



# **Environmental Strategy**

## **2017 - 2022**

**February 2017**



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**“Since the planet is our life support system – we are essentially the crew of a largish spaceship – interference with its functioning at this level and on this scale is highly significant. If you or I were crew on a smaller spacecraft it would be unthinkable to interfere with the systems that provide us with air, water, food and climate control.... We are playing with fire, a potentially reckless mode of behaviour which we are likely to come to regret unless we get a grip on the situation” -**

**– Professor Chris Rapley, Climate Scientist at University College London and former director of the Science Museum in London**

# **1. Executive Summary**

The Environmental Strategy sets out our direction for reducing fuel poverty and making our business and homes more environmentally sustainable. By implementing the Strategy we reduce future costs and we improve the overall sustainability of our business.

The global environmental problems highlighted in Section 4 of this strategy impact on our planet, but they also impact people and communities in many different ways. Resource shortages and associated price increases are those most relevant to our customers and our staff. Many of our tenants are already struggling to manage financially. Rising prices for food and fuel impact them severely. The more prices rise, the more our tenants have to choose to heat, eat, or pay their rent. Our customers having less money, along with our own costs rising, impact on the sustainability of our business.

The national and international political landscape adds risk and reduces our opportunity to bring in external funding. All of this means we need to do more, with less, and being efficient is a key theme within the strategy.

We have made some great progress, and are seen as a leading Social Housing Provider in this field. Whilst we cannot fix global issues alone, we can continue to set a great example, and we can also ensure we are minimising the impact of resource shortages and price increases for our tenants, our staff, our communities and our business.

Our strategy is aligned to the Government's declaration that by 2050 all buildings, commercial and domestic, need to be low to zero carbon to meet the UK's climate targets. We want to achieve 'Zero 2050 homes' in the most efficient and cost effective way. This strategy sets out what we expect our homes and communities to look like in 2050, which enables us to invest more efficiently towards this goal. It also ensures we are meeting interim targets along the way and that our homes and tenants will be future proofed against changes in energy supply.

The strategy is organised around three key areas: Our Homes, Our Communities, and Our Business. In sections 14, 16 and 17 we set out targets and direction under each of these headings. The action plan which will help us deliver this strategy has ownership across all NCH Teams to ensure that the whole organisation understands how their activities help to achieve our Environmental targets. This will enable us to deliver our vision 'To Create Homes and Places Where People Want to Live', now and in the future.

## 2. Introduction

Nottingham City Homes is an ALMO which manages around 27,000 homes. We are a key player in Nottingham, and a trusted partner of Nottingham City Council, which is one of the most ambitious councils in the UK, particularly in terms of energy. In 2013 we were awarded the title of Sustainable Landlord of the Year, through the UK Housing Awards. This award is important because it shows how much NCH has already done in terms of being an environmentally sustainable landlord.

We are also a SHIFT Silver landlord. The SHIFT assessment (Sustainable Homes Index for Tomorrow) benchmarks our environmental performance against other landlords. This process enables us to understand what we need to change as an organisation. We now need to focus on improving our performance so that we achieve SHIFT GOLD.

Some of the main areas for improvement include our stock performance, which we believe is partly due to historic data not having been updated, but also because we have large numbers of old homes within our stock; some of our business practices and policies; our office energy consumption; and environmental issues which are not energy related, such as water usage and adaptation to climate change. The Environmental Strategy brings together all of these improvements and is intended to help us achieve **our Vision, “To Create Homes and Places Where People Want to Live” now and in the future.** It supports the Council’s ambitious environmental plans and will ensure that we can deliver changes required to meet these in a planned and efficient way.

Being more efficient in our business practices means that we waste less and spend less, which helps with budget reductions and the financial pressures we face over the next few years. Continuing to invest in the energy performance of our homes and focusing on the performance of our new build homes will ensure that our tenants have the best chance of heating, eating, and paying their rent as Universal Credit is rolled out. Being better informed about the performance of our stock will put us in the best position to secure any external funding, which will help when our capital budgets are being reduced.

Many of the changes we will make, and projects and initiatives which will be delivered as part of this strategy will not only be good for business, and help sustain a healthy planet, but they will also improve the health and wellbeing of our communities, and our staff. For example, fuel poverty has been shown to increase mental and physical illnesses, and also to impact on educational achievement of children. We have evidenced this with our Impact Study into the Decent Homes programme, and more recently the Warm Homes for Health study. Another example is air pollution, which kills thousands of people every year. Contributing to reducing emissions will mean Nottingham air is healthier for our communities and staff.

Our Environmental Strategy will help us to support and promote Healthy People, Healthy Communities, a Healthy Business and a Healthy Planet.

This strategy also ensures that we think more broadly about environmental sustainability. Energy and fuel poverty are a priority for NCH and these issues have the biggest impact on our customers and our business. However we must also consider water use, pollution, waste, natural resources and food when we are ensuring that our activities reduce our environmental impact. The context section of the strategy includes information about why these global challenges are important to our customers and our communities.

It is crucial to understand the current financial challenges which we are facing, and to ensure that the strategy is realistic and deliverable. For that reason, the strategy is focused on being more efficient, including planning for the longer term to ensure that we invest once and invest wisely, and in doing so, ensuring that we are ahead of any regulatory requirements.

### **3. Our Performance**

#### **Some of our successes:**

- Installation of 14,221 boilers, 4140 loft insulation and 12588 cavity wall homes.
- Installation of 18760 double glazed window sets, 21743 doors
- Solid wall insulation to 4178 NCH homes and 2500 private sector homes
- Whole house retrofit to Bentinck, Manvers and Kingston 270 high rise flats, including district heating from burning waste
- PV to almost 4000 homes
- Successful delivery of Green Deal Communities grant funding to 1360 private residents, with ECO funding for more than 600 further private residents
- Funding of more than £10m secured for energy efficiency in our homes
- Fuel Poverty Advisors and Community Champions recruited and trained
- Water saving measures distributed
- Employee benefits including cycle to work and bus passes
- No bins under desks and recycling already in place.
- Awards for East Midlands Project of the Year 2015, Sustainable and Renewable Technologies, Local Government Chronicle Awards 2015, and the previously mentioned UK Housing Award 2013, as well as being shortlisted for many others.

