

## 4.5 Smart technologies

- 4.5.1 Digital technology now underpins almost all aspects of modern living in every sphere across work, travel, leisure and health; and increasingly it impacts on the economic strength, sustainability and quality of life of all parts of the UK and beyond. Emerging “smart cities” technology, which is set to have an even greater economic impact in future, builds on this to utilise digital connectivity, sensors and data in innovative ways to support: efficient resource management; environmental management, traffic congestion and other city/town management challenges.
- 4.5.2 As new developments are planned and built within the Greater Cambridge area, there is an opportunity to embed technology into the way developments are planned, built and managed, helping to ensure that they can meet their sustainability objectives and help create better places to live. There are a number of areas identified where technology can play a role. Although separated out, it is important that different ‘systems’ within a development are considered as a whole e.g. electric vehicles are part of the mobility system but can also be part of the smart grid and impact on air quality. The key areas to consider are;
- Planning/construction – Advances in data collection, analysis and modelling can help in the planning and construction phases of developments. New concepts such as digital twins can support better understanding of the impacts of developments. Monitoring of sites, particularly transport (movement of cars, bikes, pedestrians etc.) can support the planning authority in understanding the impact of the development and performance against set thresholds. This can create a more dynamic relationship where data can support development phases being brought forward if impacts are less than anticipated or early intervention where thresholds are being missed.
  - Future Mobility – New advances in mobility are supporting a move away from the car. New mobility models are emerging with shared and on-demand vehicles giving more flexibility than traditional public transport. Autonomous Vehicles are beginning to operate on campuses and segregated environments supporting first/last mile journeys. Micromobility models including shared bike schemes and in the future shared scooters make it easier for residents to access and use sustainable modes. To help residents use public transport new ‘mobility as a Service’, platforms are being developed which make the booking and payment for multi modal journeys easy as well as giving travellers information in real time. These technologies can reduce car movements and support increased trips by sustainable modes.
  - Smart Grids - Smart cities can use technology to intelligently provide low or zero carbon areas by supplying carbon-free public transport, smart grids, green infrastructure and more energy efficient homes. Technology is instrumental in transitioning to a low carbon economy and in doing so contributing to climate adaptation and mitigation. Close to 70% of energy gets wasted before reaching the place of consumption. ICT enabled solutions in smart cities in the form of smart grids and meters have the potential to deliver energy more efficiently while also making better use of existing grid infrastructure, which is already highly constrained in Greater Cambridge. Smart technology can also be used to target congestion and bolster the use of electric and hybrid vehicles.

- Environment – Environmental sensors can be deployed to measure a number of environmental factors across a development. They can measure water levels and flows, measure waste and have been deployed particularly in underground bins and they can measure the air quality and noise impacts of a development. All this data can be used to support mitigation works and give a much better understanding of the performance of buildings and development.
- 4.5.3 Smart city concepts are not just applicable to cities but to communities on a variety of scales, helping these communities become Smart Places. The Smart Places Initiative, which forms part of the Connecting Cambridgeshire Programme led by Cambridgeshire County Council, is looking at how smart solutions can be used in areas of Cambridgeshire. Working with communities, local authorities, town councils, businesses and academia, the project is seeking to use data from sensors and other devices in villages, towns and cities to provide the local area with information to help influence behaviours and improve economic strength, sustainability and quality of life for local residents.
- 4.5.4 The Councils will be supportive of schemes that look to integrate smart technologies into the design of transport and energy infrastructure, smart home technologies and other technologies that will help to enhance the quality of life of those living and working in the Greater Cambridge area as well as improving the environmental performance of new development. Collaboration with the Smart Cambridge Initiative at Cambridgeshire County Council would also be supported.

#### Further guidance

- 4.5.5 For further guidance on smart technologies and the Smart Places and Smart Cambridge Initiative see: <https://www.connectingcambridgeshire.co.uk/smart-places/smart-cambridge/>