EXD/052

Economic Vision and Strategy for the North Essex Sub-Region

A Cebr report for North Essex Garden Communities Ltd

August 2018

Cebr

Contents

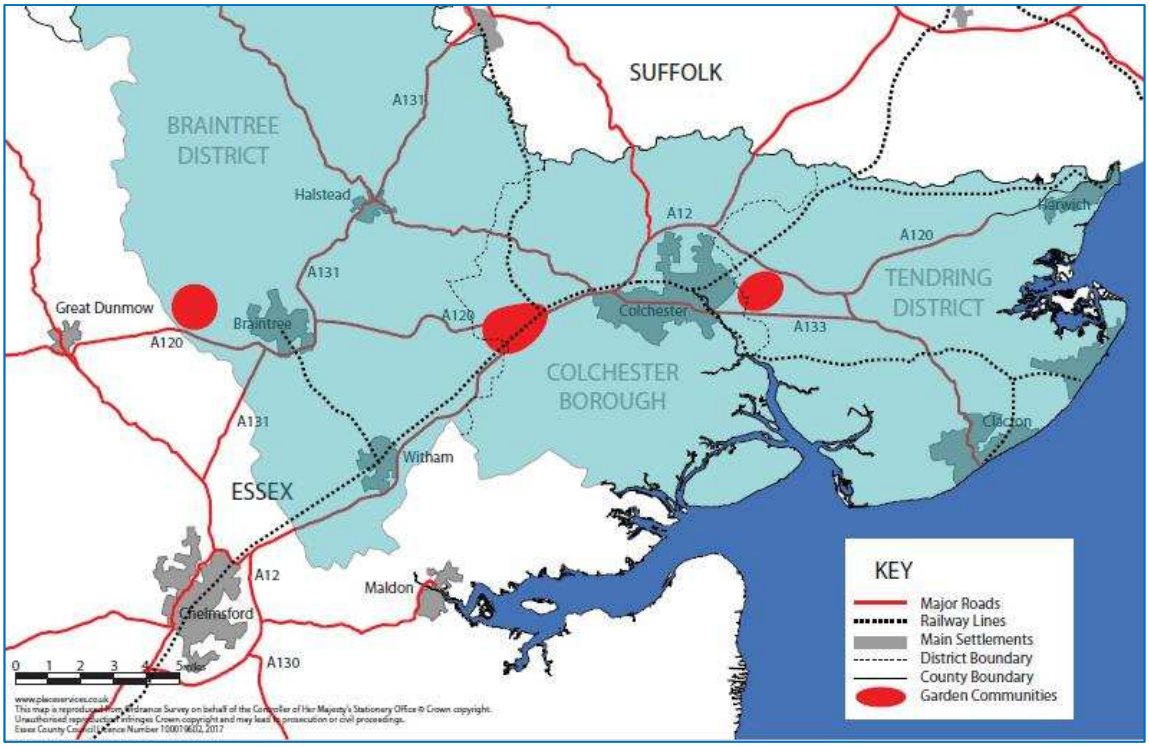
Executive Summary

Introduction

Background and context

Today, the North Essex (Essex Haven[1]) economy has **notable areas and sectors of strength**, for example the creative cluster in Colchester, advanced manufacturing around Braintree, and energy generation off the Tendring coast. There are **major opportunities and potential to unlock** from ultra-fast broadband, the rapidly-expanding University of Essex, neighbouring areas of strength and innovation, and its international connectivity by both sea and air. Nevertheless, North Essex's **economic performance lags that of its peers** in the wider region overall. This pattern is unlikely to change without intervention in the form of an **economic strategy for North Essex** to inform decisions in areas such as skills provision, employment space, and infrastructure.

Figure 1: The locations of the North Essex Garden Communities



The three **Garden Communities in North Essex** (West of Braintree, Colchester-Braintree Borders, and Tendring-Colchester Borders) are an innovative and ambitious means of meeting the substantial housing demand expected in the coming decades. These are being planned as sustainable communities that improve people's lives and are part of a **wave of new settlements to be built along Garden City Principles**. They also offer opportunities to **develop the area's economic base**, capitalising on upcoming economic and technological changes and raising the profile of North Essex – for instance through

[1] As defined under the EU's Classification of Territorial Units for Statistics (NUTS), the NUTS 3 region Essex Haven Gateway includes Braintree, Colchester and Tendring – henceforth we refer to this statistical region as North Essex

housing design, public transport investments, and provision of much-needed employment space. Combined with wider economic strategy in North Essex they offer the potential for robust economic growth, high quality employment for new and existing residents, and a higher standard of living across the sub-region.

North Essex Garden Communities Ltd (NEGC Ltd) was created in January 2017 by four councils (Braintree District Council (BDC), Colchester Borough Council (CBC), Tendring District Council (TDC), Essex County Council (ECC)) to deliver the three garden communities in North Essex. This study was commissioned to provide NEGC Ltd and the four councils together with the University of Essex and the Haven Gateway Partnership with a **robust economic vision and strategy** that will inform decisions shaping the whole area's economic, social and environmental development over a horizon of fifty years or more.

The Garden Communities are being planned to house a total of approximately **120,000 people** in the long term and following the Town and Country Planning Association (TCPA) principle of 'one job per house' will also need to provide approximately **43,000 jobs** with the planned **43,000 homes**. Their locations are shown in Figure 1. The planned long term numbers of homes in each are:

- West of Braintree - up to 10,000 homes;
- Colchester-Braintree Borders - up to 24,000 homes;
- Tendring-Colchester Borders – up to 9,000 homes.

Rationale

Globalisation has had profound implications for the structure of the UK economy, including marked increases in income and wealth inequality. Many areas have failed to provide enough high quality jobs to replace those lost following a decline in their traditional economic bases, for example manufacturing or seaside tourism, in the last decades of the twentieth century.

There is now a growing political consensus that action is needed to bring about more **balanced and socially acceptable economic and social outcomes**, including at a regional level through interventions to influence the structure of the economy. Strategies such as this form part of an integrated approach to planning and need to be aligned with wider regional and national plans, such as the Government's emerging Industrial Strategy.

There is a **housing affordability** crisis in many parts of the country and it is most acute in the Greater South East (GSE)[2], resulting from a chronic gap between housing demand and supply. For example, research by PwC into housing affordability shows that:

"*…buyers may now have to save for 19 years in order to buy their first home (assuming the deposit has to be raised entirely from their own savings without family assistance). In 2000, the same group would have been able to buy after saving for just 6 years; and in 1990 it took only around 2 years.*"

There is therefore a clear case for radically increasing **housing supply** through projects such as the construction of new garden communities. Areas that are able to increase supply are likely to gain

[2] As detailed under 'Economic Geography' in the main document, North Essex authorities have relatively low prices compared to the highest-performing areas of the GSE. However this may reflect demand limitations rather than abundant supply.

economic benefits since firms will be attracted to locations in which workers can afford to live and enjoy a good quality of life.

Cebr's analysis is intended to help frame clear choices for the vision and strategy that will help inform later decisions about issues such as the design of employment space, the approach to inward investment and skills, priorities for infrastructure investment, and the mix and type of housing. This analysis covers the **whole of North Essex**, not just the new communities. It should be recognised that decisions need to be made in a context of uncertainty about the future and that there will inevitably be trade-offs and political choices, for example about choice of economic objectives, the relative importance of difference target groups and the balance between focussing on local objectives and helping meet wider, regional objectives.

Our intention has been to produce an ambitious, joined up and realistic vision and strategy that fully realises the potential of the North Essex sub-region in terms of both its 'people' and 'place' dimensions and takes full account of the broader national and regional economic context. We have built on work done to date, extending the 'bottom up' evidence base and providing a more 'top down' view that fully explores options for *shaping* the future economic base.

Scope and structure

The report is arranged in the following structure:

- **a context-setting section** in which we define the various levels of economic geography of relevance to the current and future drivers of the North Essex sub-regional economy and identify a set of **comparator locations** to inform the rest of the analysis;
- **a comprehensive baseline analysis** of the challenges and opportunities facing the North Essex sub-region covering:
    - **high level 'crosscutting' themes** such as technological change (e.g. impacts of digital communication and automation), changing working and lifestyle patterns, 'Brexit' and the Government's emerging Industrial Strategy;
    - **themes with a more geographical dimension**, including demographics, labour markets, productivity, skills, sector development, housing and transport;
- **An analysis of strategy options** in which we set out a 'toolkit' of opportunities for leveraging existing plans and sector strengths to inform both the approach to delivering the Garden Communities and the wider sub-regional economic base; This includes two alternative strategy scenarios, which are intended to provide a basis for the NEGC Ltd stakeholders to make strategic decisions about the direction of the vision and strategy focused on:
    - Scenario 1 represents a '**lifestyle led**' strategy;
    - Scenario 2 represents an '**inward investment led**' strategy;
- We provide **a set of forecasts** of population, employment and GVA per capita built up in five stages, as follows:
    - projections of existing growth trends;
    - baseline change scenarios;

  - direct economic impacts of GC construction scenarios;
  - indirect and induced impacts of GC construction scenarios;
  - impacts of economic strategy scenarios 1 and 2;
- **a set of strategy recommendations**.

Economic geography

In considering what an optimal economic growth strategy looks like, the competitive position of North Essex now and in the future needs to be understood, as far as possible, at all the relevant geographic levels. This will involve finding an appropriate balance between its different roles in (a) competing with other locations and (b) complementing activities in other locations (e.g. London-Stansted-Cambridge and Oxford-Milton Keynes-Cambridge corridors). Moreover, the balance is likely to differ within North Essex in response to more local factors. This indicates that the approach to optimising the strategy will involve finding a blend of different means of:

- **Enhancing the competitiveness of the sub-region**, i.e. shifting its 'comparative advantage' by increasing its attractiveness as a place for workers to live and work and for businesses to invest in;
- **Mitigating any residual locational disadvantages**, for example by providing improved transport links or training to enable workers to access better opportunities – both within the sub-region and between the sub-region and other locations.

Another way of putting this is in terms of finding the right balance between (a) developing the sub-regional economic base[3] and (b) developing the role the sub-region plays in the wider regional economic base.

The **North Essex sub-region is located within the Greater South East** of England[4] (GSE), which contains the "economic core" of the UK centred on London and its agglomeration of very high value added knowledge based service activities. Although substantial numbers of GSE residents commute into the capital, there is a strong economic base beyond London, particularly to its north and west, containing centres such as Reading, Oxford, Milton Keynes, and Cambridge – we call this the '**arc of prosperity**'.

The three local authorities in North Essex exhibit diverse economic characteristics:

- **Colchester:** Rapid population growth, rapidly developing creative and digital economic strengths, good connection to London;
- **Braintree:** Established base in manufacturing SMEs, proximity to Stansted, infrastructure constraints;
- **Tendring:** Static ageing population, deprivation challenges, visitor economy, strengths from Port of Harwich.

Within North Essex, **substantial numbers of Tendring residents work in Colchester**, with significant but roughly equal numbers commuting from Braintree to Colchester and vice-versa. **Commuting flows beyond North Essex are predominantly to London and Chelmsford**, to which there are large net outflows. Nearby locations like Uttlesford, Ipswich, Babergh, and Maldon receive smaller numbers of North Essex commuters and send similar numbers to it.

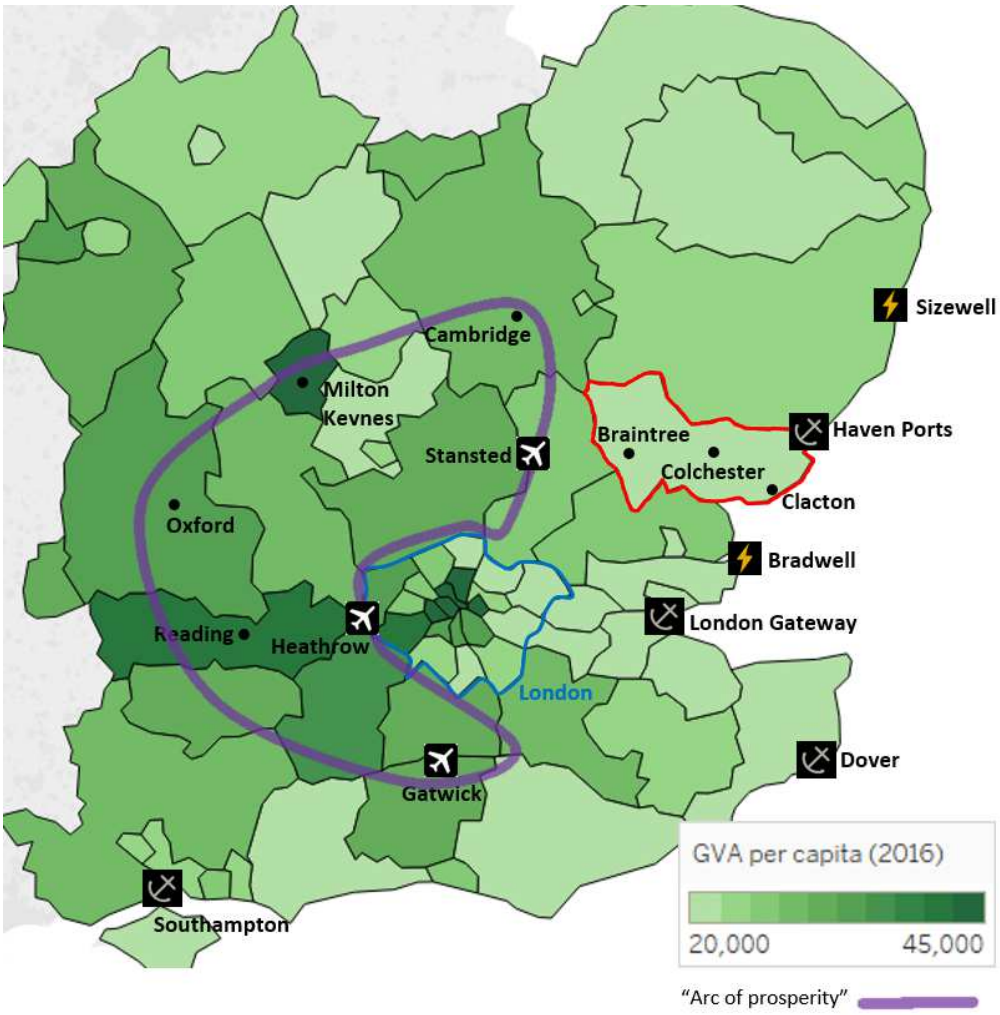
Overall **North Essex is not currently enjoying the same level of economic performance as the 'arc of prosperity'**. This is illustrated in Figure 2, which shows GVA per capita by NUTS3 region in the GSE in 2016. While North Essex shares some characteristics with parts of the 'economic core' of the GSE, it has **unexploited potential** which, if unlocked, could enable it to narrow the gap and eventually catch up with

[3] The 'economic base' or' export base' is defined by Rowthorn as consisting of '…all those activities which bring income into the region by providing a good or service to the outside world, or provide locals with a good or service which they would otherwise have to import.' This can be contrasted with local 'population serving' services that are supported by the economic base.

[4] Which contains the East of England, South East of England and London.

these nearby areas. This will mean extending the arc of prosperity eastwards and North Essex becoming more fully integrated in it. The extent to which this opportunity is realised depends on the area's competitive position in relation to **broader economic challenges and opportunities**.

Figure 2: Economic geography of North Essex and the Greater South East



We have identified a set of comparator locations in the economic core of the GSE to contextualise the challenges and opportunities that we analyse and our economic forecasts. These are **West Essex, Cambridgeshire, Milton Keynes, Buckinghamshire, Oxfordshire, Berkshire, West Surrey, and East Surrey**.

These areas all presently enjoy higher GVA per capita than North Essex. Nevertheless, on the basis of the foregoing discussion, we believe they represent a level of economic success to which the North Essex sub-region can reasonably aspire, given its location and potential linkages.

Challenges and opportunities

High level factors

Digital communication technology is expected to transform a series of traditional economic sectors in the coming decades, in some cases combining with environmental and other pressures to bring about change. Digital connectivity also has implications for where and when work is done. In particular, it enables many types of work to be undertaken outside standard working hours and traditional workplaces, often at home. Areas offering homes with good facilities for digital working, including connections to **high quality digital infrastructure**, are likely to have a comparative advantage in attracting footloose digital workers and entrepreneurs (sometimes known as 'digital nomads').

Research by Cebr describing a new **'Flat White Economy'** has demonstrated the formation of local ecosystems in particular locations where small scale creative businesses thrive in symbiotic relationships, boosting the local economy. However, many of the millennials who participate in these types of activities have a strong preference for spending their disposable income on city based experiences, e.g. in 'coffee house culture'. It is therefore important to be realistic about the range of people and activities that can be attracted to various forms of **'backyard capitalism'** in non-urban locations.

Artificial Intelligence (AI) and robotics are expected to drive a major shift towards far greater **automation of production and services** than has hitherto been possible. Cebr analysis indicates that around 30% of jobs in North Essex may be affected by automation in the next 15 years, as in the UK as a whole – this presents a **challenge** for some employees but also an enormous **opportunity to improve productivity** and create new knowledge-intensive industries. North Essex may be able to capitalise on the University of Essex's AI speciality. The way **personal mobility** is provided is also set to be revolutionised. Electrification and automation will make personal travel cheaper, cleaner, safer, easier to access, and more reliable. Notions of public and private transport will become more blurred and payment mechanisms will change. Transport and energy supply infrastructure will change. There will be major social implications and the spatial development of towns and cities will be affected.

Offsite construction is set to substantially change the nature of the construction industry, and fewer, but more skilled, employees will be required. **Building Information Modelling (BIM)** will increasingly be used to optimise the construction and long-term carbon footprint of new-build developments. Within offsite construction it can be used to create bespoke designs. It has been used in centrally-procured Government projects since 2016 and the UK is a world leader. Digital skills and connectivity are key to its effective use.

