



milton keynes

# MILTON KEYNES

## A SUSTAINABLE FUTURE

A Low Carbon Prospectus

Commissioning Partners



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Working to deliver the best possible future for Milton Keynes by creating sustainable communities and opportunities for all.

[www.milton-keynes.gov.uk](http://www.milton-keynes.gov.uk)

Civic Offices  
1 Saxon Gate East  
Central Milton Keynes  
MK9 3EJ

Tel: 01908 691691  
Email: [info@milton-keynes.gov.uk](mailto:info@milton-keynes.gov.uk)

**Milton Keynes Partnership**

**Milton Keynes Partnership**

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[www.miltonkeynespartnership.info](http://www.miltonkeynespartnership.info)

Central Business Exchange II  
414-428 Midsummer Boulevard  
Milton Keynes  
MK9 2EA

Tel: 01908 353636  
Email: [enquiries@miltonkeynespartnership.info](mailto:enquiries@miltonkeynespartnership.info)



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[www.nhbcfoundation.org](http://www.nhbcfoundation.org)

NHBC House  
Davy Avenue  
Milton Keynes  
MK5 8FP

Tel: 01908 746738  
Email: [info@nhbcfoundation.org](mailto:info@nhbcfoundation.org)



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[www.zerocarbonhub.org](http://www.zerocarbonhub.org)

NHBC House  
Davy Avenue  
Milton Keynes  
MK5 8FP

Tel: 0845 888 7620  
E-mail: [info@zerocarbonhub.org](mailto:info@zerocarbonhub.org)

Researched and designed by PRP Architects  
on behalf of the Commissioning Partners.  
Published by the NHBC Foundation  
October 2010

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Our commitment to sustainability lies at the heart of our policy, which encompasses the promotion of sustainable design practices and extends to reducing our own carbon footprint.

[www.prparchitects.co.uk](http://www.prparchitects.co.uk)

10 Lindsey Street  
Smithfield  
London  
EC1A 9HP

Tel: 0207 6531200  
Email: [lon.prp@prparchitects.co.uk](mailto:lon.prp@prparchitects.co.uk)

# MILTON KEYNES A SUSTAINABLE FUTURE

A Low Carbon Prospectus

# FOREWORD



As well as being one of the fastest growing and most successful commercial centres in the UK, Milton Keynes is known as 'the city within the country'. It's little wonder with 40 per cent green space, more than 22 million trees, 4,500 acres of lakes and parkland, and Europe's cleanest urban air quality. We have an outstanding rural and urban environment which is proving to be a model for other cities around the world.

But being green is much more than having a pleasant landscape. From its very beginning, Milton Keynes was designed to be a sustainable community making the most effective use of its resources. Alongside our many other 'firsts', our Borough has proudly led the way on a number of green initiatives during the past forty years. The introduction of the UK's first solar powered house in 1972, the first to adopt energy standards in buildings, and the UK's first kerbside recycling collection in 1992 are just three of many.

In producing this Low Carbon Prospectus we take a look back at green initiatives of the past, we mark the importance of some of Milton Keynes' current projects as diverse as Combined Heat and Power supply, low carbon homes, and electric vehicles, and we look to the future and our goal to be a showcase low carbon city.

We are in a strong position to deliver this goal, with our flexible outlook, a growing population, dynamic economic growth, and a series of well co-ordinated low carbon programmes featuring cutting edge technologies and pioneering partners.

Developing Milton Keynes as a showcase low carbon city is a collective piece of work. It involves the public and private sectors, voluntary groups, academics, and of course the people who live and work in Milton Keynes. This prospectus helps to set a vision in which all groups will be working together, so we can best respond to the challenge of climate change and reduce Milton Keynes' carbon footprint as we grow.

A handwritten signature in black ink that reads "Debbie". A long horizontal line is drawn underneath the signature, extending to the right.

Councillor Debbie Brock  
Mayor of Milton Keynes

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# INTRODUCTION

## Thinking differently, embracing evolution and championing change

Milton Keynes was planned and built with future growth in mind, to be a sustainable community long before we understood the principles that defined sustainability. It is grounded in the spirit of a balanced lifestyle, providing nature on your doorstep, and communities that have soul, energy and dynamism.

Over the years Milton Keynes has developed a reputation as a national leader for innovation in low energy buildings. Collaborations with The Open University in the mid 1970s led to pioneering low energy housing developments. Supported by research and monitoring, these projects helped to provide a better understanding of how to minimise heat losses from buildings. At that time, quality of life and lower energy bills were the drivers for change rather than concern over climate change. This early work informed national policy, leading to higher building standards, and the creation of a method for calculating energy demand in housing, which would later become the national approved standard we use today. Since then, our awareness of the need to reduce carbon dioxide emissions from the built environment has grown, and Milton Keynes Council has responded by introducing policies requiring developments to take responsibility for their contribution to climate change, through the D4 policy and carbon offset fund.

Today, the city and Borough of Milton Keynes continues to grow, applying many of the same principles that have contributed to its past success, such as having 40% of land retained as open green space, managed and maintained using the successful Parks Trust model. Milton Keynes Council (MKC) and Milton Keynes Partnership (MKP) have made a commitment to continue to build on their reputation as a national leader for innovation in low energy buildings, research and environmental policy, and to demonstrate its international leadership in low carbon living.

The Council aims to promote careful, environmentally sensitive masterplanning to provide a green, clean and safe environment. An integrated approach to the provision of new, energy efficient homes, community facilities, sustainable infrastructure and a 'smart' energy supply will benefit both existing and new residents as well as companies attracted to the quality of life and vibrancy offered by Milton Keynes.

Produced by a partnership between MKC, MKP, the Zero Carbon Hub and the NHBC Foundation, this 'Low Carbon Prospectus' for Milton Keynes has been developed to document the visionary approach, projects and initiatives which have taken place in the city since its inception in 1967. It brings together four themes; people, buildings, technology and direction, which contribute to ensuring that the continuing growth of Milton Keynes will be sustainable and will provide an environment where low carbon living is part of everyday life.

This vision for a low carbon society includes:

- A sustainable approach to housing, education, energy, water and transport;
- Electrification of transport, low carbon housing development, retrofitting insulation in older properties, 'smart' power grids, local green power generation and new waste reduction and treatment facilities;
- Engaging local communities and partners, drawing on local expertise and capacity, including the local centres of academic excellence;
- Achieving economic advantage for the Borough and supporting the development of the 'green' economy and jobs;
- An integrated approach to the Borough's rural and urban areas.

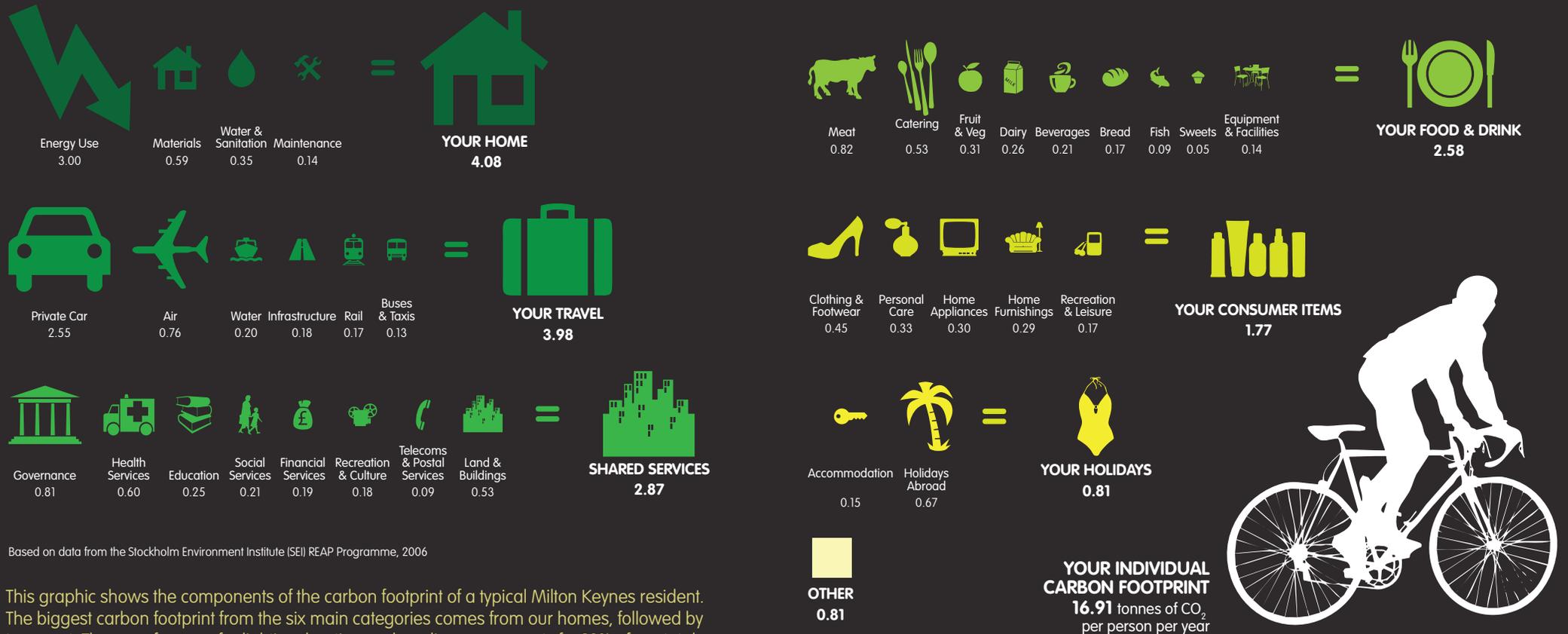




# MILTON KEYNES - WHAT KIND OF CITY?

## Carbon footprint

tonnes of CO<sub>2</sub> per person per year



Based on data from the Stockholm Environment Institute (SEI) REAP Programme, 2006

This graphic shows the components of the carbon footprint of a typical Milton Keynes resident. The biggest carbon footprint from the six main categories comes from our homes, followed by transport. The use of energy for lighting, heating and appliances accounts for 18% of our total footprint, and driving around in a car accounts for 15%. The size of each icon is proportional to the amount of CO<sub>2</sub> emitted, and looking at it this way does reveal some interesting patterns - through carbon goggles, cars in Milton Keynes are much bigger than buses or trains.

The Parks Trust estimate that they are managing over 22 million trees in Milton Keynes - this is a staggering number of trees (almost a hundred trees per person!) Milton Keynes has a well-founded reputation for its open spaces, which are jointly maintained by the Milton Keynes Council and the Parks Trust, comprising around 3,000 ha of open space, 565 play areas, 550 km trails and pathways, 250 ha of woodland, 60 km rivers and streams, 900 ha of grass, 210 km of hedges, and 21 km of canals and towpaths.

## A Low carbon lifestyle How do we compare?

### South East



Compared to the rest of the Southeast, a Milton Keynes resident has a smaller carbon footprint, although at 16.9 tonnes of CO<sub>2</sub> per person per year, still slightly higher than the UK average, roughly five and-a-half times that of a typical Chinese resident, and fifteen times that of someone living in Uganda!

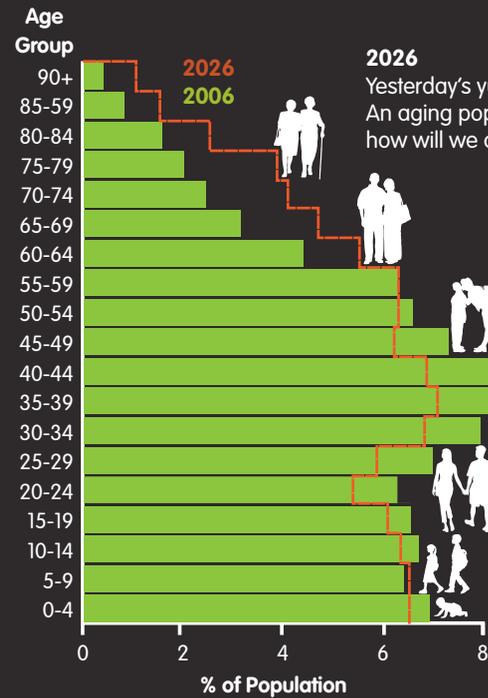
Sources of Data:  
UK data from the Stockholm Environment Institute (SEI) REAP Programme, 2006  
International data from the Norwegian University of Science and Technology (NTNU),  
Carbon Footprint for Nations Programme

**New York**  
5.2 million trees (0.27 trees per person)

**Milton Keynes**  
22 million trees (that's 95 trees per person!)

## Population

### 2006 vs 2026: an evolving demographic



**2026**  
Yesterday's yuppies:  
An aging population emerges -  
how will we address their needs?

**2006**  
Milton Keynes is generally  
composed of a youthful  
population: young professionals,  
families with young children

Milton Keynes today is made up of a young and dynamic demographic that has given the city its energy and vibrancy. But what will the population be like in 2026? The general trend predicted for Milton Keynes as well as the rest of the country, is one towards a more mature population - by 2026, the current generation will turn into an older population with very different needs and lifestyles. With fuel prices predicted to increase, will we have designed today's homes so that heating will be affordable for the elderly? Will we have provided enough infrastructure and community amenities that will support the needs of an older population? We need to future-proof our city so that it can meet the needs of present and future communities.

