In order to start to prepare for a longer time horizon, this refreshed version of the GIF starts to examine the challenges and opportunities likely to face Kent and Medway to 2050, by taking a scenario-based approach. This chapter will provide a framework to ensure that Kent and Medway are in a strong position to anticipate and plan for sustainable growth. The full 2050 report, written by ARUP, can be read as a separate document.

### 3.1 POPULATION AND TRENDS

The scenarios set out in this chapter use predicted metrics in population, housing and jobs numbers expected in 2050. The expected increase in population and growth in the demand for housing will intensify the infrastructure challenges, if growth is delivered in the same way as today.

<table>
<thead>
<tr>
<th>METRIC</th>
<th>2031</th>
<th>2050</th>
<th>2031-2050 INCREASE</th>
<th>2031-2050 INCREASE (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>2,127,000</td>
<td>2,347,000</td>
<td>220,000</td>
<td>10%</td>
</tr>
<tr>
<td>Households</td>
<td>922,000</td>
<td>1,061,000</td>
<td>139,000</td>
<td>15%</td>
</tr>
<tr>
<td>Jobs</td>
<td>976,000</td>
<td>1,075,000</td>
<td>99,000</td>
<td>10%</td>
</tr>
</tbody>
</table>

**Figure 3.1: Long-term population forecast in Kent & Medway (KCC SBDI data)**
A predicted baseline expected in 2050 has been calculated using KCC’s forecast for 2031 and employing the following assumptions:

- Households will rise at a similar rate as population (taken from the Kent 2050 population forecasts), with an adjustment made for the average household size reducing (trends taken from DCLG 2014-based household projections);

- Employment will rise at a similar rate as population, with no adjustment for changes in participation rates or the balance of commuting (instead, adjustments are made in each of the scenarios).

### 3.2 A SCENARIO APPROACH

This chapter provides a basis for county-wide conversations on how the area can ensure it is adaptable, resilient and connected in planning for a sustainable future.

Beyond these certainties, there are a number of “critical uncertainties” – trends that could go one way or another, based on current information. It is these trends against which the following scenarios have been developed.

“Climate Challenges” and “Economic Growth” have been chosen as critical uncertainties on which to base the scenarios. These factors are both highly uncertain and have the potential to be highly impactful or disruptive to 2050. Four scenarios have been developed based on these uncertainties and each scenario explores potential impacts on the County’s infrastructure provision, in order to inform the development of effective strategies and responses.

### Scenario D (page 21)

Scenario D is characterised by high economic growth and moderate climate challenge impacts – of the four scenarios, it is the one to aim for.

### 3.3 FUNDING, FINANCING AND GOVERNANCE CONSIDERATIONS

As well as creating demands for new types of infrastructure, there is likely to be an appetite and need for different forms of governance and for new models of funding and financing infrastructure. The table below sets out some of the funding and finance implications of “high economic growth and moderate climate challenges” vs. “low economic growth and severe climate challenges”.

#### Table: Funding, Financing and Governance Considerations

<table>
<thead>
<tr>
<th>HIGH ECONOMIC GROWTH AND MODERATE CLIMATE CHALLENGES</th>
<th>LOW ECONOMIC GROWTH AND SEVERE CLIMATE CHALLENGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greater economic autonomy - local authorities have greater discretion over how much to invest</td>
<td>Shorter-term approach to investment</td>
</tr>
<tr>
<td>More investment in infrastructure from institutional investors</td>
<td>More borrowing from central government, more dependence on bidding for grants and more central government control</td>
</tr>
<tr>
<td>Central government offers more local control for creative and innovative funding and finance mechanisms</td>
<td>Increased competition between investments for climate challenge adaptation and mitigation</td>
</tr>
<tr>
<td>Economic stability leading to a longer-term approach to investment on behalf of local authorities</td>
<td>Local government rationalising estates and selling off assets</td>
</tr>
<tr>
<td>A higher proportion of foreign direct investment (FDI) from outside the EU</td>
<td>Greater collaboration with other public bodies for shared services and co-investment</td>
</tr>
</tbody>
</table>
SCENARIO A – HOT HOUSE