The move towards a **higher-productivity, more skill- and capital-intensive construction model** will permit an acceleration of housebuilding and mitigate the traditional construction industry's challenges in maintaining staffing levels. The construction labour force is forecast to decline by 20-25% over the next decade, a trend which might be accelerated by future constraints on the availability of low-skilled labour from the EU27.

As offsite construction begins to play a major role in residential as well as commercial and industrial construction, the industry is likely to spread beyond its current geographic concentration in the North and Midlands and factories, possibly organised in clusters, are expected to be built and to cover regional or sub-regional markets.

The **energy** market is in a state of flux. Environmental and resource pressures are driving radical technological change. As a consequence, a range of strategic challenges and opportunities have emerged in recent years, including decarbonisation (partly now driven by reductions in the cost of renewable

energy generation – especially solar and wind energy) and electrification of transport and domestic heating.

Clearly considerable uncertainty remains as to the terms of the **UK's departure from the European Union.** Cebr analysis indicates that future restrictions on low-skilled immigration from the EU27 are likely to pose labour supply challenges for sectors currently reliant on it including agriculture, social care, and construction (although technology offers a clear means of mitigating this in the case of construction, as discussed above). The **globally-oriented** Port of Felixstowe as well as the more local Port of Harwich may gain importance after Brexit, making North Essex a stronger location for manufacturing investment. Future prospects in **some financial and business services** are sensitive to the outcome of negotiations, e.g. financial passporting rights. Any resulting decline in employment in high value sectors in the central London economy would be likely to have deflationary effects on the local economy in North Essex but there might be a positive impact since some people displaced from high income activities in central London might choose to seek alternative types of work closer to where they live benefitting start up activity and potential inward investors requiring a skilled workforce. There may also be some '**reshoring**' of manufacturing supply chains.

Technological change together with the likelihood of new linkages needing to be forged following the UK's withdrawal from the European Union pose a formidable set of economic challenges and opportunities. At the same time, the UK has a set of long-standing structural economic problems – such as a productivity and skills gap – and many places offer inadequate access to economic opportunities. The government's emerging **Industrial Strategy** aims to address these issues, identifying four Grand Challenges that represent global trends that will shape a rapidly changing future. They are Artificial Intelligence, Clean Growth, Ageing Society and Future of Mobility.

Population and workforce factors

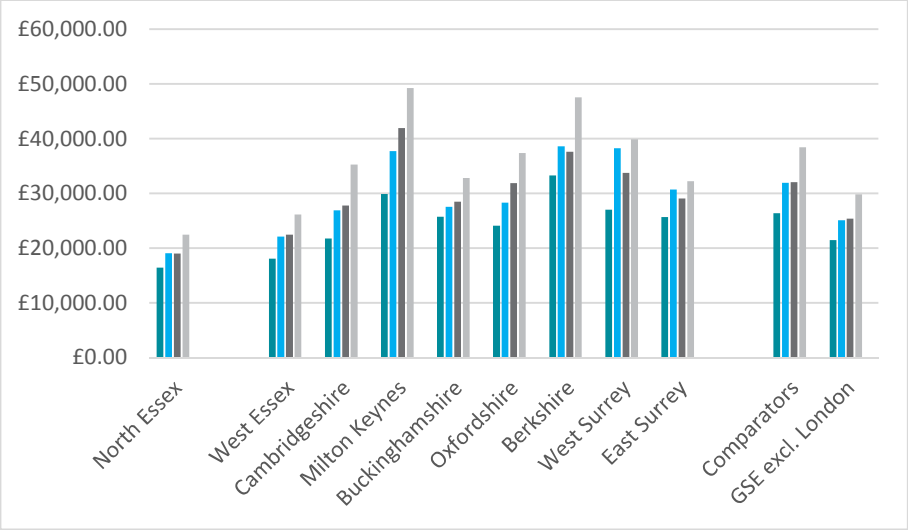
Colchester has a younger and faster growing population than other parts of North Essex, particularly in comparison with Tendring. The latter also has higher levels of deprivation (measured by the Index of Multiple Deprivation) and lower average gross disposable household income (GDHI) than Colchester and Braintree districts, as Table 1 shows.

Table 1: IMD rank and GDHI / head in Colchester, Braintree and Tendring, 2015

	IMD rank (2015)	GDHI / head (2015)
Braintree	197/326	£18,668
Colchester	185/326	£20,844
Tendring	49/326	£15,835

Unemployment levels across the UK and wider region are at historically low levels. They are somewhat higher in North Essex than in the comparator locations. Low unemployment levels sometimes mask problems of worklessness. Tendring has far higher levels of economic inactivity than the rest of North Essex. Historically, GVA per capita has been significantly lower than in the comparator locations and on baseline trends this is expected to continue, as Figure 3 shows.

Figure 3: Historic and forecast GVA per capita in North Essex, comparators and GSE excl. London in 1998 (green), 2008 (blue), 2016 (dark grey) and 2036 (light grey)



In terms of GVA per employee, i.e. workforce productivity, North Essex also lags behind its comparators and the region, as Figure 4 shows.

Figure 4: GVA per employee (£), North Essex, comparators and GSE excl. London, 2016

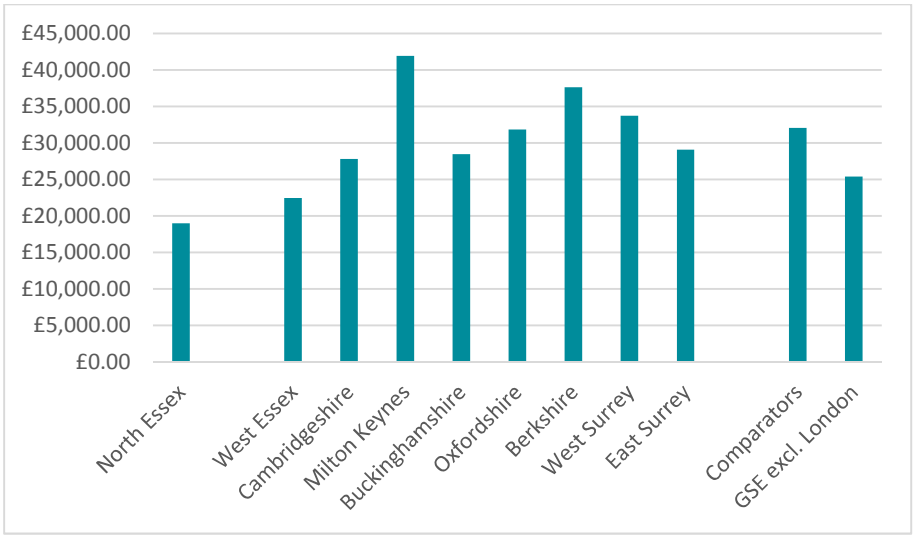
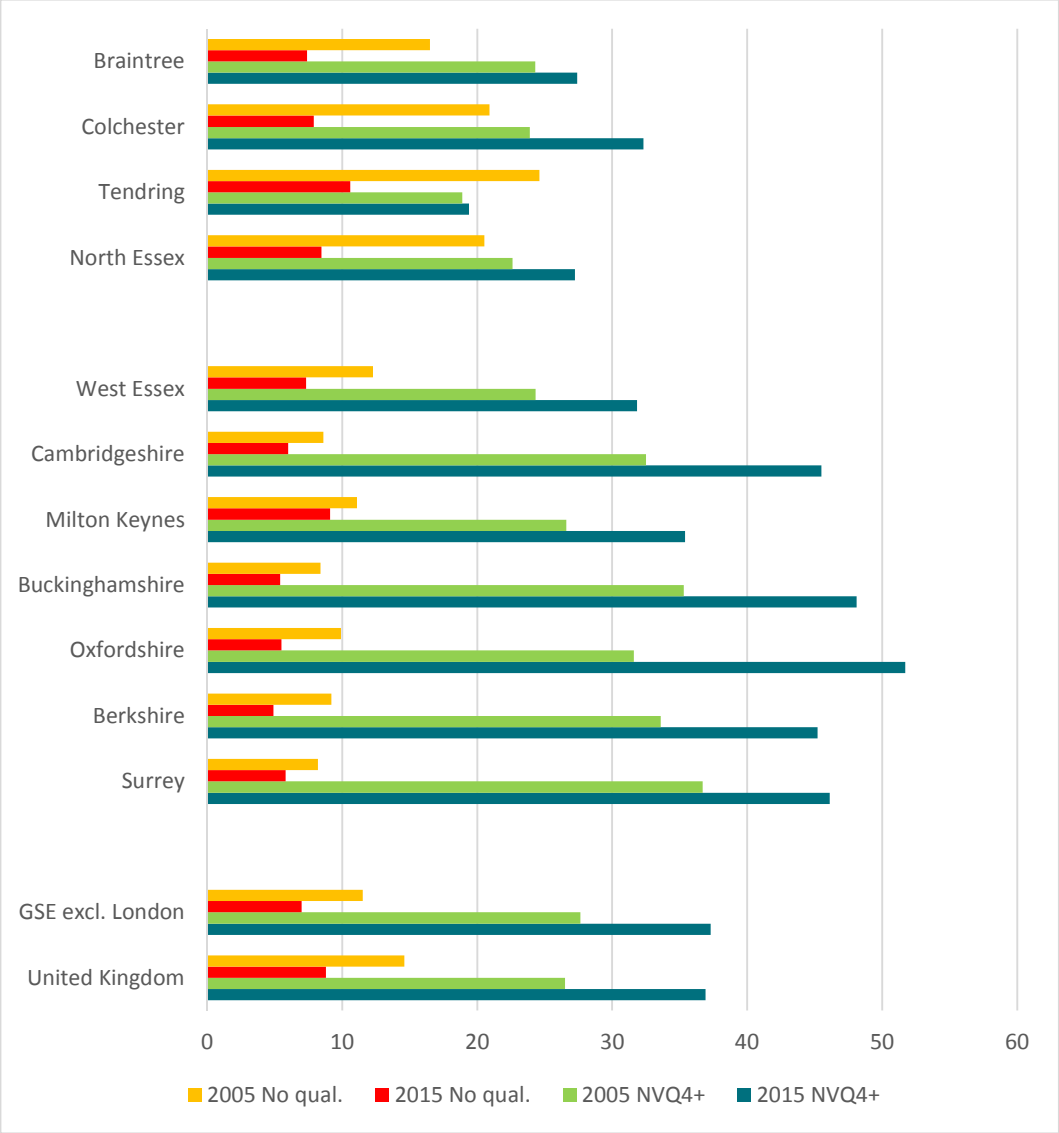


Figure 5 shows that in the ten years from 2005, all three North Essex districts made rapid progress in reducing the proportion of their populations with no qualifications, outperforming the comparators. However, **all three districts significantly underperform in terms of the proportion of their population attaining NVQ4 and above**, compared to the UK and Greater South East excluding London. Colchester was the best-performing of the three local authorities on this measure but it was still considerably behind nearly all of the comparator locations. Braintree and Tendring were notable in making much slower progress between 2005 and 2015 than any of the comparator regions, wider region or UK.

Figure 5: % with no qualification / NVQ4+ in North Essex, comparators, GSE excl. London and UK, 2005 and 2015



Industry and economic structure

There is evidence to indicate that larger employers are on average more productive, at least in some sectors. In terms of **business sizes**, North Essex has a similar profile to the wider region, with Colchester attracting more large employers than Braintree or Tendring. However, high performing centres such as Cambridge have far higher proportions of large employers.

GVA growth rates by industry for North Essex and the Greater South East excluding London were calculated by Cebr. Table 2 shows the sectors ordered by their growth rate within the wider region from highest to lowest. Whilst **high productivity sectors** like information and communication and business service activities are under-represented in North Essex, they are both **growing more quickly than in the wider region**.

Table 2: Annual average GVA growth North Essex and GSE excl. London, 1998 to 2016

	North Essex (%)	GSE excl. London (%)
Information and communication	**7.2**	**5.0**
Business service activities	**4.7**	**4.2**
Distribution; transport; accommodation and food	**1.6**	**1.8**
Construction	**1.5**	**1.7**
Other services and household activities	**1.1**	**1.7**
Public administration; education; health	**2.0**	**1.5**
Real estate activities	**1.7**	**1.5**
Agriculture, mining, electricity, gas, water and waste	**-0.5**	**0.8**
Financial and insurance activities	**-1.0**	**-0.2**
Manufacturing	**-0.8**	**-0.7**

Economic activity can be categorised into that which is driven mainly by the need to **serve the local population** and that which forms the **'export-oriented' economic base** (in this context 'exporting' refers to the sale of goods and services in other parts of the UK as well as internationally). We have also examined the proportion of activity in each of these categories in North Essex and the comparators. Tendring had the highest proportion of population-supporting activity (64%) and Colchester and Braintree both show over 50% of activity in this category. The percentages in Berkshire, Milton Keynes, Cambridge, Surrey, and Buckinghamshire, which are the most prosperous areas in general, were all under 50% (the lowest was 43%). **Economic base sectors are the most productive** and their growth must therefore be central to any aspirational economic strategy.

Strategic planning and development

The comparative economic success of many parts of the GSE has resulted in a number of **strategic growth challenges**, most notably a chronic gap between housing supply and demand in some areas. This has led to a housing affordability crisis that threatens future employment growth, particularly in certain high productivity locations such as London and Cambridge, where the ratios of house prices to median incomes are around 14.5[5]. Partly as a consequence of this, and also to promote sustainable development patterns, housing and employment growth is directed towards key strategic corridors in the region. These typically follow existing corridors (e.g. London-Stansted-Cambridge) or planned infrastructure corridors (e.g. Oxford – Milton Keynes – Cambridge) linking existing clusters of high value activity. Administratively, North Essex is not currently part of these corridors. However, as an area neighbouring the **London-Stansted-Cambridge corridor**, it is ideally placed to loosen constraints in the corridor and attract investment and skilled employees, for example with improved east-west connectivity and quality living and employment space in the Garden Communities. **East – west transport constraints** both within North Essex and between North Essex and the Stansted area will need to be addressed if these opportunities are to be fully realised.

[5] "UK Cities House Price Index - October 2017." Hometrack. See https://www.hometrack.com/uk/insight/uk-cities-house-price-index/october-2017-cities-index/.

Strategic options

Toolkit of opportunities

Cebr has identified a range of **strategic opportunities** for building the economic strategy. The first set, below, involve leveraging existing plans and initiatives and sector strengths in the wider sub-region to inform decisions about the approach to the design and delivery of the Garden Communities, in particular:

- A proactive approach to delivering the Garden Communities through **offsite construction** methods will provide cost and quality benefits, reduce risk and provide a chance to establish a significant first mover advantage as a supply base for the wider region, which is set to see major expansion in key locations including the Oxford – Milton Keynes – Cambridge and London-Stansted-Cambridge corridors;

- Capitalising on the national trend towards **localisation of energy generation** in order to improve sustainability and utilise the potential excess heat in 'district heating' schemes, as an alternative to traditional gas-fired heating. This could help reduce domestic energy consumption and achieve the Garden Communities' carbon-neutral goal. Greater energy efficiency – both from district heating and the design of the houses more generally (insulation can be improved by offsite manufacturing owing to more precise production techniques) – will lower energy bills within the communities, making them more attractive to potential residents. Projects to generate capacity could also boost local development of the **energy technology** industry;

- The installation of the Colchester **Ultra-Fast Broadband** network means that town centre businesses can now access upload and download speeds of one gigabit per second. Expansion of this network is planned, including to the new Northern Gateway development. If rolled out across the sub-region, including the Garden Communities, it would directly boost **quality of life** and represent a clear **competitive advantage** in attracting innovative, knowledge-intensive businesses which rely on high-speed Internet like high-tech manufacturing, life sciences, and the creative industries. With rapid expansion of full-fibre broadband forming part of the Industrial Strategy, North Essex will need to act quickly to maintain and enhance its advantage;

- Mitigating the impact of the UK's **ageing population**, which is particularly significant in North Essex given its current and projected age profile. Key approaches include enabling **longer working lives** – through improved adult education and garden community design which facilitates home working – and promoting healthy lifestyles and independent living throughout North Essex. Benefits should include reduced demands on the care sector and boost to output through greater employment. Further, it may be possible for the University of Essex to develop and commercialise **age-related innovation** based on its strength in artificial intelligence.