# MILTON KEYNES – WHAT KIND OF CITY?



## Housing

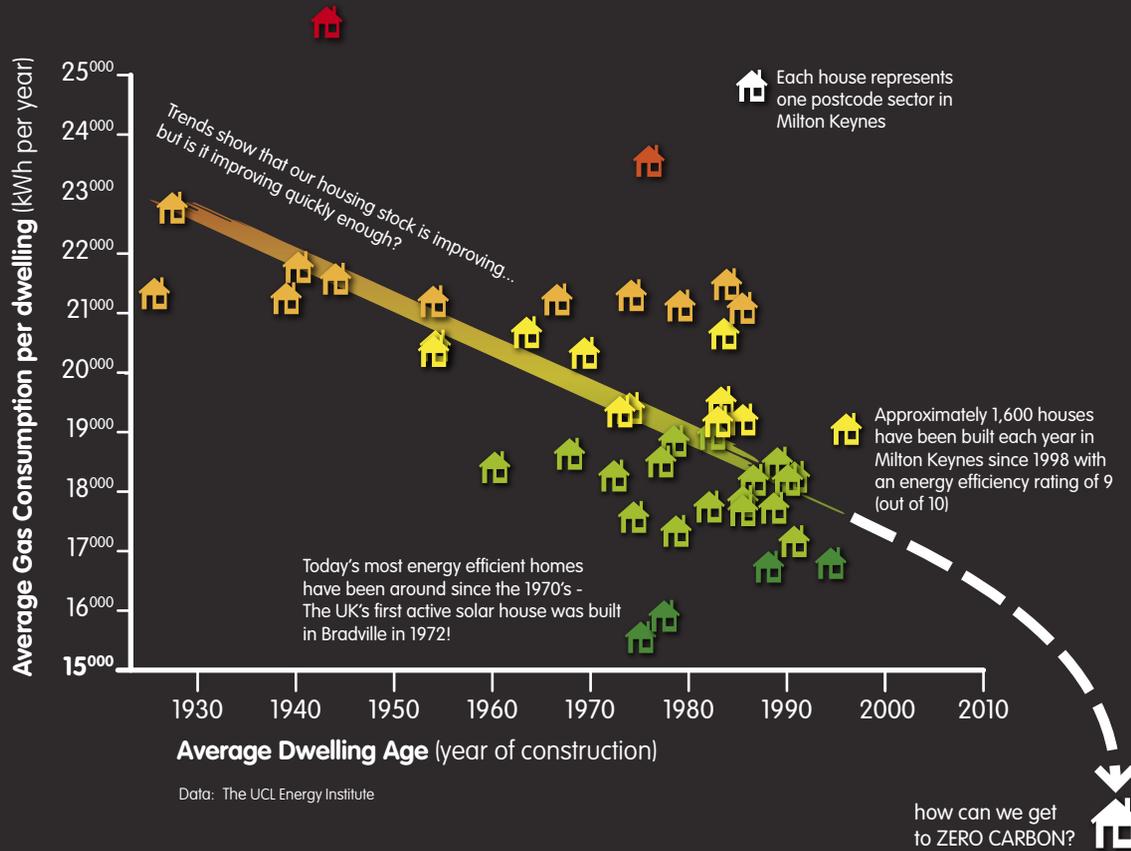
### Dwelling age and gas consumption

Not only does Milton Keynes have innovative energy-efficient estates and developments, all Milton Keynes housing built after 1970 was designed to better levels of efficiency than the required Building Regulations of the time. In addition, there is some evidence that the actual energy consumption for heating in Milton Keynes houses is lower than the UK average.

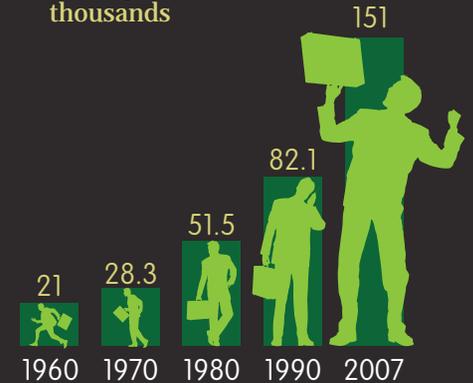
In 1999, English Partnerships announced that all new houses built in Milton Keynes must have an energy efficiency rating of 10/10, compared to the national average of 4.3/10.

Milton Keynes houses used 6 to 10% less gas energy per dwelling than the average UK house in 2006 - this despite the fact that Milton Keynes residents are generally more affluent than the UK average, which normally results in higher rather than lower energy use!

All new homes in Milton Keynes are built to energy specifications which are well in excess of the Building Regulations requirements.



## Job growth thousands



There are currently more than 5,200 employment establishments in Milton Keynes, and 151,000 jobs. Unemployment stands at less than 2% of the workforce, and 29% of this workforce is in skilled, managerial and professional categories. Milton Keynes is considered to be an 'enterprise city' with 80% of the workforce employed in companies of 10 employees or less.

60 km rivers and streams

225 km Redways





Milton Keynes to London: 100 trains a day

## A healthy lifestyle? cycles per household



Curious Milton Keynes factoid: a typical Milton Keynes resident owns more bikes on average than a typical Chinese person, and twice as many bikes as a typical American person!

Milton Keynes has over 550 km of footpaths and cycle ways, including 225 km of well-maintained Redways. An excellent infrastructure to encourage greater cycle use as part of a sustainable, healthy lifestyle.

## Mode of transport

How do people in Milton Keynes get to work?



This graphic shows how people in Milton Keynes get to work, compared to the rest of the country. The patterns are roughly the same for people working from home, cycling, taking a bus, and riding a motorbike. But people in Milton Keynes use cars 10% more, use trains 3% less, and walk to work 3% less!

500 km public rights of way



# DOCUMENT OVERVIEW

The Milton Keynes Low Carbon Prospectus sets out the city's sustainable development under four main themes. The four boxes on this page explain each of these themes and why they are significant. In the following pages, each theme is developed in more detail, with an illustrated timeline and milestones, followed by a set of selected projects and initiatives. This provides unique insights into what has shaped the city, what is going on today and a view of what is planned for the future.

The final section of the Prospectus, the 'Future Forum', captures views from a cross section of people who work or live in Milton Keynes, showing how the city has supported them in taking forward their own ideas on sustainability or stimulated their interest in a greener future.

## YOUR PART IN THE FUTURE

Engaging the community and local initiatives



This theme is about people and their important contribution to Milton Keynes in relation to low carbon living. It documents how the community has been engaged throughout the development of Milton Keynes. It identifies the key organisations which have been established to provide information and support for residents and businesses, and also some of the great initiatives which have come out of the local communities themselves.

## A LOW CARBON CITY

Reducing the environmental impact of buildings and transport



In the UK almost half of our carbon emissions come from the use of buildings (27 per cent from homes and 17 per cent from non-domestic buildings). Milton Keynes has explored low energy design since the 70's and this theme documents some of the innovative building projects which set out to exceed national targets and inform legislation in the rest of the UK.

The 1960's saw a dramatic increase in car use so Milton Keynes was designed with a grid system to minimise future congestion. Today, road transport accounts for 10% of our carbon footprint, therefore initiatives which have taken place and are planned to reduce the impact of transport and encourage non-polluting forms of transport in Milton Keynes are also included.

## TECHNOLOGY

Improving the present and protecting the future



The generation of energy accounts for 25% of all emissions, and is the largest single contributor to global warming. The third theme therefore looks at what has been done in Milton Keynes to understand and apply technologies which reduce this impact, and the plans to deliver an energy strategy which is smarter and sustainable for the long term.

The application of technology to reduce the impact of waste in Milton Keynes is also documented, from the introduction of mixed recycling schemes, garden and kitchen waste collection, waste treatment and new innovations to generate renewable energy from our waste.

## DIRECTION

Clear and informed strategies, policies and masterplanning



This theme illustrates the careful, environmentally-sensitive master planning which has contributed to Milton Keynes' success over the past 30 years. A green, clean and safe environment has been the key incentive for inward investment, company relocation and a thriving community. This is demonstrated through clear and informed strategic leadership, policy development and a co-ordinated approach to the delivery of growth which ensures that low carbon homes, infrastructure, jobs and community facilities are provided as part of a joined up approach.





# YOUR PART IN THE FUTURE

## Engaging the community and local initiatives

The Milton Keynes Master Plan envisaged “a community of active citizens, participating in the provision of its own services and able to take up the opportunities presented by the new city”. It recognised the need for a close knit web of community services at all levels and aimed for a network of opportunities which must be available to, and be understood by the residents of Milton Keynes.

1969 The Open University



The Open University

1981 Home World



1992 Future World Exhibition



**1967**  
Population of the designated new town area is 40,000 (60,000 MK Borough).

**1969**  
Open University moves into Walton Hall. It will eventually work closely with Milton Keynes Development Corporation on many groundbreaking energy-related projects in Milton Keynes. Today, it is the largest academic institution in the UK, and one of the largest universities in the world.

Population of Milton Keynes Borough  
Population of the designated new town area



1960s

1967

Milton Keynes formally designated a New Town.



1970s

1976

Around 40,000 trees and shrubs have been planted in the new city.

**1970**  
Public exhibition of the new Milton Keynes Master Plan. Milton Keynes will be a ‘city of trees’ with no building higher than the tallest tree and 40% set aside for green spaces.

**1976**  
Buy Insulation Cheap Campaign by MKDC helps existing householders buy loft insulation, draught stripping and insulation jackets for hot water cylinders at half the normal price. Estimates showed the cost of the materials could be recouped through lower fuel bills within, on average, a year.

**1977**  
Energy Research Group produce an ‘Energy in the Home’ course for OU, aimed at teaching householders more about the practical problems of domestic energy conservation.

**1981**  
Home World exhibition showcasing innovation in energy efficient homes is seen by more than 140,000 people. The homes will be occupied and form part of the city. Over 95% of the houses have better insulation than required by Building Regulations at the time, and fuel conservation measures are seen by developers as advantageous in selling the homes.



1980s

**1984**  
The Living Archive Project established to collect and document the cause and effect of change on local residents.

**1985**  
Residents get involved in energy management of their homes at Shenley Lodge, a demonstration project for Energy World, an international showcase of energy efficient housing.

**1987**  
The City Discovery Centre is an amalgamation of two earlier bodies: the Milton Keynes Urban Studies Centre (focused upon urban environmental education, including history and geography) and the Bradwell Abbey Field Centre Trust (focused upon history, archaeology and the natural environment). The charitable company informs and educates visitors about urban geography, new city planning, and the historical and natural heritage of Milton Keynes.



1990s

**1992**  
Future World Exhibition provides the public with a glimpse of the way homes might operate in the 21st century.

The Parks Trust is established to provide, maintain and equip parks, gardens, landscaped areas, woodlands, open spaces, playing fields, playgrounds and recreational amenity space for the benefit of the inhabitants and visitors to the area.

**1995**  
South Midlands Renewable Energy Advice Centre set up to offer expert advice and information on energy saving, domestic renewables, personal transport, water and waste.

**2002**  
Commonwealth Common Waste student conference held in Council Chamber - 150 children explore aspects of waste minimisation around the Commonwealth as well as in Milton Keynes. Statements from the event are included in the next version of the Council's waste plan.

**2003**  
Milton Keynes Sustainable Community Strategy aims to ensure active involvement of Milton Keynes citizens in shaping the future of the Borough.

Olney Farmers Market is established.

Sustainable Schools pilot scheme set up by GEMK, an educational resource centre working to increase awareness and understanding of sustainability and development issues.

**2005**  
A strategy for future sustainable growth is developed by MKP through widespread public engagement in the planning process.

Working Together: A Compact for Milton Keynes provides a framework to facilitate interaction between statutory organisations, voluntary and community groups in order to achieve common aims and aspirations for the ultimate benefit of local people.

**2005**  
‘Food Train’ community enterprise works to create sustainable local alternatives to the current food system in ways that improve human health, environmental quality and animal welfare, stimulate enterprise and create community.

**2006**  
Wolverton Farmers Market starts ‘Food Train’.

Food Train receive funding from Natural England to look at food economy in Milton Keynes, and ways of supplying more locally produced food.

# THE FUTURE

*The Milton Keynes Low Carbon Living Programme is a city-wide range of projects that collectively will help MKC deliver a reduction in the overall carbon footprint of the city.*

## The Low Carbon Living Programme

Milton Keynes Council is developing a Low Carbon Living Programme to re-establish the city as a place where new ideas can be tested, and innovation incorporated into daily living. A range of projects are proposed to support and encourage residents to embrace the low carbon agenda and offer a business environment which welcomes companies working in the 'green' economy.

The programme aims to demonstrate, test and evaluate how reductions in carbon emissions can be delivered in an integrated and meaningful way, focusing on substantial, longer term goals which local people can own and pursue.

Milton Keynes aims to become a beacon of international best practice for low carbon living. As a major employer, owner of 12,000 housing units and the highway authority, actions taken by MKC will have a real impact on the low carbon agenda.

## Resident Engagement and Learning (Hearts and Minds)

Projects within the Low Carbon Living Programme will contribute towards a fund supporting a programme of resident engagement as part of a city wide initiative to promote energy efficiency and education. The following ideas are being considered:

- Home demonstrator and retrofit projects.
- Education and engagement on smart grid technology and application.
- A visitor facility within University Centre Milton Keynes.
- Enhanced recycling and consumer engagement on energy reduction.
- New learning materials and engagement with schools, colleges and the University Centre.
- An online demonstration of live carbon usage data.

## Milton Keynes Sustainable Community Strategy

As a new city, Milton Keynes with its green space and young property stock should find sustainability easier to achieve than older cities in the UK and Europe. The Council will monitor the city's carbon footprint. Transport, waste, energy and food will be measured on a regular basis, and the results used to update the Sustainable Community Strategy as required.

2002 Commonweath Common Waste



2005 Food Train



2008 Wolverton Urban Farm



2008 Sustainable Schools Conference



2008 MK Low Carbon Living



2010 Wolverton Energy Roadshow



### 2007

Milton Keynes celebrates its 40<sup>th</sup> birthday.

Gulliver's Eco-Park opens at Newlands, Europe's first environmental theme park.

Newport Pagnell Farmers Market opens.

### 2008

Wolverton Community Orchard established.

Wolverton Urban Farm grows fresh produce for local consumption using innovative, environmentally sensitive growing methods.

14 schools have signed up to GEMK Sustainable Schools project. This involves a wide-ranging annual audit linking sustainability to school improvements, the curriculum, the environment and the community.

### 2009

Downs Barn Community Orchard is established.

Milton Keynes based charity Sustainable Energy Academy win Ashden Awards Charity and Community Category for Sustainable Energy for their 'Old Home Superhome' programme which spreads awareness of the ways in which household CO<sub>2</sub> emissions can be reduced by 60-80%, and inspires people to make similar changes to their own homes. There is now a network of homes across the UK that have achieved over 60% CO<sub>2</sub> reductions and are open for the public to visit.

