Lincolnshire
COUNTY COUNCIL
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Policy and Scrutiny
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Open Report on behalf of Richard Wills
Executive Director for Environment and Economy

Report to:	**Highways and Transport Scrutiny Committee**
Date:	**23 April 2018**
Subject:	**Lincolnshire Connected**

Summary:

Lincolnshire Connected seeks to consider the movement needs of businesses, residents and visitors as we move through the next three decades. The document that will be produced (anticipated December 2018) will explore how the population may change over time, and consider how lives could be improved through evolving transport technology, connectivity and accessibility, as well as considering how prepared Lincolnshire is for these changes, opportunities and challenges, including what will need to be done to implement future requirements.

Issues such as decarbonisation of transport and artificial intelligence enabling driverless cars are the focus of growing national and international attention; however, a broader approach is being taken with themes including but not limited to: energy; climate change; our environment; place shaping; public health; technology; the sharing economy; economic growth and productivity; education and skills, and rurality.

Actions Required:

Members of the Committee are invited to consider and comment on the report and highlight any areas for further consideration.

1. Background

Lincolnshire Connected is an emerging think piece, looking at the future of mobility, transport, accessibility and connectivity in Lincolnshire. Lincolnshire's 4th Local Transport Plan is coming to its natural end, and there will be a need to develop a 5th LTP in due course. As a precursor to this, Lincolnshire Connected seeks to examine wider disruptors; exploring how new technologies could be embraced in Lincolnshire, and considering the impact this has on our services and population.

Over the next few decades, national and local economies will continue to experience change, perhaps more so than in the past and due to emerging global trends, technological advances and the seismic change enabled over the last twenty years by digital connectivity and the internet. Government have directed significant funding

into R&D around battery technology, autonomous vehicles and charging infrastructure, as well as 5G and fibre technology - £160 million from the National Productivity Investment Fund for the next phase of funding for 5G Testbeds and Trials Programme, with specific pots of money for 5G roads and security projects, as well as a large-scale project on the Trans Pennine rail route. £42m is going into battery technology R&D; this is the first tranche from a total of £246m the UK government has pledged to invest under its Industrial Strategy. A further £22m has gone into the development of projects looking at driverless technology.

Across Lincolnshire there are aspirations for significant growth, as outlined within the SEP and Local Plans currently being adopted. Additionally, there is a need to demonstrate how the county will contribute to national ambitions such as those set out in the Government's Industrial Strategy and the Housing Growth agenda. At a time of rapid policy evolution, Lincolnshire is addressing a number of interconnected policies including: development of the Local Industrial Strategy, Carbon Management Plan, and Environment Strategy.

It is therefore important that Lincolnshire seeks to set out how it will both respond to, and contribute to, this changing mobility agenda within a broad policy context. The need for continued or improved access, with the resulting demand for travel means that there will be increasing calls on our transport infrastructure and services. These changes coupled with continuing constraints on public sector spending and the influences of wider trends and disruptors, means that a clear vision, delivery strategy and implementation plan is needed by the County Council. As a rural county, it is essential that Lincolnshire stay at the forefront of developments, and so decisions made now could ensure that as a county, we are well placed to implement new policy and practises.

2. Project Summary

The key aims of this approach will be to:

- Provide an overall vision and direction for access and transport in Lincolnshire over the longer-term future
- Provide a framework for access and transport policies, strategies and plans for Lincolnshire
- Develop the right partnerships to deliver for the county

Supporting these three core areas are two further key aspects that need to be at the heart of policy-making;

- The built and natural environment, including climate change and air quality, and the delivery of both physical and digital access.

- The latter being key to the delivery of:
  o Connected and automated vehicles
  o Revised delivery models for social and health care such as digital health provision (explored in more detail on page 4 and 5)
  o Improved Artificial Intelligence across a range of industries and activities

TRANSPORT EVOLUTION AND REVOLUTION

Mobility-as-a-Service (MaaS)

This describes a shift away from personally-owned modes of transportation and towards mobility solutions that are consumed as a service. This is enabled by combining transportation services from public and private transportation providers through a unified gateway that creates and manages the trip, which users can pay for with a single account. Users can pay per trip or a monthly fee for a limited distance. The key concept behind MaaS is to offer both the travellers and goods mobility solutions based on the travel needs. MaaS is not limited to individual mobility; the approach can be applied to movement of goods, as well – particularly in urban areas.

