Ceidwadwyr Cymreig | Welsh Conservatives

LIVEABLE CITIES

A Strategy for Welsh Urban Renewal

// OUR VISION

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For the first time in history, most of the world's population live in urban communities. More than half of the world's population live in cities alone – within 30 years this figure is expected to reach 70% - and the trend in Wales is no different. In 2010 it was calculated that around 66.1% of the Welsh population lived in its urban areas, and this percentage has continued to grow year-on-year.

To date there isn't a national or overarching strategy to create, maintain and develop urban liveability in Wales, yet we are in an exciting position to implement one.

Wales' cities are still to see the significant economic growth that has materialised in many other cities across the UK, such as London, Manchester, Birmingham and Edinburgh. But recent policy decisions such as the Cardiff and Swansea Region city deals between the UK and Welsh Governments have sparked greater ambition.

This is a significant and welcome development, and also a big challenge. As we have witnessed in many cities around the world, a lack of innovative and sustainable planning has too often left the blight of deprivation, overcrowding and urban sprawl.

Liveability must be at the heart of our urban strategy. Our towns and cities belong to all the people of Wales and need to be engines of growth, creativity and learning. Above all, people must be put first. As Professor Burdett of the London School of Economics has said, the challenge is to "create cities where people want to live."

The Welsh Conservatives believe that it is essential to create liveable cities and urban areas which are good for the economy, socially inclusive, environmentally sustainable and that are built on the principle of the health and well-being of citizens. We have the opportunity also to attract highly skilled young people who are currently squeezed out of London and the overheated South East of England.

This White Paper puts forward our policy proposals to transform our communities by enhancing the great urban inheritance that has been passed to us, and by adding a new sense of ambition for the future. We welcome your response to these proposals.

// EXECUTIVE SUMMARY

This White Paper introduces 25 policy proposals to transform our urban environments. The policies are for the short, medium and long-term, and develop four key themes: **Lifestyle, Transport, Housing and Design.**

Some of the standout proposals are to:

1 **Make Cardiff the UK's first Carbon Neutral Capital City.**

2 **Pilot a city wide single-use plastics ban in Wales.**

3 **Ensure that all commercial developments of over 1,000 m² must have green roofing for at least 50% of the total roof area of the development.**

4 **Publicly owned urban brownfield sites will be provided at a discount to develop Urban Eco Quarters – housing developments with shared gardens and which are high density, sustainable and provide for a mixture of tenures.**

5 **Implement clean air zones in Newport, Swansea, Cardiff and Wrexham.**

6 **Co-ordinate our urban policies so that more of Wales' busiest streets can become pedestrian zones.**

// LIFESTYLE

I. PARKS AND GREEN SPACES

The benefits of parks and green spaces to urban areas are universally appreciated. Whilst the health, environmental, aesthetic, and economic benefits are enormous, so are the positive impacts on mental wellbeing, air quality and commercial competitiveness.

Ultimately, in a liveable twenty-first century city, an attractive and health-focused environment is critical for sustainability. Green spaces provide a natural escape within densely populated and bustling neighbourhoods for residents and workers alike.

Parks are great for physical and mental health. Green spaces increase the mental wellbeing of children, as a recent study reported in the Guardian demonstrated: *"Researchers found that each degree of increase in surrounding greenness led to a 5% improvement in the development of short-term, or working, memory over a period of one year."* [1] This investment in the younger generation will have lasting benefits for health into adulthood, lowering their future healthcare costs.

// CASE STUDY

COPENHAGEN

Today, 96% of Copenhageners live within 15 minutes' walk of a larger green or blue area, and work is under way to improve access to recreational areas. Among its many parks, the Fælledparken is the most popular, attracting more than 11 million visitors each year. The city has 'biodiversity volunteers' who play a vital role in nuturing the city's green areas. In 2011, Copenhagen launched 22 local green partnerships projects, plus two city garden initiatives and a school garden project. The city also planted more than 3,600 trees – 217 of them 'adopted' by local people, companies or institutions. Copenhagen won the title of 'European Green Capital' in 2014[2].

Photo courtesy of: visitcopenhagen.com

[1] https://amp-theguardian-com.cdn.ampproject.org/c/s/amp.theguardian.com/environment/2015/jun/15/green-spaces-improve-school-childrens-mental-development-study-finds

[2] http://ec.europa.eu/environment/europeangreencapital/wp-content/uploads/2012/07/Copenhagen-Short-Leaflet_Web.pdf

Green spaces act as a natural air purification system, removing carbon dioxide from the air. Moreover, green spaces, when shaded with trees, help reduce the "Urban Heat Island" (UHI) effect by absorbing UV radiation from the sun. [3] A report from Northeast Institute of Geography and Agroecology published in October 2017 notes: *"Urban parks which can provide important ecosystem services to ameliorate the impacts of urbanization, such as noise reduction, recreational facilities, microclimate regulation, and air pollution reduction, have been shown to significantly mitigate the UHI effect."* [4]

This report highlights the cost-saving benefits to energy consumption when there's a proper investment in urban green spaces. This is not only an economic benefit, but an environmentally-friendly one as well.

We must find more locations within densely populated areas that can be converted into urban green spaces. Using Geographic Information System (GIS) mapping, and by inputting various locations throughout urban areas, it is possible to map the distance from these specific locations to the nearest park or green space. The Consumer Data Research Centre has fortunately already compiled a database of average distances from each postcode to the nearest green space. The output is an indexed map of Welsh urban areas with each postcode having a different shade depending on its proximity to a green space.

This is particularly useful because it shows green space absence in any given city. For example, the following map displays the lack of green space availability in Cardiff - specifically in northwest Grangetown, Butetown, and Splott.