This scenario is characterised by high economic growth and severe climate challenge impacts. Due to extreme levels of economic, environmental and political migration and the UK’s buoyant economy as a pull factor, the County experiences a relatively high amount of immigration. There has been an increase in employment opportunities in London, as well as Kent and Medway, due to a strong local economy fuelled by increased entrepreneurial activity. This has also increased commuting within and out of the area.

High economic growth, severe climate challenge impacts

- **SOCIAL**
  - Wealth gap reduced
  - Housing inequality (especially environmental resilience measures)
  - Increase in imported goods + increased agricultural regulation – Food price increases

- **TECHNOLOGICAL**
  - AI embraced, creating high-value jobs in technology industries
  - Loss of jobs in freight and logistics, due to technology advances
  - Advanced, resilient materials and new construction methods required due to climate challenge impacts

- **ECONOMIC**
  - Buoyant commercial sector – increase in jobs in knowledge intensive business services
  - Employment prospects attracting further skilled labour
  - New entry-level jobs created post Brexit

- **POLITICAL**
  - Strong economy results in stable political situation
  - Equitable distribution of resources and wealth remains an important political topic

- **ENVIRONMENTAL**
  - Increased blue and green infrastructure provides accessible environment for recreation and leisure, and as mitigation measures against flooding, heatwaves and drought
  - Electric vehicles reduce air pollution

Resulting Infrastructure Requirements

- **HOUSING**
  - High-quality new green towns and villages and urban extensions, well serviced and with access to amenities and jobs

- **EMPLOYMENT**
  - New office space to support the knowledge economy
  - Particularly smaller / flexible units suitable for small and growing businesses
  - Brexit-related employment floor space, close to ‘gateways’ (e.g. Dover, Folkestone)

- **HEALTH AND SOCIAL CARE**
  - New technologies used in healthcare and social care
  - This includes use of mobile technology in order to improve the standard of care

- **TRANSPORT**
  - Infrastructure to support ‘smart’ transport modes and better choices – linking different modes of transport and creating choices that favour sustainable decision-making
  - Transport links to other parts of the country

- **EDUCATION**
  - Upgrades to existing schools to ensure they are able to meet requirements of migrant populations – both physical and technological capacity

- **UTILITIES AND NATURAL ENVIRONMENT**
  - Diverse sources of energy and low-carbon approach to wider infrastructure
  - Increase in localised sources of energy improves resilience
  - Use of green and blue infrastructure
  - Waste infrastructure provision localised
SCENARIO B – WITHERING GROWTH

Immigration has increased (briefly) – with associated pressure on the rental market, healthcare and schooling. Low economic growth has led to many falling below the poverty line and has increased the wealth gap. Severe climate challenges are increasing in frequency, as are the magnitude of extreme weather events such as heatwaves, droughts and flash floods from surface water.

### Lower economic growth, severe climate challenge impacts

#### SOCIAL
- Fewer jobs available
- Longer commutes
- Housing construction increase in off-site and modular, to save costs
- Climate challenge disproportionately affecting coastal communities and less wealthy residents

#### TECHNOLOGICAL
- The reduced cost of domestic solar electricity generation and water heating solutions results in mass roll-out

#### ECONOMIC
- Domestic tourism growth due to cost of foreign holidays
- Emphasis on multi-functional, shared infrastructure due to reduction in funding
- Greater cooperation between local government and utility companies

#### POLITICAL
- Some climate challenge adaptation policies are put into effect, but the lack of funding makes implementation largely ineffective
- Tax increases required to pay for infrastructure requirements