This shift is fuelled by a myriad of innovative new mobility service providers such as ride-sharing and e-hailing services, bike-sharing programs, and car-sharing services as well as on-demand "pop-up" bus services. The trend is motivated by the anticipation of self-driving cars, which put in question the economic benefit of owning a personal car over using on-demand car services, which are widely expected to become significantly more affordable when cars can drive autonomously.

Ultra Low Emission Vehicles

Ultra low emission vehicles (ULEVs), also known as plug-in vehicles, emit extremely low levels of motor vehicle emissions (less than 75g of CO_2/km) compared to other vehicles. Pure electric vehicles (EVs), plugin hybrid vehicles (PHEVs), range-extended electric vehicles (E-REVs), and hydrogen fuel cell electric vehicles (FCEVs) are all ULEVs. Growth in ULEV adoption has been facilitated by simultaneous expansion in charging infrastructure, an ever-greater choice of new models and advances in battery technology.
Most major manufacturers have released, or are expected to release, ULEV models while others are redesigning their existing vehicles to offer ULEV alternatives.

The Office for Low Emission Vehicles (OLEV) is a team working across government to support the early market for ultra-low emission vehicles (ULEV). It is currently providing over £900 million to position the UK at the global forefront of ULEV development, manufacture and use. This will contribute to economic growth and will help reduce greenhouse gas emissions and air pollution on the nation's roads.

Decarbonisation of Transport

Transport accounts for around a quarter of UK greenhouse gas emissions and affects air quality at the roadside. The 2015 Paris Agreement set a clear target for reducing greenhouse gas (GHG) emissions, by agreeing to limit the increase in the global average temperature to "well below 2°C above pre-industrial levels" and to pursue efforts to limit the increase to 1.5°C,recognising that this would "significantly reduce the risks and impacts of climate change".

With transport carbon emissions still rising and travel demand expected to double in some transport sub-sectors, over the next decades up to 2050, a mere evolution of

current transport policies will not be enough. Limiting climate change to 1.5°C means nothing short of decarbonising transport soon after 2050 in the most advanced regions (by 2070 in some other parts of the world).With the current major investment by the automotive industry it is likely that we will see a switch to low carbon technology ahead of 2040 for personal travel. Transformational changes in thinking, policy, technology and investment are therefore required.

Tackling climate change is not the only challenge facing transport. Roadway congestion undermines the efficiency of, and quality of life. In the UK, road collisions killed 1810 people in 2016 (projected – source DfT), and air pollution from motor vehicles, such as NO_2 and particulates, contribute to the deaths of even more. The public also need transport to be more accessible and affordable, as often those people in greatest need of access to jobs and services can't afford the cost of personal transport.

A government paper is expected shortly. "The Road to Zero" will explain how the government expects to achieve their decarbonisation objectives. Lincolnshire County Council is engaged with OLEV, exploring rural opportunities for ULEVs.

Artificial intelligence

(AI, also machine intelligence, MI) is intelligence demonstrated by machines, in contrast to the natural intelligence (NI) displayed by humans and other animals. More than just a phrase or concept, AI is rapidly moving from theory to reality – and this is something we all need to be ready for, including governments. But when and how these changes occur, and whether governments can take advantage of AI's many benefits whilst meeting the challenges it brings, largely depends on how policymakers act now.

A driverless car

(Sometimes called a self-driving car, an automated car or an autonomous vehicle) is a robotic vehicle that is designed to travel between destinations without a human operator. The development of autonomous vehicles is at the heart of the government's industrial strategy and the three-year law review is considered necessary if it is to stick to the timetable announced in November last year when the chancellor, Philip Hammond, promised driverless cars on the road by 2021.