A data-driven assessment can be made and green spaces can be prioritised in areas where there is the greatest need. **Our proposal will put a requirement on local authorities to submit plans that highlight derelict or undeveloped land in large towns and cities which can then be developed into green spaces, based on data showing the areas with the greatest need.** A network of green spaces is vital for a 21st century city or town, and this policy will ensure that wasted space is put to recreational use for those who need it most.
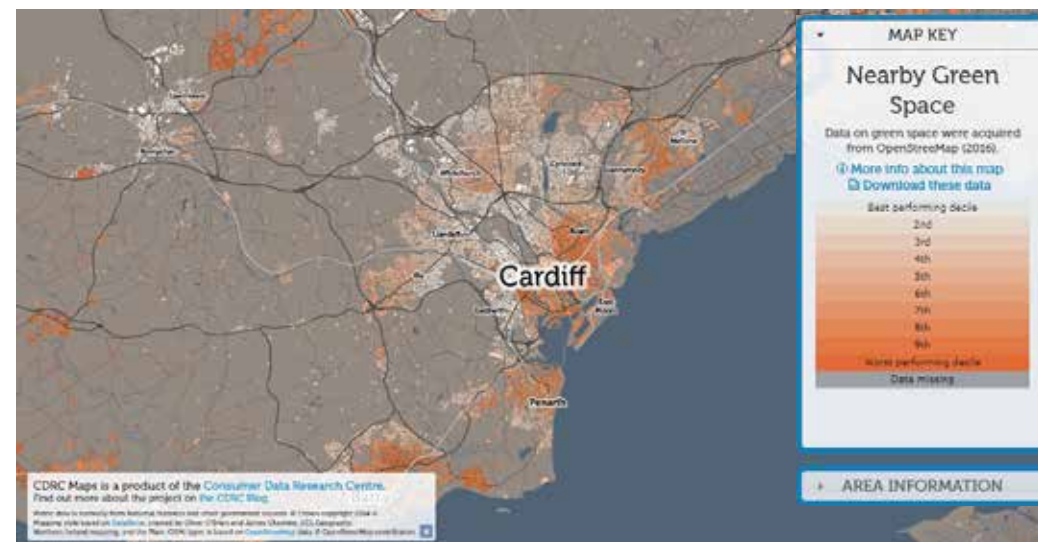
OUR PROPOSAL

All large towns and cities will be required to submit plans to utilise derelict and undeveloped land – with a specific emphasis on deprived areas – that can be developed into urban green spaces.

[3] Chaobin, Y, Xingyuan, H, Lingxue, Y, Jiuchun, Y, Fengqin, Y, Kun, B, Liping, C, & Shuwen, Z 2017, 'The Cooling Effect of Urban Parks and Its Monthly Variations in a Snow Climate City', Remote Sensing, 9, 10, pp. 1-17, Academic Search Complete, EBSCOhost, viewed 13 February 2018.
[4] Chaobin, Y., Ibid.
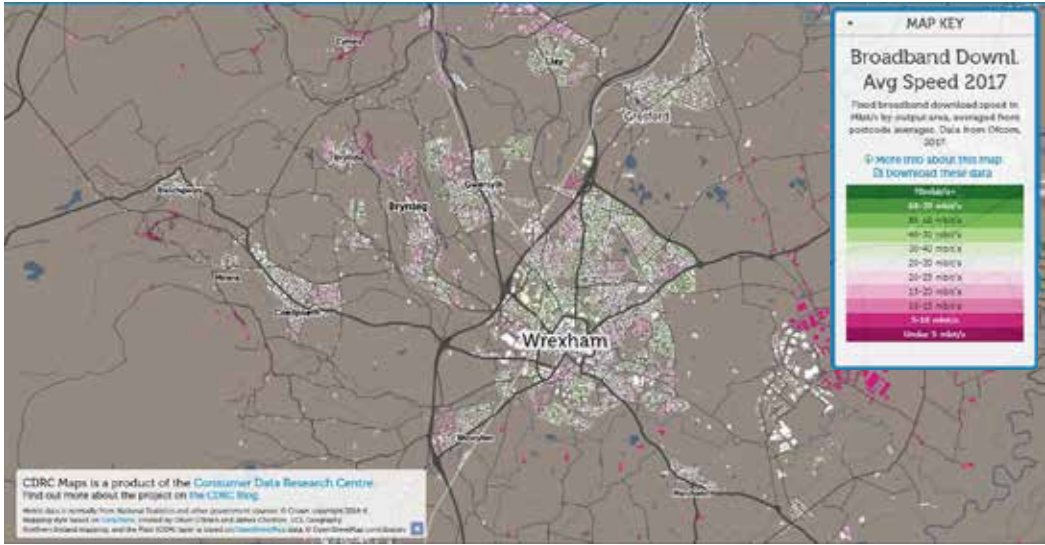
II. INTERNET CONNECTIVITY

Given the myriad of ways the internet is integrated in day-to-day life, it is essential that high-speed broadband access, public Wi-Fi access and fast mobile connectivity is available in all of Wales' urban areas.

Investment in public Wi-Fi spots will bring a range of benefits for various sectors in Wales, from tourism to education, as well as opening up new opportunities for businesses and services in our urban centers. For this reason **we will develop a Technology Infrastructure Fund to establish complete city centre Wi-Fi coverage across all of Wales' towns and cities.** Where mobile networks may falter, this public Wi-Fi network will guarantee connectivity and accessibility at all times.

Whilst this is essential for consumer access, continuous high-speed broadband is critical for attracting commercial investments. The

Department for Digital, Culture, Media and Sport understands the importance of high-speed broadband access, going so as far as to call access a legal right in the UK.[5]

The Consumer Data Research Centre has mapped the average broadband download speeds for residential properties. The data used in this map is from a 2016 OFCOM dataset. Wrexham is an example where high-speed broadband speed is lacking. The scale used for measuring broadband speed ranges from under 5 mbit/s to 70 mbit/s or more. The areas with faster broadband speed are shaded with darker hues of green whilst the slower broadband speeds are indicated by darker hues of purple. Wrexham, unlike Cardiff, Newport, and Swansea, has barely any displayed broadband speeds above 40-50 mbit/s. We want to see Wrexham as a thriving centre of business activity in North Wales, and better connectivity will help this ambition.

