Services - retail prices).  
<https://www.gov.uk/government/publications/updated-energy-and-emissions-projections-2014>

The predicted price variation up to 2020 shows a split with electricity and water charges increasing over the period while we see a drop in fossil fuel prices over the same period. Water charges rely greatly on the electricity price as the processing is highly reliant on electricity for pumping and processing.

## 4.5 Past actions and achievements

Orkney Islands Council have been conscious of the need to look at the climate change implications of the Council activities and this has resulted in several ongoing projects, strategies and actions. Some of the main actions and achievements are listed below:

### CEEF

The Council takes part in the Central Energy Efficiency Fund project which was initially funded by the then Scottish Executive. The Council received £80,000 of funding to finance a 'spend to save' programme. The CEEF programme operates as a revolving loan scheme with short payback measures being funded and the fund replenished by repayments made from the savings in fuel costs.

### Energy Management Team

The Council appointed an Energy and Utilities Officer to operate the CEEF fund and to develop and implement an energy strategy for the Corporate Property Portfolio. The post is now permanent. As part of the Spend to Save programme an Energy Engineer and Energy Officer were agreed to be appointed on a 'Spend to Save' basis. An Energy Engineer was able to be recruited and has been in post for 12 months. This is the first year of a three year post. It has been difficult to recruit to the post of Energy Officer. The team also includes an Energy Advisor.

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### **Carbon Trust**

The council was able to use the Carbon Trust design advice service as part of the £50M schools investment programme. This advice informed the development of the room data sheets and specification and helped achieve the twin requirements of achieving an BREEAM 'Excellent' rating and a Scottish buildings standards A rating for the Energy Performance of Buildings assessment. Lessons learnt from this initiative is that some of the standards need to be more appropriate and island proofed for our situation in Orkney.

### **Rain Water Recycling**

Rain water recycling has been used on several of our larger properties and was an integral part of the energy efficiency measures on the Schools Investment Programme. By collecting and storing rainwater falling on the building roof substantial savings in the quantities of water drawn from the mains supplies can be made. The water collected is not drinking quality by can be used for laundry and toilet flushing which make up a substantial part of the building water load.

### **Ensuring Energy Efficiency in building projects**

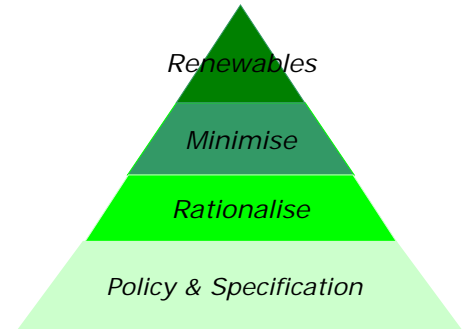
The property team has aimed, where possible to ensure energy efficiency and lower carbon solutions in its building programme. The Warehouse development in Stromness has a Sea Water heat exchange unit; Many of the housing and building projects has seen the use of photovoltaics, heat pumps, air source and other low carbon technology along with a switch to energy efficient electric technology, as this is the most affordable low carbon heating available on the islands. The Council uses energy efficiency as an important factor as part of assessing the most economically advantageous criteria in its tenders.

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## 5 Carbon Management Implementation Plan

### Hierarchy of projects

It is vitally important to ensure that the factors affecting energy efficiency are clearly understood and that projects are tackled in an order that ensures best use of resource to achieve maximum carbon reduction. The diagram opposite shows the relationship between the various aspects of energy efficiency.



### Policy and Specification

Although changes in policy and specification are difficult to evaluate in terms of the tonnes of carbon saved, it is important too that these policies are developed and the knowledge disseminated to the correct services and officers where they can be integrated into new projects. We are currently developing an asset management strategy which will put in place a framework which will inform the future development of our estate, this will involve strategic planning from the service providers to ensure the building promote the long term aims of the council and are fit to deliver the services in the most cost effective way.

### Whole Life Costing Model

Assessing the whole life cost of improvements needs to be an integral part of the Capital Project Appraisal process. Many of the projects proposed in this plan will form part of a larger asset improvement project for instance the project currently under way at Stromness Academy is providing external wall insulation and new windows to the main teaching block, this project could not be financed purely on the energy savings achieved but must be viewed as part of the larger project where the replacement heating system can be reduced to a fraction of the original size and where the buildings are upgraded to provide another 30years of operational use. The use of Whole life cost modelling will enable robust CPA to be developed demonstrating the likely success of projects.

### Setting Energy Benchmark Target

The schools investment programme focused on the development of performance specifications for the energy performance of the buildings. This strategy has been used to develop the specification for the new Evie primary school which will demonstrate a high level of energy efficiency in operation. Further benchmark work has been carried out for the care home projects for St Peters and St Rognvalds and these buildings will also be designed to meet improved energy targets from the initial specification.

### Rationalisation

After ensuring the policy foundations are in place, the next stage in developing a solid management process is to ensure all staff are aware of how their actions can influence the efficient operation of buildings or plant. By introducing staff training and by developing a system of monitoring and targeting, large savings can be achieved by using the existing buildings and plant in their most efficient way.

### Minimisation

The next stage is to look at the plant and machinery used and to evaluate how efficient and effective it is. Building regulations and legislation on vehicle emissions are driving the energy efficiency standards ever higher. There are now many buildings where substantial savings would be made if the building fabric and services were upgraded to current standards. This type of work has to be carefully planned and can only be economically undertaken as part of the ongoing repairs and maintenance programme. Improvements in vehicle efficacies can be realised at natural replacement cycle, provided the efficiency specification is constantly monitored to ensure the best level of fuel efficiency is maintained as the required standard.

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## Renewable Energy

When the energy demands of the building have been minimised through energy aware staff and the operation of efficient and well maintained plant, renewable energy should be considered as an option to reduce Carbon Emissions still further. Ground Source Heat pumps have been successfully installed in several Council buildings to date with the schools investment programme being the largest implementation of the technology to date. With grid constraints still a problem in Orkney it is difficult to make good use of other renewable systems such as wind turbines and PV systems, but small scale implementation is still possible and can be very beneficial on the smaller sites.

### *Implementation plan summary*

The previous carbon management programme set out a ten year programme of projects. This arrangements gives a good indication of the programmes aims, however it does tend to be overtaken by events and to help eliminate this we plan to develop a implementation programme using a 5 year rolling programme, in this way we have the opportunity to develop a detailed programme of works for the coming year together with a provisional programme of years 2 to 5 and an outline covering years 6 to 15. The Carbon Management working group will then meet annually to review the programme and will have the flexibility to add and reschedule projects to meet any changes in circumstances.