### 2010

MK Energy Day is the first annual event focused on the contribution of individuals to reducing Milton Keynes' carbon footprint. Events included the launch of an online Milton Keynes carbon footprint calculator, promotion of energy efficient driving techniques, an energy monitor borrowing scheme, business energy efficiency event and various energy related activities in schools across the Borough.

### 2011

Greenfest Mark II planned (subject to funding) following the success of the 2010 seminar. Up to 1,000 young people to attend and investigate sustainability at the OU.

205<sup>370</sup>  
169<sup>370</sup>

2000s

235<sup>320</sup>  
198<sup>570</sup>

2010

2010 and beyond

257<sup>690</sup>  
219<sup>600</sup>

2016

### 2008

The site is cleared for the Urban Farm in Wolverton, the new home for Growing People initiative, a horticultural social enterprise project for young people.

Transition Wolverton is a growing collective of local people who want to see a community wide response to climate change and peak oil.

MK Community Enterprise formally established, providing advice and support on social enterprise business planning and funding, such as the Scrapstore at MK Play Association which promotes reuse of waste materials from business for community use.

### 2008

Shenley Church End is chosen as one of only six areas across the country for a pioneering new project aimed at drastically cutting rubbish. Two Zero Waste promoters are appointed and visit homes, businesses and schools, and a Zero Waste Day is held which includes pond clearance, home composting and a real nappy event.

### 2009

Four young people attend international Bright Green Youth Camp in Denmark, sponsored by OU. This previewed the Climate Change summit in December 2009.

The Council resolve to become a leader in low carbon living. A Low Carbon Living Strategy & Action Plan will be developed which builds on existing and emerging initiatives in Milton Keynes and engages local communities.

### 2010

Greenfest two day Sustainability Conference at the OU for seventy-five 11-14 year olds to come up with solutions for sustainability problems.

Milton Keynes Sustainable Cities event.

Milton Keynes International Festival takes place from 16 to 25 July 2010.

### 2012

Sustainability Celebration planned (subject to funding) - 20,000 young people to share their learning at the stadium:mk with a spectacular presentation of ideas in an Olympic-style opening ceremony.

# YOUR PART IN THE FUTURE

Highlighting community projects from Milton Keynes

**CityAims** strategy  
Carbon programme green city  
Efficiency Waste to Energy  
Sustainable Infrastructure Protecting the future  
**Community programme**  
Carbon Electric Vehicles energy  
projects sustainable efficiency  
Photovoltaics Meeting national targets  
waste engagement Ideas  
Anaerobic Digester support



## Transition Wolverton

Transition Wolverton is a small group of very enthusiastic volunteers aiming to start a town-wide community response to the challenges of climate change and peak oil. The main aim of the group is to bring together Wolverton's collective skills and creativity to create a Community Energy Transition Plan, which will set out a roadmap for Wolverton's low carbon sustainable future.

So far the group have organised a number of events designed to get people thinking and talking about this roadmap and what they can do. These activities include film screenings, talks, exhibitions and workshops focusing on the themes of climate change and the reduction of our dependence on fossil fuels for heating our homes, travelling to work and producing and distributing our food. The Transition Towns Wolverton webpage provides a venue for exchanging information - from interesting books to energy case studies, to a calendar of events.

In 2010 Transition Wolverton organised the Wolverton and Greenleys Energy Roadshow in collaboration with the Energy Saving Trust. This successful event featured stalls from suppliers and organisations that offered advice and products ranging from draught proofing windows to wood stoves, to renewable technologies. Wolverton residents who had made energy saving changes to their homes were also on hand to share their experiences.

They also organised an 'Open House' which was an open invitation to all residents to visit a number of homes in Wolverton and see a range of energy-saving installations at work, including smart meters and energy monitors, sash window renovations, wood burning stoves, and pellet heating.

[www.transitiontowns.org/wolverton/](http://www.transitiontowns.org/wolverton/)

## Urb Farm

'Growing People' is all about growing food, growing people and growing community. This group runs a market garden that supplies fresh produce all year round to 'Think Food', a project that promotes healthy eating, raises awareness of the social, economic and environmental impact of food production, and supplying food for individuals and local restaurants.

The focus of the Urb Farm is the development of food growth and healthy eating in an urban environment. It was developed from a partnership with Food Train, another local charity which is working to create sustainable local alternatives to the current supply chain. The focus is on "food yards" instead of "food miles" and the activities range from running the Wolverton Farmers Market, community learning and health improvement initiatives and engaging young people and the community in the food growing process.

[www.mkchristianfoundation.co.uk](http://www.mkchristianfoundation.co.uk)  
[www.foodtrain.org](http://www.foodtrain.org)

## Parkland Produce

Parkland Produce is a new venture set up by the Parks Trust, providing meat from sheep and cattle which have been reared on Parks Trust land. The Trust's grazing animals have been used to sensitively manage its meadows in order to encourage a greater diversity of wildflowers and wildlife.

All the profits get invested back into maintaining the city's beautiful parks and landscapes, including the creation of new parks, planting trees and shrubs, maintaining footpaths, providing community events and teaching schoolchildren about farming, nature and the environment.

[www.parklandproduce.co.uk](http://www.parklandproduce.co.uk)



## National Energy Foundation



The National Energy Foundation (NEF) has worked with Milton Keynes Council since Autumn 2008 to develop and implement a long term community wide carbon reduction campaign aimed at engaging individuals, communities, businesses and organisations in addressing the issues of climate change, specifically to reduce CO<sub>2</sub> emissions.

As part of the campaign, a website of local and national carbon reduction initiatives that were available to support people in Milton Keynes was developed. The ThinkAgain! website was launched during Energy Saving Week in October 2008, showcasing energy in Milton Keynes, past, present and future; climate change impacts both global and local, and a carbon calculator for households to assess their carbon impact. Local stakeholders and community partners have subsequently supported the campaign through their websites and actions of carbon reduction.

Other activities related to the carbon reduction campaign include evolving the website into the 'MK Low Carbon Living' website, providing training days for local businesses on energy management in the workplace, and developing, marketing and delivering a number of events and activities during 'MK Energy Day', a key part of the Council's commitment to the EU Covenant of Mayors initiative, and as a means of profiling the work done to date and maintaining public interest in the campaign and momentum in CO<sub>2</sub> reduction.

The MK Low Carbon Living website also features an on-line business carbon calculator alongside the domestic carbon calculator.

[www.milton-keynes.gov.uk/mklowcarbonliving/](http://www.milton-keynes.gov.uk/mklowcarbonliving/)

## Bright Green Youth & GEMK

Bright Green Youth's vision is to pool the creative powers and diverse experiences of visionary young people to produce ambitious yet practical solutions. In August 2009, 500 of the world's most talented, engaged and creative youths gathered in Denmark for four days of workshops and fast-paced, dynamic problem solving.

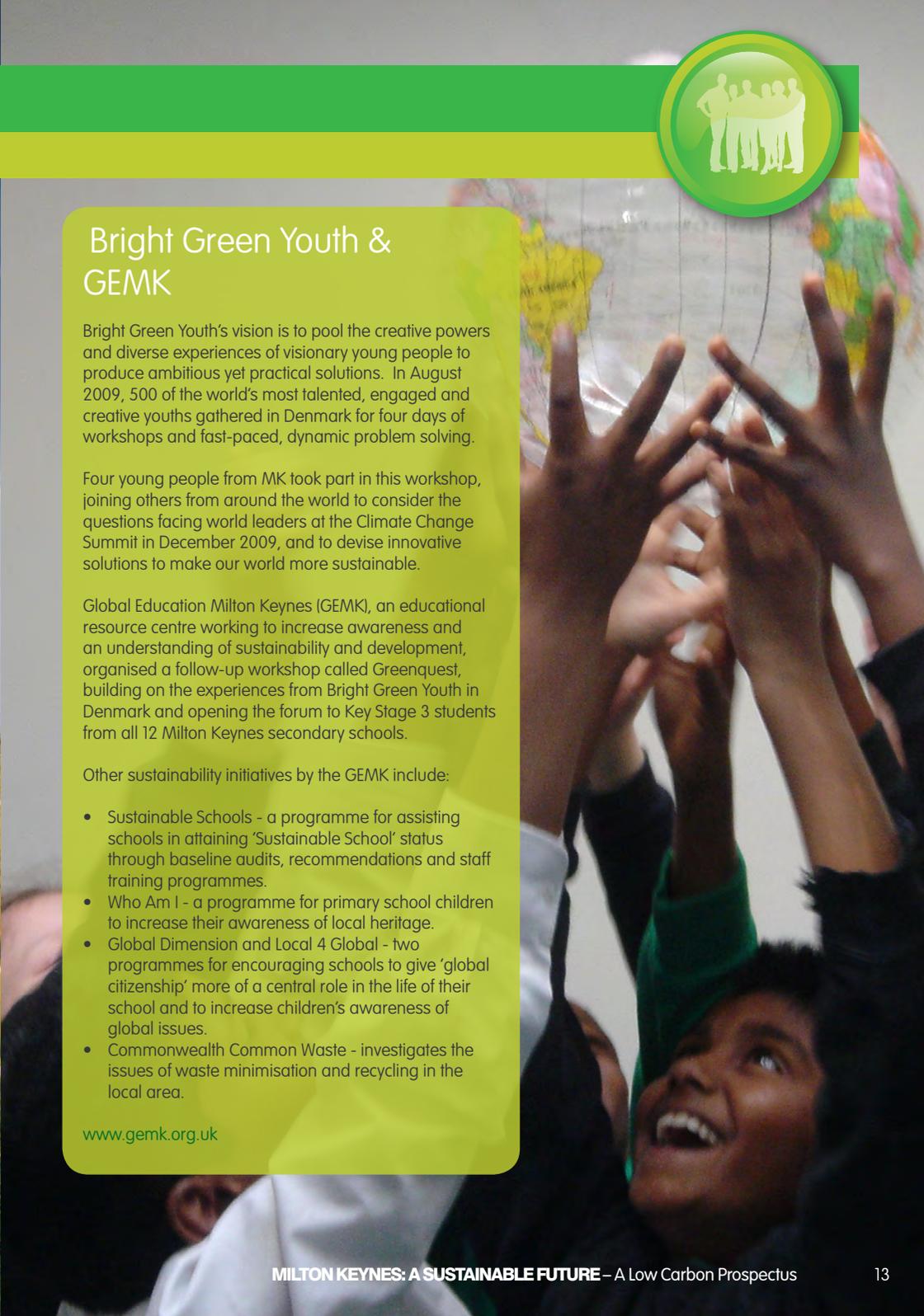
Four young people from MK took part in this workshop, joining others from around the world to consider the questions facing world leaders at the Climate Change Summit in December 2009, and to devise innovative solutions to make our world more sustainable.

Global Education Milton Keynes (GEMK), an educational resource centre working to increase awareness and an understanding of sustainability and development, organised a follow-up workshop called Greenquest, building on the experiences from Bright Green Youth in Denmark and opening the forum to Key Stage 3 students from all 12 Milton Keynes secondary schools.

Other sustainability initiatives by the GEMK include:

- Sustainable Schools - a programme for assisting schools in attaining 'Sustainable School' status through baseline audits, recommendations and staff training programmes.
- Who Am I - a programme for primary school children to increase their awareness of local heritage.
- Global Dimension and Local 4 Global - two programmes for encouraging schools to give 'global citizenship' more of a central role in the life of their school and to increase children's awareness of global issues.
- Commonwealth Common Waste - investigates the issues of waste minimisation and recycling in the local area.

[www.gemk.org.uk](http://www.gemk.org.uk)





# A LOW CARBON CITY

## Reducing the environmental impact of buildings and transport

Thanks to the visionary planning in its early days Milton Keynes stands up well against modern measures of sustainability, allowing city growth to proceed while retaining open spaces and maintaining an uncongested transport infrastructure. In the 1970s, architects were attracted to Milton Keynes as a city where it was possible to test innovative ideas for low energy and sustainable homes. Early experiments focused on gaining free energy from the sun - including homes designed to actively capture the sun's warmth to heat water and the rooms inside. Some homes also included much higher levels of insulation than were normal in Britain at the time.



1979 Solar Court, Linford



1981 Home World Ideal Home



1982 Milton Keynes Central Station

**1967**  
Milton Keynes formally designated a **New Town**.

**Late 1960's**  
Work begins on developing the **Master Plan** which sought to align closely the decisions on transport and the arrangement of land use. Key structuring principles include the grid system, linear parks and establishment of Redways.

**1974-79**  
Key local facilities, commercial and municipal buildings **crucial to the success** of the city centre are built.

**1976**  
**Milton Keynes Development Corporation** demonstrates real financial benefits of energy efficiency measures in their own offices: £2,000 of energy efficiency measures save approximately £3,600 in fuel bills the following year.

Studies begin on low energy housing design, something relatively new in the UK at the time. The project generates house designs for two estates: **Linford** and **Pennyland**.

**1980**  
**Rainbow Cooperative** explores thermal upgrading of Victorian terraced housing.

**1981**  
**Home World** is the first housing exhibition in the city showcasing innovation in energy efficient homes. Three homes in particular were seen as being groundbreaking:

**The Ideal Home** - The entire south facing wall of this house was triple glazed, forming in effect a double height conservatory.

**1982**  
**Central Milton Keynes Railway Station** opens. Since its opening, the number of trains calling at the station has increased, providing access to a wide range of destinations and encouraging more train use, particularly for longer-distance journeys.

**1983**  
**Central Milton Keynes Bus Station** opens and continues to be used by over 500,000 passengers per year.

**1985**  
Insulation standards for Building Regulations are increased, following findings from Pennyland and Gifford Park projects.

The Energy Research Group publishes findings of Pennyland and Linford energy use monitoring, identifying key messages for British designers.

Four timber framed houses at **Two Mile Ash** feature extremely low space heating energy consumption, comparable to standards anticipated for zero carbon homes. Savings in energy costs mean that owners see financial benefits within just two years.

**1986**  
**Energy World Exhibition** opens. An international showcase of energy efficient housing, where houses must be built to a new energy standard, and perform at least 30% better than required by the 1985 Building Regulations. It is a significant milestone for progress in design and construction of low-energy housing, and in the development of energy efficiency evaluation tools.