The Treasury's post-Brexit economic strategy is to invest heavily in technological innovation. The government announced funding of more than £22m for 22 research and development projects relating to the development of driverless vehicle technology last month. The funds are aimed at innovative uses of the technology, on and off road. Altogether the government has invested £120m so far of more than £1bn pledged, in a range of projects, including involving the use of autonomous vehicles in difficult and hostile environments. The Automated and Electric Vehicles Bill will increase the access and availability of chargepoints for electric cars, while also giving the government powers to make it compulsory for chargepoints to be installed across the country and enabling drivers of automated cars to be insured on UK roads. Automated vehicles have the potential to greatly reduce road traffic accidents - in 2016 85.9% of collisions causing injury involved human error, while

official research estimates that the market will be worth £50 billion to the UK economy by 2035.

The government is to review the law before the arrival of self-driving cars on UK roads, considering issues such as whether this type of transport requires new criminal offences. The issues to be examined by the review include the allocation of civil and criminal responsibility by law where there is shared control between humans and computers; the role of automated vehicles in public transport, car sharing and on-demand passenger services; any need for new criminal offences; the impact on other road users and how they can be protected from risk; and determining who the responsible person is in a self-driving vehicle.

Digital Technology and Health

The way that people use services has changed. Instant access to information and soaring numbers of smartphone users have resulted in faster, more responsive services and citizen expectations of what good healthcare looks like is rising. Having online access to services, ownership of patient records and responsibility for self-managing care and treatment are fundamental for a more modern, responsive and sustainable NHS. Strong progress is underway, in 2016 there were more than 1.5 million visits per day to NHS Choices and 95% of GPs are offering online appointment booking, repeat prescriptions and access to patient summary care records. With 10.4 million people now registered for online services, the NHS has to make very significant steps towards increasing how services can be accessed.

A NHS technology plan, based on the Wachter review (available in appendix) recommendations, has been launched and it is expected to revolutionise the healthcare system. The plans aim to simplify online patient access to urgent care and appointment booking as well as supporting people to managing their own health better by promoting the use of apps. By 2023, as Professor Robert Wachter advised, all Trusts should be largely digitised.

National and International Position

Global car manufacturers have invested $90bn into the development of electric vehicles, with Dyson being one of the more recent companies to show serious interest in launching their own models. The largest single investment is coming from Volkswagen AG (which plans to spend $40 billion by 2030 to build electrified versions of its 300-plus global models.

The UK government announced major investment and programmes in some of the areas which Lincolnshire Connected focuses on:

- £220m clean air fund for pollution hot spot areas, in line with the Air Quality and Decarbonisation agendas
- £34 million will go towards teaching construction skills like bricklaying and plastering. £30 million will go towards digital courses using AI
- The UK will set out rules so that self-driving cars can be tested without a safety operator

- An extra £100 million will go towards helping people buy battery electric cars. The government will also make sure all new homes are built with the right cables for electric car charge points
- The Centre for Data Ethics and Innovation will set standards for the use and ethics of AI and data. This will allow the UK to lead the world in developing practical uses for the technology

Next Steps:

Complete the engagement of internal and external stakeholders, develop a robust evidence base and liaise with key policy initiatives such as the Local Industrial Strategy, National Planning Policy Framework and Environmental Strategy.

3. Consultation

a) Have Risks and Impact Analysis been carried out?

N/A

b) Risks and Impact Analysis

N/A

4. Background Papers

No background papers within Section 100D of the Local Government Act 1972 were used in the preparation of this report.

Document title	Where the document can be viewed
Catapult Transport Services: Exploring the Opportunities for MaaS in the UK	https://ts.catapult.org.uk/wp-content/uploads/2016/07/Mobility-as-a-Service_Exploring-the-Opportunity-for-MaaS-in-the-UK-Web.pdf
Centre for Public Impact: Artificial Intelligence and the Future of Government	https://publicimpact.blob.core.windows.net/production/2017/09/Destination-Unknown-AI-and-government.pdf
Making IT Work: Harnessing the Power of Health Information Technology to Improve Care in England	https://www.gov.uk/government/publications/using-information-technology-to-improve-the-nhs

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