Opportunities we have identified for supporting the wider approach to the economic development of the sub-region include:

- The strategic plan for developing **Stansted Airport** includes development to accommodate 35m passengers per annum by the early 2020s, a substantial increase from the 25.9m passengers served in 2017. An increase in **long-haul and business-oriented** flights is planned, so the airport could become a much more significant investment factor for North Essex in the coming years. Likely sectors include logistics and high-value manufacturing and business services given their role in the airport's supply chain and freight export opportunities – Stansted is already the UK's **third-largest freight airport**. The expansion programme includes warehouse, industrial, and office space, however

potential growth in these sectors should be borne in mind when making employment space and skills decisions for North Essex, as provision immediately around Stansted may not fully satisfy demand;

- The energy company EDF has identified North Essex as a potential site for **offsite construction of nuclear facilities** and associated buildings. Geographical constraints at the Bradwell and Sizewell sites make onsite construction logistically difficult and North Essex's location between the two is ideal. The Port of Harwich facilitates cost-effective access to inputs and is equidistant between the two destination sites. There are expected to be two employment peaks during reactor construction, with around 6,000 jobs needed at each. Skills developed by those constructing nuclear plants offsite could be transferred to the production of residential and commercial buildings, furthering the growth of the North Essex **offsite construction** industry;

- The **Suffolk-Essex energy coast** is already a significant asset for North Essex with manufacturing and support at the Port of Harwich. One of the four 'Grand Challenges' in the emerging Industrial Strategy is Clean Growth, with offshore wind identified as an area where government will work with business to grow the industry. Other options for developing the **renewable energy** sector include solar, which could capitalise on the relatively high levels of sunlight in North Essex. Technical hurdles remain to effectively marrying solar technology with batteries for a reliable supply. Further possibilities include biomass, using imported woodchips from Europe or North America or waste sourced from local agriculture, and growing energy crops;

- The **University of Essex** is located to the east of Colchester, near the proposed Tendring-Colchester Borders community. **Employment space for knowledge-intensive industries** is already being provided by the construction of a 3,500 sq m (38,000 sq ft) Innovation Centre at the Knowledge Gateway research and technology park. This will facilitate the expansion of Colchester's existing **creative cluster** and could provide a boost to nuclear decommissioning and offsite construction in the area. The university can act as a **talent pipeline** with 4,500 graduating every year and is expanding rapidly; its 2013 strategic plan targeted a 50% increase in student numbers by 2019 with further growth thereafter. This may include a new engineering department – an exciting prospect as the eastern region currently lacks a research-intensive university with an engineering specialty and a local orientation. **Robotics** will play a greater role in the nuclear decommissioning process in the future; as automation will also be used in offsite construction there is an opportunity for the University of Essex in artificial intelligence, which is an existing area of strength for it. The garden communities will help attract skilled workers by providing quality homes. Employment space provided alongside these should take into account sectors which may expand based on the current and future specialisations of the University of Essex;

- The **London-Stansted-Cambridge corridor** is highly prosperous but currently facing severe labour and housing supply-side constraints to growth. These may yet be loosened through regeneration of its underperforming areas or new developments, e.g. Alconbury Weald near Cambridge. North Essex could also capitalise on the corridor's expansion, taking advantage of its relative proximity. This provides the chance to attract **high-tech industries** and their **skilled employees** to the Garden Communities and wider area. Strategies to ensure the corridor's continued growth benefits North Essex and not just competitors elsewhere would include:

    - Providing a **quality of life** offer in the Garden Communities (particularly West of Braintree) that attracts highly skilled and mobile workers;

- Improving STEM[6] and IT **skills** among North Essex pupils and residents;
- Developing **east-west connectivity** to reduce journey times from North Essex to Stansted and Cambridge;[7]
- Constructing quality **employment space** tailored to industries struggling to expand within the corridor.[8]

With a major growth area in high-tech, future-oriented industries on its doorstep and the chance to change economic trajectory provided by the Garden Communities, North Essex has a prime opportunity to serve the growth of the London-Stansted-Cambridge Corridor and even become part of it, extending the '**arc of prosperity**' to the east.

Our observations on broad **transport requirements** are as follows:

- Appropriate **local and strategic transport links** will be critical to the attractiveness of the Garden Communities as places in which to work, live, and invest;
- If designed appropriately they will contribute to an ambitious approach to **future sustainability**. We recommend that a fully integrated approach to the strategic planning of the settlements is undertaken, recognising the link between viable development densities and the quality of transport provision;
- We believe there are some strategic considerations that favour investment in a **heavy rail infrastructure based approach** (with conventional and/or tram – train operation). Garden Communities will grow the economic mass of the sub-region, which should increase the viability of rail schemes, which are characterised by large economies of scale and 'indivisibilities' in the provision of capacity. Further work on this should be carried out to supplement the findings of the North Essex Rapid Transit Study;
- There is a clear gap in **east – west connectivity**, both at the sub-regional and more strategic level. In addition to the A120 road scheme we believe there could be very substantial benefits arising from creating a **direct public transport link between Stansted Airport and Braintree**, including heavy rail;
- In our view, improving rail or other public transit links between Braintree, Colchester, and Tendring would further **integrate the area** economically.

Our observations on **skills** are as follows:

- Appropriate skills are vital if the population of North Essex is to be able to access the opportunities that the strategy identifies, and will be a factor in determining how successful the area is in attracting **inward investment**;
- **Inadequate or poorly matched skills are a key risk factor** for the success of the strategy and this is an area where North Essex clearly falls behind comparator areas;

---

[6] Science, technology, engineering, and mathematics

[7] Whilst this may be outside the direct control of NEGC Ltd, the combination of Stansted expansion and the additional population in North Essex will contribute powerfully to the case for national government to improve road and rail capacity

[8] The Chesterford Research Park in Uttlesford provides approximately 900,000 sq. ft. of space for biotechnology and pharmaceutical R&D – there may be enough demand to justify such a facility in West of Braintree

- Substantial investment in workforce skills will be needed to:
  - Address **low labour market participation** issues in particular areas, especially Tendring;
  - Enable young people to access **emerging opportunities**, which will be more 'skills intensive';
  - **Retrain** large sections of the existing workforce affected by **automation** in order to meet emerging skills requirements.

Scenarios

We set out below two alternative **high level scenarios** that reflect plausible 'economic futures' for North Essex but with differing assumptions about the development of the economic base and the nature of the population moving into the Garden Communities. From these flow some different **transport and skills requirements** and a different set of impacts and outcomes. There are a number of factors in common between the two scenarios, namely the assumptions about:

- Consistency with **Garden City Principles** including the importance of a strong focus on 'place quality' and the need for integrated planning of infrastructure and other interventions;
- Opportunities set out in the toolkit in relation to **delivering the Garden Communities** including ultra-fast broadband provision and local energy provision.

Scenario 1: "lifestyle led"

In this scenario there is a **less interventionist approach to inward investment** which means the local economic base has fewer large companies offering opportunities to the existing population. The vision instead is that it will **develop more organically** on the basis of remote opportunities in the wider economy that can be serviced by individuals working in North Essex who rely on **digital communications and transport links** for occasional business travel. The implication is that the economic base is **more skills intensive and less capital intensive**. **'**Place competitiveness' is relevant at the level of the individual and the basis for this is the attractive **'lifestyle' offer** that the Garden Communities and wider area offer (coast, countryside, culture etc).

It is assumed that:

- Technology enables significant numbers of workers to either work remotely from their employers' bases or independently as '**backyard capitalists**';
- There is a strong focus on provision and development of **cultural amenities** in the Garden Communities and wider area;
- The Garden Communities are successful in **attracting highly skilled younger workers** from outside the North Essex area who:
    - Do not need or want to travel to work on a daily basis who are seeking a high quality, sustainable but affordable environment in which to live. The **ultra-fast broadband offer is a major pull factor** as it will both enable working from home and leisure options;
    - Have (or are planning to set up) home based businesses that will contribute to the local economic base. They will value the ultra-fast broadband and the **high quality living environment** as will they spend a lot of time in the area.

This scenario is focussed on generating **higher average disposable incomes** as opposed to closing the GVA per capita gap with the comparators. Both home based workers and backyard capitalists will generate disposable income by providing high value services that are sold outside the area. They will spend a proportion of that in the sub-region on leisure, education and other services, boosting local incomes through indirect economic multiplier effects. In the former case (home workers for companies outside North Essex), however, earned income will not contribute directly to local GVA whereas in the latter case earned income spent in the area will represent a direct economic impact.

The University of Essex's digital specialisations and provision of employment space, together with existing strengths of the creative sector in Colchester, should **spur continued growth of the area's start-up culture**. Other opportunities associated with the proximity of the University of Essex include the retention of ambitious graduates who are attracted to the lifestyle offer of high-quality affordable homes with ultra-fast broadband in the Garden Communities. These graduates are likely to provide the workforce for expansion of creative businesses, or to set up their own. **Expansion of high-end digital infrastructure** to most or all of North Essex will of course be integral to this strategy. It should also be future-proofed, to allow for rapid upgrades to infrastructure as higher speeds become available, so the area can maintain a competitive edge.

Both in the design of the Garden Communities and in the wider area, policy to promote and improve the **place quality** of North Essex is central to this scenario. Green space provision is of course central to the Garden Community approach in any case, and attention should also be paid to fostering a broader cultural scene[9]. Developing cultural amenities in the existing settlements – for example drawing on Colchester's Roman history – is perhaps of greater importance, and will have the additional benefit of promoting tourism in the wider area. Research into quality of place[10] as a draw for creative people suggests that authenticity is key and quality of place emerges over time, so focusing on and bringing out the area's existing cultural strengths is likely to be more fruitful than attempting to create new ones in the Garden Communities.

The combination of a digitally-skilled workforce, excellent quality of life offer, and modern digital infrastructure could accelerate the **clustering of and future investment by creative and digital businesses**, and provide a 'sticky offer' which keeps businesses in the area when they grow rather than seeing them migrate to London.

We expect that there would be **incremental growth in the existing economic base** of the sub-region, although high rates of automation in some sectors, e.g. manufacturing, may mean there is considerable displacement of established jobs. Commuting patterns would likely continue along the same lines as presently. Opportunities in logistics and other lower skilled jobs are likely to be generated through expansion of Stansted and activities at the Port of Harwich.

In this scenario the lower skilled local population will find employment in population-serving activities that benefit from the increase in effective demand generated by the Garden Communities. Skills training and other interventions are focused on addressing specific issues of worklessness in particular locations within the sub-region. It is assumed that there is good **sub-regional transport** to support the lifestyle offer but high investment in strategic east-west rail connectivity is not necessary to its success.

Our view of the likely particular strengths of each of the three garden communities in this scenario is as follows:

- Tendring-Colchester Borders – expansion of the existing creative cluster including activities linked to the University of Essex, offsite construction;
- Colchester-Braintree Borders – start-ups, creative sector;
- West of Braintree – growth of existing local employers, activities with links to Stansted and some economic integration with the London-Stansted-Cambridge corridor.

[9] i.e. a 'café culture' to drive expansion of the 'Flat White economy'

[10] https://urbanland.uli.org/industry-sectors/what-draws-creative-people-quality-of-place/

Scenario 2 'Inward Investment Led'

In this scenario there is a **proactive approach to attracting inward investment** into the sub-region in order to attract more large employers and generate a range of high quality **employment opportunities for the existing population** of North Essex. The vision is to exploit the opportunities arising from technological and other changes and mitigate adverse effects on people, e.g. of automation, in order to create a **strong, diverse and resilient local economic base**. It is therefore more focused on opportunities for applying technological developments to particular industrial sectors and less reliant on backyard capitalism and remote digital working. This is an ambitious vision requiring **high levels of investment in skills, capital and infrastructure**.

It is assumed that:

- Technological change will create a number of **valuable opportunities in traditional sectors** of the economy as well as causing **new industries** to emerge;
- The Garden Communities are successful in attracting **large scale inward investments** in modernising sectors by major employers;
- Local educational institutions effectively work with employers to **develop the skills required** to make these investments viable, for example through apprenticeship provision;
- There is a strong emphasis on **improving participation through skills development** in areas of low employment and **measures to make longer working lives more appealing**;
- Local authorities, educational institutions, and employers form **networks to compete for government funding** (e.g. Industrial Strategy) which magnifies the effect of other interventions;
- The housing offer in the Garden Communities is tailored to meeting **housing demand from the local population** and from those moving to work in emerging sectors in the area;
- There is a focus on providing **large scale employment space** in the Garden Communities and elsewhere in the sub-region.

This scenario is focussed on **redressing the gap in productivity and GVA per capita** that exists between North Essex and the comparator regions in the 'arc of prosperity' around London. The inward investment is expected to generate a large number of well paid jobs, providing a direct boost to local GVA and a high proportion of income earned by workers would be spent on services in the local economy, generating indirect economic multiplier effects. Furthermore, such **inward investment could stimulate local clusters of related high value activities**. Examples of the sectors under consideration and the strategies to grow them can roughly be categorised as follows:

*Local – identifying and growing **existing North Essex strengths**:*

- **Creative:** working to expand the existing Colchester-centred cluster by meeting employment space and digital infrastructure requirements;
- **Established manufacturing:** tailoring local skills provision to facilitate expansion of existing (mainly Braintree-based) businesses and finding out if local employers would expand into newer premises were they provided;

- **Energy:** leveraging existing strength and opportunities provided under the Industrial Strategy to further expand offshore wind around the Port of Harwich.

*Regional – making North Essex a desirable location for expansion of **strong clusters nearby**:*

- **Life sciences and IT:** skills, employment space, and infrastructure (physical and digital) solutions to encourage expansion of the cluster in the London-Stansted-Cambridge Corridor;
- **Finance and insurance:** encourage siting of back-office functions from London-based companies by providing appropriate employment space.

*National/International – competing for **wider opportunities**:*

- **High-tech manufacturing:** using the AI and robotics strengths of the University of Essex to encourage university-business partnerships and ensure North Essex is an appropriate place to commercialise research;
- **Construction:** skills and digital infrastructure improvements to establish North Essex as a centre for offsite construction, able to supply major housing and infrastructure projects in the Greater South East.

The approach maximises the opportunities arising from existing strengths in the area and potential **alignments with the Government's Industrial Strategy, with a focus on exports, productivity, skills, and developing successful sectors**. 'Place competitiveness' is relevant not just at the individual level but at the level of business location decision making. Relevant factors in this will be the **quality of life available to a potential workforce and local skills availability**. There is still a role for the lifestyle economy – indeed given the existing strength of the creative sector in Colchester and the opportunities afforded by the University of Essex, its expansion is probably a given even in the absence of the Garden Communities – but the strategy is less dependent on the ability of the sub-region to attract younger, footloose workers and entrepreneurs.

In this scenario, residents of the sub-region would be much less dependent on commuting to London as the area would have a much stronger economic base of its own. This should mitigate some possible Brexit related risk to Central London employment. The area would however be more economically integrated with other parts of the GSE, particularly the high-tech **London-Stansted-Cambridge Corridor**. It is possible that in time it will be viewed as an extension of it.

This scenario is **more active in relation to the lower-skilled local population**, seeking to ensure there is a good match between the emerging economic base and the skills of the local workforce in order to attract major investments from companies seeking a skilled workforce. The quality of life offer of the Garden Communities will act as another draw to companies who want to be assured of holding on to these employees.

The economic outcomes envisaged in this scenario are dependent not only on good local transport links but also on **high levels of investment being committed to improving strategic transport links**, including east-west public transport connectivity with the London-Stansted-Cambridge corridor (and beyond). This will enable improved strategic transport links with other high growth corridors, to Stansted Airport (promoting trade, investment and visitor economy in the sub-region) and the rest of the UK.

This scenario is **higher risk – higher reward** and more dependent upon funding for large scale infrastructure investment from Government and wider political support – however the business case

may also be more attractive to a Government pursuing the Industrial Strategy, with which this scenario is strongly aligned.

We think the three Garden Communities would be more integrated, with more interchangeable strengths in this scenario. Notwithstanding this, our view of the likely particular strengths of each of them is as follows:

- Tendring-Colchester Borders – inward investment associated with University of Essex's research strengths, with larger scale employment space for off-site construction industry, possibly renewable energy and environmental business cluster;
- Colchester-Braintree Borders – inward investment in digital and finance, digital start-ups, interaction with the London-Stansted-Cambridge corridor;
- West of Braintree – strong economic interactions with the London-Stansted-Cambridge corridor with high tech inward investment.

Economic forecasts

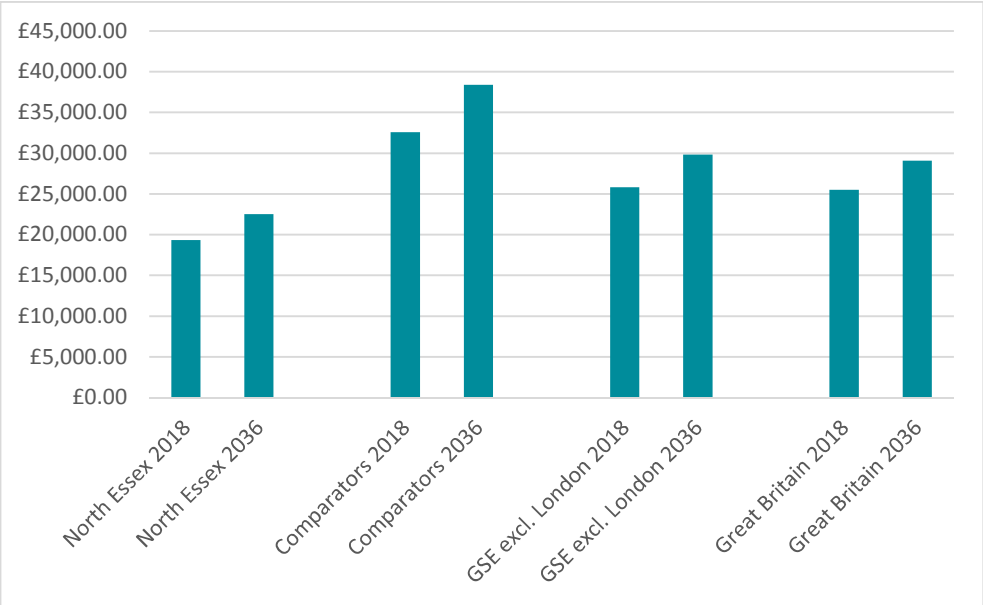
Our five stage approach to economic forecasting is set out below.

- **Stage 1**: •Projections of existing growth trends in population, employment and GVA per capita in North Essex and comparator locations
- **Stage 2**: •Addition of a set of baseline 'change scenarios' to the Stage 1 forecasts reflecting Cebr's view of the impact of broad economic developments on North Essex's competitive position
- **Stage 3**: •Addition of estimated direct economic impacts of alternative Garden Communities scenarios to the North Essex population, employment and GVA per capita forecasts
- **Stage 4**: •Addition of estimated wider economic impacts of alternative Garden Communities scenarios to the North Essex population, employment and GVA per capita
- **Stage 5**: •Addition of the estimated impacts of the 'lifestyle led' and 'investment led' strategy scenarios to the Stage 4 forecasts

Stage 1

Figure 6 shows our Stage 1 baseline forecast, i.e. a **continuation of present trends in GVA per capita**. This shows **North Essex continuing to underperform** in relation to the comparators, the Greater South East excluding London, and Great Britain.