### Summary of year 1 projects

<b>Buildings</b>	Title
B01	St Peters Care Home, Stromness
B02	Stromness Swimming Pool, Thermal Upgrade
B04	Stromsay Primary School, Thermal Upgrade and Heating Systems Upgrade
B05	Shapinsay Primary School, Thermal Upgrade and Heating System Upgrade
B06	Hatston Pier, LED Lighting Upgrade
B07	Kirkwall Grammar School, Private Wire Turbine
B09	South Pier, Stromness LED Lighting Upgrade
B10	Kirkwall East Pier Hydrogen Fuel Cell Project
B11	Kirkwall Pier, Marina Breakwater LED Lighting Upgrade
B12	Chinglebraes Waste Transfer, Power supply Upgrade
B13	Hope Primary School, replacement boiler plant
B20	Stromness Community Centre, Thermal Performance & heating improvements
B21	Westray School, Pool and HLC, Thermal Performance & heating upgrade

<b>General</b>	Title
G01	Awareness Raising Programme
G02	Boiler Maintenance Programme
G03	Private Wire Wind Turbine
G04	Kirkwall District Heating System
G05	LED Street Lighting Upgrade

## 6 Implementation Plan financing

The projected costs associated with the implementation plan have been estimated on the basis of similar project work where this is possible. Many of the project costs are 'extra over' where the ongoing maintenance and replacement programmes will be used as the base to develop a more energy efficient option than would be achieved through like for like replacement. The action plan will be developed in line with the estates management plan and the repairs and maintenance programme this will ensure that projects are scheduled to address energy saving priorities but will also meet the operational needs of the client departments.

### 6.1 Funding Sources

#### **CEEF**

At present, the Council has access to the CEEF funding which may be used where projects have a very short payback period. The projects involving the installation of Variable Speed Drives on ventilation systems and the Insulation and draught proofing of building will fall into this category and funding will be available. The CEEF funding is a revolving funded so the funded projects need to repay the money to the fund over the payback period of the works, in this way the work can be funded upfront with the energy savings providing the repayment to the fund, on completion of the payback period the savings will then accrue to the building users budget.

#### **Innovation Fund**

The councils Innovation Fund can provide funding for spend to save projects which can demonstrate a payback period of under five years with a continuing revenue savings, this fund has been used previously to fund the Energy Engineer post which has provided an in house capacity to undertake boiler servicing and maintenance operations on heating systems and Building Management Systems. It is proposed to develop innovation fund bids to cover some of the projects included in the programme where a fast payback period can be demonstrated.

#### **Repairs and Maintenance Budgets**

The on-going repairs and maintenance works will form the backbone of the carbon management funding, many of the projects identified in the five year programme are based on extensions to scheduled maintenance works, for example we have a large number of properties where the heating system is approaching the end of their serviceable life, we have the option of installing oil fired heating again, but for a relatively small additional cost we could move to a renewable heating system which would generate ongoing carbon savings and reduce operating revenue costs.

**Capital Appraisal Process** Where projects can't be accommodated within the repairs and maintenance budget we would propose to develop CPA applications and a number have been identified in the project list. The CPA would generally address a building treatment which could benefit a group of buildings, for example replacement roofs, this sort of project could be applied to a number of properties but by grouping them we could save on design cost and procurement and would also provide an element of flexibility into the works by allowing rescheduling of projects within the group if operational activity dictated.

#### **External Funding**

External funding will be pursued wherever possible, this may include Scottish or UK Government funding of European Union funding where available. We will also investigate private investment opportunities where they may present.

### 6.2 Stakeholder management and communications

As part of the implementation of the former CMP, many stakeholders were identified and have contributed to the development of the implementation plan. The development of the baseline data identified several areas where more direct contact is required within the Carbon Management Group.

As the plan becomes embedded this needs to be part of the Council's ongoing budget and project development process

### **6.3 Stakeholder management**

Engagement of the Stakeholders is important as the scope of the CMP is wider than can be managed by any individual services. The Carbon Management Group will meet regularly to discuss issues and progress and this meeting will be used to identify and mitigate risks to the projects and the programme.

The Carbon Management Team meeting will also seek to identify areas of the Council operations where contact is weak and additional personnel may be required to join or be seconded to the team. Particular projects may require input from organisations external to the Council to maximise effectiveness and when this happens, the Carbon Management Group will make the necessary contacts.

### **6.4 Communications Plan**

Communication of the targets and progress is key to developing ownership and maintaining focus on the target. It is proposed that an annual Carbon Management Report will be developed and presented to the Council. This report will be published to allow the local community to monitor the Council's progress.

Each service will be required to provide feedback on project activity and progress on any interim targets set. A meeting of the Carbon Management Group will be scheduled twice a year. This meeting will allow progress to be discussed, barriers and risks to be identified and solutions sought. Articles in the local press and radio will be used to inform the public of progress and targets.

## 7 Governance, ownership and management

The CMP demands regular attention to ensure the long term goals are kept in focus. As the programme will run for ten years from the publishing of the implementation plan, high level support for the project is essential as changes in Council operations and policy will no doubt provide opportunities and threats to the success of the strategy. By having a robust management structure, these threats can be effectively managed and the opportunities identified and quickly acted upon.

### 7.1 Main roles and responsibilities

In order to ensure that there is effective and ongoing ownership of the Carbon Management programme it is important to define a governance or accountability structure for the programme. It is proposed that representatives from the following areas of the council will form the management structure for the programme and will take part in the future strategic development of the programme.

- Senior Executive – Senior Management Team – **Alistair Buchan**

This should be the Chief Executive, or his appointed delegate, and will be the main driver for policy input to the Carbon Management Programme. They will be responsible for setting the strategic direction for Carbon Management, agreeing the resources to be devoted to the Implementation Plan and reviewing the progress against the objectives outlined in the Plan.

- Member Engagement – Policy and Resource Committee

The Carbon Management Programme is now part of the Council's operations and is also a consideration as part of the budget setting process. Any scale project or energy efficiency innovation bid will be presented to members through other channels on a case by case basis. The programme will be reported to members on annually.