[5] https://www.theguardian.com/technology/2017/dec/20/high-speed-broadband-to-be-legal-right-for-uk-homes-and-businesses
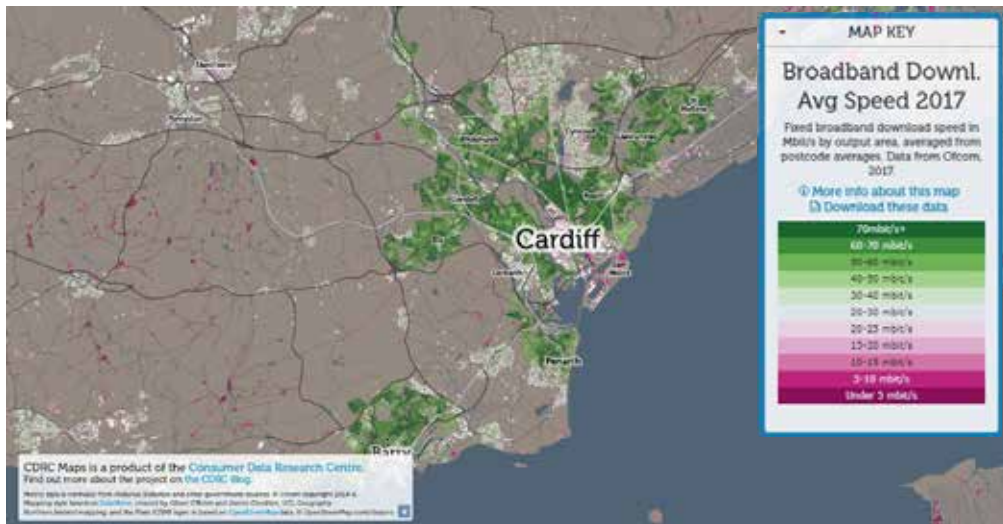
The map of broadband download speeds can be compared to Cardiff, displayed above, where there are relatively higher speeds available. In Cardiff, however, there is still a lot of work needed to improve speeds in the city centre. Mr. Oliver O'Brien, a researcher at the University College London and the Consumer Data Research Centre, has two explanations for the lag in high-speed broadband in city centers. The first is that it is often difficult to construct the necessary infrastructure, given the age of the buildings and space availability.[6] The second is that the city centres were the first to receive broadband capabilities when the technology was first developed. Nonetheless, areas on the periphery of Cardiff have significantly higher broadband download speeds displayed than in Wrexham. The map of Cardiff above displays these differences.[7]

OUR PROPOSAL

Through a Technology Infrastructure Fund, we will establish complete city centre Wi-Fi coverage across all of Wales' towns and cities.

Deloitte statistics for 2015 show that 76% of adults in Britain now own smartphones, with 50% of smartphone owners regularly using their devices on public transport, at work and while shopping.[8] In the modern world we want to connect as easily as possible from wherever we are. The rollout of the 5G mobile network in 2020 will go some way to achieving this ease of connectivity, and **we will work closely with our colleagues in Westminster to ensure that Cardiff is one the original cities for its implementation.**

OUR PROPOSAL

Work closely with the UK government and mobile network operators to ensure that Cardiff is one of the first UK cities to rollout 5G connectivity.

[6] http://oobrien.com/2017/07/broadband-speed-in-the-uk/
[7] https://maps.cdrc.ac.uk/#/metrics/bband/default/BTTTFTT/13/-3.1922/51.4952/

[8] http://www.realtowns.co.uk/rise-rise-public-wifi-britain/

III. CLEAN STREETS

Litter and litter crime is a big problem in Wales, especially in our urban areas. There has been a colossal shift in the public's perception of plastic recently, and the Welsh government should be taking advantage of this momentum to remodel our approach to litter altogether.

The UK Government has announced a succession of initiatives to tackle the use of single-use plastics – plastics that are polluting our seas, or getting embedded in our landfill sites for hundreds of years. These include the announcement of a bottle deposit scheme in England, a proposed ban on plastic straws and an acknowledgment of a need for a single-use plastics tax.

This follows other similar schemes around the world. New York City banned single-use styrofoam containers in July 2015, Oxford is thought to have become the first city in the UK to ban non-recyclable food containers in early 2015, and in Aberporth, in Ceredigion, a local crusade has been launched against single-use plastic products. The village's general store is selling milk in glass bottles and a pub has replaced plastic drinking straws with paper ones.

Additionally, the private sector has portrayed some leadership in this area:
• Supermarket chain Iceland announced that it intended to go plastic-free within 5 years
• McDonald's said that all its packaging from around the world would come from sustainable sources by 2025, and early in 2017
• Pub chain JD Wetherspoon stopped automatically putting plastic straws in drinks for customers and from January 2018 will use only biodegradable paper straws

Our policy is to launch a pilot project of a city wide single use plastics ban in Wales, going further than all of the piecemeal approaches that we have seen to date.

OUR PROPOSAL

Pilot a city wide single-use plastics ban in Wales.

To further strengthen our approach in Wales, we will introduce measures to specifically tackle general urban litter, particularly for the night-time economy.

The Welsh Government published a report on managing the night time economy in 2016. However, the report only mentions litter three times and provides no data on the prevalence of night-time littering.

Cardiff City Council published a report on their plan to develop the night-time economy of the city between 2017-2022. The project identified actions that could help prevent crime and disorder by reducing litter including:

- "For Cardiff to work with fast food outlets to reduce waste and cleansing time, considering thicker or gull-proof bags and presentation of trade waste".

- "For Cardiff to fund a dedicated cleansing and waste team to deal directly with business concerns. Carry out tactical cleaning of frontages, doorways and hotspots that can quickly and efficiently target problem areas over and above those currently provided by the Council. Respond to business call-outs and report/liaise with Cardiff Council and to ensure their cleansing and collection schedules support the needs of city centre businesses, e.g. timely waste collections following major events. Provide information and advice to businesses on the presentation of waste".

A separate report into crime in Cardiff found that litter left from a night out could increase the probability of a serious crime occurring. Figures show that between 1 September 2015 and 30 October 2015 there were 635 empty bottles and glasses left on the street in Cardiff's city centre. These could be "potential weapons", and the Community and Adult Services Scrutiny Committee inquiry highlighted the need to maintain timely street cleansing routines.

It is important that a policy to confront night-time waste should aim to make it easier for consumers to be socially responsible (by improving waste disposal facilities) and compelling more people to recognise that littering is not sustainable or responsible - they cannot rely on the early morning cleaners to clean up their mess. Based on this, **the Welsh Conservatives will introduce an Urban Litter Prevention Grant to fund innovative trial projects on cutting-edge litter prevention schemes such as litter cameras, river traps and initiatives to prevent the night-time economy litter.**

Clean streets are an undervalued yet crucial aspect of a liveable town and city, and the importance of the issue should be matched by Government policy and ambition.