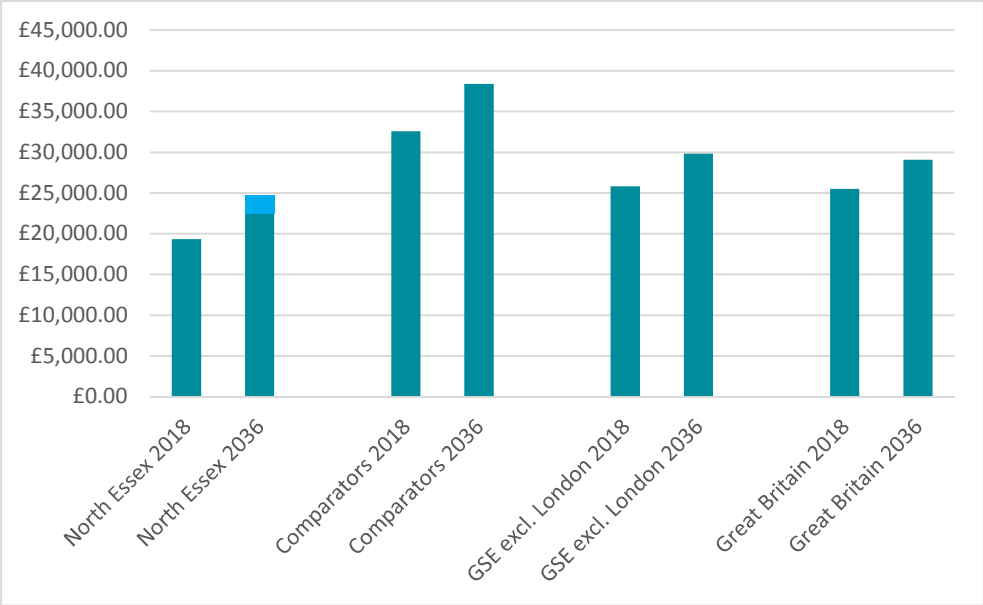
Figure 6: GVA per capita forecasts, 2036



Stage 2

We considered the full range of high level **challenges and opportunities** set out above in order to examine how external factors could shift trends in North Essex relative to other locations. For most of the issues, the impacts are highly uncertain, and it is not clear which areas will benefit or lose out more. However, North Essex seems well placed to benefit from the move towards renewable energy and seems better placed than its comparators when it comes to Brexit impacts. Therefore, when accounting for these wider factors in our projections we assume that **North Essex's GVA and employment in 2036 are higher by 10% and 5% respectively**[11]. GVA per capita for 2036 would increase by £2,250 to £24,748 on this assumption, as shown in Figure 7.

Figure 7: GVA per capita to 2036, with anticipated future trends



Stage 3

At this stage we introduce our **additionality framework** to estimate the direct impacts of the construction on GVA and employment**.** Additionality (or additional impact) is the effect of an intervention on a target measure or measures when compared to a baseline. The construction of up to 43,000 new homes within North Essex over a 50-year period is a major intervention which will lift GVA and create jobs in the area – the extent to which this happens depends on choices made in the construction of the homes. When assessing the additional impact on the economy, the reference position – construction that would be happening anyway in the wider region– and the impact of the Garden Communities project upon it is also taken into account.

The following three factors are key to determining the final outputs for the reference and intervention cases:

[11] Roughly equivalent to extra annual growth of 0.5% in GVA and 0.25% in employment from 2018 to 2036, so these assumptions are reasonably cautious

Leakage: The proportion of outputs which do not benefit the target group – in this case, the proportion of GVA from construction not accruing to North Essex.

Displacement: The extent to which intervention displaces output that would have happened in the absence of intervention. Provision of housing in Garden Communities is likely to reduce construction activity elsewhere (indeed, this is part of the reason for their construction).

Economic multiplier: Further economic activity driven by supply chain effects and additional local income (this determines the **indirect** and **induced** impacts of the Garden Communities' construction).

We consider two intervention cases for the Garden Communities project:

Traditional: Garden Communities are built in an 'off-the-shelf' manner using standard construction techniques and there are no interventions around skills, infrastructure etc.

Innovative: High-quality homes are built in the Garden Communities, using offsite construction from a facility or facilities based in North Essex; this would minimise leakage and maximise the economic multiplier. Assumed to be the result of intervention to attract inward construction investment, e.g. improving skills, making a success of the I-CONSTRUCT innovation hub to develop businesses along the supply chain.

Our estimates of the total GVA impacts of construction are set out for each of the two construction scenarios in Table 3. These include estimates on the impact of construction in the wider area as well as the Garden Communities themselves.

Table 3: Net local direct effects

		Innovative	Traditional	Reference
Leakage	Garden Communities	£19,578,061	£28,583,969	
	Wider area	£30,629,684	£61,259,369	£61,259,369
Gross local direct effects	Garden Communities	£78,312,244	£42,875,953	
	Wider area	£122,518,737	£91,889,053	£91,889,053
	Displacement	£49,007,495	£36,755,621	
Net local direct effects	Garden Communities	£78,312,244	£42,875,953	
	Wider area	£73,511,242	£55,133,432	£91,889,053
	Total	£151,823,486	£98,009,385	£91,889,053

Once the reference case estimates are subtracted, this shows **total net additional local direct effects** of **£59.9m** and **£6.1m** per annum for the innovative and traditional cases, respectively.

Stage 4

At this stage we estimate the indirect and induced GVA effects of the Garden Communities' construction by introducing a **supply linkage (indirect) multiplier** and an **income (induced) multiplier**. We used composite multipliers,[12] representing the cumulative effect of these, of 1.25 for the reference and traditional construction scenario and 1.4 for the innovative construction scenario. The estimated impacts of the indirect and induced effects are shown in Table 4.

Table 4: Composite multipliers applied to net local direct effects

		Innovative	Traditional	Reference
Net local direct effects	Garden Communities	£78,312,244	£42,875,953	
	Wider area	£73,511,242	£55,133,432	£91,889,053
Multiplier effects	Garden Communities	£31,324,897	£10,718,988	
	Wider area	£29,404,497	£13,783,358	£22,972,263

Adding the indirect/induced effects implied by these multipliers to the stage 3 results gives estimated **total net additional local effects** accounting for the direct, indirect, and induced impacts of **£97.7m** and **£7.7m** per annum for the innovative and traditional cases, respectively.

A summary of the estimated total employment impacts for Stages 3 and 4 is shown in Table 5.

Table 5: Total employment impacts

		Innovative	Traditional	Reference
Jobs impact (direct)	GVA/construction worker	£63,981	£46,706	£46,706
	Total net local direct effects	£151,823,486	£98,009,385	£91,889,053
	Direct construction jobs	2373	2098	1967
	Net direct jobs	406	131	
Jobs impact (indirect)	GVA/worker	£66,009	£66,009	£66,009
	Multiplier effects	£60,729,394	£24,502,346	£22,972,263
	Indirect/induced jobs impact	920	371	348
	Net induced/indirect impact	572	23	
Jobs impacts	Total jobs	3293	2470	2315
	Net jobs	978	154	

The impacts of the construction impacts on GVA per capita are in fact fairly modest. **For the traditional case the impacts are negligible. For the innovative case the uplifts are £108 from the direct effect and £68 from the indirect and induced effects.** However, above and beyond the direct, indirect, and induced impacts of the construction of the Garden Communities themselves, the **additional population** they attract to the area will drive further economic activity[13]. Projected effects on population, employees, and GVA in 2022, 2029, and 2036 are shown in Table 6.

[12] Based on advice in the English Partnerships (now Homes England) Additionality Guide.

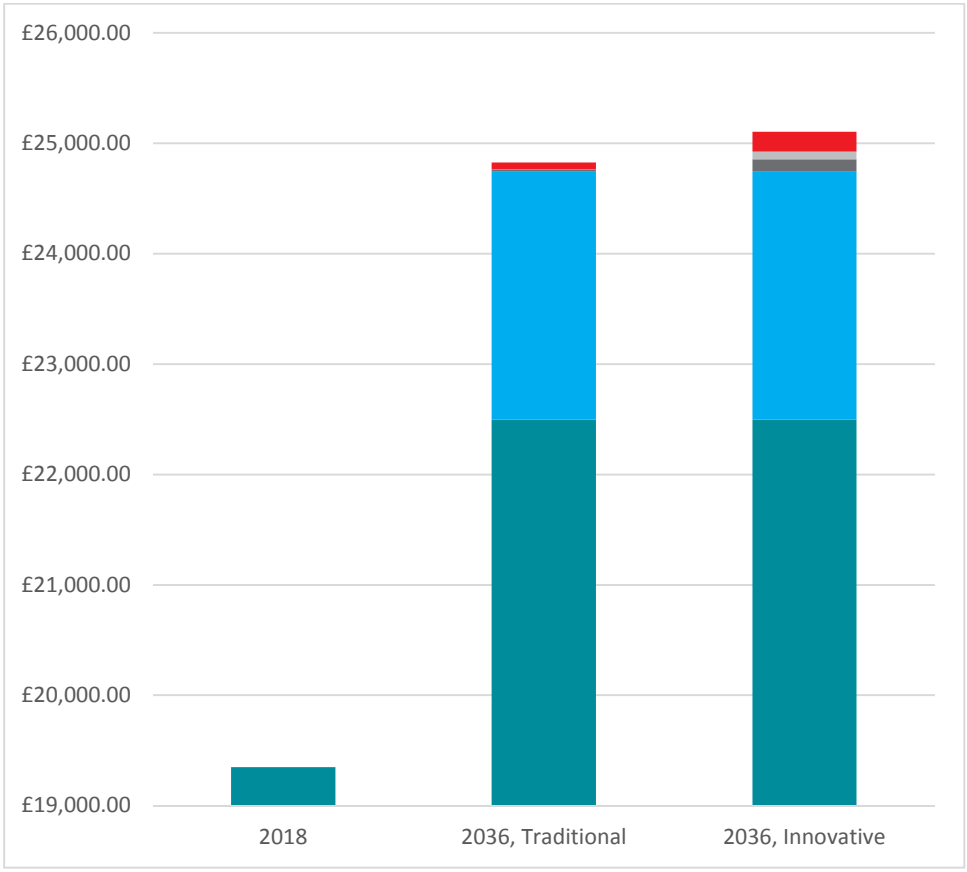
[13] Methodology and assumptions for the impact of additional population are explored in the main document

Table 6: Projected effects of Garden Communities residents

		2022	2029	2036
Houses	West of Braintree	90	1,320	3,700
	West of Colchester	40	1,160	3,700
	East of Colchester	150	1,500	3,400
	Total	**280**	**3,980**	**10,800**
Population	West of Braintree	104	1,518	4,255
	West of Colchester	46	1,334	4,255
	East of Colchester	173	1,725	3,910
	Total	**322**	**4,577**	**12,420**
Employees	West of Braintree	41	607	1,702
	West of Colchester	18	534	1,702
	East of Colchester	69	690	1,564
	Total	**129**	**1,831**	**4,968**
GVA (construction)	West of Braintree	£2,201,470	£36,470,548	£117,697,660
	West of Colchester	£978,431	£32,049,875	£117,697,660
	East of Colchester	£3,669,116	£41,443,804	£108,154,607
	Total	**£6,849,017**	**£109,964,227**	**£343,549,928**
GVA (innovation)	West of Braintree	£2,641,764	£43,764,657	£141,237,192
	West of Colchester	£1,174,117	£38,459,850	£141,237,192
	East of Colchester	£4,402,939	£49,732,565	£129,785,528
	Total	**£8,218,820**	**£131,957,072**	**£412,259,913**

The impact of the additional population on North Essex GVA per capita is estimated to be an additional £63 in the traditional construction case and £181 in the innovative construction case. Figure 8 summarises the impacts of the Stages 1 – 4 forecasts (including the population impacts) in terms of GVA per capita in 2036. Please note truncated axis.

Figure 8: GVA per capita including effect of Garden Communities population



Baseline GVA per capita is shown in dark green. The estimates of external factors on future trends are shown in blue. The direct construction impacts are shown in dark grey, the indirect and induced impacts are shown in light grey and the population impacts are shown in red.

Stage 5

In this stage we estimate the impacts of the two economic strategy scenarios.

In the **inward investment-led** scenario, we assume that:

- **North Essex increases its employment-to-population ratio to that of the comparator regions by 2036**, reflecting that intervention has taken place to attract major employers and create jobs, thereby increasing participation and decreasing out-commuting[14].
- **The GVA produced by each of these employees is valued at the GVA per employee implied by the baseline and future trends, so they are as productive as other employees in the sub-region**. The 'new' employees are a mix of skilled individuals now working in North Essex rather than commuting elsewhere and new entrants to the labour force who are less productive.

In the **lifestyle-led scenario, employment increases each year at a quarter of the rate and GVA at half the rate implied by the inward investment-led scenario**. Highly skilled and productive people are being attracted to the area, and those that work or establish businesses within it make significant contributions to GVA. However, we envisage less of a focus on increasing participation and skills in this scenario.

It is also reasonable to assume a degree of interaction with choices about how the Garden Communities are built – in each case we assume that **in the innovative construction case the GVA uplift is 10% higher**:

- In the **lifestyle-led** scenario, more modern and bespoke homes built using innovative methods will improve the quality of life offer and make attracting skilled professionals easier;
- In the **inward investment-led** scenario, establishing offsite construction within North Essex could act as a catalyst to further commercial development, perhaps including clustering of similar industries

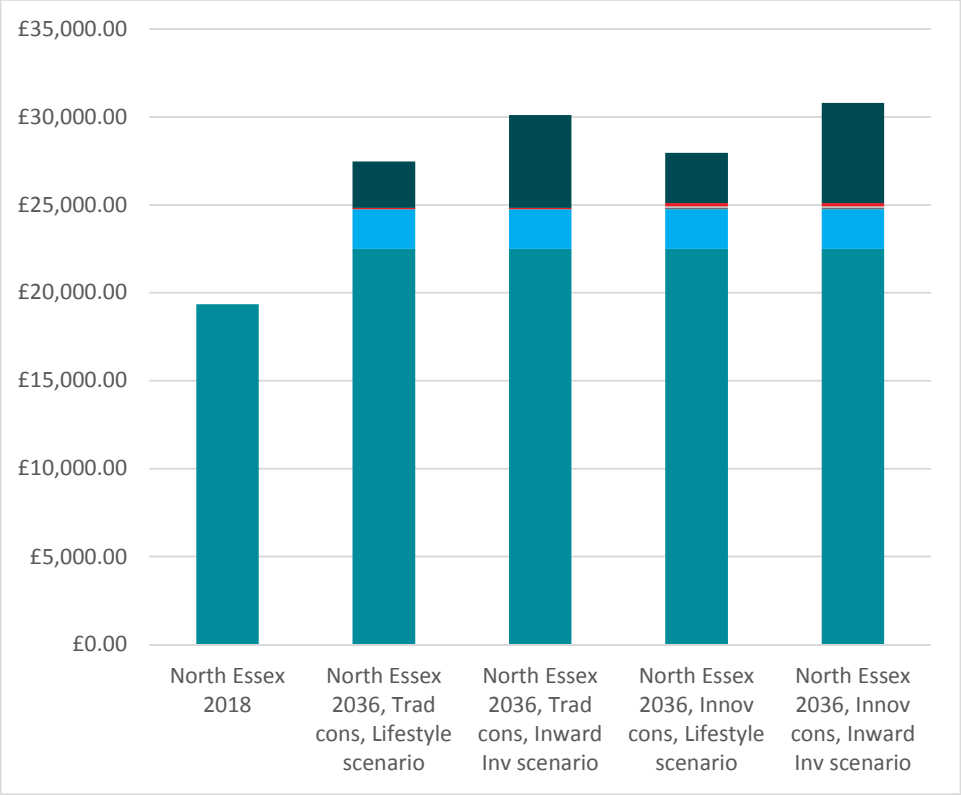
GVA and employment outcomes for each stage, construction case, and scenario are in Table 7. The estimated GVA per capita in 2036 for **each permutation of Garden Communities construction case** (traditional, innovative) **and strategy scenario** (lifestyle, investment) is shown in Figure 9 along with GVA per capita in 2018 for context.

[14] Employment in the comparators is 43.5% of population. In North Essex it is 35.9% in the traditional construction case and 36.1% in the innovative construction case

Table 7: 2036 results by stage, construction case, and economic strategy

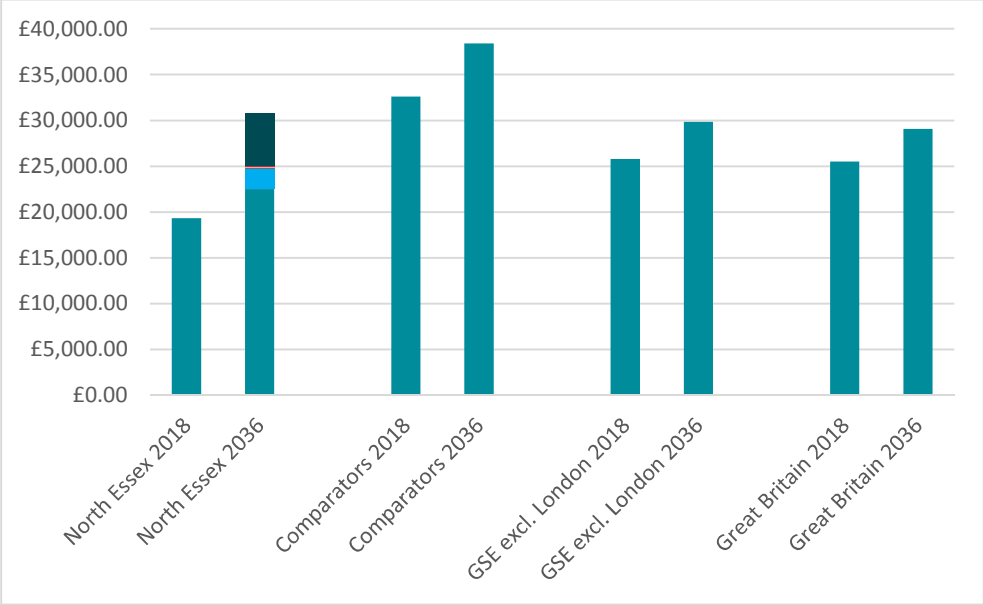
		GVA	Employment	Population	GVA per worker	GVA per capita
Trend growth		£12,468,639,253	188,892	554,200	£66,009	£22,498
Trend and future growth		£13,715,503,179	198,337	554,200	£69,153	£24,748
Traditional	Direct	£13,721,623,511	198,468	554,200	£69,138	£24,759
	Indirect/induced	£13,723,153,594	198,491	554,200	£69,137	£24,762
	Population	£14,066,703,521	203,459	566,620	£69,138	£24,826
Innovative	Direct	£13,775,437,612	198,742	554,200	£69,313	£24,856
	Indirect/induced	£13,813,194,743	199,314	554,200	£69,304	£24,925
	Population	£14,225,454,656	204,282	566,620	£69,636	£25,106
Traditional	Lifestyle	£15,561,629,775	214,268	566,620	£72,627	£27,464
Innovative	Lifestyle	£15,838,558,725	214,886	566,620	£73,707	£27,953
Traditional	Investment	£17,056,556,029	246,695	566,620	£69,140	£30,102
Innovative	Investment	£17,451,662,795	246,695	566,620	£70,742	£30,800
Comparators		£199,177,139,530	2,257,486	5,185,100	£88,230	£38,413
GSE excl. London		£521,013,479,260	7,007,452	17,456,600	£74,351	£29,846
Great Britain		£2,030,167,204,223	30,845,906	69,827,506	£65,816	£29,074

Figure 9: Final projected outcomes for GVA per capita in North Essex



As the greatest projected increase in GVA per capita is delivered by the combination of **innovative construction and an inward investment-led strategy**, we compare this outcome with 2018 and 2036 levels for the comparators, GSE excluding London, and Great Britain, as shown in Figure 10. Under this outcome North Essex would overtake Great Britain and the wider region, and **the gap relative to the high-performing comparator regions would roughly be halved**.