- Head of Strategic Development and Regeneration – **Jan Falconer**

The Carbon Management Group will report all actions to the Head of Strategic Development and Infrastructure who will in turn report to the Council's Corporate Management Team. This is an important role as it provides a direct link between the Carbon Management Group and the Council's Corporate Management Team. This link will ensure progress is maintained by identifying any risks to the program quickly to the Officers able to make the necessary provisions to get the programme back on track.

- Energy Manager – **Alistair Morton**

The Energy Manager will be responsible for evolving and implementing the Carbon Management Plan and for achieving the targets. The Carbon Manager's role would be much broader than that of a traditional Energy Manager as the Council's carbon footprint is generated from a far wider source than the building stock. The Carbon Manager would work in conjunction with the stakeholders responsible for non-building carbon sources to ensure effective progress towards the targets.

- LA Carbon Management Team.

Carbon Management Group	Name	Position
Core team members	Kenny Copland	Fleet Manager
	Maria Cuthbertson	Waste Manager
	Fraser Murray	Orkney Ferries & Harbours Operations
	Laura Cromarty	Transport Manager
	Peter Diamond	Head of Schools
		Service Manager Community Social Services
	Jan Falconer	Head of Strategic Development and Regeneration
	Gareth Waterston	Head of Finance

The team will be responsible for:

- Review and update of the Implementation Plan on an annual basis
- Monitoring and reporting progress against plan
- Monitoring and reporting emissions performance
- Maintenance of the opportunity database
- Internal and external communication

## **7.2 Risks and Issues Management**

Risks to the project will come from many sources both internal and external to the council. The Carbon Management Group will meet regularly to discuss these issues and will report back up through the management team any issues that cannot be resolved at the group level. Issues on individual projects will be managed by the project managers to ensure risk is managed at the lowest level possible and within the shortest timescale.

## **7.3 Benefits Management**

Data on completed project and interim results will be passed back up the management structure to ensure the Council is fully informed of the impact the programme is having. By demonstrating early successful projects, it will be easier to develop enthusiasm for the programme and to ensure future issues are given consideration.



**Carbon Management Implementation Plan: Responsibility Table.**

Activity	Responsible person		
	Executive representation	Service Representation	Carbon Management Team
<b>Carbon Management Implementation Plan</b> <ul style="list-style-type: none"> <li>• Set objectives</li> <li>• Manage implementation plan</li> <li>• Monitor and review progress</li> <li>• Manage risks and issues</li> <li>• Manage stakeholders and communication</li> <li>• Report</li> </ul>	<b>Chief Executive</b> Or Nominated Deputy	<b>Jan Falconer</b> Head of Strategic Development and Regeneration	<b>Alistair Morton</b> Corporate Property
<b>Financing of Carbon Management Activities</b>	<b>Gareth Waterston</b> Head of Finance		
<b>Carbon Management in Buildings</b>	<b>Gwyn Evans</b> Strategic Development and Regeneration	<b>Alistair Morton</b> Strategic Development and Regeneration	
<b>Carbon Management in Housing</b>	<b>Frances Troup</b> Head of Housing and Homelessness	<b>Luke Fraser</b> Housing Manager	
<b>Carbon Management in Waste</b>	<b>Darren Richardson</b> Head of Roads and Environmental Services	<b>Maria Cuthbertson</b> Waste Manager	
<b>Carbon Management in Vehicle Fleet</b>	<b>Darren Richardson</b> Head of Roads and Environmental Services	<b>Kenny Copland</b> Fleet Manager	
<b>Carbon Management In Transport</b>	<b>Brian Archibald</b> Head of Marine Transport and Engineering	<b>Laura Cromarty</b> Transport Manager	
<b>Carbon Management in Ferry Fleet</b>	<b>Brian Archibald</b> Head of Marine Transport and Engineering	<b>Fraser Murray</b> Orkney Ferries & Harbours Operations	
<b>Carbon Management in Harbours</b>	<b>Alistair Wylie</b> Harbours Operations Deputy Harbour Master		
<b>Communications and community relations</b>	<b>David Hartley</b> Communications Manager		

## 7.4 Reporting and evaluation

In order to maintain momentum on the programme, it is essential that all parties are fully informed of progress on targets, issues arising and new opportunities which may open up new avenues for carbon savings. The reporting procedure must be appropriate to the people receiving the information. Too much information can be just as disabling as not enough. The following table shows the proposed reporting system to be used.

Audience	Quarterly	6 Months	Annually
Policy and Resources Committee  (reporting to Full Council)			<ul style="list-style-type: none"> <li>• Progress report on achieving carbon reduction Target</li> <li>• Summary of project spend</li> <li>• Summary of cost savings achieved</li> </ul> 5 Year rolling programme
Management Team		<ul style="list-style-type: none"> <li>• Projects underway report</li> <li>• Project scheduled for next 12 months.</li> <li>• Summary of project spend</li> </ul>	As above
Carbon Management Team	<ul style="list-style-type: none"> <li>• Current project list and progress report</li> <li>• Current project risk log</li> <li>• Current projects spend</li> <li>• 12 Month project look ahead</li> <li>• 5 year project rolling programme</li> <li>• New opportunities register</li> <li>• Project spend report</li> <li>• Project cost savings report</li> </ul>	As above	As above

The annual progress report to the Full Council will be published on the Council website to allow public scrutiny of progress towards targets.

## Annex A: Initial Project List

<b>Buildings</b>	<b>Title</b>
B01	St Peters Care Home, Stromness
B02	Stromness Swimming Pool, Thermal Upgrade
B03 (2019-20)	North Walls School, Thermal upgrade and Heating Systems Upgrade
B04	Stronsay Primary School, Thermal Upgrade and Heating Systems Upgrade
B05	Shapinsay Primary School, Thermal Upgrade and Heating System Upgrade
B06	Hatston Pier, LED Lighting Upgrade
B07	Kirkwall Grammar School, Private Wire Turbine
B08 (2020-21)	Orphir Primary School, Thermal Upgrade and Heating System Upgrade
B09	South Pier, Stromness LED Lighting Upgrade
B10	Kirkwall East Pier Hydrogen Fuel Cell Project
B11	Kirkwall Pier, Marina Breakwater LED Lighting Upgrade
B12	Chinglebraes Waste Transfer, Power supply Upgrade
B13	Hope Primary School, replacement boiler plant
B14 (2017-18)	Papdale Primary, Thermal Performance improvements
B15 (2018-19)	Pickaquoy Centre, LED lighting
B16 (2019-20)	Rackwick Hostel, heating and insulation upgrade
B17 (2020-21)	Rousay Primary School, heating and insulation upgrade
B18 (2019-20)	Stenness Primary School, heating and insulation upgrade
B19 (2017-18)	Stromness Academy, Thermal Performance improvements
B20	Stromness Community Centre, Thermal Performance & heating improvements
B21	Westray School, Pool and HLC, Thermal Performance & heating upgrade