OUR PROPOSAL

Through funding raised from tougher penalties on littering, we will introduce an 'Urban Litter Prevention Grant' which trials cutting edge litter prevention schemes such as river traps, litter cameras, and initiatives to prevent 'night-time economy' litter.

// TRANSPORT

I. CYCLING, WALKING AND CATCHING THE BUS

The design and layout of streets and public spaces has a direct impact on how we choose to travel and spend time outside. Cycling is a cost-effective and eco-friendly alternative, proven to reduce urban travel congestion and carbon dioxide emissions. Essential to a sustainable and liveable twenty-first century city, cycling puts health and safety at the fore of urban development. The current cycling infrastructure fails to meet the demand for non-automotive modes of transport around our urban areas.

OUR PROPOSAL

To at least double the length of cycle routes in urban residential areas by 2040, prioritising local cycling networks around community anchors.

Throughout Europe and North America, cities have turned to cycling as a cheaper alternative to tackle congestion and pollution.[9] These cities have been able to market themselves as sustainable and health-conscious urban areas, which attract individuals and industry wanting an efficient and healthy environment to live and work. It

would be in the best interest of Wales to develop infrastructure to facilitate growth in cycling through the provision of additional bike lanes in its urban areas.

It is now easier than ever to plan, develop, and provide proper bike lanes in urban areas. Using geographic information science (GIS), variables such as population density data, levels of traffic congestion, locations of existing roadways and bike lanes, elevation, etc. can be compiled and analysed to develop a suitability index for a particular urban area. These variables highlight the worst traffic areas, the relative stable gradient that makes cycling the most suitable alternative, where individuals currently ride their bikes, etc. When these variables are weighted and aggregated, the output is a map of a particular city with areas that would be most suitable for a proposed bike lane.

Reductions in traffic congestion and carbon dioxide emissions are not the only advantages of moving towards a bicycle-centric transportation scheme. There are first, the obvious yet important health benefits such as improved cardiovascular health and reducing obesity. Then there are the benefits for property values. Studies in the United States have discovered that properties on or near a bike trail

9 http://www.richmondgov.com/BikePed/documents/RichmondBicycleMasterPlan.pdf

// CASE COMPARISON
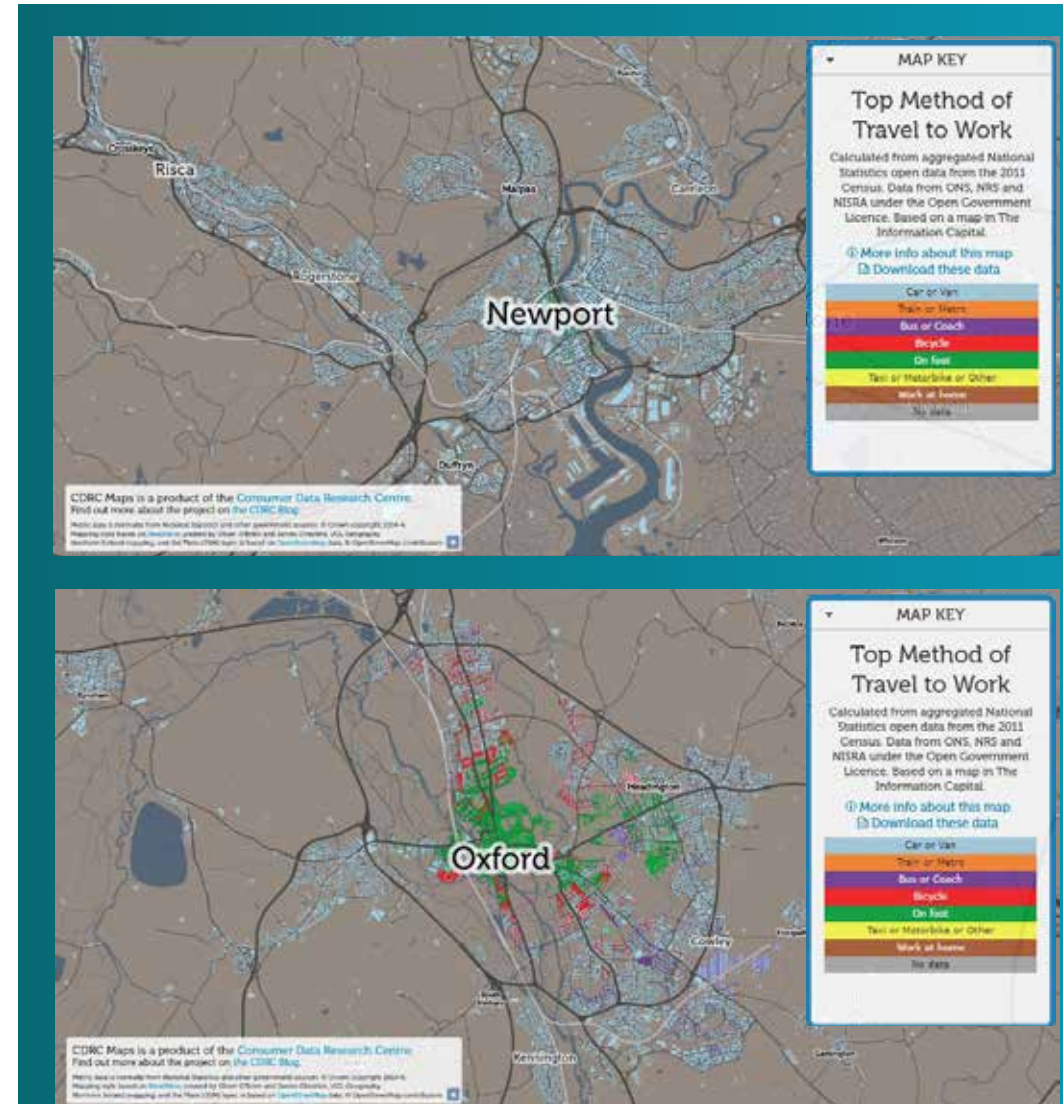
NEWPORT AND OXFORD

The above images show the top methods of travel to work in both Newport and Oxford. Oxford has much larger pockets of cyclist commuters, whereas Newport's commuting is predominantly based on car or van.

sold faster than other properties.[10] Tourism is another large incentive for promoting cycling. Cycling allows for easy navigation through the city centre and access to historic sights and attractions on the periphery of the urban area, all while minimising transportation time and cost.