#### **The Performance of Our Business**

- The carbon emissions from our three largest offices are 673Tonnes of Co2 per year, down from 861 in 2014 /15.
- From our fleet, we emit 811 TCo2 per year, which is a reduction of 234 TCo2 over the last four years.
- Property Services has ISO14001, but this is not organisation wide.
- We are a SHIFT Silver landlord.

## The Performance of Our Homes

- Nottingham's current average SAP is 68.4. Our Corporate Plan target by 2018 is an average SAP of 69 which is the bottom of EPC Band C.
- SHIFT landlords' current average SAP is 70, so we are currently just below average. We expect to achieve 70 through our programme of stock condition surveys.
- Our new build homes average SAP is 86. Our highest performing homes are the five new build homes built by our own DLO, and these average SAP 96 which is EPC A.

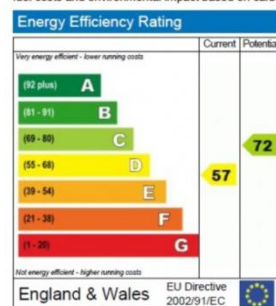


## How we Measure the performance of our Homes

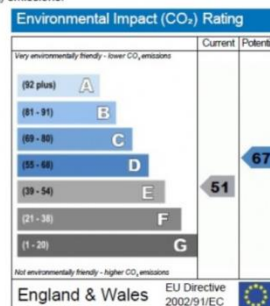
We measure the performance of our homes using a SAP score (standard assessment procedure). SAP scores are banded into EPC (Energy Performance Certificate) ratings for homes, and an EPC certificate is produced each time an assessment is carried out.

An EPC certificate includes two ratings, one for energy efficiency which is based on the cost for heating and lighting the home, and one for environmental impact (EIA), which shows the carbon emissions from heating and lighting the home. The first is the one which we are currently measured on and which our Corporate Target relates to. This impacts fuel poverty. The second is important when considering carbon reduction targets. Both ratings are based on current practice. So efficiency is based on fuel prices today, and carbon is based on carbon emission factors today. This must be considered when we use EPC ratings to evaluate our performance.

This home's performance is rated in terms of the energy use per square metre of floor area, energy efficiency based on fuel costs and environmental impact based on carbon dioxide (CO<sub>2</sub>) emissions.



The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating, the more energy efficient the home is and the lower the fuel bills are likely to be.



The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide (CO<sub>2</sub>) emissions. The higher the rating, the less impact it has on the environment.

## 4. Global Challenges

“Climate change poses a threat not just to the environment, but also to poverty eradication abroad and to economic prosperity at home ”  
- Former Prime Minister David Cameron 2015

**Climate Change** has been stated to be a **worse threat than terrorism on our security**. It is caused by increased levels of gases in the Earth’s atmosphere which trap the sun’s heat and raise the temperature of the Earth. This is known as Global Warming. Global warming leads to ice caps melting and rising sea levels. Carbon dioxide is the biggest cause of Global Warming. Carbon dioxide emissions are produced when we use fossil fuels such as gas to heat and power our homes and oil to drive our cars. Methane is another significant contributor to global warming which is 25 times more powerful than CO<sub>2</sub>. Methane is caused by rotting food in landfill sites, and cows burping and farting!

A single cow’s contribution to climate change each year is equivalent to driving 7,500 miles in an average car

Climate Change is worsened when we chop down trees and rain forests and when peat bogs dry out. These areas of rich vegetation absorb lots of carbon which is released back into the atmosphere if they are damaged.

The Government’s Climate Change risk assessment for the UK suggests that our biggest internal challenges will be increased **flooding**, pressure on clean **water security and supply**, **ECO systems** and **summer droughts**, which can cause greater impact on health services, but that climate change impacts outside of the UK are likely to impact us even more due to **volatile food prices** and **environmental refugees**. [1]

**Air pollution** is caused by emissions from petrol and diesel vehicles as well as power stations and households burning solid fuels. NOX emissions are measured in different locations around the UK and in many of those locations, including in Nottingham, the emissions have been found to be higher than they are permitted to be by the World Health Organisation. **Air pollution is a major environmental risk to health** and can increase chance of stroke, heart disease, lung cancer, and both chronic and acute respiratory diseases, including asthma. [2]

We are currently using our planet’s resources far faster than they can be renewed. In the UK we are currently living a three planet lifestyle. We only have one planet so this is not sustainable.

**Clean water** is essential for life, and yet we are currently polluting much of the planet’s water, which has consequences for water based ECO systems, and potentially our health. Water Pollution is caused by industrial or agricultural waste, or by household sewage discharge. Chemicals or plastics which we use can end up in

<sup>1</sup> <https://www.gov.uk/government/publications/international-dimensions-of-climate-change>

<sup>2</sup> <http://www.who.int/mediacentre/factsheets/fs313/en/>

the sea, rivers and lakes, and even in groundwater which means they could be present in the water we use in our homes, even for drinking. **Pollutants can also be swallowed by fish, and then get into our food supplies.** [<sup>3</sup>]

In the UK we currently have 10% more supply than demand for clean water. By 2050 demand is expected to exceed supply by 5 – 16% due to higher demand from changing uses and population, and reduced supply because of global warming. Half a million more homes are also expected to be at **significant risk of flooding**. Additional spending on flood defences, sustainable urban drainage systems (SUDS) and property level protection from flooding will be required to mitigate the risk. These figures are based on global temperatures increasing by 2 degrees. If temperatures rise by 4 degrees, mitigation will be inadequate and **more than one million homes will be at risk.** [<sup>4</sup>] 13% of new homes built since 2000 have been built on flood plains.

The **Energy** we need to run our homes and business comes from power stations which generate electricity in a range of ways. In 2015 the UK's electricity generation was made up of 30% gas, 23% coal, 22% nuclear and 25% renewables. By 2020 the UK has committed to producing 30% of electricity from renewable sources. [<sup>5</sup>]

Coal, gas and oil, are fossil fuels which are non-renewable as they take millions of years to be produced. As they are produced they absorb carbon which means that when they are burnt they release this into the atmosphere, adding to global warming. Our supplies of **fossil fuels are running out**, so we have to find alternative ways to make electricity. Renewable power is generated by using the sun, wind, waves or water and these can be at a major scale, supplying power stations, such as wind farms in the sea. Or they can be on a local scale, such as the PV panels we have installed. Biofuels are also considered to be renewable fuel sources because they can be quickly grown. However they require land and water which could be used for other things such as growing food, and they **contribute to air pollution** which is responsible for up to 40,000 deaths a year in the UK.