**1994**  
**Future World Exhibition** demonstrates how homes might operate in the 21st century, with an emphasis on energy efficiency and the environment.

1960s

1970s

1980s

1990s

1972

Masterplan is launched

**1970**  
First section of the **new city grid road** system is constructed. Designed to avoid rush hour congestion, it is successfully expanded to accommodate the city's growth and maintain free flowing traffic, reducing pollution and inefficient use of fuel.

**1972**  
**Bradville Solar House** is first in the UK to incorporate active solar heating as well as solar heated hot water. It demonstrates that it is difficult to get active solar heating to work, and leads to a stronger focus on passive solar design.

**1979**  
**Solar Court** demonstrates extreme passive solar design, incorporating double glazing and much more insulation than is required by current Building Regulations.

**National Bowl** re-uses sub-soil excavated from the many new developments to fill in the former clay pit and form the amphitheatre.

**The Autarkic House** - A timber frame, energy efficient house, designed to be easy to build and extend.

The **Futurehome 2000** project incorporated a conservatory from which warm air was vented into the house by small fans. It was televised by the BBC's Money Programme.

Open University **Alternative Technology Group** develop a car sharing meter to promote the shared ownership of cars.

**1983**  
A total of 177 low energy homes are completed at **Pennyland**, an entire development designed to showcase a low energy layout using passive solar design, with the aim of producing a cost-effective mass-market low energy house and informing national thinking on the benefits of passive solar measures.

**1984**  
36 flats and houses at **Gifford Park** demonstrate 60% reduction in space heating fuel for no more than £500 additional construction cost. Dwellings incorporate 75% south facing glazing to living spaces, gravity fed solar panels and conservatories.

**1986**  
The **Milton Keynes Energy Cost Index (MKECI)** is developed. This computer programme later evolves into the UK's first national energy efficiency rating scheme for buildings in 1990, the National Home Energy Rating (NHER). Standards introduced (at least 30% higher than the Building Regulations in force at the time). These become the norm for all new Milton Keynes housing developments.

1995

50,000 homes

2000

Over 150 miles of Redways & leisure routes

**1999**  
**The Energy Centre Phase 1** building demonstrates how a 1,000 m<sup>2</sup> low energy office can be heated by a domestic-scale condensing boiler.

**2000**  
Development at **Broughton & Atterbury** begins. The Homes and Communities Agency (HCA) establish a number of key principles for the area which underpin the creation of an integrated sustainable community which will be applied to town extensions elsewhere.

# THE FUTURE

*The City will base its low carbon programme on the benchmark set by the other leading cities of the world.*

## The Low Carbon Living Programme

From the outset Milton Keynes was designed to make the most effective use of resources both in its development and its long-term future - as a sustainable community. Projects have included a real focus on energy efficiency in homes, commercial premises and innovative public transport solutions.

The Low Carbon Living Programme has grown out of this Milton Keynes experience, driven forward by a desire to capitalise on what the city has achieved, a commitment to mitigating the risks of climate change, and to exceed targets set by Government. Below are some of the projects which will be delivered by the programme.

**ELVIS** is a project to bring electric vehicles to the city. It aims to have 1,000 electric vehicles on the streets by 2014. Two successful bids have been made for funding to support this initiative.

**MK Smart Green Development** housing demonstrator project will monitor 50 new homes over a two year period to test the technologies and attitudes of people. The project will also help in understanding how the new homes perform with Smart Grid and Electric Vehicle technology.

**MK Smart Brown Development** will provide funding, advice and resources to improve the energy efficiency and carbon footprint of existing housing stock in Milton Keynes. Additional projects being considered include:

- An enhanced focus on cycling and use of Redway infrastructure.
- A city wide energy measuring and usage project looking at older housing.
- Help for hard-to-treat homes, e.g. solid wall insulation.
- Participation at the EV10 Event at Millbrook to demonstrate the city's approach to the Low Carbon Agenda.

## Core Strategy

Core strategy objectives to mitigate the Borough's impact on climate change and reduce CO<sub>2</sub> emissions include:

- Implementing higher than national requirements for sustainable homes and buildings.
- Sustainable transport initiatives.



1983 Pennyland



1984 Giffard Park



2000 Broughton and Atterbury



2009 Ashlands



2009 Wolverton Park



2011 Nissan Leaf Electric Car

**2002**  
**MK Car Share**, the most successful car share scheme in the UK starts. Today, over 10% of Central Milton Keynes employees are members and benefit from discounted travel and free parking.

**2005**  
Measures to **improve public transport** start in the city, which will include further bus lanes, introduction of bus priority signals, and real time passenger information providing passengers with up to the minute information on bus arrivals at bus stops, on the internet and through mobile phone text messaging.

**2006**  
**Parklands development** (former Nampak site) in Woburn Sands incorporates solar water heating on all houses and flats with an estimated combined total output of almost 250,000 kWh per year. It is one of the first developments to comply with the new D4 policy.

**Places for People's** flagship mixed-tenure development at Broughton Atterbury, is one of the largest in the UK to be rated EcoHomes 'Excellent'. The homes incorporate Electrisave meters which tell people how much energy they are using in financial terms and how much CO<sub>2</sub> they are emitting, a first for the social housing sector.

**2007**  
**Mercedes-Benz** install wind turbine and three charging points for electric vehicles. Electricity generated in one year is enough to power an electric smart car for 30,000 miles.

**2008**  
Industrial units in Bletchley are each supplied with electricity from their own **wind turbines**. Feedback is positive and the turbines are seen as a real bonus, not only reducing running costs but improving company credentials by reducing their CO<sub>2</sub> emissions.

**2009**  
**The Pinnacle** is the first BREEAM 'Excellent' rated office development in the city and was winner of the Office Development Awards for Sustainable Achievement. The building has an 'A' rated Energy Performance Certificate and has heat and electricity supplied by the Central Milton Keynes Combined Heat and Power system.

**Ashlands** regeneration scheme, one of the first brownfield sites redeveloped for housing, includes 376 homes and a local centre.

**2010**  
**Bletchley Leisure Centre** achieves BREEAM 'Excellent'. Hot water and space heating demand is met by a biomass boiler. The building utilises natural ventilation for cooling in the bowls and sports hall areas. The atrium is also cooled with natural ventilation and a thermal wheel uses heat from extract air to warm the fresh air intake. Rain water harvesting is used to supply the majority of the WCs.

**2012**  
**National Centre for Network Rail** due to open. Plans for the building include recycling rainwater to flush WCs, using reclaimed materials from the demolition of the National Hockey Stadium and sourcing materials locally to reduce CO<sub>2</sub> emissions from their transportation. The building will have living 'green' roofs, natural ventilation and incorporate renewable energy technology.

Building Regulations Part L updated:  
25% improvement compared to 2006

2010

Building Regulations Part L updated:  
44% improvement compared to 2006

2013

## 2000s

2005

Local Plan D4 policy adopted

**2005**  
**Oakgrove Phase 1** is the first secondary school to be built to the highest national environmental assessment method standard at the time, BREEAM 'Excellent'. The building uses green materials and sustainably sourced timber, and incorporates rainwater harvesting. Energy is supplied by thirteen 15kW wind turbines, photovoltaics, solar thermal panels and a ground source heat pump.

**IKEA** store incorporates innovative operational and environmental solutions including rainwater harvesting and 90% recycling.

**2007**  
New 7,000m<sup>2</sup> **Makita** warehouse extension incorporates recycled wood pellet fired heating boiler and movement sensor control of lighting to reduce CO<sub>2</sub> emissions and achieve the 10% renewable energy target for Policy D4.

**Oxley Woods** responds to the Government's demands for affordable, sustainable housing through the Design for Manufacture Competition. The houses are built at low cost using factory-manufactured panels and feature passive solar air warming, cooling and ventilation.

**2008**  
**Vizion** development in Central Milton Keynes demonstrates best practice and innovation in high density, mixed-use development with advanced energy performance.

**2009**  
**Wolverton Park**, an award winning sustainable regeneration project, includes the listed Royal Train Shed shell, within which elegant townhouses have been constructed, with triple-height windows and ribbon glazing in the roof which provide lots of natural daylight.

2009

100,000 homes

**2009**  
**The Milton Keynes Academy** in Woughton is a landmark building providing an inspiring state-of-the-art environment. It is constructed using off-site prefabrication and multi-service modules. It features controlled natural ventilation, biomass heat generation and daylight heating controls.

**2010**  
More than 3,000 existing homes have been retrofitted with insulation, funded by contributions to the **D4 carbon offset fund**.

New coach station and **Park & Ride** facility opens to aid the promotion of sustainable movement in Milton Keynes, and offer people an alternative to using their cars.

**2011**  
The new chapel at **Crownhill Crematorium** incorporates several features to enhance sustainability, such as intelligently-controlled natural ventilation, and a ground source heat pump for water heating.

**Nissan LEAF** zero emission electric car goes on sale.

2016

Building Regulations Part L updated:  
Zero Carbon

**2017**  
**Oakgrove** is being developed as one of seven Millennium Communities across the country. The 1,000 homes will be heated and powered by a district CHP system and the focus will be on minimising the ecological footprint by reducing the need to travel, while encouraging biodiversity and green infrastructure. It will promote best practice in information and communication technology as part of the Digital Infrastructure Strategy for Milton Keynes.

# A LOW CARBON CITY

Highlighting low-carbon projects from Milton Keynes

## Oakgrove School

Completed in 2009, the new three-storey extension at Oakgrove School incorporates high standards of energy-efficiency and low environmental impact. It achieved a BREEAM 'Very Good' rating.



Sustainable design. Extensive use of recycled materials include rubber from used bus and lorry tyres to make the floor matting in corridors, and insulation made from old newspapers to fill cavities in the walls. All timber used on the project is FSC-accredited, which means that it comes from managed forests where new trees are planted as existing ones are cut down and used.

Rain water is harvested to flush the toilets, reducing water consumption, and the building is naturally ventilated, with solar shading to keep the building naturally cool. An 'intelligent' Building Management System (BMS) monitors energy use which is displayed on plasma screens in the reception area, and internal lighting controls operate on movement and daylight sensors.

Oakgrove School incorporates one of the biggest ground source heat pump installations in Europe, extracting heat from the ground and pumping it into the building to provide very low cost space heating.

The estimated cost savings on the school's utility bills could be as much as 80% on gas consumption, 30% for water, and 30% for electricity. This could amount to as much as £15,000 a year and possibly £375,000 saving over the life of the building.

The eco-friendly features are often used as teaching aids, and an eco orienteering game has been developed for the students.

## Vizion

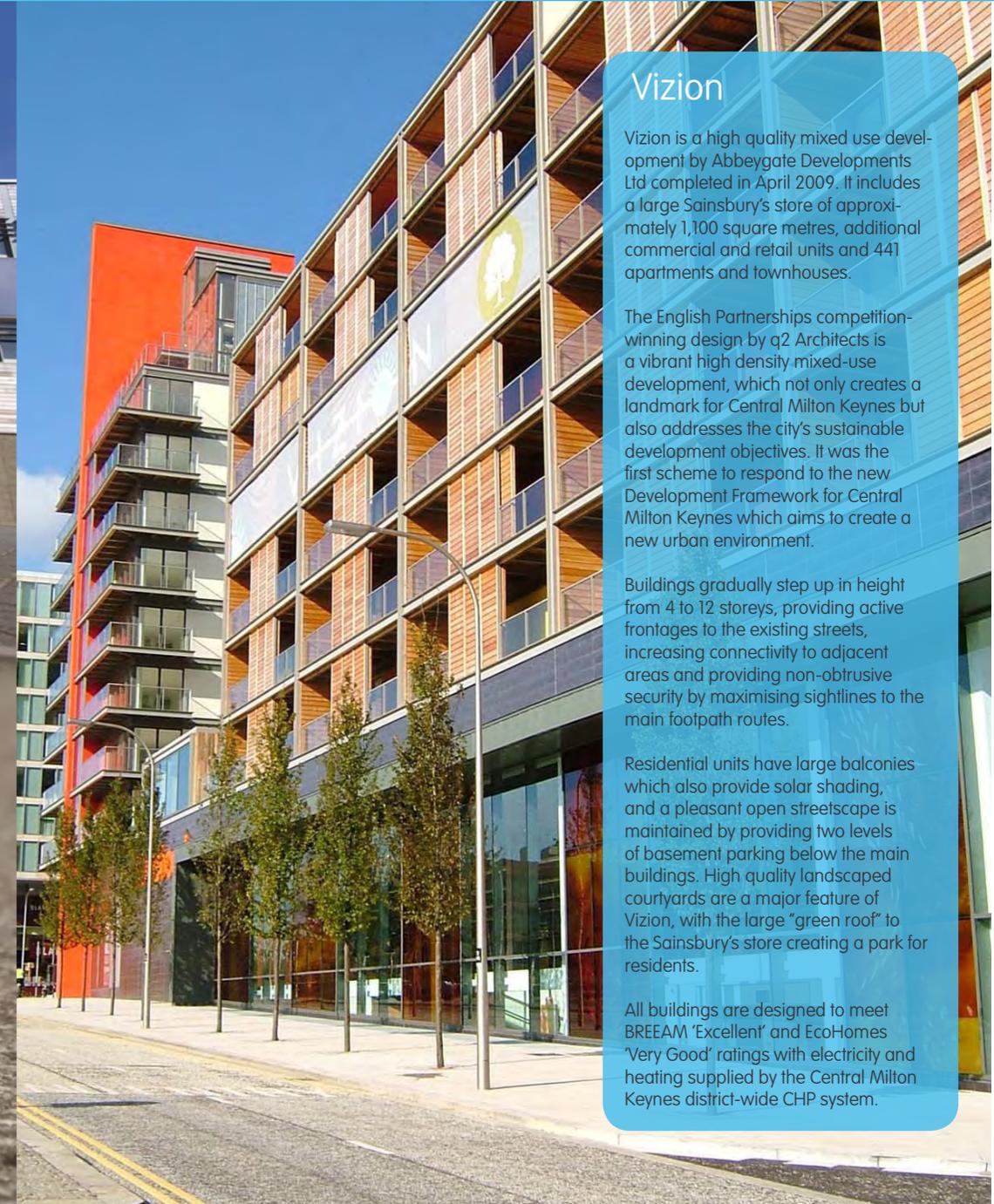
Vizion is a high quality mixed use development by Abbeygate Developments Ltd completed in April 2009. It includes a large Sainsbury's store of approximately 1,100 square metres, additional commercial and retail units and 441 apartments and townhouses.