The policy response to the increasing demand for urban bike lanes starts by identifying where there is the greatest traffic congestion. Using the GIS strategy outlined above, these areas can be quickly identified and subsequently developed to alleviate the congestion. This should be the primary goal of developing bike lanes. Following this, transportation plans should be crafted to connect the outlying urban areas to the city centre. This will ease traffic congestion as well as reduce carbon dioxide emissions from those making a moderate to long journey into the city.

bicycle options and can encourage bicycle use as part of a multimodal commute. Under our Community Cycle Fund, community projects will be able to access funding to support a whole range of infrastructure projects depending specifically on what the community need and want.

Investment in buses and other public transport will free up space on the roads so that there is better provision for cyclists and walkers. Since two thirds of trips and over half of car journeys in the UK are less than five miles long, measures to change travel behaviour and reduce the need to travel in urban areas could bring significant benefits. Many local authorities around Wales are hoping to move to low emission buses, we believe that greater incentives for people to use buses will help that gradual change of reliance from cars to more sustainable forms of transport.

Many cities around the world are moving towards car-free city centres. Oslo, for example, will implement its city centre ban by 2019, six years before a countrywide city centre ban comes into effect. Additionally, Madrid aims to restrict cars from 500 acres of its city centre by 2020.[11]

This is all part of a global recognition that city centres are dominated by air-polluting cars, and in recognition of a growing momentum to give the streets back to the people. Pedestrianisation of this sort is already quite common in Britain, especially in Wales, and it is an extremely important building block in the development of a more liveable city.

The phasing out of combustion engine vehicles represents a momentous shift in UK transport. Whilst we work towards the target of eradicating diesel and petrol vehicles by 2040, we should start to put more resources and investment behind the more sustainable forms of transport.

OUR PROPOSAL

We will co-ordinate our urban policies to designate some of Wales' busiest city streets as pedestrian only areas.

OUR PROPOSAL

Establish a Community Cycle Fund that local communities can use to fund and design their own cycling network.

Secure bicycle parking options are an important part of New York's bicycle infrastructure. Placing Bicycle Transit Centres at transportation hubs and/or in central business districts enhances

OUR PROPOSAL

We will introduce a green card which will give free bus travel to all 16-24 year olds in Wales.

[10] https://www.railstotrails.org/resourcehandler.ashx?id=4618

[11] http://www.businessinsider.com/cities-going-car-free-ban-2017-8?IR=T#madrids-planned-ban-is-even-more-extensive-2

TRANSPORT

II. ELECTRIC VEHICLES

Electric car usage is growing in Wales, and will become increasingly more important in light of ambitious UK Government targets to see our roads free of petrol and diesel cars by 2040. In Wales, whilst the uptake from a consumer point of view has been positive, there has been a lack of national leadership and a disappointing level of infrastructure to assist in the day to day practicalities of owning electric vehicles.

According to figures by the DVLA, in 2012 there were just 53 electric cars in Wales, but by June 2016, there were 1,523 fully electric or plug-in hybrid vehicles in Wales – an increase of 2773%. Swansea had the highest level of low emission vehicles, with 203 cars, whilst Cardiff had just 135 registered plug in vehicles. Merthyr had the lowest, with just 7 plug in vehicles.

Creating capacity for the growth of electric vehicles and developing our charging point infrastructure must be an integral component of urban regeneration and future planning. Wales has 3.3% of the UK's charging connectors, amounting to 532 charge points. Scotland, by comparison, has 2493 charging points.[12] **Under Welsh Conservative proposals we would adopt an ambitious world-leading strategy to install 10,000 electric charging points in Wales by 2030. We would provide public sector leadership by having electric charging points installed in all Welsh Government and local authority owned premises, and would install rapid charging points along all Welsh European Transport Network Roads, creating a Wales wide network of rapid charging points on key arterial routes.**

Under Welsh Conservative proposals, **we will work with Welsh Universities and the private sector to create a centre for excellence and research in energy storage and transportation.** This will lead the way in bridging the gap between home energy generation and vehicle-to-grid systems – two evolving areas of modern sustainable living that will overcome restrictions with the grid, and which will empower people to make the change.

OUR PROPOSAL

As part of a wider strategy to achieve 10,000 electric charging points by 2030, we will ensure that all Welsh Government and local authority premises have electric charging points installed, and that all Welsh Trans European Transport Network roads have rapid charging points along their routes.

OUR PROPOSAL

Work with Welsh Universities and the private sector to create a centre for excellence and research in energy storage and transportation in Swansea.

[12]https://www.zap-map.com/statistics/

III. CLEAN AIR

Every week it seems there is a new World Health Organisation report revealing how bad our air quality is in Wales. Public Health Wales have stated that air pollution is a public health crisis, second only to smoking and more of a concern than obesity and alcohol. Additionally, DEFRA estimates that air pollution results in 40,000 early deaths per year, with annual societal costs of up to £27.5 billion.

Five towns and cities in Wales – Port Talbot, Chepstow, Cardiff, Newport, and Swansea - all reported illegal and damaging levels of air pollution in 2016. To combat this, the **Welsh Conservatives are committing to introduce Clean Air Zones in Wrexham, Newport, Cardiff and Swansea.**

OUR PROPOSAL

The implementation of Clean Air Zones in Wrexham, Newport, Cardiff and Swansea.

OUR PROPOSAL

Make Cardiff the UK's first Carbon Neutral Capital City.

In order to understand the need for clean air initiatives in Wrexham, Cardiff, Newport, and Swansea, the overleaf map (displaying current nitrogen dioxide levels, a pollutant from automobile exhaust) is instructive. The map – courtesy of the Consumer Data Research Centre shows - that the highest levels of nitrogen dioxide in Cardiff are located in the city centre.[13] The data displayed is from the Department for Environment, Food and Rural Affairs.

Carbon dioxide levels have increased around the world, and is associated with cars, planes, power plants, and other human activities that involve the burning of fossil fuels. Cities around the world are putting in place pioneering structural changes in place to achieve urban carbon neutrality by a variation of dates - some as early as 2025 – and will be significantly improving the air quality of these areas as a consequence. **We believe that Cardiff should be the first Capital city in the United Kingdom to reach this, and we would do so through a comprehensive and integrated application of these policies.**

The need for Clean Air Zone implementation in Wales is clear - plans already exist in five English cities and Scotland are close behind with four in place for 2018. One that was introduced in Berlin in 2008 led to Particulate Matter and Nitrogen Dioxide emissions 50% and 20% lower than the predicted trend. As recent Welsh Government court cases with Client Earth have proven, the time to act is now.