Nuclear power is a way of producing electricity which does not contribute to climate change, but it has **significant risks** associated with it. Power stations which currently use nuclear energy are expected to close by 2025 and new nuclear power stations are very expensive to build.

Gas is available to 85% of UK homes, and at around 1/3rd of the price of electricity it is the main fuel source for heating our homes. However gas is a fossil fuel, much of it is imported, and it will run out. Fracking has potential to produce cheap gas to replace fossil fuels but there is **concern that fracking could pollute groundwater** which is used to provide clean drinking water.

UK policy suggests a move towards electric heating, which will put more pressure on infrastructure and mean more investment is required in the national grid. Peak electricity demands are already seen across the UK at certain times of day, such as teatime when people get in from work. Reducing the electricity load at these times can have a huge impact on the requirement for coal fired power stations. Balancing

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<sup>3</sup> [http://wwf.panda.org/about\\_our\\_earth/teacher\\_resources/webfieldtrips/water\\_pollution/](http://wwf.panda.org/about_our_earth/teacher_resources/webfieldtrips/water_pollution/)

<sup>4</sup> <https://www.theccc.org.uk/2015/10/29/preparing-for-uk-water-extremes-flooding-and-drought/>

<sup>5</sup> <http://www.energy-uk.org.uk/energy-industry/electricity-generation.html>



demand with supply will be an important part of reducing the UK carbon emissions, which means Smart metering and electricity storage technology is very important. [6]

Many alternative **fuel supplies are more expensive** to develop than coal and the Government funds this development through charges to energy consumers, including our business, our staff and our customers.

The impact of climate change on other countries is critical to our customers and communities because of food production. **More than half of our food in the UK is imported.** [7] Food production uses land and water, and it produces carbon emissions. Transporting food also creates carbon emissions, and requires packaging which uses materials such as plastic, and creates waste. The World's population is growing and eating habits are changing. As more people across the world eat more meat, more land is required to grow food for livestock and more methane is created. Forests are cut down to provide farming land, which reduces the planet's ability to absorb carbon. This leads to more global warming, which causes **heatwaves and water shortages**, and both of these **reduce crop production** which leads to **rises in food prices**.

If UK households stopped wasting avoidable food and drink it would save 17 million TCO<sub>2</sub> which is equivalent to the emissions from one quarter of private car journeys made in the UK. The average cost of this wasted food is £470 per year, or £700 per year for families with children, so our tenants could save up to £40 per month by reducing their food waste.

With the production of food being so resource intensive, it is essential that we reduce our food waste. In the UK consumers throw away 4.2 million tonnes of avoidable food waste each year. Along with all the energy and water used for producing and transporting food being wasted, most discarded food reaches landfill sites where it emits methane and further adds to global warming. [8]

**Energy and food prices are set to continue rising.**

## **5. Fuel Poverty**

Many of the tenants living in our homes have a low income. The official definition of fuel poverty is low income / high cost; people must have a low income and higher than average costs. To have higher than average fuel costs someone must live in a home which is not energy efficient. However even residents who do not meet this definition because their home is more efficient than average, can still feel as though they struggle to heat their homes adequately. 23% of social housing tenants in the UK feel this way, compared to 11% who are actually classed as being in fuel poverty. This is due to social renters often having much lower incomes, so even efficient

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<sup>6</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/48550/6099-elec-system-assess-future-chall-full.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48550/6099-elec-system-assess-future-chall-full.pdf)

<sup>7</sup> <https://www.theguardian.com/environment/2016/jan/06/more-than-half-of-uks-food-sourced-from-abroad-study-finds>

<sup>8</sup> <http://www.wrap.org.uk/content/uk-handy-waste-facts-and-figures-retail-sector>

homes can be hard to heat. [<sup>9</sup>]

Cold homes are linked to a wide range of health issues, from mental health to asthma and respiratory issues, to trips and falls, some of which are attributed to excess winter deaths and excess winter hospital admissions as stated in the Fuel poverty report commissioned for the Government [<sup>10</sup>]. The impact of these on the NHS has been estimated at £145m per annum [<sup>11</sup>]. Cold Homes also cost us more money because they are more likely to have recurring damp and mould issues. Nottingham City Homes spent £250,000 on anti-mould paint in 2012 –13. Anti mould paint treats the symptoms but not the cause.

Nottingham City Homes' recent study, **Warm Homes for Health**, has proven the saving to the NHS. This showed that residents living in solid wall homes had reduced numbers of visits to the doctors after their homes had been insulated and that they experienced an improvement in their mental health and wellbeing. So investing in our homes to ensure that our tenants have affordable heat means we can save money for the NHS. This helps with some of the wider financial pressures which the UK is facing.

The risk of rising fuel prices is a Corporate Business risk for us because our tenants' fuel bills are a huge part of their living costs, and if these rise disproportionately to their income, which has happened in recent years, they have less money for paying their rent. This is particularly challenging with the introduction of **Universal Credit**, when people are expected to manage their own budget when they haven't had to do this before. In 2015, NCH took part in a study with Sustainable Homes, called **Touching the Voids** [<sup>12</sup>]. This showed that when homes become more energy efficient they are void for a shorter length of time - on average, 31% shorter for band B properties compared to those in bands E and F. Also rent arrears were found to be on average half a month higher for properties in band F properties.

## 6. UK Regulation

In 1980 the UK introduced the Climate Change Act which set out a legally binding commitment to reduce carbon emissions by 80% on 1990 levels by 2050, with interim targets of reducing emissions by 34% by 2020 and 40% by 2030. More recently, in December 2015 a Climate Conference was held, and 195 countries adopted the first ever legally binding global climate deal. The commitments include limiting global temperature rises to below 2 degrees above pre-industrial levels.

The UK is expected to meet Climate Change targets through a combination of reduced consumption, a **shift from gas to electric heating** and from petrol and

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<sup>9</sup> <http://fuelpoverty.eu/2016/09/30/the-continuing-importance-of-fuel-poverty-among-social-renters-in-england-explaining-the-gap-between-objective-and-subjective-fuel-poverty-measures/>

<sup>10</sup> Hills, J. (2012). *Getting the Measure of Fuel Poverty*. London: Crown.

<sup>11</sup> BRE. (2011). *The Health Costs of Cold Dwellings*. London: Building Research Establishment.