The English Partnerships competition-winning design by q2 Architects is a vibrant high density mixed-use development, which not only creates a landmark for Central Milton Keynes but also addresses the city's sustainable development objectives. It was the first scheme to respond to the new Development Framework for Central Milton Keynes which aims to create a new urban environment.

Buildings gradually step up in height from 4 to 12 storeys, providing active frontages to the existing streets, increasing connectivity to adjacent areas and providing non-obtrusive security by maximising sightlines to the main footpath routes.

Residential units have large balconies which also provide solar shading, and a pleasant open streetscape is maintained by providing two levels of basement parking below the main buildings. High quality landscaped courtyards are a major feature of Vizion, with the large "green roof" to the Sainsbury's store creating a park for residents.

All buildings are designed to meet BREEAM 'Excellent' and EcoHomes 'Very Good' ratings with electricity and heating supplied by the Central Milton Keynes district-wide CHP system.



Energy Generation **USE** FOCUS **HOMES**  
 development sustainable  
 Efficiency Waste to Energy  
 Infrastructure cycling Protecting the future  
 strategy DESIGN homes  
 Carbon housing Recycling  
 smart Greening the Grid Technology  
 Vehicles Reducing Emissions **Innovation** Smart Grids  
 Anaerobic Digester  
 low energy



## Tattenhoe Park

A new neighbourhood of approximately 1,300 new homes, with shops and community facilities, allotment gardens and public open space is planned for Tattenhoe Park, south-west of Milton Keynes. A new primary school, 'Priory Rise' has already been completed.

The objective is to develop Tattenhoe Park in a sustainable way and deliver an attractive, well-designed place to live, with strong connections to surrounding neighbourhoods and the wider city. Much of the open space has been landscaped and the primary infrastructure (roads and services) constructed. To manage surface water run-off, there is a Sustainable Urban Drainage System (SUDS) consisting of a series of waterways and ponds.

It is intended to explore ways to deliver smart metering technology across the site which, together with other planned smart grid applications, will provide an early test bed for reducing the future carbon impact of the grid.

### Sustainable Urban Drainage Systems (SUDS)

### Low Carbon Housing Demonstrator Site

### Priory Rise Primary School

### Low Carbon Housing Demonstrator

The development proposes to bring together a number of national low carbon initiatives in a single, replicable neighbourhood, including electric vehicles, the Code for Sustainable Homes, Smart Grids, demand management tariffing, feed in tariffs, new technology, low carbon learning/promotion and the accessibility of lower carbon living.

It is proposed to build approximately 50 of the homes to test the technologies available and the attitudes of the occupiers to their application in a real world environment. At the end of the two year monitoring period we will have a clear understanding of how these elements work together.

In order to achieve a significant reduction in personal impacts, residents will need to adopt and maintain lifestyle changes, ranging from use of sustainable transport to near zero waste, while still enjoying the benefits of living in Milton Keynes. Support will be provided by a specially trained carbon coach, and social monitoring will be led by The Open University.

The project, still in its early stage, would if successful demonstrate how we can make efficient use of land, energy and materials whilst achieving a significant reduction in carbon production within the home and the community at large. It will also help establish replicable methods and an advanced understanding of cost and skills involved in successful low carbon construction.



# TECHNOLOGY

## Improving the present and protecting the future

Milton Keynes has always been a city that thinks differently, embraces evolution and champions change. Back in the 1960s, no-one had even heard about climate change, but even then, people were asking questions about how the new city should be powered. Could the city be all-electric, using the output from the then newly-built nuclear power stations? Or should everyone have their own gas central heating system? Today, with the low carbon vision, delivered through a continuation of the 'test bed UK' philosophy championed by the city since its inception, the city can achieve a truly sustainable living environment.



1986 Energy World



1986 'Cogeneration' demonstration project



1988 National Energy Foundation

**1967**  
Milton Keynes formally designated a **New Town**.

**Late 1960's**  
Work begins on developing the new **Milton Keynes Master Plan**. It is an era of low fuel prices, therefore energy is not considered in the design. The low density layout adopted, with its own advantages, does however impact on some future options. This includes the ease of incorporation of community heat and power and the future reliance on the car for transport.

**1972**  
**Master Plan is launched.** Early proposals for heating and cooling include district heating as well as individual systems. Combined Heat and Power (CHP), a 'total energy scheme' is considered, with an option for incorporating refuse incineration. It is concluded that a full district solution would not prove economically viable, but that smaller-scale systems might be viable for specific areas.

**1976**  
**The Open University's Energy Research Group** commissioned by the Transport and Road Research Laboratory to study the long term availability of fuels for transport, subsequently including studies of the potential for electric vehicles.

**The Alternative Technology Group** is set up. Research projects include the Car Sharing Scheme, Rainbow Greenhouse, food production efficiency of smallholdings, and community-scale waste paper recycling.

**1979**  
**Network for Alternative Technology and Technology Assessment (NATTA)** established at the OU, offering the latest information on low-impact renewable energy developments and policy.

**Solar Court** in Great Linford tests innovative heating systems using solar collectors, a heat pump and waste water heat recovery on three homes. Other houses have a conventional heating system and form a control group. The houses are monitored extensively over the next 3 years, funded by the Department of Energy.

**1979**  
**East Flank Study** looks at how local planning could take energy saving further by using solar orientation, concentrating higher densities along defined routes for public transport, incorporating CHP and providing allotments.

**1981**  
**Home World** demonstrates the latest ideas in housing design and technology. **Futurehome 2000** had three alternative heating systems; a gas boiler, a coal boiler and a FIAT 'Totem', a car engine converted to use gas instead of petrol - probably the first example of a micro-CHP installation in the UK.

**1985**  
**Pennyland and Linford** is the largest monitoring exercise undertaken to date, providing a transparent understanding of energy uses in houses and demonstrating that the biggest savings come from insulation and efficient energy systems.

**1986**  
**Energy World Exhibition** opens. EU funding allows early Zero Carbon study to assess if all energy needs can be provided by installation of a wind turbine (one of the first in a city) and photovoltaics on the site to serve 5-6 homes.

### 1960s

**Early 1970's**  
Energy projections indicate that by the time Milton Keynes is scheduled to be finished in the 1990's, there could be a **UK energy shortage**. Inhabitants could expect to enter the 21st Century faced with large heating bills and expensive and scarce fuels for transport.

**1972**  
Central London Polytechnic and MKDC collaborate to incorporate and monitor active solar heating in the **UK's first Solar House** in Bradville, one of the few projects exploring alternative energy sources to oil.

### 1970s

**1976**  
Energy efficient design becomes a key development objective following monitoring and improvements to MKDC offices.

**MKDC (Energy Consultative Unit) and Open University (Energy Research Group) collaboration starts.** Working with members of the Development Corporation, the group's first report describes eight projects underway in Milton Keynes which are achieving between them fuel bill savings of £150,000 per annum.

**1977**  
**Gas fired heat pump** prototype is designed by The Open University's Energy Research Group in collaboration with Lucas Aerospace. It uses a single cylinder motor boat engine converted to run on gas and is capable of providing 15 kW heat output, enough to heat two or three houses. Another project with the Rutherford Laboratories looks at a chemical heat pump energy storage system.

**1979**  
**Housing Layout Study** by ECU explores the implications of passive solar design on layouts, using computer modelling to examine orientation and overshadowing. 'Shadow prints' drawn up for single houses and terraces of varying heights and orientations are used to lay out Pennyland. Housing density is also analysed by the Martin Centre at Cambridge. They conclude that passive solar systems could be used for housing densities of up to 44 dwellings per hectare.

**COMTEK** community technology festival takes place, organised by the Alternative Energy Group at the OU.

### 1980s

**1982**  
**Energy Consultative Unit** publishes second progress report for projects undertaken 1976-81. The report includes a number of significant conclusions:  
1. Energy saving measures can be cost effective within short periods;  
2. Immediate energy saving can be made by simply improving the levels of insulation and heating control systems in existing buildings; and  
3. Active solar heating systems are not cost effective, although technical advances and further increases in fuel costs suggest potential for the future.

**1986**  
The Open University **Energy and Environment Research Unit (EERU)** established to undertake and co-ordinate research on sustainable energy technologies and to support the development of environmentally sound approaches to the generation and use of energy.

**1988**  
The **National Energy Foundation (NEF)** established by MKDC to preserve for the future benefit of the UK public some of the energy initiatives previously undertaken within the new city and to encourage more sustainable use and generation of energy.

# THE FUTURE

*Milton Keynes will actively strive towards the goal of being self-sustaining in energy generation as part of its transition from non-renewable to renewable energy sources.*

## The Low Carbon Living Programme

Over the past 40 years, a range of projects demonstrates how Milton Keynes is able to turn innovation into real development. The aim of the programme is to build upon this experience, and to demonstrate, test and evaluate how the different elements of the drive to reduce carbon emissions can be delivered in an integrated and meaningful way.

Milton Keynes, with its foundations in low carbon development, provides a unique test bed to demonstrate how best to achieve the carbon reduction target of 80% by 2050, and demonstrate collectively how at a city level the range of carbon reducing initiatives from UK Government and Europe work together.

## MK Smart Business

Through this programme, an MKP and MKC business investment fund will provide support for local low carbon business innovation.

## Research, Data Capture and Learning

A city scale project will measure power usage and local energy generation, to understand the contribution and demands new homes, retrofit projects, smart grid and electric vehicles will make on UK power distribution and generation.

Additional projects being considered include:

- City wide energy measuring and usage project to compare performance of older housing and impact of smart grid applications.
- Participation at the LCV2011 Event at Millbrook to demonstrate the city's approach to the Low Carbon Agenda.
- An Open University project for research into low carbon, based on Wolverton.
- Biomass CHP.
- Switching off street lights.
- A large city wind turbine.



1993 MRF



1994 Futureworld



2007 Central Milton Keynes CHP



2007 IKEA Biomass



2008 The Pinnacle



2008 Vizion

**1992**  
First Borough-wide door-to-door recycling scheme in the UK starts in Milton Keynes. It serves 75,000 properties and collects paper, cardboard, cans and plastic bottles.

**1993**  
UK's first purpose built **Materials Recycling Facility (MRF)** built in Milton Keynes. This state-of-the-art facility uses a range of technologies to sort recyclables by their physical and chemical properties; shape, size, weight, magnetism and light absorption.

**1998**  
**Cranfield University Energy Technology Centre** offers specialist research, education and consultancy in renewable energy, biomass conversion and energy from waste.

**Milton Keynes Energy Agency** is set up with a remit to focus on improving the energy efficiency of homes within the city.

**2001**  
First UK **Automatic Plastics Sort** installed at the MRF, increasing the volume and quality of the material processed.

3 air quality monitoring stations National 25% recycling target set.

2000

2000

**2004**  
Demonstration energy crops such as short rotation willow are grown on part of the new **Phase 2 of the National Energy Centre** site.

**2005**  
MKC has distributed more than 28,000 **compost bins** and leaflets to date.

**2005-07**  
University College London monitor energy use in homes first monitored in 1988-92 by MKDC and NEF. After 20 years the low energy homes continue to perform well.

4 air quality monitoring stations

2002

**2007**  
**Biomass heat plant** installed at IKEA.

Mercedes-Benz UK takes the lead in pioneering energy saving technology at its Tongwell site by installing a vertical axis **wind turbine**. Three charging points are installed next to the turbine which can be used to charge electric vehicles.

**2009**  
Combined food and garden waste collections are rolled out in two phases to all properties in the Borough. The waste is sent to Buckinghamshire CC's **High Heavens** in-vessel composting facility. Most residents are positive about the trial, and it has a much greater uptake than anticipated (85%, 75% expected), thereby diverting even more waste from landfill.

**Materials Recycling Facility (MRF)** begins to collect and process new additional materials including aerosols, rigid plastics and waxed cartons.

**2011**  
A new state of the art **anaerobic digestion plant** will be completed to treat the city's municipal waste and use it to generate renewable energy

The **"Concerto" Project**, a European funded project, aims to deliver low carbon, energy efficient infrastructure. Milton Keynes is one of four European cities taking part, and has to date delivered the Central Milton Keynes CHP plant that currently provides heat and power to the Hub, Pinnacle and Vizion developments. Photovoltaics will also be installed to provide 165 kWp of electricity.

1990s

2000s

2010 and beyond

1998

2 air quality monitoring stations

2000

UK target - 10% electricity from renewables by 2010.

**1994**  
**Future World Exhibition** sponsored by the NHBC in 1994. Architects, builders and producers of building products are invited to demonstrate how homes might operate in the 21st Century. As with the Home World Exhibition 13 years earlier, the common themes of the exhibition are energy efficiency and conservation of the environment.

**1997**  
**Kyoto Protocol** agreement is the first international treaty to set legally binding emissions cuts for industrialised nations. Signed by 178 countries, it came into force in 2005.

**2002**  
**Energy Review and Outline Energy Strategy for Milton Keynes** considers how the predicted growth of the city to 2025 may affect CO<sub>2</sub> emissions. Recommendations include setting a zero carbon growth target and investigating a local Carbon Offset Fund to help achieve this.

**2003**  
MKC introduces optional alternate weekly **garden waste collection scheme**. The waste is composted on a local farm and used as an alternative to chemical fertiliser.

**2006**  
**Waste trials** begin in Milton Keynes. Waste from about 1,200 properties (expanded to cover 2,200 properties in 2008) is sent for anaerobic digestion at the Bedfordia Bio-gas plant.

**2007**  
New **Anglian Water** biosolids and energy plant provides energy as well as sludge treatment.

6MW Combined Heat and Power (**CHP**) plant generates and supplies heat and electricity to commercial and residential areas in the west end and central business district of Central Milton Keynes.