Project Reference	B01 – St Peters Care Home Replacement
Owner	Jan Falconer / Caroline Sinclair
Department	Development & Infrastructure Service / Harbours
Benefits	<p>The Current St Peters house care facility is due for replacement the new facility will have a slightly larger floor area at 2600m<sup>2</sup> than the existing facility but will be built to the recently introduced building standards which will ensure the energy efficiency of the new building will be significantly better than the existing property. It is proposed to use heat pumps for space and hot water heating and these may be Sea Source to take advantage of the buildings proximity to the sea.</p> <ul style="list-style-type: none"> <li>• <b>92 Tonnes CO2 annual reduction</b></li> <li>• 75 Tonne further reductions is on site renewable generation can be installed, subject to S&amp;SE grid constraints</li> <li>• 47% saving over existing building</li> </ul>
Funding	<ul style="list-style-type: none"> <li>• CPA developed for project</li> <li>• Internal capacity funding</li> </ul>
Resources	Development and Infrastructure services together with external consultants will develop project along with Orkney Health and Care
Ensuring Success	<p>Building will need to meet new building control requirements, the latest edition of the technical standards includes a step change in energy performance and this will ensure energy savings are achieved.</p> <p>OIC employers requirements will include energy targets for the build.</p>
Measuring Success	Monitoring of the heating systems will be a requirement of the employers requirements and this information will be used to ensure efficient operation of the heating systems in line with specifications.
Timing	<ul style="list-style-type: none"> <li>• 2016-17 construction programme</li> </ul>
Notes	

Project Reference	B02 – Stromness Swimming Pool Thermal Upgrade
Owner	Jan Falconer / Karen Greaves
Department	Development & Infrastructure Services / Leisure & Rec
Benefits	<p>The existing roof over the pool hall and plant room at Stromness swimming pool is at the end of its useful life. The existing roof has a very poor thermal performance by today's standards and the replacement roof will incorporate much higher levels of insulation, the roof insulation will also be wrapped around to include walls of the pool hall to provide a complete thermal upgrade.</p> <ul style="list-style-type: none"> <li>• <b>67 Tonnes CO2 Emission Reduction</b></li> <li>• 31% saving on existing emissions</li> </ul>
Funding	<ul style="list-style-type: none"> <li>• Repairs and Maintenance budget</li> </ul>
Resources	Development & Infrastructure will develop design and tender project; external consultants will be used for building services.
Ensuring Success	<p>Monitoring of Installation during works will ensure high quality installation and that thermal performance is achieved.</p> <p>Air tightness testing before and after installation will demonstrate improvement to air tightness.</p>
Measuring Success	Building is currently metered for electricity and heating oil use, performance improvements will be measurable using the existing arrangements.
Timing	<ul style="list-style-type: none"> <li>• 2016-17 programme of works</li> <li>• Design work and procurement now complete</li> </ul>
Notes	The existing ventilation systems within the pool still have a few years left of serviceable life, when this equipment is due for replacement we can consider heat pump replacement for the oil fired boiler plant, this project will be included in the +5 years category.

Project Reference	B03 – North Walls Primary School, thermal upgrade
Owner	Jan Falconer / Peter Diamond
Department	Development & Infrastructure Services / Education
Benefits	<p>The existing roofs on the building are reaching the end of their operational life and will need to be replaced. It will be possible to introduce additional insulation into the roof as part of the reroofing process which will increase the thermal performance and airtightness of the roof. With a reduced heat load we can now consider using ground source heat pumps as a heat source for the building.</p> <p>The school currently has a 6KW wind turbine which has operated successfully over the last few years, it may be possible to provide additional capacity on this site utilising private finance on a hosting arrangement, where the council would receive energy in exchange for providing a site and grid connection for a turbine.</p> <ul style="list-style-type: none"> <li>• 45.7 Tonne CO2 Emission Reduction:</li> <li>• 43% saving on existing emission</li> </ul>
Funding	<ul style="list-style-type: none"> <li>• Funding will be part of the repairs and maintenance activities for the school. The heating system is nearing the end of its economic life and is due for replacement.</li> </ul>
Resources	The concept design for this project has already been developed for Glaitness Primary School. A full design will require to be developed based on the school building and the opportunity for additional insulation works to the fabric. Design work will be undertaken by external consultants with cost management by D&I staff.
Ensuring Success	Monitoring of the energy consumption by the new heat pump system will be required in order to claim RHI support. This monitoring will provide early indication of overall performance of the heating system and identify system failures quickly allowing rapid remedial action.
Measuring Success	Carbon emissions will be measured on a monthly basis with energy consumption monitored against weather conditions.
Timing	<ul style="list-style-type: none"> <li>• Construction is programmed for 2019-20.</li> </ul>
Notes	<p>Currently electrically heated building. Total electrical consumption – 243,934kWh Assume 60% used for space heating – 146360kWh Heat pump (COP2.5) – 58,544kWh so saving 80,000kWh</p> <p>Also included 15kW wind turbine (at 20% eff)</p>

Project Reference	B04 – Stronsay Primary School
Owner	Jan Falconer / Peter Diamond
Department	Development & Infrastructure Services / Education
Benefits	<p>The existing roofs on the building are reaching the end of their operational life and will need to be replaced. It will be possible to introduce additional insulation into the roof as part of the reroofing process which will increase the thermal performance and airtightness of the roof. With a reduced heat load we can now consider using ground source heat pumps as a heat source for the building.</p> <ul style="list-style-type: none"> <li>• <b>42.8 Tonnes CO2 Emission Reduction:</b></li> <li>• 33% of annual emissions</li> <li>• Further 27 Tonnes saving from Orkney Grid CO<sub>2</sub></li> </ul>
Funding	<ul style="list-style-type: none"> <li>• CPA for Schools thermal Treatment. We have a number of school building where the existing heating system is at the end of its operational life, we could minimise carbon emissions by using heat pumps as an alternative to heating oil boilers, a programme of insulation will be required to minimise the size of the new renewable heating plant, but this work will need to be co-ordinated with replacement roofing works.</li> </ul>
Resources	Design and procurement will be done in house by D&I. External consultants will be used to develop renewable heating systems design.
Ensuring Success	Careful monitoring of on-site installation will ensure high efficiency standards are achieved. Air tightness testing and thermal imaging testing will be used to verify improvements.
Measuring Success	Metering equipment will be installed as part of the new renewable heating system; this equipment will provide daily performance information and will enable system to be operated at maximum efficiency, with faults and deviations quickly identified.
Timing	<ul style="list-style-type: none"> <li>• Development of CPA in FY 2015/16</li> <li>• Initial works beginning 2016/17</li> </ul>
Notes	