<sup>12</sup> Sustainable Homes (2016) *Touching the Void*. London: Sustainable Homes

diesel to electric vehicles, **localised renewable generation** and de-carbonisation of the National Grid, through greener and cleaner power stations. In 2011, the Carbon Plan, published by the Government, set out the policies for achieving their carbon targets. This stated that **by 2050 all buildings would need to have an emissions footprint close to zero** [<sup>13</sup>].

The 2015 Fuel Poverty strategy for England proposes all homes should be **EPC Band C** by 2030. **By 2030**, it has been suggested that gas appliances, **boilers** and heaters are also expected to have been **phased out in the UK**. Electric heating in homes is more expensive than gas at present, and because electric heating is usually provided by heat pumps, it is suited to **low temperature heating**, which **requires very energy efficient homes**. Electrically heated homes will also need to be Smart to maximise their efficiency. Smart homes allow energy flows to be managed better, so battery storage, smart meters and smart controls will be needed and these will make the UK's grid more efficient, which will reduce the cost of electricity.

## **7. Finances and Funding**

Our business is also under significant financial pressure. In coming years we have to deal with welfare reform, budget pressure at NCC, and rent reductions which are reducing our 5 year investment programme by more than £35m. With these challenges it is crucial that we are more efficient, more focused, and smarter with our budgets.

There are currently no central Government grants for energy efficiency, and in recent years grant and even financial mechanisms have been introduced and then reduced or removed with very little notice, which gives little certainty for investment.

Energy Company Obligation (ECO) funding is the only current energy efficiency and fuel poverty funding. The current extension of ECO which starts in April 2017 and runs to September 18, is primarily aimed at fuel poor households, with social housing properties eligible only if they have an EPC of E or below. From our current data on 17735 properties, NCH has 7193 properties in Band D, and **1200 properties which are E or below**. ECO funding for solid wall insulation is still available, but reduced to fund only 17,000 homes nationally in an 18 month period.

The Feed in Tariff is now so low that it is difficult to make investment in PV systems pay. However there are opportunities around energy storage, which mean landlords could attract annual payments for batteries (or even storage heaters) which are controlled to accept and release power at certain times of day. This could make renewable technology more financially viable at both individual and communal levels. Renewable Heat Incentive can also help to fund district or renewable heating schemes.

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<sup>13</sup> HM Government. (2011, December). *The Carbon Plan*. Retrieved October 16, 2014

In 2013 the Green Deal was established alongside ECO funding, using money from the Green Investment Bank to provide loans for energy efficiency. In implementation this was overly complex and loans were too expensive and it proved very unpopular so was closed in 2015. The Green Deal concept of PAYS (Pay as You Save) is still favoured by the Government as it uses energy savings to pay for the measures which reduces the need for grant. The legislation which allowed loans to be collected through the energy bill still exists. It is also well proven that energy efficiency can create lots of jobs, and this is very beneficial to the UK economy, particularly if money spent on investing in energy efficiency is redirected from paying for oil and gas, using the PAYS mechanism.

“The employment impact of investing in energy efficiency is between two and a half and four times larger than that for oil and natural gas” (Platt & Rosenow, Up Against the (Solid) Wall, 2014)

NCH is currently using H2020 European funding and we had expected to access more EU funding, in future. Since **Britain's decision to leave the EU**, this **funding may not be available** and there is no clarity on whether UK Government will replace these funding programmes with a national alternative. There is potentially a short term opportunity for ESIF funding, until the UK has officially left the UK, which is currently projected to be by 2019.

## 8. Technical Issues

In a typical British home, around one-third of the heat produced by a central heating system is rapidly lost through the roof, floor, ceiling and walls. This means that for a poorly insulated property up to £1 out of every £3 spent on heating is being wasted. This is why insulation is so critical to reducing energy bills.

According to Government figures, there are 19,830,000 cavity wall properties in the UK, of which 14,150,000 are already insulated to today's standards. The remaining 5,680,000 include hard to treat cavities, and hard to access residents. There are 8,000,000 solid wall properties, of which only 3% have been insulated to date [<sup>14</sup>]. NCH has insulated almost 100% of our cavity walls and around 50% of our solid wall properties. We have insulated 85% of our lofts to current standards, and very few floors as this is the most difficult area to access to install insulation.

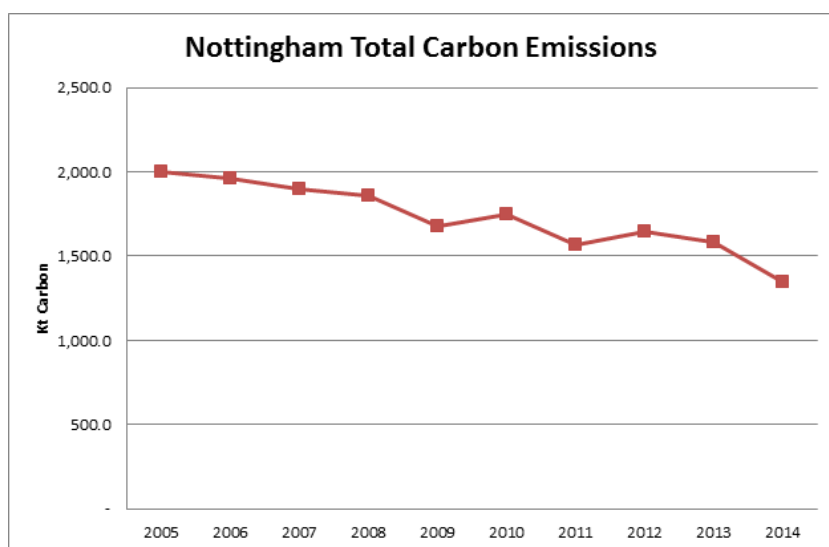
SWI (Solid wall insulation) was previously a priority for ECO funding. Insulating solid wall homes is part of the UK Government's Carbon Plan. However recent reviews commissioned by the Government have shown that there are technical problems with some SWI installations, with poor detailing and inadequate ventilation causing damp and mould, and subsequent performance issues.

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<sup>14</sup> DECC. (2014, September 23). *Quarterly Statistical Release Green Deal, ECO and Insulation Levels in Great Britain*. Retrieved October 27, 2014

## 9. Local Context

Nottingham has a high profile in tackling Climate Change. The Nottingham Declaration of Climate Change was developed here and has now been signed by hundreds of other Local Authorities. NCC signed up to the Covenant of Mayors early, and wrote an ambitious Energy Strategy in 2010. For a number of years we have been proud of the fact that we are the most energy self-sufficient City in the UK.