**2008**  
**Vizion** mixed-use development on Witan Gate connects to the Central Milton Keynes CHP system.

Four **electric vehicles** introduced to the MKC street cleansing fleet.

The BREEAM Excellent rated **Pinnacle office** development connects to the Central Milton Keynes CHP system. Air conditioning uses absorption chillers served by the CHP network.

**2010**  
Milton Keynes awarded **1.6 million Euros** for project to clean up bio-gas from food waste to inject back into national supply.

**Low Carbon Network Funding** bid. If the bid is successful, the funding will support the development of a smart grid to reduce power demand during the high cost peak usage periods.

**Milton Keynes Wind Farm** at Petsoe End operational. Seven turbines erected in Olney will generate approximately 38,000,000 kWh of electricity per year, equivalent to the average annual consumption of 8,085 households.

**2014**  
Joint residual waste project with Northamptonshire County Council due to come **online**.

**2016**  
All **new homes** to be zero carbon from 2016.

**2019**  
All **new buildings** to be zero carbon from 2019.

# TECHNOLOGY

## Highlighting technological innovations from Milton Keynes

### Smart Grid Project

This project is an essential component in reducing the risk of future power outages due to increasing demand on the grid, the introduction of electric vehicles and the increasing contribution of renewable power streams.

We need to produce more electricity than we do today but must do so largely without emitting greenhouse gases which contribute to climate change. These changes need to be supported by a modernised electricity grid with larger capacity and the ability to manage greater fluctuations in demand, while maintaining security of supply. The smart grid therefore lies at the centre of a vision for a transformed low carbon electricity system.

#### Smart Grid Concept

A Smart Grid is an electricity network that can intelligently integrate the actions of all users connected to it in order to efficiently deliver a sustainable, efficient and secure supply of energy.

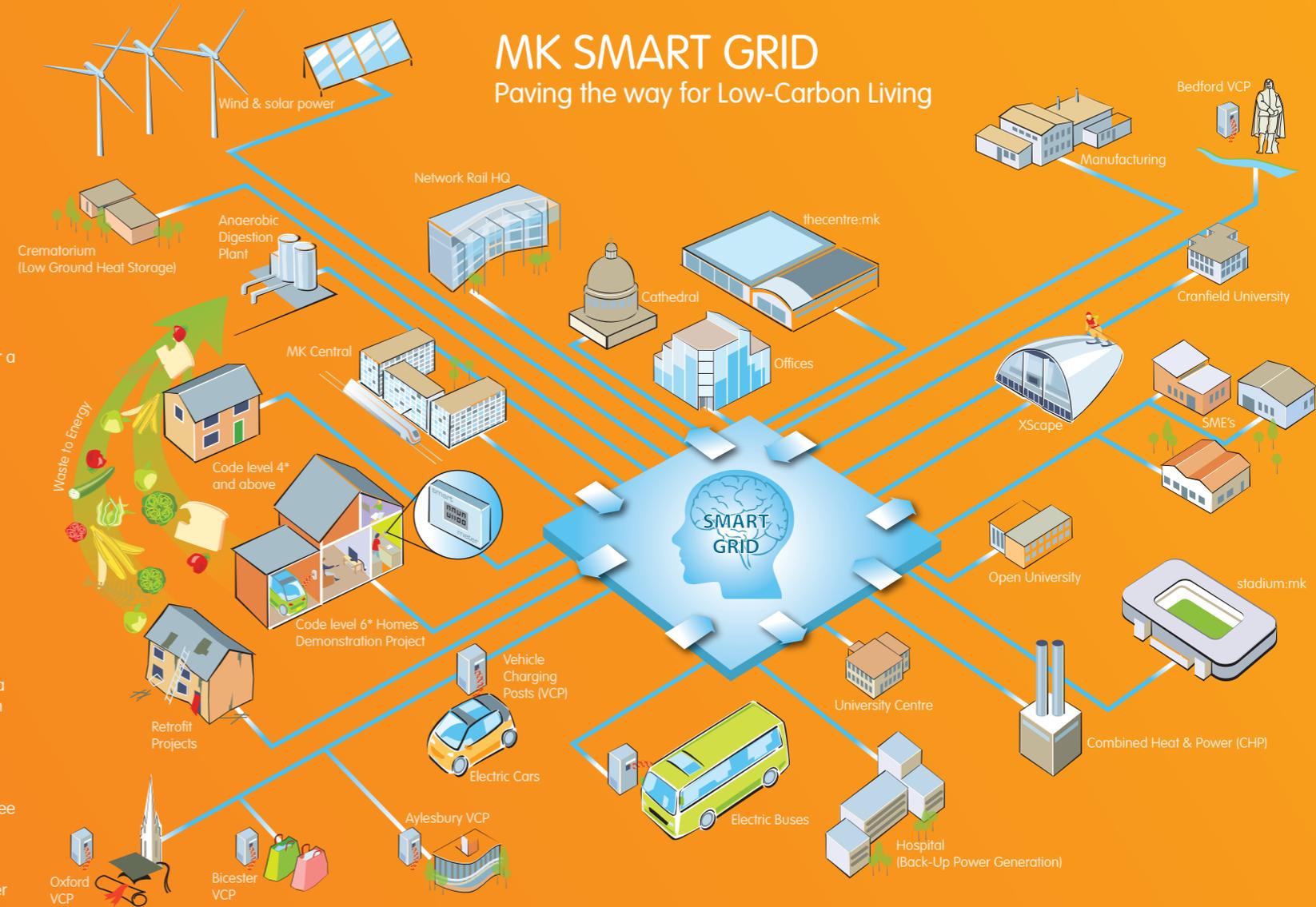
Smartening the grid includes steps such as the installation of smart meters in residences and businesses, new methods of power storage, demand management, and smart sub-station technology.

#### Smart Grid Trial

Central Networks are leading the development of a bid for part of the OFGEM £350 million Low Carbon Network Fund to support electrical distribution companies in trialling 'smarter' or more efficient electrical distribution and supply technology. MKP/MKC & Central Networks have signed a memorandum of understanding in which they agree to work together to develop this bid and trial.

The smart grid trial will go beyond individual homes looking at both local and on-building power generation, linking generation to power usage in the home and moderating consumer demand and usage. This technology will also be applied to existing homes particularly on the older estates.

### MK SMART GRID Paving the way for Low-Carbon Living



Produced by Milton Keynes Partnership for illustrative purposes

Energy kWh Biomass  
 Renewables Wind Power  
 Efficiency Waste to Energy  
 Sustainable Infrastructure  
 Combined Heat & Power  
 Carbon Energy Security Recycling  
 Vision Greening the Grid Technology  
 Photovoltaics Reducing Emissions  
 Meeting national targets  
**Innovation** Smart Grids  
 Anaerobic Digester



## Anaerobic Digestion Plant & Gas Scrubber

Food and garden waste is currently separately collected by the council for in-vessel composting. Next year however, a new state of the art anaerobic digestion plant will be completed to treat the city's municipal waste, using it to generate renewable energy. The facility will process all of Milton Keynes' food and garden waste (currently more than 25,000 tonnes each year), and have the capacity to cope with future increases (expected to reach 30,000 tonnes) during the next five to seven years.

### The Process

Anaerobic Digestion (AD) is a biological process that happens naturally when bacteria break down organic matter in environments with little or no oxygen. It is effectively a controlled and enclosed version of the anaerobic breakdown of organic waste in landfill which releases methane.

### Renewable gas

HCA have supported the AD project in Milton Keynes by providing a Low Carbon Infrastructure Fund (LCIF) grant of £1.5 million towards the addition of a gas scrubber to the plant that will allow biogas from the plant to be injected directly into the local gas network. This will be the first time that this type of gas injection has been installed in the UK and will provide a significant increase in the renewable gas available to Milton Keynes residents.

Domestic food and garden waste



Garden waste bins and kitchen caddies



Waste bins and caddies are collected by the Council



Waste is taken to the AD facility, where micro-organisms break down the organic material



Biogas is produced, a gas scrubber enables injection into the mains gas grid



Digestate material produced by the facility can be used as a biofertiliser

## Combined Heat & Power

A 6 megawatt Combined Heat and Power plant (CHP) is located near Avebury Boulevard/ Midsummer Boulevard.

The CHP system will generate and supply electricity and heat to new commercial and residential areas in the West End and central business district of Central Milton Keynes. It is a means by which the heat produced during the generation of electricity can be put to good use rather than being wasted. CHP systems can lead to substantial savings in total fuel usage as well as helping the environment, since less heat and fewer carbon dioxide emissions are rejected into the atmosphere.

Conventional power plants generally use only 40% of the fuel they burn in producing electricity. This can result in 60% of the burnt fuel being rejected or 'wasted' up the smoke stack. By comparison, CHP can achieve an efficiency of over 70%. CHP will be connected to the mains power grid for back-up electricity and the opportunity to sell excess electricity back to the grid.

In addition, CHP uses this generated heat to produce hot water for heating buildings in the surrounding area by a district heating system. This is most efficient when there is a mix of uses (residential, retail, schools/colleges and businesses), creating a varied need for heat through the day and night.



# DIRECTION

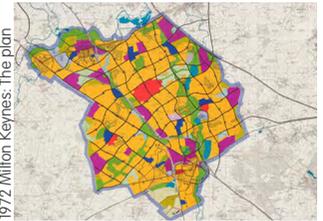
## Clear and informed strategies, policies and masterplanning

The Master Plan sought to anticipate the forces which create cities and facilitate their healthy development. It recognised the close connection between transport systems and the arrangement of land uses and the need to consider these two basic elements together. The Plan was not intended as a town map or a 'blueprint' for the development of the city, rather as a strategic framework with considerable flexibility, capable of responding to changing needs.

Helmur Jacoby's vision for the Boulevard of Central Milton Keynes



1972 Milton Keynes: The plan



**1967**  
Milton Keynes Development Corporation is established to provide the vision and execution of a 'new city'. The city will not reach maturity until the turn of the century therefore must provide the kind of environment which will fit wants and needs at that time. Monitoring and development of the city must be fed back into the planning system to improve and change what is being done.

**1972**  
The Master Plan is launched and outlines the structure of the city and the policies to be followed during the development period. Great importance is placed on parks and open space, zoning residential and commercial areas and building a road system that distributes traffic to avoid rush hour congestion.

**1974**  
MKDC produces plans for £100m City Centre, intended to be a business and shopping district to supplement the local centres in most of the grid squares. 22% of the city centre is green spaces.

**1974**  
Milton Keynes Borough Council is created (as a district of Buckinghamshire until 1997). MKBC is now responsible for local services such as waste collection, and highways.

**1976**  
Campbell Park opens, and around 40,000 trees and shrubs have been planted in the new city to date. The parks and green spaces make an important contribution to minimising the impacts of climate change (although this was not known at the time), through carbon capture and localised cooling and shading.

**1992**  
The Parks Trust is established by MKDC to care for 4,500 acres of multi-functional green spaces, comprising parkland, floodplain, ancient woodland, scheduled monuments, transport corridors and parkways. The Trust is endowed with a property and investment portfolio. Rents from shops, offices and workshops pay for the vital work of nurturing and enhancing the young landscape. Today, the management and enhancement of Milton Keynes' green spaces is vital to ensuring the city is resilient to the impacts of climate change in the future.

**1997**  
Borough of Milton Keynes becomes a unitary authority. MKC is now a waste disposal authority in addition to being a waste collection authority - 'Project Reduce.' MKC also becomes responsible for transport policy and schools which use approximately 40% of our total energy budget.

**2002**  
The Energy Review and Outline Energy Strategy for Milton Keynes considers how the predicted growth of the city to 2025 may affect CO<sub>2</sub> emissions under 3 scenarios, using a Dynamic Regional Energy and Emissions Assessment Model (DREAM). Its recommendations include setting a zero carbon growth target and investigating a local Carbon Offset Fund to help achieve this.

### 1960s

**1967**  
Milton Keynes is formally designated a New Town. It is to be the biggest yet, with a target population of 250,000, in an area of 21,850 acres. Located equidistant from London, Birmingham, Leicester, Oxford and Cambridge it is intended to be self-sustaining, eventually becoming a major regional centre in its own right.

### 1970s

**1974**  
Willen Lake (North and South) and its linear parks are created on the former flood plains of the River Ouzel, protecting the existing flood plains and ensuring that the risks from flooding are no greater for the new city following development. This is an innovative and sustainable approach to flood management in a time where the typical solution in other new towns consists of oversized pipes and other over-engineered solutions.

### 1980s

**1983-89**  
Caldecotte and Furzton balancing lakes and linear parks, like Willen provide sustainable drainage, valuable habitats for wildlife and an attractive environment for leisure activities.

### 1990s

**1992**  
Government transfers control from MKDC to the Commission for New Towns (CNT). CNT continues to require energy standards in excess of national Building Regulations.

**2000-04**  
MKC takes the environmental standards applied to CNT sites a stage further by 2004 developing local plan policies incorporating environmental requirements to cover all buildings not just residential.

**2001**  
NHBC, the standard setting body and leading warranty provider for new homes, moves its National Operations Centre to Milton Keynes.

**2002**  
Central Milton Keynes enters the second generation of its development, with the adoption of a new framework for future development over the next 30 years. It is a major masterplanning exercise which aims to radically reshape Central Milton Keynes. One of the strategic goals is to demonstrate sustainability through environmentally sensitive development, improvements to the existing building stock, energy efficiency and reduction of waste. Plans include a sustainable residential quarter and public transport improvements.

# THE FUTURE

*We aim to achieve carbon reduction levels in advance of statutory guidelines ensuring Milton Keynes is one of the low carbon front runners.*

## Council Commitments

To support Milton Keynes' ambition to become an exemplar low energy community, the Council decided in 2009 to develop a Low Carbon Strategy and Action Plan. It has also:

- signed the Nottingham Declaration on Climate Change,
- agreed a carbon reduction target of 12% by 2010 as part of the LSP Local Area Agreement,
- joined the EU Covenant of Mayors, which required cuts in carbon emissions by at least 20% by 2020, and
- joined the national 10:10 campaign, which seeks to get individuals and organisations to cut their carbon emissions by 10% by the end of 2010. For the Council this means a CO<sub>2</sub> cut of about 2,500 tonnes resulting in a reduction in its energy bills by £250k.