Figure 10: Maximum estimated North Essex GVA per capita vs comparators



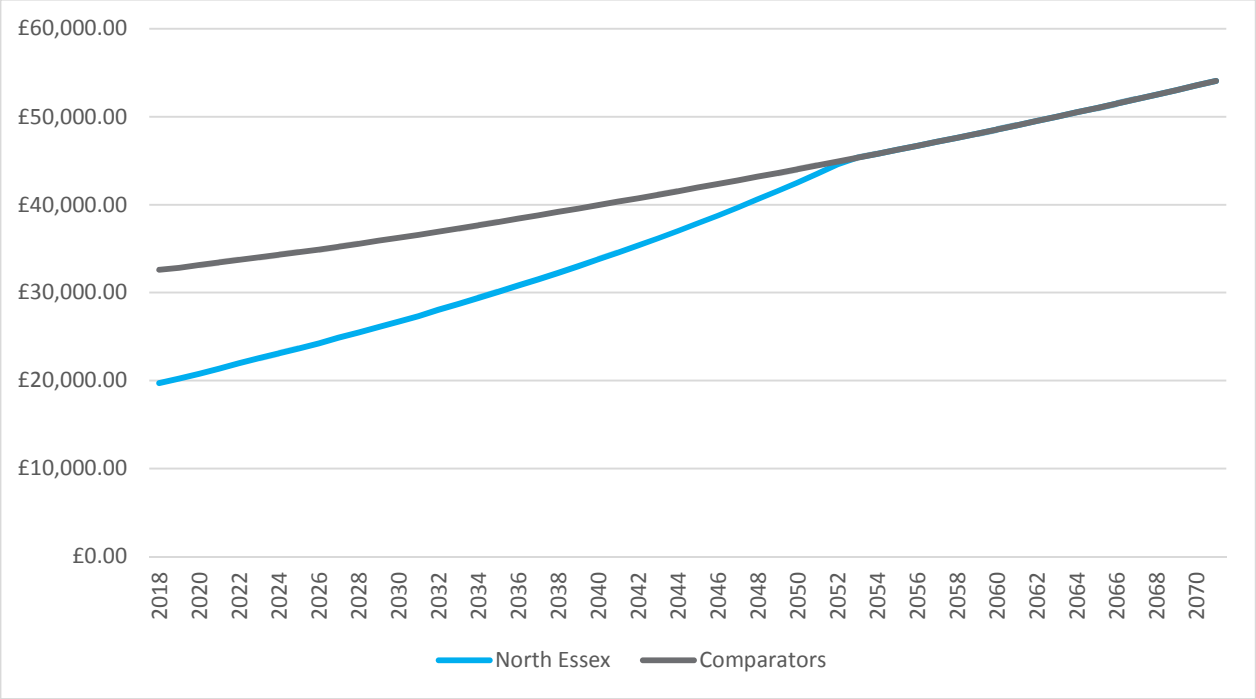
The employment impact is roughly 16,000 above stage 2 for the lifestyle led scenario and 48,000 above for the inward investment led scenario. **In either case, 'one job per house' is met**, as 10,800 houses will have been constructed at this point, based on the Cambridge Econometrics work. **However these are high-level estimates, not detailed forecasts**.

Estimated impacts on key metrics by scenario and employment impacts by stage of analysis are broken down in detail in the main document.

Extrapolation to 2071 and implied GVA shares

Extrapolating outcomes under the different scenarios forward to 2071, we find that in the 'best' scenario (innovative construction, inward investment-led scenario) **North Essex's GVA per capita converges with the comparators' in 2053**. Implied trajectory from 2018 to 2071, with GVA per capita tracking that of the comparators after convergence, is shown in Figure 11.

Figure 11: GVA per capita in North Essex and comparators to 2071



Full results for 2071 by stage, construction case, and scenario are shown in Table 8.

Table 8: 2071 results by stage, construction case, and economic strategy

		GVA	Employment	Population	GVA per worker	GVA per capita
Trend growth		£20,759,275,545	235,741	691,652	£88,060	£30,014
Trend and future growth		£22,835,203,100	247,528	691,652	£92,253	£33,015
Traditional	Direct	£22,837,603,230	247,579	691,652	£92,244	£33,019
	Indirect/induced	£22,838,203,263	247,589	691,652	£92,243	£33,020
	Population	£24,433,811,169	264,885	734,892	£92,243	£33,248
Innovative	Direct	£22,858,706,799	247,687	691,652	£92,289	£33,049
	Indirect/induced	£22,873,513,517	247,911	691,652	£92,265	£33,071
	Population	£24,788,243,005	265,207	734,892	£93,467	£33,730
Traditional	Lifestyle	£32,082,961,587	278,653	734,892	£115,136	£43,657
Innovative	Lifestyle	£32,260,177,505	278,895	734,892	£115,672	£43,898
Traditional	Investment	£39,732,112,004	319,957	734,892	£124,180	£54,065
Innovative	Investment	£39,732,112,004	319,957	734,892	£124,180	£54,065
Comparators		£339,266,255,971	2,732,060	6,275,124	£124,180	£54,065
GSE excl. London		£858,709,295,979	8,598,306	21,419,652	£99,870	£40,090
Great Britain		£2,960,574,213,385	34,624,035	78,380,256	£85,506	£37,772

We also estimate what **sectoral shares** in North Essex might look like following a period of convergence with the comparators. Anticipated sector shares for North Essex and the comparator regions are shown

in Table 9 for selected years. If North Essex's economic profile has converged in terms of GVA shares as well as GVA per capita, it would reflect those shown in 2053.

Table 9: Baseline sectoral GVA shares for North Essex and comparators - 2016, 2036, 2053, 2071

North Essex Baseline	2016	2036	2053	2071
Agriculture, mining, electricity, gas, water and waste	3.4%	3.0%	2.8%	2.4%
Manufacturing	10.4%	8.5%	6.8%	5.2%
Construction	10.4%	10.9%	11.0%	10.7%
Distribution; transport; accommodation and food	19.8%	20.5%	20.3%	19.6%
Information and communication	3.8%	5.6%	7.4%	9.8%
Financial and insurance activities	3.9%	3.1%	2.5%	1.9%
Real estate activities	15.4%	13.0%	11.0%	9.0%
Business service activities	10.5%	14.7%	18.9%	23.9%
Public administration; education; health	18.4%	17.2%	16.2%	14.8%
Other services and household activities	4.1%	3.5%	3.1%	2.7%

Comparators Baseline	2016	2036	2053	2071
Agriculture, mining, electricity, gas, water and waste	3.1%	2.6%	2.3%	1.9%
Manufacturing	7.8%	6.1%	4.6%	3.3%
Construction	6.2%	6.1%	5.9%	5.4%
Distribution; transport; accommodation and food	19.2%	18.8%	17.7%	16.0%
Information and communication	10.8%	14.9%	18.9%	23.5%
Financial and insurance activities	3.6%	2.7%	2.1%	1.5%
Real estate activities	14.4%	11.5%	9.3%	7.1%
Business service activities	14.5%	19.3%	23.5%	28.0%
Public administration; education; health	15.7%	14.0%	12.5%	10.7%
Other services and household activities	4.7%	3.9%	3.3%	2.6%

Fiscal Impacts

Based on planned dwellings numbers for the Garden Communities, the current composition of housing in North Essex, and Council Tax rates, we estimate **Council Tax revenues** in 2036 and in 2071 (the end of the plan period) as for scenarios where there is no real-terms change (Table 10) and for a 1% annual rate of real-terms increase (Table 11).

Table 10: Council Tax revenue by Garden Community, no real-terms change in rates

Anticipated revenue, no real-terms change in Council Tax rates	West of Braintree	Colchester-Braintree Borders	Tendring-Colchester Borders	Total
2036	£4,823,094.84	£4,580,713	£4,177,635	£13,581,442
2071	£15,251,408	£21,913,138	£10,075,472	£47,240,018

Table 11: Council Tax revenue by Garden Community, 1% annual real-terms increase in rates

Anticipated revenue, 1% annual real-terms increase in Council Tax rates	West of Braintree	Colchester-Braintree Borders	Tendring-Colchester Borders	Total
2036	£8,172,569.31	£7,761,860.81	£7,078,859.15	£23,013,289
2071	£25,842,989.42	£37,131,063.89	£17,072,542.66	£80,046,596

The impact of the Garden Communities and economic strategy on **Business Rates** is also considered. Results for 2036 are shown in Table 12 and results for 2071 are shown in Table 13. These estimates are based on GVA figures for each year and scenario implied by our earlier analysis and assume that rateable value of commercial property and therefore Business Rates revenue grows in line with GVA.

Table 12: Implied Business Rates uplifts by scenario, 2036

Implied Business Rates uplift, 2036	Traditional	Lifestyle	£24,963,397
	Innovative	Lifestyle	£28,708,041
	Traditional	Investment	£45,177,849
	Innovative	Investment	£50,520,498

Table 13: Implied Business Rates uplifts by scenario, 2071

Implied Business Rates uplift, 2071	Traditional	Lifestyle	£125,048,556
	Innovative	Lifestyle	£127,444,877
	Traditional	Investment	£228,480,671
	Innovative	Investment	£228,480,671

Recommendations

Based on our research into economic opportunities, analysis of the area, and strategy scenarios, we set out **strategy recommendations** for the Garden Communities and wider area. We discuss below the broad components and considerations of the strategy, **sectoral factors** including likely locations for investments; finally, we propose a set of **KPIs** to measure the success of the project.

Components of the strategy

- **Quality of life and area visibility:** leveraging the design and housing mix of the Garden Communities themselves and wider sub-regional assets to boost North Essex's appeal as a place to live, work, and study, and to 'put it on the map' in the eyes of potential residents and investors;
- **Skills development:** working with employers and education providers to identify and meet skills needs, making use of support available under the Industrial Strategy where possible, and leveraging the existing strengths of the University of Essex;
- **Infrastructure:** using road, rail, and public transport improvements to enhance agglomeration, and best-in-class digital infrastructure to enhance the area's appeal to businesses across sectors;
- **Employment space:** intelligently siting new employment space in and around the Garden Communities to meet the needs of expanding local businesses and potential investors;
- **Business-education networks and partnerships:** further university-business partnerships to commercialise research, sectoral networks to win government funding.

Sectoral considerations

- **Construction:** using the opportunity from the Garden Communities, Port of Harwich, and University of Essex to make North Essex a hub for innovative construction methods, leveraging supply chain opportunities from new nuclear construction;
- **Creative and digital:** building on the rapidly-emerging cluster in and around Colchester, focusing on Tendring-Colchester Borders and Colchester-Braintree Borders. Encouraging expansion of the London-Stansted-Cambridge Corridor into West of Braintree and Colchester-Braintree Borders;
- **Finance and insurance:** using the position of Colchester-Braintree Borders along the Great Eastern Main Line to encourage investment by central London firms, including FinTech activity;
- **Logistics and manufacturing:** leveraging logistics opportunities from the Port of Harwich and Stansted Airport to build these industries around Tendring-Colchester Borders and West of Braintree, building on Braintree's existing manufacturing strength and supply chain opportunities in offshore energy.

Proposed KPIs

- **GVA per capita:** achieving a degree of convergence with comparators (extent to be agreed);
- **Participation/economic inactivity:** increasing labour force participation with a particular focus on Tendring given its current underperformance;
- **Deprivation:** tackling pockets of deprivation, mainly in Colchester and Tendring;

- **Skills:** increasing the proportion of the population with high skill levels, aiming to converge with the wider region;
- **Innovation:** targeting a higher level of patent applications;
- **Investment:** attracting significant domestic and foreign inward investments in key sectors.

1 Introduction

Garden Communities are an innovative and ambitious means of meeting housing demand in a sustainable, high-quality way. Wider economic strategy can ensure that Garden City Principles are met to the benefit of the whole of North Essex.

Background and context

Today, the North Essex (Essex Haven[15]) economy has **notable areas and sectors of strength**, for example the creative cluster in Colchester, advanced manufacturing around Braintree, and energy generation off the Tendring coast. There are **major opportunities and potential to unlock** from ultra-fast broadband, the rapidly-expanding University of Essex, neighbouring areas of strength and innovation, and its international connectivity by both sea and air. Nevertheless, North Essex's **economic performance lags that of its peers** in the wider region overall. This pattern is unlikely to change without intervention in the form of an **economic strategy for North Essex** to inform decisions in areas such as skills provision, employment space, and infrastructure.

Background to North Essex economic strategy

North Essex has economic strengths and opportunities but currently **lags** behind its peers in the wider region.

The Garden Communities are an ambitious project which will help meet **housing demand** and **raise awareness** of North Essex.

Delivery of the Garden Communities can form part of the **wider economic strategy** to benefit the whole sub-region.

The three **Garden Communities** in North Essex (West of Braintree, Colchester-Braintree Borders, and Tendring-Colchester Borders) are an innovative and ambitious means of meeting the substantial housing demand expected in the coming decades. These are being planned as sustainable communities that improve people's lives and are part of a wave of new settlements to be built along **Garden City Principles**. They also offer opportunities to develop the area's economic base, capitalising on upcoming economic and technological changes and raising the **visibility of North Essex** – for instance through housing design, public transport investments, and provision of much-needed employment space. Combined with wider economic strategy in North Essex they offer the potential for robust economic **growth**, high quality **employment** for new and existing residents, and a higher **standard of living** across the sub-region.

[15] As defined under the EU's Classification of Territorial Units for Statistics (NUTS), the NUTS 3 region Essex Haven Gateway includes Braintree, Colchester and Tendring – henceforth we refer to this statistical region as North Essex

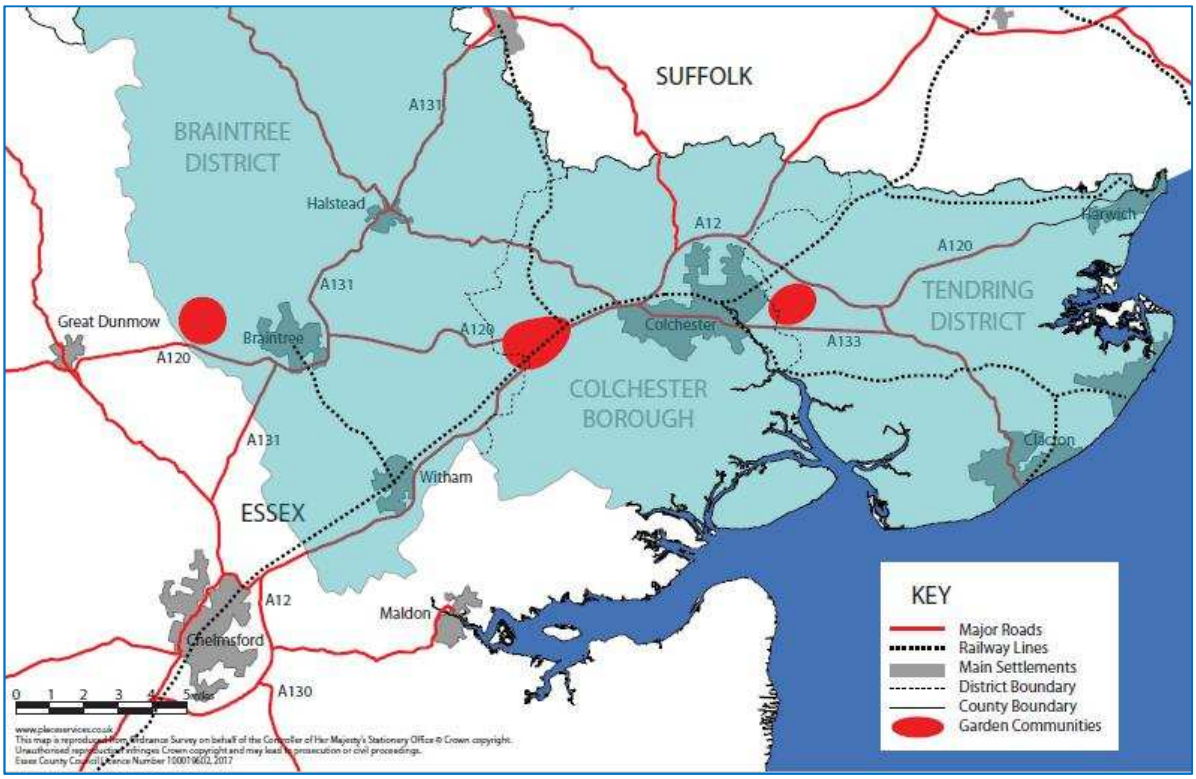
North Essex Garden Communities Ltd (NEGC Ltd) was created in January 2017 by four councils (Braintree District Council (BDC), Colchester Borough Council (CBC), Tendring District Council (TDC), Essex County Council (ECC)) to deliver the three garden communities in North Essex. This study was commissioned to provide NEGC Ltd and the four councils together with the University of Essex and Haven Gateway Partnership with a **robust economic vision and strategy** that will inform decisions shaping the whole area's economic, social and environmental development over a horizon of fifty years or more.