**The Nottingham City Council Energy Strategy 2010: 26% reduction in CO2 emissions from a 2005 baseline, by 2020.** This has already been achieved, four years early, partly thanks to the insulation and renewable projects which NCH has delivered.

**The Nottingham Plan to 2020 includes further targets for fuel poverty: By 2020, Nottingham will have reduced fuel poverty below that of any Core City.** Against this we are making progress, and are now third of all Core Cities.

RHE (Robin Hood Energy) has been set up by Nottingham City Council to meet their objective to deliver a 'Nottingham Tariff'. This was a commitment in their Energy Strategy and the Nottingham Labour Manifesto. NCH has supported RHE with their roll out, and we now switch all void properties to RHE.

In 2010 Nottingham generated 11.45% of heat and power from CHP (Combined Heat and Power) and renewables. **Our target by 2020 is to generate 20% of all power locally.**

English Core Cities comparison	Domestic PV installation up to end March 2016	FITs Per 10,000 homes March 2016	Domestic PV installation up to end December 2015	FITs Per 10,000 homes Dec 2015
<b>Nottingham</b>	<b>5,109</b>	<b>401</b>	<b>4,514</b>	<b>354</b>
Manchester	5,991	285	4,926	235
Sheffield	4,750	204	4,587	197
Leeds	6,478	198	5,343	164
Bristol	3,452	186	3,273	176
Newcastle	2,006	169	1,913	161
Liverpool	2,982	142	2,535	121
Birmingham	5,723	137	5,551	133

Over the last five years we have installed almost 4000 PV systems to NCH homes, and Nottingham now has far more PV systems installed per 10,000 homes, compared to other Core Cities. We have also

expanded the district heating network into more homes. This uses waste as fuel which also helps to reduce Nottingham's waste to landfill.

Nottingham is delivering the Smart Cities Agenda. The EU funded REMOURBAN and SENSIBLE projects which NCH is part of, are both developing Nottingham as a 'Smart City'. Other partners in Nottingham, such as the two universities, are pivotal to this agenda. The Green Theme Partnership has been set up as a cross organisational group to drive the green agenda, and NCH expects to play an important part in this group throughout the period of this strategy.

Nottingham City Council has recently been awarded £6m of funding from (OLEV) Office of Low Emissions Vehicles. This is to support the city in developing electric vehicle infrastructure which will reduce emissions and improve air quality. NCH's fleet is made up primarily of diesel vehicles. In the last four years we have reduced our carbon emissions through working more efficiently, using opti-time to plan our journeys and jobs better, and right first time and multi-skilling to ensure we can complete works in one visit. Our current annual carbon emissions are 811TCo<sub>2</sub>, from 1045TCo<sub>2</sub> in 2013.

NCC has also secured £6.1m to implement a programme to develop Nottingham as a Cycle City. This includes developing better cycling connections and ensuring safe routes for less experienced cyclists. NCH already offers Cycle to Work scheme bikes, and cycle facilities in the majority of offices. Recently agreed is a cycle mileage scheme to incentivise cycling between sites.

## **10. Background and Progress**

Our 2013 - 2018 Asset Management Strategy committed to insulating all remaining un-insulated solid wall homes, and attracting £50m ECO funding. We initially made good progress against this target; a fuel poverty index was developed to prioritise which neighbourhoods received insulation first, and six neighbourhoods and almost 2500 NCH homes have subsequently been insulated under the **Greener Housing** programme, our partnership brand with NCC.

DECC's 2016 fuel poverty statistics show that NCH's energy projects have reduced fuel poverty in Nottingham. Most wards above the 12.6% Nottingham average are predominantly areas with private landlords and owner occupiers with Arboretum coming out highest. The areas with NCH homes which are above average include Aspley, Wollaton East and Lenton Abbey and The Dales. All of these have received insulation works in 2016 and therefore statistics in the next release are likely to show a drop in these wards too.

During our programme ECO funding reduced by almost 90% and now provides only a few hundred pounds per property. NCC and NCH committed to continuing with the SWI programme, which includes around 4000 homes still to be insulated. Some of these are part of the current programme, which has been procured and is on site. Others are budgeted to be insulated over the next five years. There are some challenges with our current plan:

- SWI costs around £6,000—£8,000 per property, and saves around £240 per year.
- If ECO funding continues to be available it will not be for all of our solid wall homes, and will be offered at very low rates.
- Lack of funding is a significant barrier to private residents in our communities, and our commitment in the Asset Management Strategy was to deliver cross tenure.
- Planners in Nottingham have worked with us on projects being delivered in estates such as Lenton Abbey, and have been generally positive about the results. However they have stated that the current solution will not be satisfactory for all Nottingham red brick estates.
- Low to zero carbon homes which are suitable for electric heating would need to be very efficient. Technical questions about how to deal with areas below the Damp Proof Course for example, mean that homes with SWI will not always be suitable for low temperature heating.
- The work takes more than 4 weeks, and this can be quite disruptive.

But our residents have stated that warmth is one of their priorities. Affordability is also a key issue for our customers and our business so we cannot afford not to improve our homes, but we must think carefully about how we do this in the most cost effective and efficient way.

Within our Asset Management Strategy 2013—2018 we stated that ‘most of our homes can, with the investment detailed in this plan, continue to provide quality accommodation over the next 30 years. These properties will need on-going maintenance, while some of the non-traditional construction and solid wall properties with no cavities will require significant additional insulation to improve their energy efficiency’. The significant additional insulation has been focused on solid wall insulation. We are not intending to replace all of our stock in 30 years, but in 34 years our homes are expected to have zero carbon emissions. If we do not consider how to achieve this now, and we continue to invest and build over the next 30 years, without focusing on performance, we will see significant additional costs.

## **11. NCH Corporate Strategies**

The other Corporate Strategies which this strategy contributes to and builds on are the Corporate Plan 2015 – 2018, the Asset Management Strategy 2013 – 2018, the Damp and Mould Strategy, and the Health and Wellbeing agenda. The new HRA business plan, which is being written currently, will align with this strategy. The STP (Sustainability and Transformation Plan) and the NCC Health and Wellbeing Strategy will be supported by the delivery of this strategy.