But we shouldn't just restrict our efforts to the urban centre. The adverse effects of poor air quality on children are stark, and the British Lung Foundation have been campaigning on this very issue for years. According to their figures, children that are exposed to severe air pollution are five times more likely to have poor lung development and increased infection susceptibility. Last year, the environmental charity Client Earth found that nine Cardiff schools are located within 150m of roads with potentially harmful concentrations of nitrogen dioxide. It is for these reasons that the **Welsh Conservatives will put a requirement in place for all schools and nurseries to have air pollution monitors on the busiest roads within 10 meters of the premises.**

OUR PROPOSAL

As part of a campaign to improve the air quality of Welsh Schools and Nurseries, all schools and nurseries in Wales will be required to have air pollution monitors on the busiest road within 10 metres of the school grounds.

[13]https://maps.cdrc.ac.uk/#/indicators/ahah_no2/default/BTTTFTT/13/-3.1960/51.4978/

// HOUSING

One solution to reducing the costs of housing and increasing output is in constructing prefabricated homes. Built in a factory and assembled on-site, prefab houses are built with incredible accuracy and in much less time on average than on-site builds.[14] Whilst this isn't a silver bullet solution to alleviate the housing crisis, a comprehensive approach will be required encompassing best practice from around the world.

The Welsh Conservatives will be releasing a separate housing strategy in the autumn of 2018 which reflects our commitment to increase housing supply, with a specific emphasis on social housing through local authorities, co-operatives and housing associations.

OUR PROPOSAL

Publicly owned urban brownfield sites will be provided at a discount to develop Urban Eco Quarters – housing developments with shared gardens and which are high density, sustainable and provide for a mixture of tenures (co-operative, affordable, family).

II. ENERGY EFFICIENCY

Urban areas are often a combination of new, old, and ancient buildings; Wales' cities are no exception. This variation in building age has implications and challenges for energy efficiency. Whilst new homes are being built with some of the latest technologies and highest standards of energy efficiency, older homes, many built before 1950, are often un-refurbished and subsequently energy inefficient, although the traditional materials used in the construction continue to lock in carbon. These older homes will be the target of energy efficiency policy to help lower energy consumption, and consequentially, lowering energy bills. The development of urban areas in Wales provides an opportunity to target the greatest need for improvements in energy efficiency.

Turning to the Consumer Data Research Centre, data has been compiled showing the Energy Performance Certificate for domestic properties for most of the urban areas in Wales by postcode. This data displays the rating on a scale of A through G with an A rating being

I. SUPPLY

In the UK the housing problem is exacerbated by an expensive land pricing system due to a limited supply of land. On the continent cities are tackling this issue through well planned high density developments that are both affordable and sustainable. One example of this is Vallastaden in Sweden. As part of the development, people could bid for sites to build their own homes. This is what we should be prioritising in Wales; urban developments that are high density, sustainable and that provide for a mixture of tenures.

[14]https://www.theguardian.com/sustainable-business/2017/jan/26/prefab-homes-uk-housing-crisis-modular-offsite-construction-manchester-liverpool-energy-efficiency

in the 90th or higher percentile of energy efficient homes and a G rating in the 20th or lower percentile. The following map of Newport demonstrates that a majority of the homes fall within the 55th-68th percentile of energy efficient homes.[15] This map is also convenient because it shows the potential score that a particular postcode could receive. The data, collected by the Department for Communities and Local Government, includes variables such as carbon dioxide emissions, insulation and window type, and low energy lighting.[16]

Due to aging stock, the improvement of the energy efficiency in existing Welsh housing will require a whole suite of measures, whilst being mindful that we have a duty to preserve and protect the cultural identity and industrial heritage that is visible throughout. There are almost 500,000 pre-1919 buildings in Wales, almost one-third of the building stock. The vast majority are terraced houses – used for everyday working and living – but we need to ensure that these are preserved along with the major historic buildings.

OUR PROPOSAL

We want all existing urban homes to be upgraded to Energy Performance Certificate Band C by 2035 at the latest.

When we start to truly appreciate this heritage we will see its full potential today and for the future. Of course these buildings shouldn't just be preserved for the function of utility; there is also a sustainability dimension. Embedded carbon and the risk of unleashing it is a real threat in Wales. It has been estimated that an old flour mill in Sydney saved 21,000 tonnes of CO^2 by avoiding demolition to become 47 studios – equivalent to keeping 5,000 cars off the road for a year. Demolition is not the answer.

Through our policy proposal **we will develop a 'Retrofit Toolkit' to encourage upgrades and retrofitting.** This will be based upon a whole building approach which is endorsed by the Sustainable Traditional Buildings Alliance. This involves 'an integration and balance of fabric measures such as insulation, draught proofing, glazing, rainwater protection; services such as ventilation, heating, thermostatic controls, renewable energy; and education in regard to how occupants understand, use and maintain their buildings'.[17]