The Garden Communities are being planned to house a total of approximately **120,000 people** in the long term and under the Town and Country Planning Association (TCPA) principle of 'one job per house' will also need to provide approximately **43,000 jobs** with the planned **43,000 homes**. Their locations, shown in Figure 12, together with the planned long term numbers of homes in each are:

- West of Braintree - up to 10,000 homes;[16]
- Colchester-Braintree Borders - up to 24,000 homes;
- Tendring-Colchester Borders – up to 9,000 homes.

They are part of a wave of new settlements that represents the first concerted effort at planning along Garden City Principles since the highly successful original garden cities were built in the early 20th Century.

Figure 12: The locations of the North Essex Garden Communities



[16] West of Braintree will also take in part of Uttlesford District to the west, which will increase this number slightly

The Town and Country Planning Association (TCPA) have developed an up to date set of Garden City Principles, which include:

- Strong vision, **leadership** and community engagement;
- Mixed-tenure homes and housing types that are genuinely **affordable**;
- A wide range of **local jobs** in the Garden City within **easy commuting distance** of homes;
- Development that enhances the **environment**.

The TCPA states:

*"The Garden City principles are a distillation of the key elements that have made the Garden City model of development so successful, articulated for a 21st century context. Taken together, the principles form **an indivisible and interlocking framework for the delivery of high-quality places**. A Garden City is a holistically planned new settlement which enhances the natural environment and offers high-quality affordable housing and locally accessible work in beautiful, healthy and sociable communities…"*

This approach facilitates a long term, integrated approach to planning which is '**infrastructure led**' with transport infrastructure, schools, health and leisure facilities etc. coming forward alongside housing. The Councils will have control over other social aspects of the developments e.g. green space provision, planning for autonomous vehicles and ultrafast broadband, and facilities and infrastructure needed to support business.

Three critical economic features of the garden city concept that distinguish it from other developments were cited in an influential report in 2015[17]:

- "…***retaining value*** *in the place: the "uplift" in the value of the land can be shared more equitably than currently;*
- *Localising **stewardship** of community assets: rather than taxing developments, the ownership of assets is granted to the community itself, which helps foster positive relationships between residents, businesses and stakeholders; and*
- *Unlocking access to **patient capital**: the scale of garden cities makes them attractive to "patient capital" from long term investors*."

These features indicate the importance of understanding of interactions between the way garden communities are planned and the long term development of the local and sub-regional **economic base**.

Strategic rationale

Housing affordability

There is a **housing affordability** crisis in many parts of the country and it is most acute in the Greater South East. This is the result of a chronic gap between housing demand and supply. There is now an acute inter-generational divide in the housing market, with an 'insider – outsider' market that is

[17] "Making New Garden Cities Happen," Barton Willmore, Shelter, Urbed, Chris Blundell and Wei Yang & Partners, April 2015.

exacerbated by speculative behaviour. Existing homeowners have enjoyed capital appreciation while non owners have become increasingly squeezed as both prices and rents have risen at faster rates than incomes for years, particularly in 'overheated' parts of the country. For example, research by PwC into housing affordability shows that:

"*…buyers may now have to save for 19 years in order to buy their first home (assuming the deposit has to be raised entirely from their own savings without family assistance). In 2000, the same group would have been able to buy after saving for just 6 years; and in 1990 it took only around 2 years.*"

Rationale for the Garden Communities

Housing supply shortages and the resulting challenges for prospective buyers create an impetus for increased housebuilding and a focus on affordability.

Housing quality can be improved by planning communities and infrastructure on Garden City Principles rather than expanding existing settlements.

Economic opportunities can be grasped and local challenges can be addressed through the design of Garden Communities and the wider economic strategy that goes with them.

Thus there is a clear case for radically increasing **housing supply** and therefore its affordability. This will benefit those in the area, particularly younger and poorer residents, currently struggling to buy a home. Also, areas which offer affordable housing are likely to gain **economic benefits** since firms will be attracted to locations that workers can afford to live in and enjoy a good quality of life.

Housing deliverability and quality

At the local level, however, the provision of housing is often a highly contentious political issue and new developments often face determined opposition. Often this is a reaction to the poorly designed, sprawling housing schemes that have been built on the peripheries of existing settlements over the last fifty years or so, in which few social facilities have been provided and little consideration given to access to economic and leisure opportunities. Meeting the housing supply needs of the North Essex sub-region by **consolidating** a significant proportion (about half) of demand in the Garden Communities and planning them along Garden City Principles is a bold and sensible approach to addressing this issue.

This is supported in national legislation by an amendment to Section 16 of the **Neighbourhood Planning Act 2017**, under which the Secretary of State may make regulations allowing a local authority to oversee the development of an area as a new town[18]. It will support the creation of garden towns and villages by enabling the responsibility for any **development corporation** created under the New Towns Act 1981 to be transferred to a local authority or authorities. The intention behind this section was explained by Lord Taylor of Goss Moor, who was responsible for adding it, as:

"*This amendment is aimed at empowering local government communities to bring forward settlements of the highest quality, ensuring that the value that comes from development taking place is captured to create great places and deliver wonderful facilities for those places and is not captured in excessive*

[18] These functions will be transferred to local authorities through secondary regulations.

profits for landowners or developers, and ensuring that the Government's objectives in bringing forward the garden villages, garden towns and garden cities programme are met in terms of the delivery of what comes forward, with opportunities for small builders, self-builders and contract builders to grow and deliver in new ways better quality, more affordable homes and all the facilities in these places to create sustainable and vibrant 21st century communities."

Economic opportunities

An approach based on Garden City Principles also recognises a more **fundamental economic challenge**. The 'housing crisis' is in fact partly a reflection of a much broader set of economic problems associated with the distribution of effective demand. Globalisation has had profound implications for the structure of the UK economy, including **marked increases in income and wealth inequality**, which are manifest at the national, regional and local level. There has also been a spatial dimension to this. City centres and other knowledge intensive clusters have generally become more dynamic and increasingly competitive but other areas have fared less well. For example, more peripheral areas have typically failed to provide enough high quality jobs to replace those lost following **decline in their traditional economic bases**, for example manufacturing or seaside tourism, in the last decades of the twentieth century.

There is now a growing **political consensus** that intervention is needed to bring about more balanced and socially acceptable economic and social outcomes, including at a regional level. The focus is not on more ex post income redistribution – the UK in fact already redistributes more of its national income than most comparable countries - but rather to influence the structure of the economy in a way that provides a more equitable distribution of rewards from economic activity itself – hence the notion of "predistribution." At the national level, this is a main objective of the Government's emerging **Industrial Strategy**.

Role of NEGC Ltd Economic Vision and Strategy

The development of a long term economic vision and strategy as part of the overall planning of the Garden Communities will enable an **integrated set of interventions** to be planned at the sub-regional level that is fully aligned with the wider objectives set out above. This analysis is made with **the whole of North Essex in mind, not just the new communities**.

The analysis is intended to help **frame clear choices for the vision and strategy** that will help inform later decisions about issues such as:

- The **housing mix** in terms of types, tenures, and quality. This will be relevant to determining the approach to housing delivery including the role of different types of developer / housing provider, the role of self-build, off site construction etc;
- The design of **employment space provision** and the approach to marketing it and allocating it to different types of business / uses. This should reflect the balance between inward investment, growth of local businesses, incubation of new local start-ups;
- The approach to attracting / developing a more **productive workforce** and a more **inclusive sub-regional economy**, e.g. through detailed action plans for inward investment and skills etc;

- Strategic and local priorities for investment in **digital and transport infrastructure** / services and other 'public goods', including investment in 'place making' tailored to the vision for each garden community.

It needs to be recognised that **decisions need to be made in a context of uncertainty** about the future and that will inevitably be trade-offs and political choices, for example about choice of economic objectives, the relative importance of difference target groups and the balance between focussing on purely local objectives and helping meet wider regional objectives.

Scope and structure of analysis

Cebr has sought to assimilate data, evidence, and arguments to develop a powerful **economic narrative** in a way that will inform the choices about the planning and design of the garden communities and broader economic interventions set out above. Our intention has been to produce an ambitious, joined up and realistic **vision and strategy** that fully realises the area's potential in terms of both its 'people' and 'place' dimensions and takes full account of the broader **national and regional economic context**. It should also help contribute to the business case for investment in larger scale schemes to help meet the objectives across a broader geography, e.g. strategic transport plans that recognise the wider connectivity needs of the North Essex area.

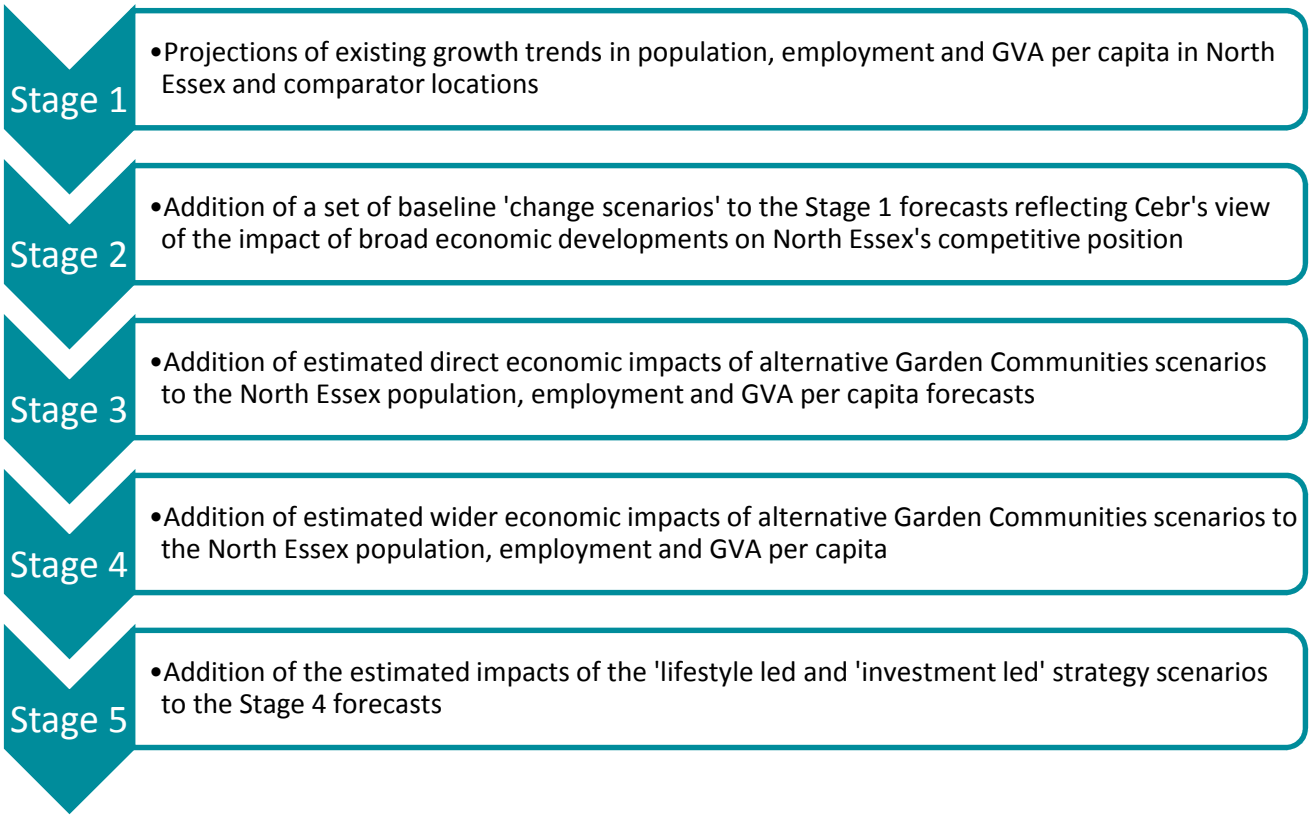
Cebr's starting point has been the work done to date by and on behalf of the promoters of the Garden Communities. This includes 'bottom up' forecasting of population and employment to provide a planning 'baseline' and other work to inform the approach to planning the sub-region's economic future. Our role has been to develop both the bottom up evidence base and provide further evidence of a more 'top down' nature that **fully explores options for *shaping* the future economic base** in the powerful way that is envisaged by NEGC Ltd's stakeholders. This analysis is set out in the rest of this report, which is arranged in the following structure:

- **A context-setting section** in which we define the economic geography of relevance to a vision and strategy that aims to unlock the full economic potential of the North Essex sub-region. This covers:
    - Examination of the competitive and complementary **relationships between different locations** and how these influence their economic performance;
    - The role that integrated **interventions and policies** can play in influencing a location's competitive position;
    - Consideration of the various **levels of economic geography** of relevance to the current and future drivers of the North Essex sub-regional economy;
    - A set of **comparator locations** that we use to consider the challenges and opportunities and to **calibrate objectives** for future development in North Essex;
- **A comprehensive baseline analysis** of the challenges and opportunities facing the North Essex sub-region covering:
    - **Crosscutting themes** that are expected to have an impact on the future trajectory of the North Essex economy, including new technologies, regional and industrial policy, changing working patterns and lifestyles, and Brexit;

  - **Themes that have a geographic dimension**, including demographics, labour markets, productivity, skills, sector development, housing and transport;

- **An analysis of strategy options** in which we set out:
  - **A 'toolkit' of opportunities** for leveraging existing plans and sector strengths to inform both the approach to delivering the Garden Communities and the wider sub-regional economic base;
  - **Two alternative strategy scenarios**, which are intended to provide a basis for the NEGC Ltd stakeholders to make strategic decisions about the direction of the vision and strategy;
- 'Baseline', 'with Garden Communities' and 'with Garden Communities and economic strategy' **forecasts of population, employment and GVA per capita**. These are built up in five stages of analysis as set out in Figure 2;
- **A set of strategy recommendations**.

Figure 2: Forecasting stages



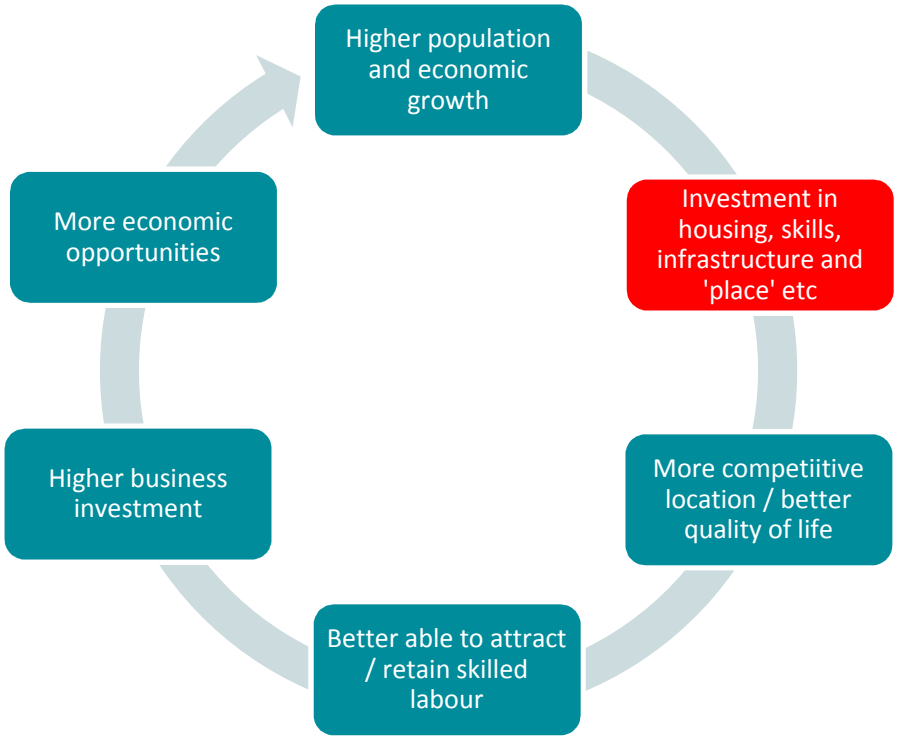
2 Defining the Economic Geography

North Essex sits within a prosperous wider region centred on London, containing multiple successful economic centres. Choices in construction of the Garden Communities and wider economic strategy need to be considered in this context.

Economic performance and location

The starting point for considering the challenges and opportunities to be addressed is a recognition that places both **compete with and complement one another**. Significant variations in economic performance emerge between different places over time as locational advantages and disadvantages[19] influence what economic activity takes place where.

Figure 13: Interactions between location and economic growth



[19] In the first instance these would have been determined by natural factors such as climate and the availability of natural resources. Transport infrastructure allows people to take advantage of activities that take place in different locations and is itself an important locational factor since its quality (i.e. frequency) is generally determined by the size of population that will use it, i.e. it is subject to very significant economies of scale. In other words as a place grows it will be able to support better transport services, which will in turn make it a more attractive location.