Project Reference	B05 – Shapinsay Primary School
Owner	Jan Falconer / Peter Diamond
Department	Development & Infrastructure Services / Education
Benefits	<p>The existing roofs on the building are reaching the end of their operational life and will need to be replaced. It will be possible to introduce additional insulation into the roof as part of the reroofing process which will increase the thermal performance and airtightness of the roof. With a reduced head load we can now consider using ground source heat pumps as a heat source for the building.</p> <ul style="list-style-type: none"> <li>• <b>31.2 Tonnes CO2 Emissions Reduction:</b></li> <li>• 33% of annual emissions</li> <li>• Further 19 Tonnes saving from Orkney Grid CO<sub>2</sub></li> </ul>
Funding	<ul style="list-style-type: none"> <li>• CPA for schools Thermal Treatment. We have a number of schools buildings where the existing heating system is at the end of its operational life, we could minimise carbon emissions by using heat pumps as an alternative to heating oil boilers, a programme of insulation will be required to minimise the size of the new renewable heating plant, but this work will need to be co-ordinate with replacement roofing works.</li> </ul>
Resources	Design and procurement will be done in house by D&I. External consultants will be used to develop renewable heating systems design.
Ensuring Success	Careful monitoring of an on-site installation will ensure high energy efficiency standards are achieved. Air tightness testing and thermal imaging testing will be used to verify improvements.
Measuring Success	Metering equipment will be installed as part of the new renewable heating system; this equipment will provide daily performance information and will enable system to be operated at maximum efficiency, with faults and deviations quickly identified.
Timing	<ul style="list-style-type: none"> <li>• Development of CPA in FY 2015 -16</li> <li>• Initial works beginning 2016 -17</li> </ul>
Notes	



Project Reference	B06 – Hatston Pier and Ferry Terminal
Owner	Jan Falconer / Brian Archibald
Department	Development & Infrastructure Services / Harbours
Benefits	<p>Replacement of existing flood lights using more efficient LED floodlights. Use of either Air source heat pumps or sea source heat pump to heat existing terminal building. Existing point of use heating is expensive to operate.</p> <ul style="list-style-type: none"> <li>• <b>38.7 Tonnes CO2 Emission Reduction:</b></li> <li>• 33% of annual emissions</li> </ul>
Funding	<ul style="list-style-type: none"> <li>• Repairs and maintenance budget</li> </ul>
Resources	Design developed by external consultants with procurement and project management by D&I.
Ensuring Success	Careful monitoring of design and construction to ensure energy targets are met.
Measuring Success	Metering equipment will be installed as part of the new renewable heating system; the equipment will provide daily performance information and will enable system to be operated at maximum efficiency, with faults and deviations quickly identified.
Timing	<ul style="list-style-type: none"> <li>• Summer 2016-17</li> </ul>
Notes	<p>Total Electrical consumption – 276972kWh Assume 40% used for pier lighting – 110,788kWh Replacement LED lamps with 40% saving – 40,000kWh</p> <p>Assume 60% of remainder used for space heating – 99,710kWh Heat pump (COP2.5) – 39,884kWh so saving 50,000kWh</p> <p>Total Saving 90,000kWh<sub>e</sub>.</p>

Project Reference	B07 – Kirkwall Grammar School private wire wind turbine project
Owner	Jan Falconer / Peter Diamond
Department	Development & Infrastructure Services / Education
Benefits	<p>500kW Turbine installed but operated at 300k, the system would feed electricity to KGS initially with any excess energy used in KGS heating system, phase 2 would see the system extended to cover Papdale School the Halls of Residence and the OIC offices.</p> <ul style="list-style-type: none"> <li>• <b>226 Tonnes CO2 Emission Reduction:</b></li> <li>• 34% of building emissions</li> </ul>
Funding	<ul style="list-style-type: none"> <li>• Private investor will provide turbine and private wire distribution as part of the project; however alterations to the school electrical distribution would be required. A CPA and business case will be presented.</li> <li>• Investment opportunity for OIC with projected 5% ROI</li> </ul>
Resources	Developed by consortium of local businesses
Ensuring Success	Due diligence study will be required on technical and financial proposals before project can proceed. Technical concept for the scheme is sound and has been achieved on other sites, but grid constraint in Orkney may prove to be a stumbling point.
Measuring Success	Operation of generation can be easily monitored on site to ensure efficiency of system is achieved.
Timing	<ul style="list-style-type: none"> <li>• Initial phase of project covering KGS could be operational by end of 2016-17</li> </ul>
Notes	Major risk on this project is achieving required grid connection at school, initial negotiations are underway with S&SE

Project Reference	B08 – Orphir Primary School
Owner	Jan Falconer / Peter Diamond
Department	Development & Infrastructure Services / Education
Benefits	<p>The existing roofs on the building are reaching the end of their operational life and will need to be replaced. It will be possible to introduce additional insulation into the roof as part of the reroofing process which will increase the thermal performance and airtightness of the roof. With a reduced heat load we can now consider using ground source heat pumps as a heat source for the building.</p> <ul style="list-style-type: none"> <li>• <b>36.7 Tonnes CO2 Emission Reduction:</b></li> <li>• Further 11 Tonnes saving Orkney Grid CO<sub>2</sub></li> </ul>
Funding	<ul style="list-style-type: none"> <li>• CPA for Schools Thermal Treatment. We have a number of school buildings where the existing heating system is at the end of its operational life, we could minimise carbon emissions by using heat pumps as an alternative to heating oil boilers, a programme of insulation will be required to minimise the size of the new renewable heating plant, but this work will need to be co-ordinated with replacement roofing works.</li> </ul>
Resources	Design and procurement will be done in house by D&I. External consultants will be used to develop renewable heating systems design.
Ensuring Success	Careful monitoring of an on-site installation will ensure high energy efficiency standards are achieved. Air tightness testing and thermal imaging testing will be used to verify improvements.
Measuring Success	Metering equipment will be installed as part of the new renewable heating system; this equipment will provide daily performance information and will enable system to be operated at maximum efficiency, with faults and deviations quickly identified.
Timing	<ul style="list-style-type: none"> <li>• Development of CPA in FY 2020-21</li> </ul>
Notes	