Environmental Sustainability is a challenging concept, because it is about making decisions now which will impact our lives and those of others in the future. If we don't take the steps now, as identified in the Stern report, it will cost us all much more money in the future.

## 12. Vision

This strategy is based on the Government's declaration that by 2050 all buildings, commercial and domestic, need to be low to zero carbon, and that we want to achieve 'Zero 2050 homes' in the most efficient and cost effective way. Through our 2013 Asset Management Strategy we acknowledged that some of our homes require significant additional insulation to improve their energy efficiency. If we spend significant amounts of money now on bringing our homes up to an EPC C, and regulation is introduced which requires our homes to be EPC A or B, we will have no money left to make the additional improvements. If we make our homes an EPC C and fuel prices rise as expected, our tenants who had been lifted out of fuel poverty, will once again struggle to pay their bills, and their rent. We could decide to pause work now and wait until further grant funding is introduced, but if we once again base our strategy on chasing funding, we are at risk of boom and bust delivery, increased costs, and pressure to deliver within unrealistic timescales. This also does not help to grow the low carbon economy, which could provide many of our tenants with training and jobs. So we need to move towards a position where we are not reliant on grant funding, whilst ensuring we can attract this when it is available. The result of this will be future proofed homes which we only have to invest in once.

Our Vision is to '**Create Homes and Places where People Want to Live**'. As a sustainable business this does not just mean now, it also means that we want to continue doing this in the future. What will Nottingham's homes and communities of the future look like?

- All homes will be super-efficient, requiring very little heating and cooling, and using rainwater for some of their water provision. Low temperature heating will be standard, provided either by community heating or by renewable electrical heating such as heat pumps.
- Our homes and communities will generate electricity, and will be part of a Smart Homes network, which buys, sells and stores power to ensure lowest cost and carbon dioxide emissions.
- None of our residents are in fuel poverty.
- Gardens and neighbourhoods provide a source of food, and biodiversity for insects and animals, and drainage for surface water run-off.
- People are able to breathe clean air as they carry out their daily activities.
- Our residents have access to job opportunities, sustainable transport, and affordable healthy food.

This aspiration for Nottingham's communities of the future may seem ambitious, and it will not be realised within the term of this strategy, but if we are to reach these goals by 2050 in the most efficient way possible, we must set out our direction of travel. This will ensure all decisions taken now will not adversely impact our ability to achieve our vision in the long term.



## 13. Delivering the strategy

In the short term, we need clear goals and projects which will move us towards achieving our vision. These goals and projects are set out over the following pages, with an Action Plan to be developed to give more detail of who will deliver each element and the specific tasks which help us to deliver on our goals.

**Our commitments are grouped into 3 key areas:**

1. **Our Homes**
2. **Our Communities**
3. **Our Business**

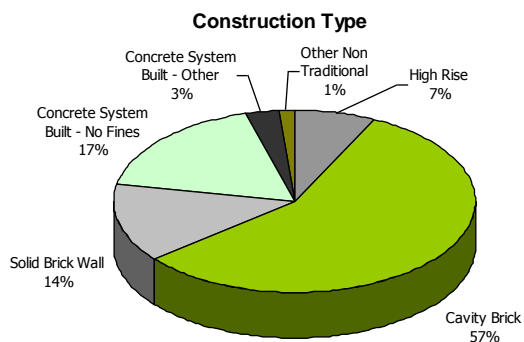
As a landlord we can directly impact the **environmental performance of our homes**. We can take a **long term view** of how we invest in our assets, and we also have an **opportunity to influence** our tenants and our communities. As a business we can take control of our energy consumption, and we can **influence our supply chain** through our procurement policy.

The strategy ensures that our business is mitigating our environmental impact, and helping our tenants to do the same.

By being ambitious, we put ourselves in a great position to **influence national policy**, which will help us to ensure that any grant funding will help us to deliver our strategy, rather than grant funding driving our strategy.

## 14. Our Homes

Whilst we have made significant investment into the performance of our homes, we have not always updated our EPCs, or SAP scores, so our current average performance and SHIFT score is based on data which is not up to date. Therefore it does not recognise all of the work we have done to improve our homes.



57% of our homes have insulated cavity walls. For today's standards cavity wall insulation is sufficient but with insulation installed earlier than 2000, these properties will require additional investment to improve their energy performance before 2050.

The remaining properties are classed as hard to treat, which means they require solid wall insulation. We have around 4000 solid wall homes remaining un-insulated. These are our worst performing homes, in which tenants are most likely to be in fuel poverty. Whilst our focus must continue to be on these 4000 properties, and bringing them up to a standard fit for today, we must not create problems for the future, so we need to reconsider our strategy.

We are also now facing the challenge of rent reductions, giving us reduced budgets over the 30 year HRA Business Plan period. With limited budgets we need to ensure that when we make significant investment in our properties, we are achieving **the standards we will require in the future; not the standards we require now.** For this reason, and those set out in Section 7, our strategy is to now look to the longer term. This means we need to be better informed about our long term plans, and we need to pilot solutions for how we will achieve these plans. However we must also ensure we are continuing to reduce fuel poverty.

**We will do this through piloting a range of high performance whole house retrofit solutions, use external funding & financial mechanisms to support HRA budgets. We will use our pilots to develop a 30 year investment plan by 2020. Because it will take longer to deliver this programme to all homes, we will also install lower cost measures to more homes, which will ensure we reduce fuel poverty for more of our tenants sooner.**

Low cost measures include ensuring all of our lofts are insulated, draught proofing, LED lighting and installing more effective heating controls. We will also use innovative methods to insulate and improve our homes, and ensure we continue to provide a test bed for green tech solutions developed in Nottingham and further afield. Collectively through these different projects, we will ensure that **none of our homes are less than an EPC D by 2020 and C by 2030.**

During the first period of this strategy, we will carry out analysis to ensure we understand which properties should be prioritised for the significant investment, and which properties require cheaper low cost measures. We will also understand the ways we can achieve our '2050' homes. We will support the roll out of Smart metering and ensure our tenants understand how to make the most of these. We will also focus on other environmental impacts of our homes. We have for many years been installing low flow taps and low flush toilets as part of Decent Homes, but we have not routinely offered showers. We will now do this on a paid for basis. We will also ensure we are installing water butts when we deliver any relevant projects.