The Low Carbon Action Plan, which sets out a programme of actions to deliver these commitments, is currently under consideration by the MKC.

## Core Strategy

The Milton Keynes Core Strategy is a key part of the Local Development Framework that will replace the existing Milton Keynes Local Plan. It sets out the vision for the Borough in the year 2026, provides the objectives and strategy for the future development of the city and identifies the major areas where growth and change will take place. Core Strategy Objectives to mitigate the Borough's impact on climate change and reduce CO<sub>2</sub> emissions include:

- Implementing higher than national requirements for sustainable homes and buildings.
- Locating development away from areas of flood risk.
- Promoting community energy networks and strategic renewable energy developments.
- Reducing waste generation and increasing amounts of recycling.
- Sustainable transport initiatives.

According to the Strategy, "The scale of growth planned for Milton Keynes will inevitably increase activity and carbon emissions and put pressure on natural resources." It is therefore imperative that new buildings are designed to the highest possible viable standards to minimise their environmental impact. Policies for tackling climate change and building sustainable communities include:

- Developing successful neighbourhoods.
- Ensuring high quality, well designed places.
- Sustainable construction.
- Community energy networks and large scale renewable energy schemes.



1974 Willen Lake



1980 Concrete Cows



1983 Caldecote Lake

1992 The Parks Trust



2001 NHBC



2008 Zero Carbon Hub

**2003**  
John Prescott announces the Government's Sustainable Communities Plan and the next stage of major growth for MK - 133,000 new homes.

**2004**  
Milton Keynes Partnership Committee is created by the Government to ensure a coordinated approach to the planning and delivery of growth and development in Milton Keynes.

**2005**  
Milton Keynes Council Local Plan is adopted, and includes an ambitious sustainable construction policy (known as 'D4'). All new projects over a certain size must be 'carbon neutral' or offset their emissions elsewhere, incorporate renewable energy technologies to deliver a 10% reduction in CO<sub>2</sub>, feature water conservation and drainage technologies, use sustainable building materials and minimise waste.

**2008**  
The Government passes the Climate Change Act, setting legally binding targets for reducing emissions by 80 % based on 1990 levels by 2050.

Milton Keynes Carbon Offset Fund is launched, requiring developers to contribute financially to upgrading the energy efficiency of older properties in the city. Today, 3,000 homes have received improvements paid for from the fund.

**2009**  
Government's Low Carbon Transition Plan states that to respond to the challenge of climate change we need to become a low carbon country.

**2010**  
MKC publish the pre-submission Core Strategy, setting out the vision for the Borough to the year 2026, and the objectives and strategy for future development, including targets for increasing trips by public transport and cycling, and 'greener' construction standards for new developments.

MKC to agree Low Carbon Strategy and Action Plan.

**2013**  
Building Regulations Part L requires 44% less CO<sub>2</sub> emissions than the 2006 target emission rate.

## 2000s

**2004-05**  
Development frameworks for the Northern, Western and Eastern Expansion Areas set out the broad planning principles that will guide future development. They provide more detail on how various aspects of the development should be dealt with e.g. movement and connections, residential densities, landscape and open space and sustainability.

**2006**  
The Stern report is published. The HM Treasury report on the economic impact of climate change finds that the costs of inaction far outweighs the costs of action.

The Strategy for Growth to 2031 (MKP) provides a long-term growth plan and strategic policy framework to enable Milton Keynes to grow in a sustainable way beyond 2011. The Strategy proposes urban intensification and the development of new sustainable extensions that integrate with the provision of new and enhanced public transport systems and interchanges.

**2008**  
The original Plan for the new city is completed.

The Zero Carbon Hub, a new independent private-public partnership tasked with taking day-to-day operational responsibility for co-ordinating the delivery of low and zero carbon new homes, sets up base in Milton Keynes.

**2009**  
MKC Interim Climate Change Action Plan is prepared for 2009/2010, incorporating a climate strategy and energy management policy. The plan focuses on actions by Milton Keynes Council that help to reduce greenhouse gas emissions in the local authority area. Its purpose is to set a programme for cutting the Council's own emissions whilst setting an example to others, helping to communicate the message to the wider community.

**2010**  
Building Regulations Part L (Conservation of Fuel and Power) requires 25% less CO<sub>2</sub> emissions than the 2006 target emission rate.

**2016**  
New dwellings to be Zero Carbon from 2016.

**2019**  
All categories of new buildings to be Zero Carbon from 2019.

**2020**  
Milton Keynes carbon emissions to be cut by at least 20%.

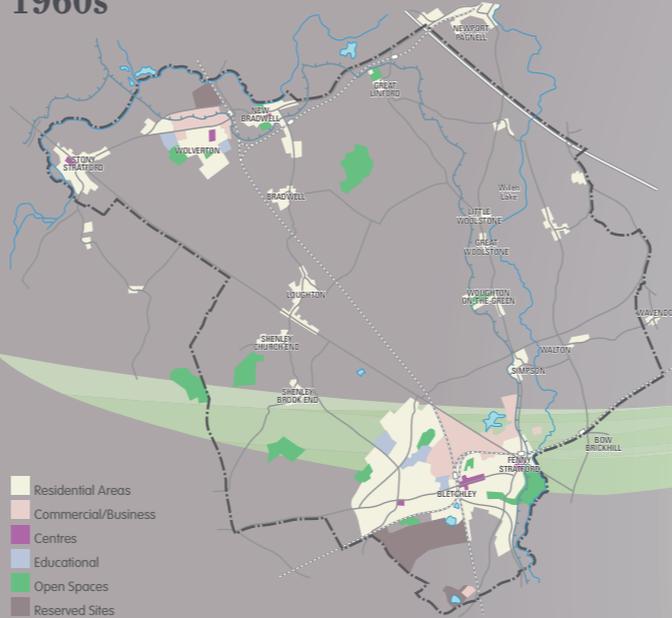
## 2010 and beyond

# DIRECTION

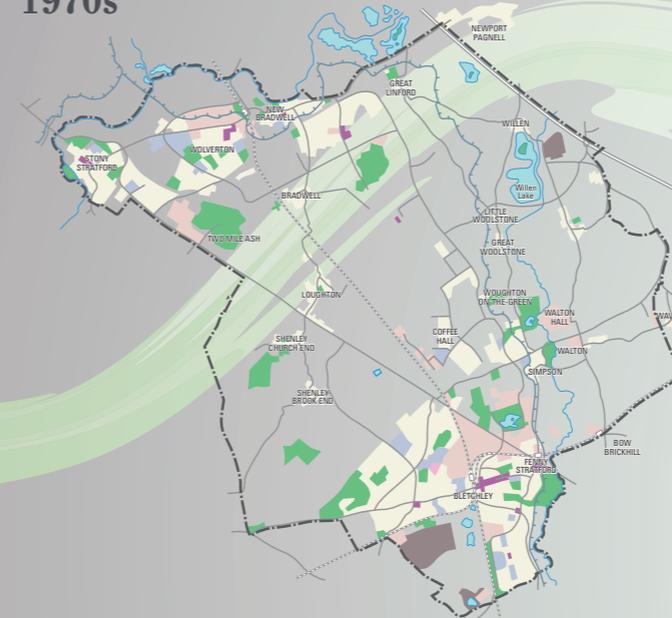
An evolving vision for Milton Keynes

Carbon **CO<sub>2</sub>** council  
 Energy Renewables climate  
 Generation delivery Energy strategic  
 reduction Sustainable buildings Change  
 emmissions Electric Vehicles  
 Climate leadership reduce  
 change **community**  
 reducing emissions **growth** masterplanning  
 policy development

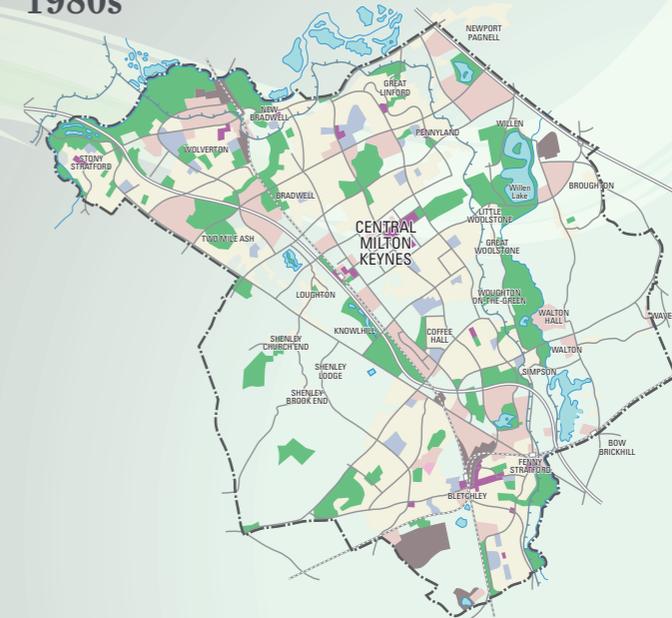
1960s



1970s



1980s



- Residential Areas
- Commercial/Business
- Centres
- Educational
- Open Spaces
- Reserved Sites

## Grid Squares

Major roads were planned using a grid pattern and the districts between them are known as grid squares. Grid intervals of 1 km were chosen so that people would always be within walking distance of a bus stop, and each grid square is a semi-autonomous community, making a unique collective of 100 clearly identifiable neighbourhoods within the overall urban environment. Most grid squares have Local Centres (retail hubs) and also community facilities.

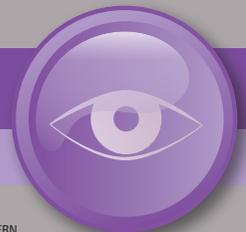


## Roads and Cycleways

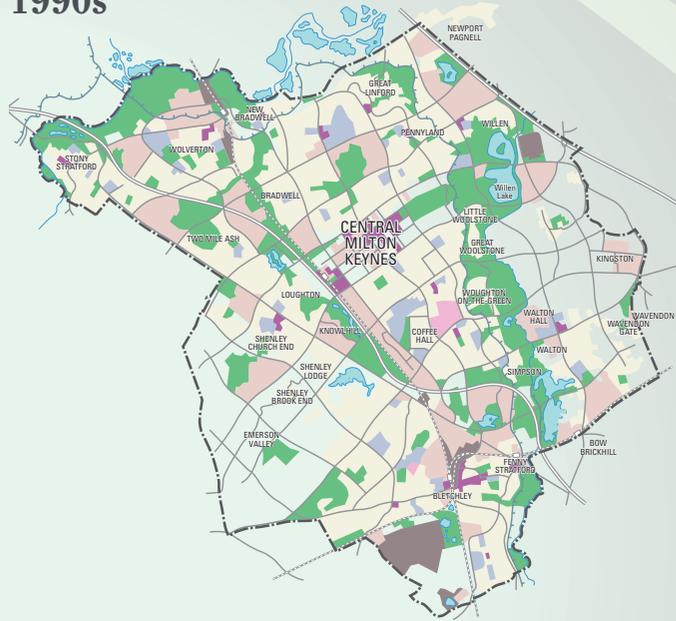
The grid roads and roundabout junctions are designed to reduce congestion and deal efficiently with volumes of traffic. Generous reservations accommodate main services and allow for future upgrading (and future alternative forms of transport), while landscaping protects adjacent development from noise, pollution and the visual intrusion of traffic.

A separate cycleway network (the 'Redways') runs through the grid-squares and sometimes runs alongside the grid-road network. This was designed to segregate slow moving cycle and pedestrian traffic from fast moving motor traffic, and provide safe and easy access to activity centres and other parts of the city via underpass and bridge crossings.

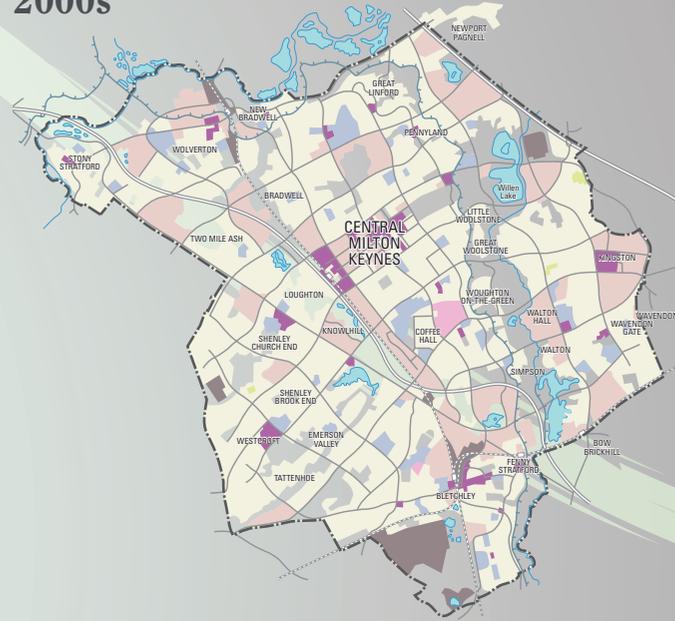




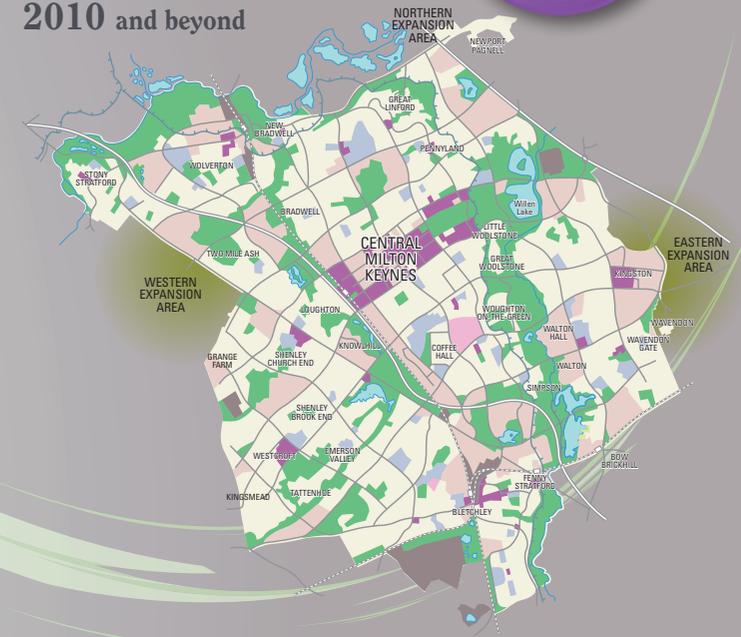
## 1990s



## 2000s



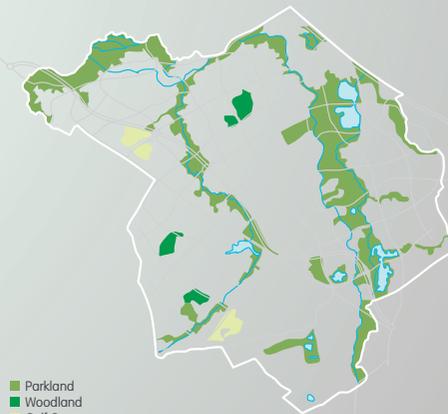
## 2010 and beyond



### Landscape, Parks & Open Space

Park development principles combine the advantages of the town park with those of the country park and provide opportunities for agriculture, sporting, commercial and other features and activities. Trees and planting, managed and maintained by the Parks Trust, contribute to the overall biodiversity and also play an important role in carbon sequestration (capturing and storing carbon from the atmosphere).