These variations are exacerbated by **feedback processes** between the opportunities places offer and the decisions people make about living and working in them. For example, highly skilled people are likely to be more motivated to seek out more distant work opportunities and as they move to take advantage of such opportunities they are likely to attract others to move with them. As a result, **clusters of economic activity emerge which enjoy *economies of agglomeration***. In simple terms, people and investment are attracted to successful places; as they grow these places become more productive, which attracts more people and investment, and so on. This process is illustrated in Figure 13.

It should be recognised that decisions need to be made in a **context of an uncertain future** and there will inevitably be **trade-offs and political choices**, for example about economic objectives, target groups, and the balance between local and wider regional objectives.

The attractiveness of different locations for various activities (working, living etc.) develops over time, i.e. **it is path dependent** and while many of the factors determining locational advantage / disadvantage are endogenous (internal to the process), they require planned and coordinated intervention in the form of investment in various 'public goods' that cannot be expected to be provided in an economically efficient way through competitive markets. In appropriate circumstances **such intervention can generate a step change in a location's economic performance**, provided it is able to unlock significant unexploited 'economic potential'.

Understanding the nature and scale of a location's economic potential requires **consideration of its 'comparative advantage' in relation to other locations**. Transport and digital communications, by enabling economic interaction *between* locations, allow markets for goods, services and workers to develop at a variety of different levels of geography, in accordance with their various supply and demand characteristics. For example, while there are global markets for many products, some services, e.g. theatre performances or other specialist cultural experiences, might only be available in larger cities. Employment markets are typically more local or regional because they are limited by the time and money people are willing to spend travelling to work. Generally, there will be more economic interaction between places that are close to one another than those that are more distant, while larger places will have stronger interactions with other locations, over larger distances, than smaller places.

This suggests that the **interactions between place and economic growth** described above operate not only at the local or sub-regional level but at a broader level of geography. In considering what an optimal economic growth strategy looks like, the competitive position of North Essex now and in the future needs to be understood, as far as possible, at all the **relevant geographic levels**. This will involve finding an appropriate balance between its different roles in (a) competing with other locations and (b) complementing activities in other locations. Moreover the balance is likely to differ between different parts of North Essex, in response to more **local factors**. This indicates that the approach to optimising the strategy will involve finding a blend of different means of:

- **Enhancing the competitiveness of the sub-region**, i.e. shifting its 'comparative advantage', for example, by increasing its attractiveness as a place for workers to live and work and for businesses to invest in;
- **Mitigating any residual locational disadvantages**, for example by providing improved transport links or training to enable workers to access better opportunities – both within the sub-region and between the sub-region and other locations.

Another way of putting this is in terms of finding the right balance between (a) developing the sub-regional economic base[20] and (b) developing the role the sub-region plays in the wider regional economic base. In the next sections we consider the various levels of North Essex's economic geography, to help ensure that the strategy is informed by a comprehensive view of the **sub-region's competitive position**. We start at the broad regional level within which North Essex sits, the Greater South East (GSE).

Economic Geography

The UK's economic core

The North Essex sub-region is located within the **Greater South East** of England[21] (GSE), which contains the "economic core" of the UK. The GSE is one of Europe's most prosperous regions and, like all of its continental peers, it contains a **major urban agglomeration** at its heart. London is in fact one of only a handful of world cities that compete at a global level for a range of very high value added knowledge based service activities. It is able to play this role because it has benefitted from a very powerful process of agglomeration-driven growth, as described in the previous section. As a result its workers are highly productive compared to the UK average.

Wider regional picture

North Essex sits in a wider region centred on and heavily influenced by **London**.

Commuting is a feature of the areas around London but there is a distinct and diverse economic base beyond the capital.

An '**arc of prosperity**' around west and north London contains much knowledge-intensive industry, multiple centres of economic activity, and a high quality of life.

Coastal areas provide international connections but also experience socioeconomic challenges.

London's locational advantages for the high value activities in which it specialises are highly immobile because they are dependent on the enormous network effects enabled by **high levels of investment sunk into the city's transport and communications systems** over many decades and more. While the degree of network connectivity that supports London cannot be replicated elsewhere, its benefits, and those of the economy it supports, are spread to people and businesses across a wide area of the Greater South East and beyond in different ways.

Large numbers of London workers live in the surrounding region, where they find the affordability of housing and quality of life available to them more than compensate for the time and money costs of travelling to work in London. The relatively high earnings they make in London support local economic activity.

[20] The economic base or 'export base' is defined by Rowthorn as consisting of '…all those activities which bring income into the region by providing a good or service to the outside world, or provide locals with a good or service which they would otherwise have to import.' This can be contrasted with local 'population serving' services supported by the economic base..

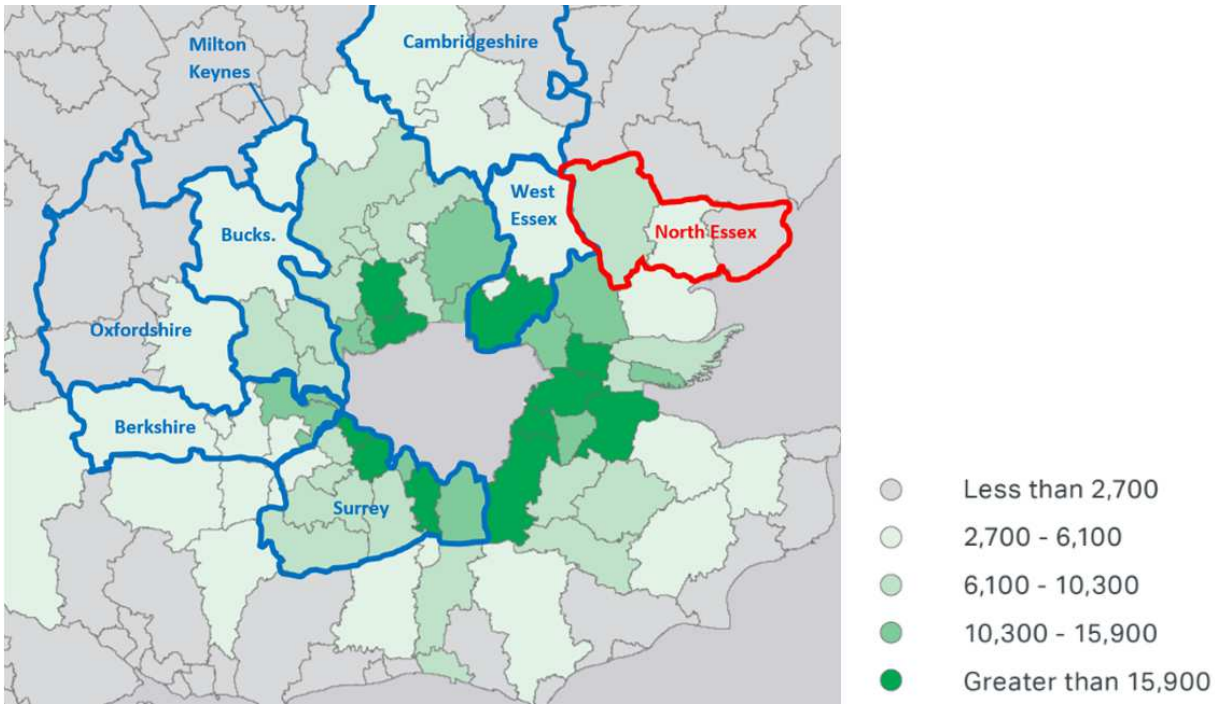
[21] Which contains the East of England, South East of England and London.

Within the Greater South East there is also **a strong economic base beyond London**, in which the availability of a high quality of life is also an important factor. In particular, to the west and north of London there is an '**arc of prosperity**' containing clusters of highly performing knowledge intensive sectors in and around locations such as Reading (ICT, professional services), Oxford (life sciences, information technology, motor manufacturing) Milton Keynes (e.g. corporate headquarters, advanced manufacturing) and Cambridge (life sciences). The local and sub-regional economies in these locations are resilient and well diversified. In fact, the Commission on Sustainable Development in the South East, which reported in 2005, found that despite London's apparent predominance, the region, particularly its western side, is intrinsically quite **polycentric**[22]:

"*Essentially, especially on the western side, the region contains an exceptionally large number of highly independent FURs [Functional Urban Regions], which have high degrees of self-containment but which also interact with each other as well as with the central London core*"

These locations depend on **proximity to and interaction with London** in a variety of ways. While they tend to be popular commuter locations, as shown in Figure 14[23], their local economic bases also benefit from access to the range of specialist services available in London and from the advanced transport system that the region as a whole supports[24], so they are not simply dormitory locations supplying labour to the capital. London's global reputation and its international and national transport connections enable it to play an important 'gateway' function that promotes tourism, trade and investment across the GSE.

Figure 14: Commuting flows (number of people) into London by local authority, 2011



[22] It was found to have a polycentricity index of 0.15. This compared to 0.02 for the highly monocentric Île-de-France and a range of 0.15-0.20 in the traditionally "polycentric" regions of Randstad Holland and Rhine-Ruhr.

[23] Raw map from draft London plan https://www.london.gov.uk/what-we-do/planning/london-plan/new-london-plan/draft-new-london-plan/chapter-2-spatial-development-patterns/policy-sd2-collaboration-wider-south made using 2011 Census data

[24] The GSE supports an advanced and comprehensive transport system meeting a multitude of requirements for international, national, regional and local travel because of the scale of demand concentrated in the region as a whole, particularly London.

'Non – core' areas of the GSE

Coastal and more peripheral areas of the GSE tend to have more mixed economic fortunes. **Coastal communities tend to have an older age profile and in some cases there are high levels of deprivation** with significant issues in relation to worker productivity and under-participation in the workforce. The region contains a number of **major ports both for passengers** (e.g. Dover, Harwich, Southampton) **and freight** (Felixstowe, London Gateway, Southampton) which support a wider local economic base in these locations. **Energy generation** plays an important local economic role in some areas, particularly on the North Sea coast where there are nuclear power sites at Bradwell and Sizewell and a growing offshore wind sector.

North Essex

Portrait of North Essex

The North Essex sub-region reflects some of the more general characteristics of the Greater South East, but also **contains considerable diversity**.

Local authorities: high-level characteristics

Colchester: rapid population growth, rapidly developing creative and digital economic strengths, good connection to London

Braintree: established base in manufacturing SMEs, proximity to Stansted, infrastructure constraints

Tendring: static ageing population, deprivation challenges, visitor economy, strengths from Port of Harwich

The main population centre is the growing regional centre of **Colchester**, which has an independent economic base with strength in ICT, finance and higher education. Colchester also houses many London commuters and this is reflected in the frequency and quality of rail services[25] and the orientation of its major road and rail links (the GEML[26] and A12), which radiate outwards from London. This infrastructure is under capacity pressure and is in need of enhancement[27].

The **creative sector in Colchester** currently makes up 8.8% of businesses, 5.7% of employment, and 7.5% of GVA. Nesta's 2016 report *The Geography of Creativity in the UK* identifies an increasing concentration of creative activity in London and its periphery and names Colchester as the **8th fastest-growing creative cluster** (out of 47) in the UK, with particular specialisations in digital marketing technology, coding, and publishing. Therefore it is unsurprising that the town is identified as part of the Thames Estuary Production Corridor[28], an area stretching from central London into Essex and Kent which could become a globally competitive production corridor.

[25] Two fast services an hour to Liverpool Street with a journey time of around 45 minutes and slower services per hour with journey times of around an hour.

[26] The Great Eastern Main Line, the main rail route from London to Norwich.

[27] A programme to renew the entire commuter and intercity rolling stock fleet is underway. There are plans to increase line speeds to enable the 'Norwich in 90 [minutes]' ambition to be achieved.

[28] https://www.london.gov.uk/sites/default/files/tepc_vision_2017.pdf

There is a successful creative incubator in Colchester town centre[29] and the Innovation Centre at The University of Essex, due for completion in 2019, will provide **commercial space for knowledge-intensive businesses**.[30]. If the start-ups and freelancers which Colchester is clearly good at attracting can be helped to scale up into larger businesses – and enticed into staying in Colchester rather than relocating to London when they do so – an opportunity exists for this sector to create high-skilled, high-productivity employment.

The **average age of Colchester's population is lower** than that of North Essex as a whole and the rate at which the **population is growing** is considerably higher. There are some pockets of deprivation in the town and there has been a measurable increase in acute social problems in recent years. There is a largely rural hinterland in the remainder of Colchester District, which houses significant numbers of commuters. Constable Country, which has a significant **visitor economy**, lies partially within the district to the north east of Colchester town and spans the Essex-Suffolk border. The town itself draws on its Roman and Norman history to drive tourism.

Braintree is a smaller employment centre that plays a range of more local service and administrative functions but also maintains a traditional **economic base with a relatively large manufacturing sector** relative to North Essex and the wider region. This sector includes successful SMEs in specialist activities such as aerospace components, laboratory equipment and food additives. For example Precision Aerospace Component Engineering (PACE)[31] produces precision components for domestic and export markets. In the town of Witham there are two **innovative producers in the glass and windows industry**[32].

The surrounding district is largely rural in nature. A proportion of Braintree District residents **commute to London and other centres**, particularly from Witham which is on the GEML south of Colchester. A branch line there connects the town of Braintree with an hourly service to Liverpool Street. There has been some investment in road links but **connectivity with Stansted, Cambridge and other parts of the GSE is constrained** by the absence of 'orbital' rail connectivity, to the west of North Essex. The east-west A120 route has only been partially upgraded and there are lengthy sections of single carriageway between Braintree and Colchester.

Close to Braintree District is **Stansted Airport**[33] (around 15 miles from Braintree town) and there is a good road connection (this stretch of the A120 is dual, in contrast to the eastern route towards Colchester). Stansted is London's third airport and the UK's fourth busiest, serving 25.9 million passengers in 2017[34], with **ambitious expansion plans** now underway. The airport is the largest single employment site in the East of England, employing over 10,000 people across 190 companies on site.

Tendring contains a number of coastal communities, with a **higher proportion of older residents**, and significantly **higher levels of social deprivation** than elsewhere in North Essex. There are frequent rail services between the main coastal towns and Colchester which are a legacy of their formerly important seaside tourism from London. The decline in tourism has led to a glut of low price, low quality

[29] 37 Queen Street, which offers 12,000 sq. ft. of lettable space for creative freelancers and is fully occupied.

[30] 38,000 sq. ft. of commercial space will be available for both start-ups and established businesses.

[31] It employs 113 people according to Companies House records filed in March 2017.

[32] Euroview Architectural Glass and Crittall Windows.

[33] It is further from other parts of North Essex (around 30 miles to Colchester and 48 miles to Clacton) and transport links are much less good as the A120 only has a single carriageway between the A12 and Braintree. There are no east – west rail connections to Stansted from North Essex

[34] This represents an impressive recovery following a period of prolonged decline after 2008.

accommodation in places like Clacton and Jaywick and this has attracted new residents from more deprived social groups. **Harwich remains an important port for passengers** and has an operational and maintenance role in **servicing the growing off-shore wind sector**. Otherwise the economy in Tendring is made up of generally lower value activities, including seasonal tourism, and the economy is more geared towards population-serving rather than 'export-driven' activities. Away from the coast Tendring is largely rural, with small, dispersed settlements.

Working and commuting patterns in North Essex

Using 2011 Census data on usual residence and place of work provided via Nomis, the ONS's labour market data service, we present insights on the nature of **commuting within North Essex and commuting interactions with the surrounding area**. Data tables are provided in Appendix 1.

Table 14 shows that **each of the three North Essex authorities has more out-commuters than in-commuters**, though Colchester is close to having as many employees as it does workers, reflecting its status as a regional centre.

Table 14: Total inflows and outflows by local authority, 2011

	Braintree	Colchester	Tendring
Inflow	**15,184**	**22,968**	**6,763**
Outflow	**31,765**	**24,850**	**17,412**
Net change	**-16,581**	**-1,882**	**-10,649**

Commuting flows between the three local authorities within North Essex are illustrated in Figure 15:

- **Braintree and Colchester exchange roughly equal numbers** of commuters;
- **Tendring's outflows to the other two authorities far exceed inflows**, with those to Colchester about ten times larger than those to Braintree.

Figure 16 considers **commuting flows into and out of North Essex as a whole**. London is taken as one entity, along with the five local authorities receiving the highest numbers of North Essex commuters.

- **London is the dominant commuting destination** for the sub-region and for Braintree and Colchester residents in particular, with outflows to London for each exceeding those to the other two North Essex authorities;
- **Other nearby districts are major destinations**, with patterns as one would expect given their proximity to each of the local authorities – for instance there are substantial flows out of Braintree to Chelmsford and Uttlesford;
- **Inflows from these districts are also significant**, for example Babergh in south Suffolk sends more workers to North Essex than it receives.