#### ENVIRONMENTAL
- Vulnerability of some locations in the face of increased extreme weather and rising sea levels, coupled with the increased cost of protection, has led to some ‘managed decline’

### Resulting Infrastructure Requirements

#### HOUSING
- Modular homes and off-site construction

#### HEALTH AND SOCIAL CARE
- Increased use of ‘top up’ services above and beyond more basic levels of care
- Non-UK adopted residents pay at market rate for their healthcare at the point of use

#### TRANSPORT
- Lower central funding pushes authorities towards funding mechanisms that target users/beneficiaries of the infrastructure
- Rise of ‘pay as you go’ mobility services

#### EDUCATION
- Increased use of multi-functional community hubs
- Rationalised centres of further education to reduce costs – some students are therefore required to travel further

#### UTILITIES AND NATURAL ENVIRONMENT
- Centralised energy storage infrastructure
- Reliance on overseas energy
- Strategic flood defences with retreat from areas where not possible to protect
- Focus on improvements to green and blue infrastructure
SCENARIO C – LYING FALLOW

This scenario is characterised by lower economic growth growth, and moderate (less severe) climate challenge impacts. Poor economic performance combined with technological advancement has led to fewer jobs. There is also limited funding for infrastructure, creating further congestion and poor service provision. This hardship leads to social unrest, heated public opinion and heightened political activism.

### SCENARIO C - LYING FALLOW

#### Lower economic growth, moderate climate challenge impacts

**SOCIAL**
- Increase in purpose-built homes and facilities for incoming older people, serving the wider South East
- Increasing demand for health and social care - boosted employment
- New models of housing emerge

**TECHNOLOGICAL**
- Technological advancements focus on making best use of existing assets and infrastructure, in particular use of existing airfields for non-vertical take-off technologies (e.g. passenger drones)

**ECONOMIC**
- Brexit has led to barriers to the streamlined movement of people, vehicles and goods
- Rise in young professionals moving out of London
- Agricultural sector characterised by lower levels of investment & more traditional technology and inputs

**POLITICAL**
- A greater emphasis is put on the inter-relationship between businesses, universities and politics – creating a ‘Local Enterprise Partnership-plus’
- LAs, central government and other countries share resources and infrastructure and exploit synergies

**ENVIRONMENTAL**
- Less focus on delivery of blue/green infrastructure
- Moderate climate change allows for increase in agro-forestry
- Careful agro-forestry management results in increased habitats, improved soil structure and increased shading

### Resulting Infrastructure Requirements

**HOUSING**
- Housing growth through redevelopment, infill and smaller extensions, including in the Green Belt
- New models of housing to meet specific requirements of population

**HEALTH AND SOCIAL CARE**
- New technologies used to improve healthcare and social care in order to reduce costs, in particular physical infrastructure costs
- Greater availability and provision of elderly care homes, both state-run and private

**TRANSPORT**
- Limited improvements to highways network – ‘patches’ to alleviate congestion and impacts of Brexit on movement
- Limited improvements to rail network, but no new lines or major upgrades

**EDUCATION**
- Increased focus on community-level and community-led infrastructure to reduce pressures on strategic provision – including new wave of childminders (no physical infrastructure required)

**UTILITIES AND NATURAL ENVIRONMENT**
- New generation of bio-energy infrastructure
- Increased tree cover (through agro-forestry) may reduce river flood risk in some locations
- Reduction in maintenance results in reduced quality of blue and green infrastructure
SCENARIO D – FERTILE GROUND

This scenario is characterised by strong economic growth and only moderate climate challenge impacts – it is therefore the most desirable of the four scenarios. The County has capitalised on its identity as the ‘Garden of England’, focusing on cultural identity, natural beauty and attractiveness as a tourist destination. Kent competes successfully for skills, investment and talent. The buoyant local economy creates new revenue streams to fund infrastructure, while new technologies are embraced to create efficiencies in service provision and delivery.