21st Century homes are continuously moving towards domestic renewable energy generation as a basis for their energy consumption. It is becoming
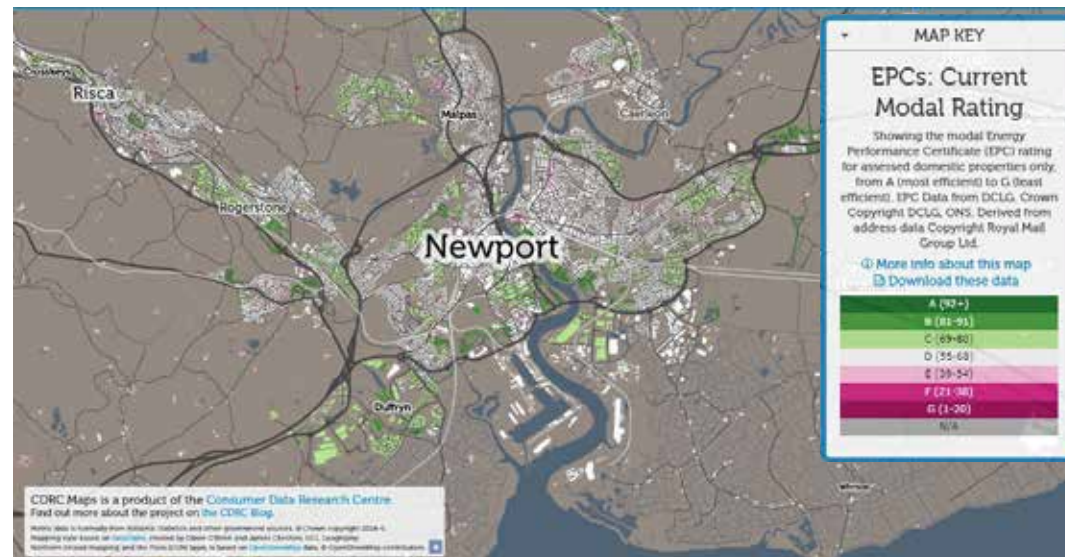
increasingly common in the sector to hear organisations talk about homes being 'power stations'; namely producing more energy than they use. Wales has some innovative and sector leading projects leading this transition (such as Solcer House in Stormy Down), and so we should be building on this foundation to promote and encourage the wider uptake of micro or community energy generation schemes. To accomplish this, the **Welsh Conservatives will provide funding for a Smart Homes initiative to support micro and neighborhood energy schemes that want to generate, store and transport their own energy.** This initiative will be available for both older housing stock and new, and will work in co-ordination with the 'Centre for Excellence in Energy Storage and Transportation' as set out in the electric vehicles section of this strategy.

Urban buildings of the 21st century need to be green buildings, but they also need to retain the historical characteristics that have shaped their purpose and existence. Housing emits over 40% of the UK's carbon emissions, and so far in Wales there has been little progress and a lack of ideas to tackle the issue. These proposals will put Wales on track to achieve our international emissions obligations, whilst removing thousands of families from fuel poverty, and protecting the cultural and industrial heritage of Welsh housing.

OUR PROPOSAL

We will provide funding for a Smart Homes initiative to support micro and neighbourhood energy schemes that want to generate, store and transport their own energy.

[15]https://maps.cdrc.ac.uk/#/metrics/epc_current/default/BTTTFTT/14/-2.9967/51.5793/
[16]https://epc.opendatacommunities.org/domestic/search
[17]http://www.sdfoundation.org.uk/downloads/Guide-1-Planning-Responsible-Retrofit-2015-08.pdf

// DESIGN

I. RENEWABLE ENERGY

Moving away from fossil fuel-driven engines is essential for creating a healthy and pollution free urban environment. Improving bike lanes, increasing housing energy efficiency, reducing car use, and increasing tree canopy and green spaces all help to improve air quality. The biggest factor in urban pollution, however, is the energy source.

Cities are responsible for over 70% of the world's energy related carbon emissions, and will therefore play a key role in our attempts to meet international carbon reduction targets. Recent CDP data reveals 100 cities worldwide are sourcing the majority of their electricity (at least 70%) from renewables, from Auckland to Nairobi to Seattle. In total, some 184 cities now have solar energy in their electricity mix, while 189 report that they source wind energy.

Meanwhile more than 40 cities in the rankings now operate on 100% renewable electricity, including Basel in Switzerland and Reykjavík in Iceland. Reykjavík, for example, sources all its electricity from hydropower and geothermal, while Basel relies on a mix of hydropower and wind energy.

Many more towns and cities have committed to hitting 100 per cent renewable power by 2050, including more than 80 towns and cities across the UK such as Swansea, Caerphilly, Manchester, Birmingham, and Newcastle, who all made renewables commitments through the UK100 group, a network of local government leaders from across the UK. We believe our cities should be more ambitious.

OUR PROPOSAL

We will invest in renewable generation so that by 2030, Cardiff, Newport, Swansea and Wrexham will generate enough clean energy to offset their electricity consumption.

Renewable energy sources can come in a variety of forms, ranging from solar to hydraulic to wind. These all have a zero carbon output, which is not only beneficial for the environment, but also for the health of the citizens.

A study by Professors Ursula Eicker and Martin Klein at the University of Applied Sciences, Stuttgart on renewable energy integration within three German case studies, Ludwigsburg, Munich, and Ostfildern conclude that a combination of renewable energy sources is the best approach to reducing emissions in an urban area, depending on what the natural landscape is like surrounding that area.

They write, "A renewable contribution of 40-45% is feasible for moderately dense urban areas, when biomass and geothermal potentials are included. For municipalities to become climate neutral, energy efficiency is therefore of crucial importance."[18]

As part of the Institute of Welsh Affairs' three year project 'Re-Energizing Wales', a model for the Swansea City Bay Region has been developed to 'maximize the use of regional energy resources to achieve a target of renewable electricity generation equivalent to 100% of electricity consumption on an annual basis.'[19] This is an excellent case study of how ambitious we could and should be in Wales in regards to our energy consumption and renewable energy generation. We believe that the Welsh Government should be providing the ambition to hit these all important targets, keeping pace with other cities around the world. That is why **we will invest in renewable generation so that by 2030, Cardiff, Newport, Swansea and Wrexham will generate enough clean energy to offset their electricity consumption.**

OUR PROPOSAL
Develop a working partnership with energy providers and distributors to co-ordinate a long-term strategy to increase grid capacity.

One way that we can achieve this is through public sector leadership. Public sector bodies have a significant carbon footprint. The Welsh Government has recognised this and have consequentially introduced a target for a carbon neutral public sector by 2030. After closely monitoring the responses to the consultation on this target, we believe that we could and should be more ambitious. For this reason we have proposed a target to make public sector buildings carbon neutral by the end of the next assembly – namely 2026.

Through these ambitious commitments, and through the development of a working partnership with energy providers and distributors to improve grid capacity, we can harness the vast energy opportunities that our natural resources offer.

OUR PROPOSAL
All public sector buildings in Wales will be carbon neutral by 2026.

II. TREE CANOPY

Tree canopy, the amount of land shaded by tree cover, has a wide range of benefits when planted along roadways, sidewalks, bike lanes, waterfront, etc. From the environmental benefits of improving air quality and deflecting solar radiation, which lowers urban temperatures, to the economic benefits of increasing commercial business activity, tree canopy is a worthwhile investment for urban areas. According to a study conducted by the U.S. Forest Service of New York City and highlighted by the U.K. Forestry Commission, every $1 invested in urban forestry per year had a $5 return in economic activity, water management, lowering urban temperatures, and improving air quality.[20] This economic impact is substantial, but coupled with well-being indicators, urban areas in Wales will be able to market themselves to investors as eco-friendly, enjoyable and healthy places for their employees to live and work.