Our best performing new build homes are the ones which we built with our own DLO. These achieve a high EPC A. To reduce the risk of having to retrofit our new build homes in the next 30 years we need to ensure all of our homes meet this standard. Our planned 'Eastglade' project is focused on developing low carbon homes, with low impact living including community food growing. This new build project will set our benchmark for the future. Higher energy efficiency targets for new build will require some flexibility about how we build our homes and the materials we use.

### **Our Commitments:**

- Establish our performance baseline for all properties.
- Improve all homes up to a minimum EPC of D by 2020, and C by 2030.
- Develop road maps for each NCH archetype, to understand how to achieve long term targets most cost effectively.
- Plan for the long term, and by 2020 agree an Energy Investment Strategy for 2050 zero carbon, budgeted within and to be delivered over the 30 year HRA Business Plan.
- Use our existing solid wall insulation budget and any grant we are able to attract to pilot a range of solutions for '2050 homes', including renewable energy solutions, battery storage and whole house retrofit.
- Develop and test a financial model which enables NCH and NCC to share the benefit of the savings created by our investment. This is 'Energiesprong'.
- Develop a commercial business model, delivering insulation in-house to 100 homes, using the most innovative methods to ensure long term business opportunities and offering this to private residents and other housing providers.
- Support the roll out of Smart meters, and test smart controls, ensuring that our tenants understand smart technologies and get the best use from them.
- Target a minimum of EPC B for all new build, using our DLO homes, and use our planned exemplar Eastglade project to inform how we build in future.
- Install water saving appliances in kitchens and bathrooms and water butts in any projects which remove rainwater pipes.
- Develop a new build policy ensuring we are building future proofed homes which do not put tenants at risk of overheating or flooding, as well as supporting biodiversity through the design of external areas.
- Build and retrofit houses using materials which look good and which are hard wearing and will last for a minimum of 50 years.

## 15. Case Studies

### Case Study: BMK

Our retrofit of Bentinck, Manvers and Kingston Court tower blocks, is a great example of where bringing together budgets has achieved homes fit for 2050. These have been evaluated by a BRE (Buildings Research Establishment) project called URBANEER which used monitoring equipment to compare the performance of the blocks before and after the retrofit project to assess the impact of our investment. It found that average temperatures in the blocks before works were carried out were 16 degrees, and that humidity levels were high. Retrofitting the whole building has resulted in 21 degree average temperatures, and up to 65% savings on tenant bills. The new district heating connection also means the homes are now super low carbon and these have been stated to be an exemplar retrofit.



## Case Study: REMOURBAN



REMOURBAN is a project funded by the European Commission, through which Nottingham is developing an integrated replicable urban development plan in the Sneinton area.



Nottingham City Homes is receiving 1.8m Euros funding for the works, and more than 150k Euros funding for our time, to show how we can develop homes which belong in Smart Cities. We are calling them our '2050 homes'. We have already insulated 126 solid brick homes in the Windmill Lane area, with a methodology which has gained

national recognition by the Government, through their Bonfield review, looking at quality, standards and customer care for Energy projects. Our next REMOURBAN projects include an energy retrofit of Newark Crescent and Morley, Haywood, Keswick and Byron Courts, which will also receive low temperature district heating, PV and battery storage at a communal level.

The 2050 homes, which is a pilot of a terrace of William Moss houses, will use the Energiesprong model, developed in the Netherlands, to procure a supplier who will guarantee the energy performance of the properties once they have been retrofitted, with a target of zero energy consumption after retrofit.

### Energiesprong

Energiesprong is a radical approach to retrofit and regeneration, which involves wrapping the home to create a super insulated home, which generates as much energy as the consumers require, and which guarantees the energy performance.

The concept, which was developed in Holland, means Energy Leap in English. Because the energy savings and the maintenance are performance guaranteed, money which we would have spent anyway, and a contribution from savings which the tenants will make, can be used to create the Energiesprong solution. After the work has been completed, the tenant will be warm and comfortable, and have a significantly improved home, with lower maintenance, and for this they will pay a set fee instead of a fluctuating energy bill, which will help them manage their budget.

The requirements for an Energiesprong are as follows:

- The work must pay for itself within 30 years (HRA investment and tenant savings)
- It must be installed in less than 10 days
- The solution must have a performance guarantee for the energy savings and the maintenance—this is crucial for us to develop a model where we use our existing investment and use a PAYS (Pay As You Save) model for tenants.

## 16. Our Communities

Our Communities include our traditional communities and also our business communities. NCH has great networks and links with a range of different types of organisations in Nottingham, the UK, and even internationally. We also have a network of customers within our 27,000 homes and more people within our communities. We have 1000 staff. These networks are all communities within which NCH has the opportunity to influence, to learn and to improve environmental outcomes.

Our communities in the traditional sense consist of our customers and residents living in homes which have been subject to right to buy. These residents are potential customers for energy projects. In the past we have generated an income by delivering solid wall insulation to private residents in our communities, which has helped achieve NCH's fourth Corporate Goal; to generate new business, securing income to reinvest in Nottingham and our communities. It is important that we continue to seek out business opportunities with new types of energy project.

Our Fuel Poverty Officer is working with many cross tenure community organisations to ensure that our advice can reach more people, and we have already trained several Community Energy Champions who are now giving advice to their friends and family. One of the cheapest ways of saving our communities money is by helping them to switch to a cheaper energy supplier. If this is NCC owned RHE, even better!

**Fuel switching takes less than an hour, is free, except for staff time, and can save tenants more than £200 per year. Linking fuel switching to our rent first campaign will help to ensure tenants spend money on rent, not energy bills.**

Rising prices of food and fuel will affect our communities, and it is important that we help them to develop resilience, by becoming more self-sufficient, and by creating jobs and skills. As new housing is required, and space for allotments is used, sustainable food growing areas such as orchards or mini-allotments need to be incorporated into our streets and gardens. Our new build projects are piloting some of these ideas, and our Decent Neighbourhoods team is delivering improved biodiversity and opportunities for wildlife to flourish, as well as growing areas where possible.

The UK is developing a low carbon industry, which will include new jobs, which can provide opportunities for our tenants. Nottingham has a thriving Green Tech industry, and NCH has previously supported local companies by being a test bed for innovation. We will continue to partner with organisations piloting new technologies, and will grow our links with research partners, ensuring we keep up to date with innovation.