Project Reference	B09 – South Pier, Stromness LED Lighting Upgrade
Owner	Jan Falconer / Brian Archibald
Department	Development & Infrastructure / Harbours
Benefits	<p>Replacement of existing pier lighting using more efficient LED flood lighting</p> <ul style="list-style-type: none"> <li>• 14.4 Tonnes CO2 Emission Reduction:</li> <li>• 30% of annual emissions</li> </ul>
Funding	<ul style="list-style-type: none"> <li>• Repairs and maintenance budget</li> <li>Initial design work funded by resource efficient Scotland</li> </ul>
Resources	Design developed by external consultants with procurement and project management by D&I
Ensuring Success	Careful monitoring of design and construction to ensure energy targets are met
Monitoring Success	Metering equipment will be installed as part of the new renewable heating system; this equipment will provide daily performance information and will enable system to be operated at maximum efficiency, with faults and deviations quickly identified.
Timing	<ul style="list-style-type: none"> <li>• Summer 2016-17</li> </ul>
Notes	

Project Reference	B10 – Kirkwall East Pier Hydrogen Fuel Cell Project
Owner	Jan Falconer / Brian Archibald
Department	Development & Infrastructure Services / Harbours
Benefits	<p>As part of the Surf n Turf project a hydrogen fuel cell will be installed on Kirkwall pier, the energy from this unit will be fed into the local grid displacing grid energy with power derived from a hydrogen storage project utilising excess energy generated at EMEC's Eday site</p> <ul style="list-style-type: none"> <li>• <b>3.7 Tonnes CO2 Emission Reduction:</b></li> <li>• This target is set very low at present until further details of the expected usage become available.</li> </ul>
Funding	<ul style="list-style-type: none"> <li>• European Union Funding</li> <li>• Economic development budget</li> </ul>
Resources	D&I assistance with development of grid connection at pier
Ensuring Success	EU funding will require detailed reporting of operational effectiveness of system.
Measuring Success	Energy generated will be metered as it enters the local grid; use of energy on the pier is already monitored so a clear indication of local use of energy can be demonstrated.
Timing	<ul style="list-style-type: none"> <li>• Programme to install fuel cell 2016/17</li> </ul>
Notes	

Project Reference	B11 – Kirkwall Marina Breakwater LED Lighting Upgrade
Owner	Jan Falconer / Brian Archiblad
Department	Development & Infrastructure Services / Harbours
Benefits	<p>Replace existing lighting with more efficient LEF floodlighting units.</p> <ul style="list-style-type: none"> <li>• <b>2.1 Tonnes CO2 Emission Reduction:</b></li> <li>• 16% of annual emissions</li> </ul>
Funding	<ul style="list-style-type: none"> <li>• Repairs and maintenance budget</li> <li>Initial design work funded by resource efficient Scotland</li> </ul>
Resources	Design developed by external consultants with procurement and project management by D&I
Ensuring Success	Careful monitoring of design and construction to ensure energy targets are met
Measuring Success	Metering of energy use on pier is already in place and this will allow monitoring of installation.
Timing	<ul style="list-style-type: none"> <li>• Summer 2016-17</li> </ul>
Notes	

Project Reference	B12 – Chinglebraes Waste Transfer – Power Upgrade
Owner	Jan Falconer / Darren Richardson
Department	Development & Infrastructure Services
Benefits	Upgrade incoming electrical supply and switchgear and remove diesel powered generation plant.  <ul style="list-style-type: none"> <li>• <b>6.0 Tonnes CO2 Emission Reduction:</b></li> </ul>
Funding	<ul style="list-style-type: none"> <li>• Repairs and maintenance budget</li> </ul>
Resources	Design development by D&I with additional external technical support if required.
Ensuring Success	Careful monitoring of design and construction to ensure energy targets are met
Measuring Success	Measuring fuel use and electricity consumption on site will provide performance data on success of project
Timing	<ul style="list-style-type: none"> <li>• Summer 2016-17</li> </ul>
Notes	

Project Reference	B13 – Hope Primary School, Boiler replacement
Owner	Jan Falconer / Peter Diamond
Department	Development & Infrastructure Services
Benefits	<p>Replace oil boilers with heat pump and recommission heating system to accommodate new arrangement, additional fabric insulation to be installed as required.</p> <ul style="list-style-type: none"> <li>• <b>52.9 Tonnes CO2 Emission Reduction:</b></li> </ul>
Funding	<ul style="list-style-type: none"> <li>• Repairs and maintenance budget</li> </ul>
Resources	Design development by external consultants with additional technical support from D&I as required.
Ensuring Success	Careful monitoring of design and construction to ensure energy targets are met
Measuring Success	Measuring fuel use and electricity consumption on site will provide performance data on success of project
Timing	<ul style="list-style-type: none"> <li>• Summer 2016-17</li> </ul>
Notes	



Project Reference	B14 – Papdale Primary, Thermal Upgrade
Owner	Jan Falconer / Peter Diamond
Department	Development & Infrastructure Services
Benefits	<p>External insulation and roof insulation upgrade to infant school buildings. Including window upgrade. Connection to district heating network will enable savings on heating emissions.</p> <ul style="list-style-type: none"> <li>• <b>197.78 Tonnes CO2 Emission Reduction:</b></li> </ul>
Funding	<ul style="list-style-type: none"> <li>• Repairs and maintenance budget</li> </ul>
Resources	Design development by external consultants with additional technical support from D&I as required.
Ensuring Success	Careful monitoring of design and construction to ensure energy targets are met
Measuring Success	Measuring fuel use and electricity consumption on site will provide performance data on success of project
Timing	<ul style="list-style-type: none"> <li>• Summer 2017-18</li> </ul>
Notes	