A system of linear parks protect the flood plains and tributaries of the Great Ouse river and incorporate a number of balancing ponds which help manage surface water run-off and mitigate flooding in and around Milton Keynes.



■ Parkland  
■ Woodland  
■ Golf Course

### Sustainable Growth

A long-term vision has been developed to guide the proposed expansion of Milton Keynes and ensure that the implications of growth are firmly rooted in regional plans and strategies. The Strategy for Growth provides a platform for major economic and cultural development and also takes into account the physical infrastructure required to ensure development is sustainable.

The Council's adopted 'Core Strategy' will include standards and targets for reducing carbon emissions from new development and supplying energy from low and zero carbon sources. Strong leadership from the Council and Milton Keynes Partnership will help ensure the vision of Milton Keynes as a low carbon city will be fulfilled.



# FUTURE FORUM

Ideas, opinions and perspectives

## Milton Keynes VOICES



The story of Milton Keynes is not just about the masterplan or the projects. It's also about its people and how they are living and working towards a better future for themselves and coming generations.

In the Future Forum we capture views and thoughts from a cross section of people, all with strong connections with Milton Keynes and many who both live and work in the city.

It's all about what inspires them, what they care about, and how they think the city should move forward into a low carbon future. These voices and thoughts present the many faces of Milton Keynes: its leadership, community spirit, youth, green lifestyle and spirit of innovation.



Imtiaz Farookhi



David Foster



Pete Winkelman



Tadj Oreszczyn



Clive Faine



John Walker



Julia Upton



Rosemary Clarke



Youth Voices

Clive Faine is the Managing Director of Milton Keynes based Abbeygate Developments. He is also a member of the Milton Keynes Transport Partnership and chairs both the local Sustainable Transport Group and the Milton Keynes Cycling Forum.

*"Milton Keynes is leading the low carbon agenda compared to many other local authorities with their D4 policy and carbon offset fund. The CHP in Central Milton Keynes was the first to be installed in a modern city centre and the next step is to look for opportunities to roll out CHP with alternative fuel sources, which do not rely on gas."*

Clive Faine  
Managing Director, Abbeygate Developments

Rosemary Clarke of Global Education Milton Keynes (GEMK) engages young people in the low carbon agenda and increases awareness and understanding of sustainability and development issues within schools.

*"Children are really receptive and care about the environment. Through Eco Councils, conferences and other activities they come up with great ideas, such as rerouting a school Redway so it works better. By learning about the impact their homes and lifestyles have on the environment they also influence their parents' actions."*

Rosemary Clarke  
Co-ordinator, GEMK

Imtiaz Farookhi is Chief Executive of NHBC, the standard setting body and leading warranty provider for new homes in the UK. NHBC is pivotally involved in the drive to develop low and zero carbon new homes. NHBC funds both the Zero Carbon Hub and the NHBC Foundation, a research body which promotes best practice to help industry and the government respond to the UK's housing needs in the best interests of home owners.

*"We are currently in the process of moving our Head Office to Milton Keynes, having established our National Operations Centre here in 2001. We are now a major employer in Milton Keynes. Milton Keynes has a good track record of linking innovation, CO<sub>2</sub> reduction and energy efficiency on the one hand and quality of life on the other. These aspects are integral to the exciting and ambitious agenda represented in this prospectus."*

Imtiaz Farookhi  
Chief Executive of NHBC

David Foster leads The Parks Trust, which cares for a large proportion of the city's green space and the richly planted grid road corridors. The Trust, which was established by the Milton Keynes Development Corporation, works to maintain and protect an intricate interconnected mix of woodland, grassland and wetland.

*"Here the emphasis is on encouraging biodiversity and ensuring that this important part of the city delivers something special for its population - the chance to experience peaceful and interesting landscapes and habitats on their doorsteps."*

David Foster  
Chief Executive, The Parks Trust, Milton Keynes

John Walker has worked at the Milton Keynes Development Corporation since 1975 and was Planning Director between 1980 and 1992, then Chief Executive of the Commission for the New Towns from 1992 to 1999.

*"Milton Keynes has always looked for new ways to improve life for residents and businesses. Low energy buildings have been an important part of this pioneering attitude since the 1970s, helping people to live in more comfortable homes that are cheaper to run and cause less damage to the environment. Aiming high, following through and demonstrating what can be achieved are key features of the new city's character. The low carbon city is right in line with this tradition."*

John Walker  
Chairman of the Green Gauge Trust, promoting better delivery of low energy buildings.

Amy, Jasmine and Anais represented Milton Keynes at the first global climate change conference for young people in 2009, the Bright Green Youth Conference. The trip was a project by the OU and local schools to commit to thinking about carbon neutral planning.

*"Meeting people from all over the world in Denmark was brilliant and we came back to Milton Keynes with new ideas, things like the ecogym and ecofriendly homes, and really enthusiastic about what we could do next."*

Amy Bosworth, Jasmine Satchell & Anais Berriman  
Bright Green Youth

Julia Upton is Chief Executive of Milton Keynes Community Foundation, a charity that funds and supports projects which respond to the needs of the local community, including cultural activities and the promotion of healthy lifestyles.

*"We help people to learn how to live more sustainably whether it is how to grow their own food or how to cook healthy recipes. We are centrally located so people can get to us by public transport but we also go out into the community."*

Julia Upton  
Chief Executive, Milton Keynes Community Foundation

Tadj Oreszczyn did his PhD in solar energy at The Open University in the 1980's but now directs the UCL Energy Institute, advises government on energy efficient buildings and supports leading energy efficient organisations located in Milton Keynes such as the National Energy Foundation and the Zero Carbon Hub.

*"Milton Keynes has over the last four decades been at the forefront of demonstrating low energy building technology. It has led the way in the integration of renewable technologies in buildings and the control and labelling of the energy performance of buildings. Lessons learnt from Milton Keynes have helped to inform National energy policy and regulations."*

Tadj Oreszczyn  
Director, UCL Energy Institute

Pete Winkelman, Chairman of MK Dons FC, is the man responsible for the development of stadium:mk – the centrepiece of Milton Keynes' bid for Candidate Host City in England's 2018 World Cup

*"The Football Club and its Sport and Education Trust are building Milton Keynes a sporting legacy that will sit proudly at the heart of our community. A low carbon vision, reached by working together in partnership, shows our city's determination to take the initiative and provide a framework for modern sustainable living."*

Pete Winkelman  
Chairman, MK Dons

# ACKNOWLEDGEMENTS AND CREDITS

## Commissioning Partners

Neil Jefferson	Zero Carbon Hub/NHBC Foundation
John Lewis	Milton Keynes Partnership
Tim Roxburgh	Milton Keynes Partnership
Grant Seeley	Milton Keynes Partnership
Geoff Snelson	Milton Keynes Council
Clive Turner	Zero Carbon Hub
Phil Winsor	Milton Keynes Council

The Commissioning Partners are grateful to the following people and organisations who shared knowledge and gave their support during the development of the Prospectus:

Nicola Adshead	Milton Keynes Council
Austin Baggett	National Energy Services
Dave Baker	Robust Details Ltd
Guy Barnett	Milton Keynes Partnership
Alison Bartlett	Milton Keynes Council
Mike Bayse	Cranfield University
Jacki Bell	Homes and Communities Agency
Anais Berriman	Bright Green Youth
Linda Bird	Milton Keynes Council
Amy Bosworth	Bright Green Youth
Ian Byrne	National Energy Foundation
Ian Chapman	Cranfield University
Gillian Clarke	Milton Keynes Council
Rosemary Clarke	GEMK
Robert Coles	PRP Architects
David Cook	Milton Keynes Council
Richard Copper	The Open University
Steve Crowther	Milton Keynes Council

Nick Cunningham	NHBC
Neil Cutland	Inbuilt
Martin Davies	Milton Keynes Council
Ellie Dawkins	University of York
Roz Dicks	Homes and Communities Agency
John Doggart	Sustainable Energy Academy
Ian Duncan	Milton Keynes Partnership
Kellie Evans	Milton Keynes Council
Clive Faine	Abbeygate Development
Imtiaz Farookhi	NHBC
Nadi Farrell	The Parks Trust, Milton Keynes
David Foster	The Parks Trust, Milton Keynes
Tracy Galvin	PRP Architects
Melissa Gardner	Oakgrove School
Judy Gibbons	Shenley Church End Parish Council
Matthew Gilbert	Milton Keynes Council
Darren Gray	Milton Keynes Council
David Grindley	David Grindley Architects
Ian Hamilton	UCL Energy Institute
Paul Hammond	Homes and Communities Agency
Chris Harbottle	Milton Keynes Council
Mark Harris	Milton Keynes Council
Sanda Hayes	National Energy Foundation
Gavin Hodgson	BRE
Andy Hudson	Milton Keynes Council
Paul King	UK Green Building Council
Jayde Lucas	Zero Carbon Hub
Robert Macdonald	Zero Carbon Hub
David Matthews	Solar Associates
John Miles	Arup

Cheryl Montgomery	Shenley Church End Parish Council
Philip Murphy	PRP Architects
Tadj Oreszczyn	University College London
Rob Pannell	Zero Carbon Hub
Dave Parrish	Milton Keynes Council
Graham Perrior	NHBC
Lesley Potter	Milton Keynes Council
Stephen Potter	The Open University
Peter Rickaby	Rickaby Thompson Associates Ltd
Robin Roy	The Open University
Stuart Sage	Homes and Communities Agency
Brian Sandom	Milton Keynes Council
Richard Sarraff	Bloor Homes Northampton
Jasmine Satchell	Bright Green Youth
Dick Stimpson	Arup
Tina Surti	Milton Keynes Partnership
Heather Talbot	Growing People
Alan Taylor	Renewable Power Systems
Jasmine Taylor	Homes and Communities Agency
Julia Upton	Milton Keynes Community Foundation
Henk van Aswegen	City Discovery Centre
John Walker	Green Gauge Trust
Clare Walton	MK Council of Voluntary Organisations
Mark Watts	Arup
Peter Whittington	Dept. for Business Innovation and Skills
Megan Williams	Milton Keynes Council
Ros Williams	PRP Architects
Pete Winkelman	MK Dons
Colin Wood	Milton Keynes Partnership

## Credits

### Research and Document Preparation

Kate Mansfield	PRP Architects
Marylís Ramos	PRP Architects
Clive Turner	Zero Carbon Hub

### Graphic Design

Nick Foster	PRP Architects
Marylís Ramos	PRP Architects

### Project Advisors

Neil Jefferson	Zero Carbon Hub
Dr Steve Moorhouse	Milton Keynes Council

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'Information is Beautiful' by David McCandless, Collins, 2010

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Pages 4-7 Pictograms courtesy of **www.allsilhouettes.com**

### Graphics by PRP Architects

Page 4	Carbon Footprints
Page 5	A Low Carbon Lifestyle
Page 5	Population
Page 5	Trees
Page 6	Housing
Page 6	Job Growth
Page 6	A Healthy Lifestyle
Page 6	Pathways
Page 10	Mode of Transport

### Courtesy of The Open University

Page 10 1969 The Open University

### Courtesy of Global Education Milton Keynes

Page 10	Commonwealth Common Waste
Page 11	2008 Sustainable Schools Conference
Page 13	Bright Green Youth and GEMK

### Courtesy of Food Train

Page 11 2005 Food Train

### Courtesy of MK Christian Foundation

Page 11	2008 Wolverton Urban Farm
Page 12	Urb Farm background image

### Courtesy of Hannah Meara

Page 11	2010 Wolverton Energy Roadshow
Page 12	Transition Wolverton - Energy Roadshow

### Courtesy of Nissan

Page 15 2011 Nissan Leaf Electric Car

### Courtesy of IKEA

Page 19 2007 IKEA Biomass

### Courtesy of Renewable Power Systems

Page 21 Anaerobic Digestion Plant Image

### Artist: Helmut Jacoby

Page 22 Helmut Jacoby's vision for the Boulevard of Central Milton Keynes

From '**The Milton Keynes Master Plan**' by the **Milton Keynes Development Corporation**, 1970

Page 22 1970 Milton Keynes The Plan

### Courtesy of The Parks Trust

Page 23 1992 The Parks Trust

### Courtesy of NHBC

Page 23 2001 NHBC

### Courtesy of the Zero Carbon Hub

Page 23 2008 Zero Carbon Hub

From '**The Milton Keynes Master Plan**' by the **Milton Keynes Development Corporation**, 1970

Pages 24-25 Grid Squares, Roads and Cycleways, Landscape, Parks and Open Space



Milton Keynes Partnership



# MILTON KEYNES

## A SUSTAINABLE FUTURE

A Low Carbon Prospectus