OUR PROPOSAL
Ensure a minimum of 20% urban tree canopy cover, addressed through local wellbeing plans and area statements, by 2030.

A report by Natural Resources Wales contained similar findings to the US study. In particular the report noted several social benefits created as result of urban tree canopy. These include the reduction of depression and anxiety, creating a common neighborhood identity and sense of pride and well-being, as well as creating spaces for physical activity.[21] Finally, a few of the environmental benefits outlined by Natural Resources Wales include improvements in air quality and reducing the 'urban heat island effect' as well as improving water management.

This relationship between an urban area and its inhabitants is vital for a healthy and connected community. Urban forestry brings life to a city, making it a vibrant place to live and work. Trees bring a fresh, natural aesthetic into a worked and manmade urban landscape.

OUR PROPOSAL
In order to make Wales the most tree friendly country in the world, we will introduce a Charter for trees which upholds the protection of our oldest trees.

[18]Eicker, U, & Klein, M 2014, 'Large-scale renewable energy integration within energy-efficient urban areas: results from three German case studies', International Journal Of Low Carbon Technologies, 9, 3, pp. 202-213, Academic Search Complete, EBSCOhost, viewed 26 February 2018.
[19] http://www.iwa.wales/wp-content/uploads/2018/04/Regen-SBCR-A-Renewable-Future-FINAL.pdf

[20]https://www.forestry.gov.uk/pdf/Trees-people-and-the-buit-environment_Kelly.pdf/$file/Trees-people-and-the-buit-environment_Kelly.pdf
[21]https://naturalresources.wales/media/4123/tree-cover-in-wales-towns-and-cities-2014-study.pdf

III. GREEN ROOFS

Research from the world-renowned Tyndale Centre for Climate Change suggests that there needs to be at least a 10% increase in green space in our cities in order to combat climate change; green roofs are going to be a big part of this. Around the world, the recognition of the importance of sustainable urban development is being matched by an understanding that urban green spaces are critical for air quality, urban agriculture, and the reduction of UHI amongst many other factors. The problem is the scarcity of available land for these new natural areas.

Nevertheless, aerial imagery offers a solution. Across our towns and cities there is enormous potential to promote and invest in the opportunities that are presented by the vast city roof-scape. Over the past 30 years, green roof techniques have developed from an environmental experiment into a construction necessity because of its broad range of benefits.

The city of Munich is already exploiting a wide range of measures to make use of green roofs including grants for voluntary installations of green roofs, a reduction in water charges and supportive regulations in urban land-use plans. In particular, the requirement to landscape all suitable flat roofs with a surface area of over 100m^2 has led to Munich being a world leading city for this innovative construction standard.[22]

In Singapore an initiative is being implemented which promotes rooftop greening so that it can reach an unprecedented goal of 50 hectares of new sky rise greenery areas by the year 2030. In Portland, Orgeon widespread green roofing has improved rain water management. The city's sewer systems are operating at capacity, so any measures that reduce the influx of rainwater are supported with grants.

These examples - along with the following case study of Chicago - show an array of cities around the world that are taking advantage of green roofing techniques. But in Wales we have failed to capitalise on the vast benefits that can emerge from such investment.

According to statistics from the UK Committee on Climate Change, emissions from buildings accounted for 34% of total UK greenhouse gas emissions in 2014. Direct emissions, resulting from the use of fossils fuels make up half of the emissions, whilst the other half is electricity related. Yet nearly as long as a decade ago, the New York Department of Design and Construction recognised that per unit area, green roofs save over twice the energy as cool roofs.[23] Additionally, the IPCC (Intergovernmental Panel on Climate Change) have said that buildings provide some of the greatest, most cost effective and fastest opportunities to tackle climate change. In relation to the carbon emissions targets for Wales, green roof technology could substantially raise our prospects.

Sheffield City Council are leading the way with these initiatives in the UK. According to the Sheffield Development Framework:

"Green roofs have a number of benefits, which support various Core Strategy policies. They can reduce and attenuate surface water run-off, help to improve air quality by absorbing particulate matter, and improve biodiversity by creating habitats. Green roofs can also help to minimise the relative heating of urban areas, and can reduce the need for heating and cooling within buildings, therefore reducing carbon emissions. The topography of Sheffield means that roofs in the valleys are highly visible, and well designed and constructed green roofs can make a striking visual improvement, helping to strengthen Sheffield's unique greenness".[24]

[22]http://www.igra-world.com/images/news_and_events/IGRA-Green-Roof-Policies.pdf

[23]http://www.nyc.gov/html/ddc/downloads/pdf/cool_green_roof_man.pdf
[24]https://www.sheffield.gov.uk/content/dam/sheffield/docs/planning-and-development/sheffield-plan/Climate%20Change%20and%20Design%20SPD%20and%20Practice%20Guide.pdf

// CASE STUDY

CHICAGO

Chicago's thriving green roof programme began with a 20,300 square-foot demonstration roof on City Hall. The green roof, designed by Conservation Design Forum, features some 20,000 native plants with over 150 varieties. It retains more than 75% of the volume from a one-inch storm, preventing this water from reaching the combined sewer system. Internal studies show a 50% reduction in storm water runoff.

The programme has led to more than 80 green roofs in the city, totalling over 2.5 million square feet (City of Chicago, 2006). The city encourages the use of green roofs by sponsoring installations and demonstration sites and by providing incentives, including expedited permitting and density bonuses.

Photo courtesy of: Water Environment Research Foundation

Green roofs are a natural resource providing important refuges for nature and wildlife within our urban areas, as research from the UK and Switzerland has shown. Similarly, green roofing on a large scale can provide people with recreational areas. Roof gardens and roof top parks provide a creative and quiet space which help improve the quality of life, with the benefit of being in a zone of cleaner air (as opposed to the air quality on the ground). It is estimated that there is at least 200 million m² of roof space in the UK which has the potential to be landscaped with little change to the structure of the roof, including public buildings, housing blocks, hospitals and offices.

Green roofs should be a core feature of any 21st Century Liveable City strategy, and Wales has the potential to lead the way.