Project Reference	B15 – Pickaquoy Centre Lighting Upgrade
Owner	Jan Falconer/ Karen Greaves
Department	Development & Infrastructure Services
Benefits	<p>Replacement LED lighting and lighting controls within sports centre building</p> <ul style="list-style-type: none"> <li>• <b>174.6 Tonnes CO2 Emission Reduction:</b></li> </ul>
Funding	<ul style="list-style-type: none"> <li>• Repairs and maintenance budget</li> </ul>
Resources	Design development by external consultants with additional technical support from D&I as required.
Ensuring Success	Careful monitoring of design and construction to ensure energy targets are met
Measuring Success	Measuring electricity consumption on site will provide performance data on success of project
Timing	<ul style="list-style-type: none"> <li>• Summer 2018-19</li> </ul>
Notes	

Project Reference	B16 – Rackwick Hostel, Insulation and Heating Upgrade
Owner	Jan Falconer
Department	Development & Infrastructure Services
Benefits	<p>Install internal insulation within the building and replace electrical storage heating with heat pump system.</p> <ul style="list-style-type: none"> <li>• <b>0.65 Tonnes CO2 Emission Reduction:</b></li> </ul>
Funding	<ul style="list-style-type: none"> <li>• Repairs and maintenance budget</li> </ul>
Resources	Design development by external consultants with additional technical support from D&I as required.
Ensuring Success	Careful monitoring of design and construction to ensure energy targets are met
Measuring Success	Measuring electricity consumption on site will provide performance data on success of project
Timing	<ul style="list-style-type: none"> <li>• Summer 2019-20</li> </ul>
Notes	

Project Reference	B17 – Rousay Primary School, Insulation and Heating Upgrade
Owner	Jan Falconer/ Peter Diamond
Department	Development & Infrastructure Services
Benefits	<p>Install internal insulation within the building and replace existing oil heating system with heat pump.</p> <ul style="list-style-type: none"> <li>• <b>14.0 Tonnes CO2 Emission Reduction:</b></li> </ul>
Funding	<ul style="list-style-type: none"> <li>• Repairs and maintenance budget</li> </ul>
Resources	Design development by external consultants with additional technical support from D&I as required.
Ensuring Success	Careful monitoring of design and construction to ensure energy targets are met
Measuring Success	Measuring electricity consumption on site will provide performance data on success of project
Timing	<ul style="list-style-type: none"> <li>• Summer 2020-21</li> </ul>
Notes	

Project Reference	B18 – Stenness Primary School, Insulation and Heating Upgrade
Owner	Jan Falconer/ Peter Diamond
Department	Development & Infrastructure Services
Benefits	<p>Install internal insulation within the building and replace existing oil heating system with heat pump.</p> <ul style="list-style-type: none"> <li>• <b>30.08 Tonnes CO2 Emission Reduction:</b></li> </ul>
Funding	<ul style="list-style-type: none"> <li>• Repairs and maintenance budget</li> </ul>
Resources	Design development by external consultants with additional technical support from D&I as required.
Ensuring Success	Careful monitoring of design and construction to ensure energy targets are met
Measuring Success	Measuring electricity consumption on site will provide performance data on success of project
Timing	<ul style="list-style-type: none"> <li>• Summer 2019-20</li> </ul>
Notes	

Project Reference	B19 – Stromness Academy, Envelope Thermal Upgrade
Owner	Jan Falconer/ Peter Diamond
Department	Development & Infrastructure Services
Benefits	<p>Extension of existing external insulation project to cover next phase of the project.</p> <ul style="list-style-type: none"> <li>• <b>88.71 Tonnes CO2 Emission Reduction:</b></li> </ul>
Funding	<ul style="list-style-type: none"> <li>• Repairs and maintenance budget</li> </ul>
Resources	Design development by external consultants with additional technical support from D&I as required.
Ensuring Success	Careful monitoring of design and construction to ensure energy targets are met
Measuring Success	Measuring electricity consumption on site will provide performance data on success of project
Timing	<ul style="list-style-type: none"> <li>• Summer 2020-21</li> </ul>
Notes	

Project Reference	B20 – Stromness Community Centre, Envelope Thermal Upgrade
Owner	Jan Falconer
Department	Development & Infrastructure Services
Benefits	<p>Upgrade of fabric insulation within the nursery area of the building with extension of existing air source heating system to cover area.</p> <ul style="list-style-type: none"> <li>• <b>5.15 Tonnes CO2 Emission Reduction:</b></li> </ul>
Funding	<ul style="list-style-type: none"> <li>• Repairs and maintenance budget</li> </ul>
Resources	Design development by external consultants with additional technical support from D&I as required.
Ensuring Success	Careful monitoring of design and construction to ensure energy targets are met
Measuring Success	Measuring electricity consumption on site will provide performance data on success of project
Timing	<ul style="list-style-type: none"> <li>• Summer 2016-17</li> </ul>
Notes	

Project Reference	B21 – Westray Pool and Healthy Living Centre, heating upgrade
Owner	Jan Falconer
Department	Development & Infrastructure Services
Benefits	<p>Existing pool and HLC are supplied from the school boiler plant, the building operates on a different time schedule from the school and would be more efficient if it was supplied from an independent heating system, The pool plant could be supplied from a heat pump as a further carbon saving. Installation of external and internal insulation throughout the school building, existing boiler plant to be replaced with secondary heat pump system.</p> <ul style="list-style-type: none"> <li>• <b>78 Tonnes CO2 Emission Reduction:</b></li> </ul>
Funding	<ul style="list-style-type: none"> <li>• Repairs and maintenance budget</li> </ul>
Resources	Design development by external consultants with additional technical support from D&I as required.
Ensuring Success	Careful monitoring of design and construction to ensure energy targets are met
Measuring Success	Measuring oil and electricity consumption on site will provide performance data on success of project
Timing	<ul style="list-style-type: none"> <li>• Summer 2016-17</li> </ul>
Notes	



Project Summary Sheet

<b>General</b>	Title
G01	Awareness Raising Programme
G02	Boiler Maintenance Programme
G03	Private Wire Wind Turbine
G04	Kirkwall District Heating System
G05	LED Street Lighting Upgrade