SCENARIO D - FERTILE GROUND

High economic growth, moderate climate challenge impacts

SOCIAL
- Town centres are revitalised with more pedestrianisation, greener infrastructure, with shared autonomous transport
- Local businesses thrive, boosting employment
- Increase in remote working and greater levels of commuting

TECHNOLOGICAL
- Shared autonomous vehicles/autonomous shuttles have been embraced
- Improved accessibility of transport
- New transport investment links Kent with other growth areas in the South East

ECONOMIC
- Strong economic identity, through growth in sectors including professional services, advanced manufacturing and precision agriculture
- Strong local economy and improved connectivity to parts of the UK and beyond
- Seen as strategic gateway to the continent

POLITICAL
- The strong economy has allowed for new revenue streams to fund infrastructure without risking viability of businesses etc., including road user pricing and local infrastructure taxing

ENVIRONMENTAL
- Kent and Medway are leading Research and Development in advanced precision agriculture, combining technology, organic principles and resilience against environmental stressors and shocks

HOUSING
- New housing via high-quality new green towns and urban extensions redevelopment & infill
- Housing well served by transport links, in particular rail travel
- Additional housing to counteract gentrification – affordable and/or safeguarded for local residents

EMPLOYMENT
- Buoyant local economy coupled with proximity to Gatwick, results in multiple sectors including professional services and advanced manufacturing
- Growth in office and industrial floorspace required

TRANSPORT
- Focus on walkability – new paved routes and spaces, including retrofitting of existing infrastructure
- Increased rail capacity into London – both through additional services/rolling stock and upgrades
- Secondary hubs developed, e.g. Ashford and Ebbsfleet

EDUCATION
- Secondary schools form new relationships with universities, embedding higher education and sharing facilities
- Growth in higher education – existing universities, new providers, and ‘campuses’ for London-based universities requiring more space

UTILITIES AND NATURAL ENVIRONMENT
- Agricultural sector growth leads to increased demand for water irrigation
- Data centres and networks required to facilitate big data
- Traditional waste systems
- Less multi-functional open space
3.4 IMPLICATIONS AND NEXT STEPS

Whilst it is impossible to predict which of these scenarios is most likely, it is clear that there are certain inevitabilities that Kent and Medway need to start preparing for if they are to deliver sustainable growth.

- **The role and pace of technology in the delivery of new infrastructure will grow.** In every scenario, the role of technology will either enable infrastructure providers to provide more competitive forms of infrastructure or deliver more cost-effective infrastructure. How authorities enable this growing pace of technology in the future is a key challenge. The implication is that the County needs to build horizon scanning for new technology into the analysis phase, in the development of new infrastructure projects.

- **As a result of this increasing role of technology, the role of digital connectivity is vital.** Whatever outcome or scenario, the way in which information is gathered, analysed and communicated will become increasingly important to sustainable communities.

- **The critical necessity of a more sustainable solution to providing energy.** With an imminent influx in the adoption of electric vehicles, there will be significant implications for the way in which energy is delivered to support this new infrastructure. In addition, growth pressures, whether in a high- or low-growth scenario, will mean that pressures on the grid are exacerbated further. There will be a need to strategically plan the way in which electricity is generated and delivered.

- **Whatever scenario materialises, the funding of infrastructure will continue to present real challenges.**

Moving forward, partners will be using this scenario-based framework to test the approach on infrastructure types and developing a more consistent approach to future-proofing infrastructure through a series of workstreams. These workstreams will feed into more detailed iterations of this analysis.

**KENT AND MEDWAY - PLANNING NOW FOR 2050**

**ADAPTABLE** to new technologies, a rise in electric vehicles, a growing and ageing population, climate risks, decarbonisation and a growing energy demand;

**RESILIENT** to changes in climate, economic uncertainty (Brexit), population growth and increased financial pressure on services;

**CONNECTED** to growth in technology, AI and automation, broadband demand, changes in work patterns and employment.