## Our Commitments:

- Deliver our Fuel Poverty Action Plan and include fuel poverty within our Eyes Wide Open campaign, including recruiting 10 community energy champions who can engage their communities directly in staying warm and well, and saving energy.
- Save £10,000 on tenant fuel bills per year, through offering Switch and Save or switching to Robin Hood Energy.
- Pilot a community energy model including testing battery storage
- Work with partners such as Super Kitchen, the Food Assembly, Community Gardens and the Waste Supermarket, to develop resilience to rising food and fuel prices in our communities, to focus on reducing food waste and food miles, and to ensure opportunities for food growing are included in our neighbourhoods.
- Through our Decent Neighbourhoods Team, ensure natural habitats are included in our neighbourhood improvements.
- Develop an exemplar new build community, with low energy sustainable housing, and community growing.
- Efficiently and effectively communicate campaigns to ensure the widest possible take up of community offers or projects and use all possible opportunities to engage people about sustainability.
- Use 200 staff volunteering days to work on community projects focused on environmental or natural improvements or food growing.
- Offer our Environmental and Fuel Poverty e-learning to our tenants and communities.
- Develop a model for delivering works and advice to private sector residents and private landlords.
- Continue to build networks in Nottingham, the UK and across the world, to increase our knowledge and to jointly bid for funding to help us continue researching and innovating and providing a test bed to support businesses testing their innovative green tech or environmental solutions.

## Case Study: Decent Neighbourhoods.



Outdoor seating areas have been provided at three tower blocks to allow residents to enjoy their outside space, increase social interaction and offer health benefits. Wildflower turf and a wide variety of native plants and shrubs have been planted to increase wildlife presence and biodiversity opportunities. New footpaths were installed to help preserve the landscaping, and outside one block; Manvers Court, the Gold Award winning RHS Tatton Park garden has been installed for residents to enjoy.

## 17. Our Business

Our staff operate from four main sites; Loxley House, Harvey Road, Beechdale Court and Bestwood Housing Office, and several smaller sites or Joint Service Centres. Beechdale Court and Harvey Road will be merged in 2017 which should help to make our business more efficient, both in terms of energy consumption, but also by saving transport between offices. However flexible working and technology are key to improving our business efficiency.

### Our Commitments:

- Roll out ISO14001 across our whole business
- Achieve SHIFT Gold by 2018 and aim for SHIFT platinum by 2022.
- Make Environmental Sustainability a cross cutting initiative in Team Plans, appraisals and make our Environmental Sustainability E-learning mandatory
- Develop a network of Energy Champions, who will take a lead on promoting energy and environmental behaviours across our business
- Promote flexible working practices
- Reduce paper waste and move to a paperless office, ensuring our IT capability supports this
- Target 95% waste from construction sites to be recycled.
- Reduce our emissions from our offices to an average of 50kg/m<sup>2</sup> from 60kg/m<sup>2</sup>
- Centralise all energy spend with the Energy Team and deliver a 10% reduction through the term of the strategy
- Save water in our offices through water efficient devices, education and signage and targeting a reduction in our current water use across Beechdale, Harvey Road and Loxley from 6m<sup>3</sup>/employee/ year to 5m<sup>3</sup>/employee/ year.
- Continue to reduce our emissions from our fleet year on year, through more efficient working practices, and through sourcing electric vehicles where these suit our business needs, and work with Nottingham City Council to ensure that electric vehicle infrastructure will work for our business by 2020.
- Encourage and incentivise cycling to and from work, and between sites.
- Implement a sustainable meeting policy, reducing inefficiencies in time and fuel.
- Ensure that by 2020, 50% of our tenants are communicated with by email or text instead of letter or newsletter.
- Ensure that by 2017, 80% of our staff are communicated with by email or text instead of letter or newsletter.
- Develop an ethical purchasing policy, including items such as non-polluting cleaners, fair trade and recycled items, and use this opportunity to review our purchasing policy for NCC equipment and consumables.
- Sign up to SHIFT for contractors for all contractors delivering on the capital programme.
- Meet all legislative requirements and reduce our environmental complaints which rose in 2015; these primarily focus on rubbish and fly tipping, which will be reduced through Eyes Wide Open and management of contractors.
- Target and evaluate construction and maintenance projects on tonnes of waste created per £m of contract value to incentivise efficient design



## **18. Resources**

The delivery of the strategy will require the involvement of all NCH staff. It is a cross organisational strategy which requires our staff to change their behaviour. It will be Energy Team's responsibility to influence behaviour change, using a network of Energy Champions.

The investment in our homes and surveys will be delivered by Asset Management, including Capital Delivery and Assets, as well as the Energy Team. Decent Neighbourhoods will be involved and the New Build Team will take ownership of ensuring the Environmental Sustainability of our new homes. The DLO will take responsibility for delivering insulation as part of their new commercial team as well as some of the paid for measures. The Mechanical and Electrical team will be involved in delivering LED lighting as well as innovative heating solutions. Fleet and facilities will be involved, and performance management will be pivotal to ensuring that our systems are robust and will maintain our ISO14001 accreditation, whilst helping us deliver our strategy. Our Marketing and Communications, and front line teams will be essential to changing behaviour in our staff and communities.

## **19. Monitoring and Reviewing**

A cross organisational team will be set up and include EMT representation, Performance Management, Facilities, Marketing and Energy. This team will meet monthly to review progress and reports will be taken to board each quarter. Interim results will be published on the intranet.

## **20. Key Risks**

We are operating with funding and financial challenges for social housing which are unprecedented. Key business risks such as welfare reform, rent reductions and the Council's budget deficit are all risks because they increase pressure on staff and customers, which can mean getting buy in to a new strategy can be more difficult. These pressures often mean it is more difficult for staff to think innovatively and to change their behaviour or working practices, even though this is often what is required to increase efficiencies and to overcome the challenges.

Rising fuel prices impact on our customers and our business. This is a Corporate Risk.

Britain's decision to leave the EU means there is further financial uncertainty. Lack of long term national policy adds risk to this strategy as does the reduction in ECO.

If properties are retrofitted to 2050 standards and then the tenant exercises the right to buy, there is a risk some of the investment could be lost.

Merging Beechdale Court and Harvey Road is an opportunity to reduce carbon emissions and cost however the short term expected life of this building makes it difficult to invest in technologies which could save us money and reduce carbon.