Project Reference	G01 – Awareness Raising Programme
Owner	Jan Falconer
Department	Development & Infrastructure Services
Benefits	<ul style="list-style-type: none"> <li>• 427 Tonnes CO2 Emission Reduction:</li> <li>• 5% of Total Building Reduction Target</li> <li>• Anticipated Savings £30K Per Annum</li> </ul>
Funding	<ul style="list-style-type: none"> <li>• A spend to save application was developed to address awareness raising, however due to recruitment problems the implementation has been placed on hold.</li> <li>• Restructuring of D&amp;I may release some internal resources to undertake this work</li> </ul>
Resources	Staff training and awareness raising will make use of existing training resources available from Carbon Trust, EST and Resource efficient Scotland.
Ensuring Success	Staff training is only effective for a very limited period and it is necessary to reinvigorate the training on a regular basis, as a result it is proposed to run a rolling programme of staff training covering different locations, such as schools and office buildings. The training will be tailored to the operations of each building user group.
Measuring Success	Building users will be encouraged to provide meter readings. Regular performance data will be issued to buildings Targets will be set with user groups.
Timing	<ul style="list-style-type: none"> <li>• Year 1 – School estate</li> <li>• Year 2 – Office accommodation</li> <li>• Year 3 – Health and Care</li> <li>• Year 4 – Remaining properties</li> </ul> Programme would then repeat
Notes	

Project Reference	G02 – Boiler Maintenance Programme
Owner	Jan Falconer
Department	Development & Infrastructure Services
Benefits	<p>We have recently introduced a Building Energy Engineer posts as part of the energy management programme. This service covers the maintenance of the boiler plant, heating system checks and maintenance and development of the Building Management Systems.</p> <ul style="list-style-type: none"> <li>• <b>129 Tonnes CO2 Emission Reduction:</b></li> <li>• 5% of boiler heating oil emissions</li> </ul>
Funding	Funding has been providing by the innovation programme, however the post will demonstrate on going saving and it is anticipated that the post will be self-funding.
Resources	Development and Infrastructure will provide the energy engineering service which will address boiler maintenance on all properties.
Ensuring Success	Maintain records of works undertaken will form part of the operation and maintenance documentation and will inform future replacement programmes.
Measuring Success	<p>By measuring the performance of heating plant in terms of heating oil consumption we can show an on-going improvement in plant efficiency.</p> <p>Recording man-hours and works completed allow a detailed assessment of the specialist contractors work displaced and financial value can be calculated.</p>
Timing	<ul style="list-style-type: none"> <li>• Programme commences September 2014</li> <li>• Initial phase will be 18 Months, but will be extended to 3 years</li> </ul>
Notes	

Project Reference	G03 – Private Wire Wind Turbine Project
Owner	Jan Falconer
Department	Development & Infrastructure Services
Benefits	<p>The installation of a 75kW Hydrogen fuel cell on the Kirkwall pier will provide a clean energy source which will displace grid energy used by the shipping in port. The fuel cell will also provide an educational resource which should provide Orkney with the opportunity to train staff in operation, maintenance and development of hydrogen fuel system.</p> <ul style="list-style-type: none"> <li>• 3 Tonnes CO2 Emission Reduction:</li> <li>• % of annual target</li> </ul>
Funding	<ul style="list-style-type: none"> <li>• Funding of this project has been developed by the project team and involves EU, Scottish Government, OIC and private financing.</li> </ul>
Resources	Design work will be undertaken by external consultants with D&I managing the integration into the existing pier distribution system cost management by D&I staff.
Ensuring Success	D&I will work with partners to deliver the project on time within the proposed budget. Knowledge transfer will be a key part of the project and the council will assign sufficient recourse to ensure success of this aspect of the project.
Measuring Success	Fuel use and energy generation will be carefully monitored in order to assess the efficiency of the systems and allow improvements to be made.
	Project is currently underway, and is due to be operational
Notes	

Project Reference	GO4 – Kirkwall District Heating
Owner	Jan Falconer
Department	Development & Infrastructure Service / Other
Benefits	<p>As part of the overall waste strategy we have the opportunity to look at developing a waste to heat plant and district heating system. The energy developed from the waste could be used to generate heat as the primary energy with electricity also being investigated as an option. The scheme would provide heat to a number of OIC properties which could be linked by a heating network. Over time it is envisaged that the network would be expanded to connect more properties.</p> <ul style="list-style-type: none"> <li>• <b>Quantified against each property</b></li> </ul>
Funding	<ul style="list-style-type: none"> <li>• A CPA will be developed in conjunction with the waste processing project.</li> <li>• An initial feasibility study is being undertaken by an external consultant at the moment, this work is funded by the Scottish Government.</li> </ul>
Resources	<p>Design work would be provided by external consultants with cost planning delivered by D&amp;I services. Alternative options may be assessed as part of the CPA with the possibility of a turnkey delivery team considered.</p>
Ensuring Success	<p>CPA process will identify opportunities and risks for the council and will evaluate the financial benefits of the scheme.</p>
Measuring Success	<p>The plant outputs will be measured to quantify the energy generation and the volume of waste processed. The scheme will deliver low carbon energy to some of our most difficult to treat properties within the Kirkwall town centre.</p>
Timing	<ul style="list-style-type: none"> <li>• Initial cost assessment underway to inform briefing papers</li> <li>• CPA assessment to follow</li> <li>• Project will be developed over the next 5 years</li> </ul>
Notes	

Project Reference	GO5 – LED Street Lighting Upgrade
Owner	Darren Richardson
Department	Development & Infrastructure Service / Other
Benefits	<p>Improved lighting levels and colour rendering, improvements to lighting distribution improves dark sky's compliance. 40% reduction in the connected load and equivalent reduction in operating costs.</p> <ul style="list-style-type: none"> <li>• <b>185 Tonnes CO2 Emission Reduction</b></li> </ul>
Funding	<ul style="list-style-type: none"> <li>• Initial project will be funded using SALIX for the works up to Dec 2016</li> <li>• The remaining work not completed by Dec 2016 will form the basis of an Innovation fund bid</li> </ul>
Resources	<p>Design work would be provided by external consultants with cost planning delivered by D&amp;I services. Installation work be undertaken by the Street lighting maintenance team with supplementary assistance by contactors as required.</p>
Ensuring Success	<p>The SALIX loan application process will identify opportunities and risks for the council and will evaluate the financial benefits of the scheme.</p>
Measuring Success	<p>Street lighting inventory will be updated on a monthly basis to ensure maximisation of the potential savings.</p>
Timing	<ul style="list-style-type: none"> <li>• Application to SALIX funding before the end of April 2016</li> <li>• Phase one complete by December 2016</li> <li>• Remaining lighting points replaced by Dec 2017</li> </ul>
Notes	