Figure 15: commuting flows within North Essex, 2011

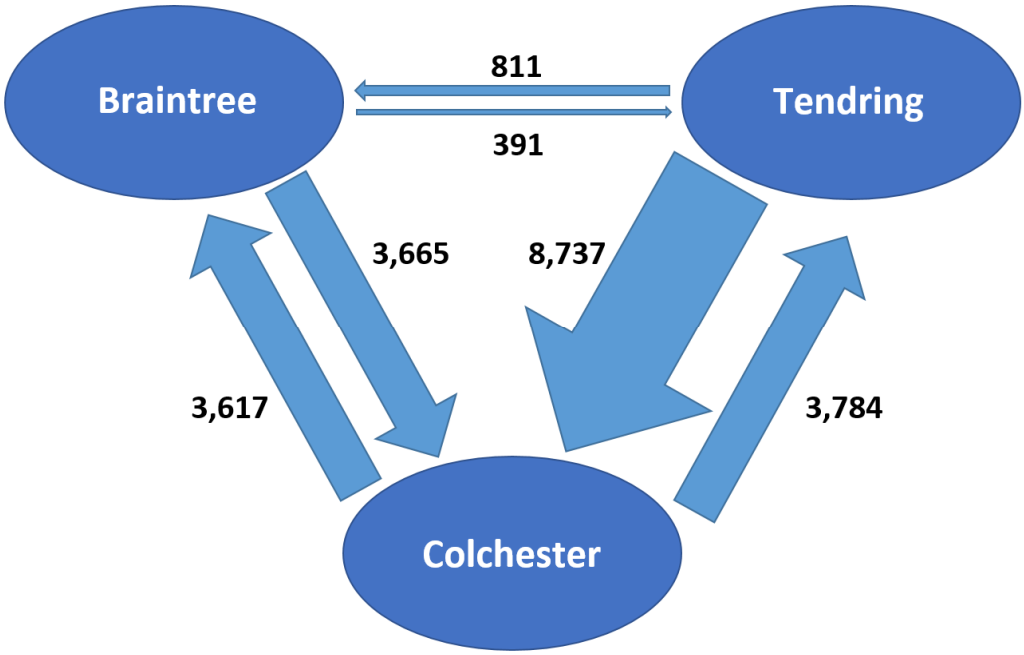


Figure 16: key commuting flows between North Essex and surrounding area, 2011

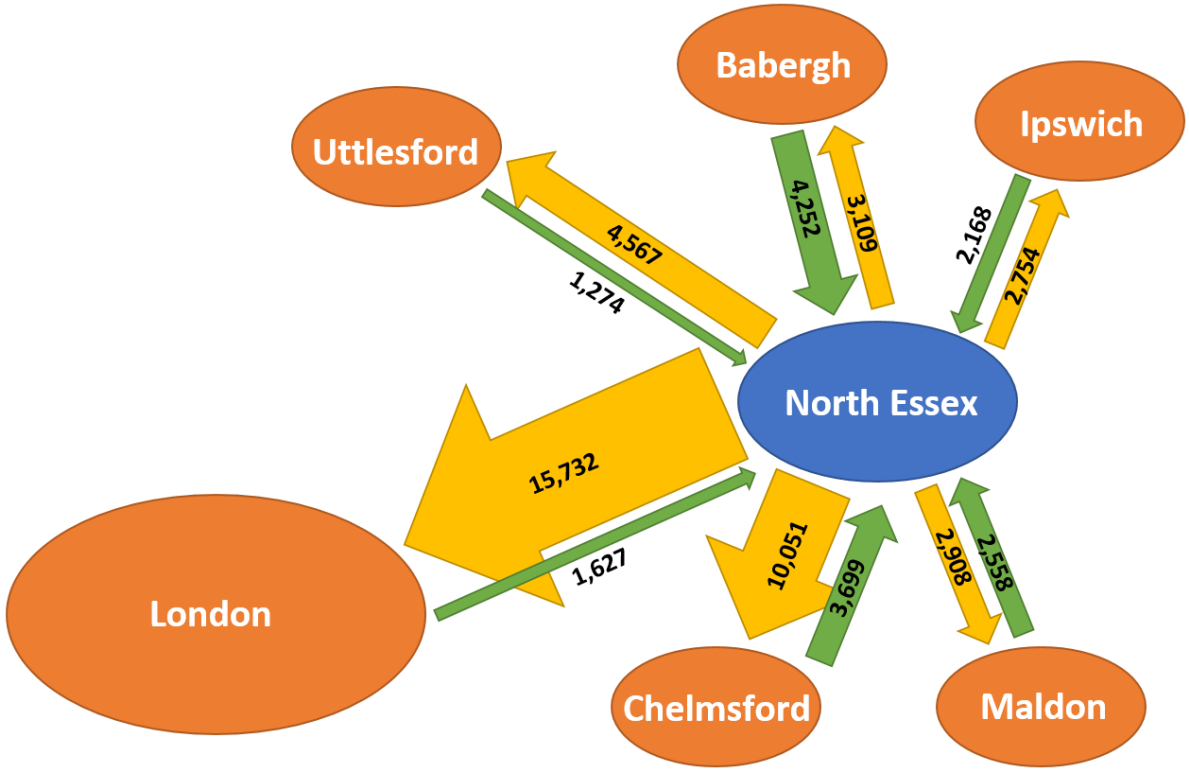


Table 15 shows outflows only, broken down to the level of the North Essex authorities. Key insights on **commuting to and from the surrounding area** include:

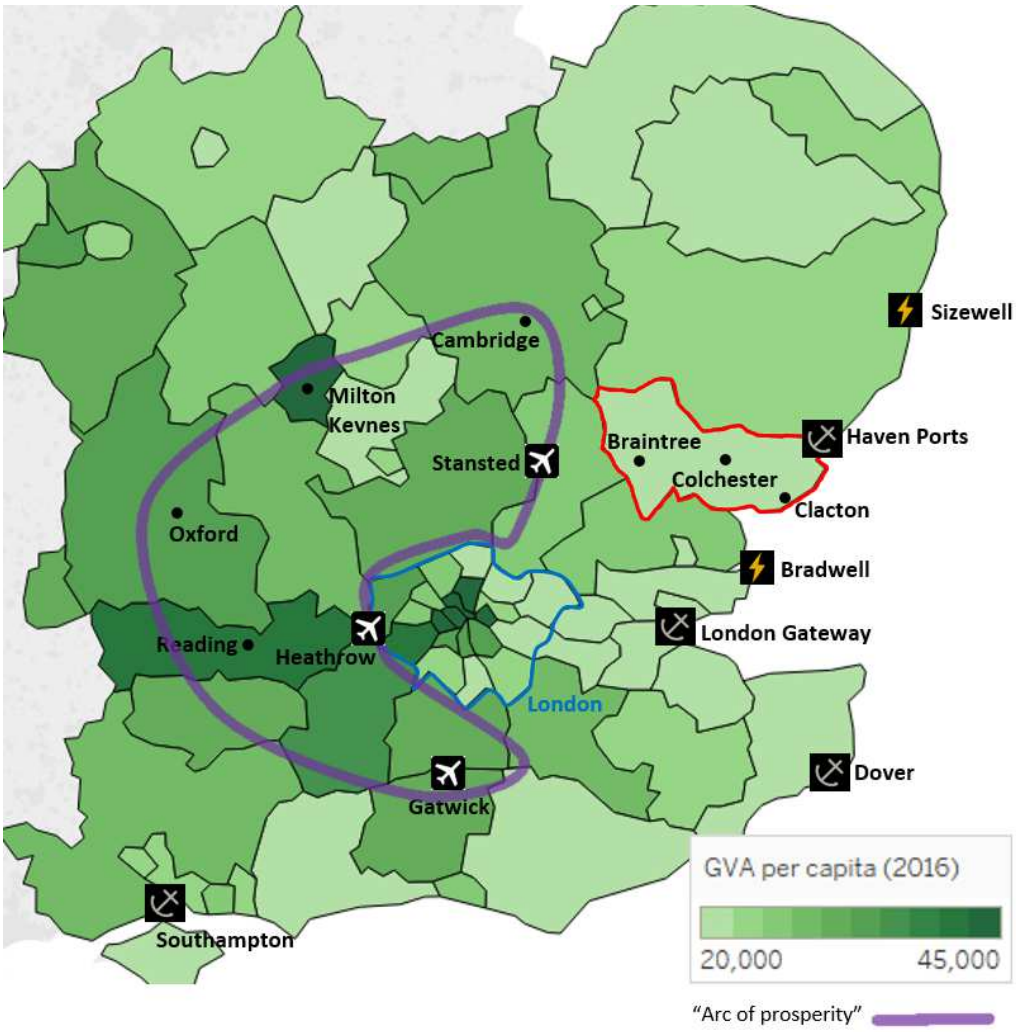
Table 15: Commuting out of the North Essex local authorities, 2011

	Usual residence		
Place of work	Braintree	Colchester	Tendring
Braintree	26,964	3,617	811
Colchester	3,665	45,269	8,737
Tendring	391	3,784	26,124
London	7,151	6,093	2,488
Chelmsford	6,854	2,525	672
Uttlesford	3,830	483	254
Babergh	1,211	1,266	632
Maldon	1,363	1,384	161
Ipswich	249	1,434	1,071

The economic opportunity for North Essex

Overall **North Essex is not currently enjoying the same level of prosperity** as some other areas within the 'arc of prosperity' that makes up the economic core of the Greater South East beyond London.

Figure 17: Economic Geography of the Greater South East



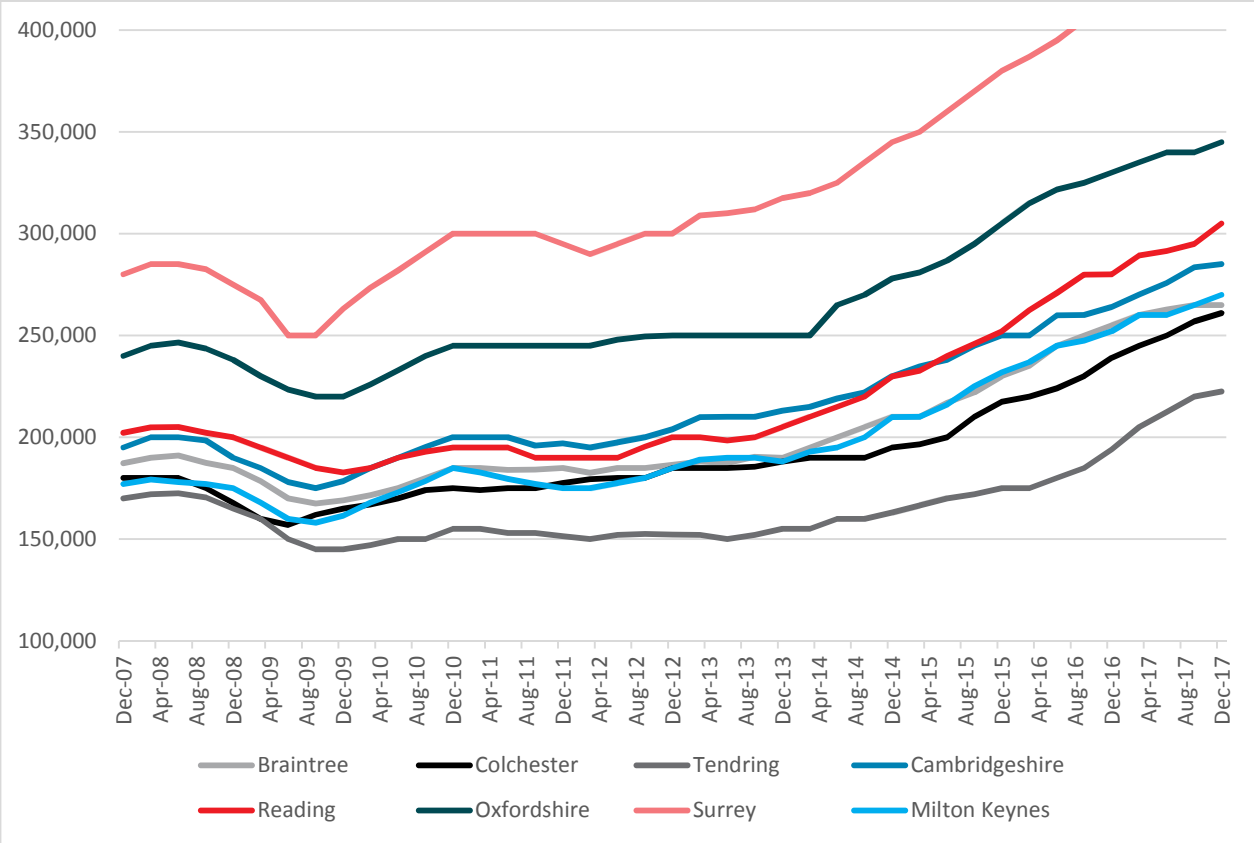
While North Essex shares some characteristics with parts of the 'economic core' of the GSE, it has **unexploited potential** which, if unlocked, could enable it to narrow the gap and eventually catch up with these nearby areas. This will mean **extending the arc of prosperity eastwards** and North Essex becoming more fully integrated in it. The extent to which this opportunity is realised depends on the area's competitive position in relation to broader economic challenges and opportunities.

A number of **strategic growth pressures and constraints** facing the economic core of the Greater South East are considered in the next section. There are various ways in which North Essex could respond to these in a way that is likely to provide mutual economic benefits. These are considered in the Challenges and Opportunities section that follows. In the light of the above discussion, a summary of the economic

geography relevant to North Essex is shown in Figure 17. This map also illustrates GVA per capita by NUTS3[35] region.

House price movements over the last 10 years are shown in Figure 18 for each of the North Essex local authorities and selected other areas in the East and South East of England. Reading and Cambridgeshire, and to a greater extent Surrey and Oxfordshire, have much higher house prices than the North Essex authorities, suggesting they are **more 'in demand' as places to live and work**. Of course, high house prices are not intrinsically desirable and it is noteworthy that Milton Keynes has similar house prices to those seen in Braintree, suggesting that it has achieved the ideal of economic success and affordable living – though this may also reflect differences in housing quality.

Figure 18: Median price paid (all houses), North Essex authorities and selected others, Dec 2007 - Dec 2017



[35] NUTS is the Nomenclature of Territorial Units for Statistics, a standard geocoding classification produced by Eurostat. NUTS1 regions are the largest e.g. East of England, followed by NUTS2 e.g. Essex, then NUTS3 e.g. Essex Haven (North Essex)

Comparator locations

In order to examine the challenges and opportunities of the North Essex sub-region in the **context of an appropriate range of geographies** we have identified a set of comparator locations in the Greater South East outside London. These will also provide a means of calibrating our North Essex forecasts in the baseline and 'with strategy' scenarios.

Our data comparisons include North Essex and, where appropriate and available, the three districts it contains (Colchester, Braintree and Tendring) together with a set of eight other NUTS3 areas in the area immediately around London and the London-Stansted-Cambridge corridor. These are:

- West Essex;
- Cambridgeshire;
- Milton Keynes;
- Buckinghamshire;
- Oxfordshire;
- Berkshire;
- West Surrey;
- East Surrey.

These areas presently enjoy higher GVA per capita than North Essex, and could all be considered part of the 'arc of prosperity'. Nevertheless, on the basis of the foregoing discussion, we believe they **represent a level of economic success that North Essex can reasonably aspire to attain**, given its location and potential linkages. Comparisons with the **Greater South East excluding London**[36] (the 'wider region') are also included, where appropriate.

We use the comparators to frame much of the analysis of challenges and opportunities in the following section, which contains a wide range of metrics. We also provide economic forecasts in Section 5 for the comparators. The **key economic measure of success** will be the degree to which prosperity in North Essex – measured primarily but not exclusively by GVA per capita – converges with these comparators.

[36] i.e. the East of England and South East England

3 Strategic Challenges and Opportunities

Wider technological and political phenomena will influence the economic trajectory of North Essex with or without the Garden Communities.

A review of current economic characteristics relative to comparators informs the scale of the opportunity and how it might be grasped.

Introduction

In this section we examine a range of **strategic challenges and opportunities** that we consider likely to influence the sub-region's economic potential through the period of the strategy. This forms the main element of our **baseline analysis** and therefore it does not consider the opportunities arising from the fact that a decision has been made to proceed with the Garden Communities. Rather these are the independent factors that are considered important in **framing the feasible choices** about the economic vision and strategy.

The strategic challenges and opportunities comprise:

- A set of high level themes that represent **significant expected changes** in the competitive environment of the GSE and / or UK and which are relevant to the future of North Essex, covering:
    - **Technological change and environment themes**:
        - Digital communications;
        - Automation of production and services;
        - Personal mobility;
        - Construction techniques;
        - Energy market change;
    - The UK's withdrawal from the European Union ("**Brexit**")
    - The Government's **Industrial Strategy**;
    - Changing **working patterns and lifestyles**;
- A set of themes that have more meaning when considered in the **context of particular areas or places**, relating to population characteristics, industry and economic structure, and themes related to strategic planning and development. In general these need to be considered at different levels of geography in order to capture the range of issues of relevance to this vision and strategy. We provide

data at the level of the UK, GSE excluding London, comparators, North Essex, district level as appropriate in this section. The themes cover:

- **Population and workforce**:
  - Expected growth and ageing of the population;
  - Relative levels of deprivation and standards of living;
  - Various aspects of labour market performance;
  - Productivity and skill levels;
- **Industry / economic structure**:
  - Business sizes
  - Sectoral strengths / gaps;
  - Planned investments and interventions;
- **Strategic planning and development**:
  - Housing supply shortages and developable land availability;
  - Strategic growth corridors;
  - Infrastructure - transport and digital.

Technological change and environment

Digital communications

As well as forming important new areas of economic activity in itself, digital communication technology is notable for having transformed the way a vast range of human activities are undertaken. Over the past 25 years or so it has not only **displaced a series of established technologies and industries** but reshaped the way the whole economy, and society at large, operates. From an economic perspective it has, for example, **reduced information barriers and other inhibitors of competition** in many industries, resulting in a massive shift of power from producers to consumers. More generally it is changing the competitive structure of the economy and also its social

Overarching technological themes

Digital communications and automation will continue to transform sectors of the economy and the nature of employment within them.

Innovation in **personal mobility** could have major implications for spatial development and locational advantages.

Rapid modernisation of **construction techniques** creates challenges for established industry, but could solve labour market challenges and create high-value employment

Changes in the **energy** market will see the competitive position of renewables improve.

organisation, and this is likely to have spatial implications over time, which may be of relevance to the future of North Essex. This is considered further in the section below on changing working patterns and lifestyles.

A range of sectors that have remained only marginally impacted by digital communication technology are expected to face **major disruption** in the coming decades. In some cases digital and other technological innovation is expected to combine with environmental and other pressures to bring about change.

Automation of production and services

Robotics and Artificial Intelligence (AI) are expected to bring about a major shift in levels of **automation of production and services**, which will have profound impacts in the labour market. A recent PwC study[37] found that around **30 per cent of all UK jobs are susceptible to automation over the next 15 years or so**, although in many cases the nature of jobs will change rather than disappear. The study also found that:

- The highest likelihood of automation appears to be in sectors such as **transport, manufacturing, and wholesale and retail**. The likelihood is lower in education, health and social work;
- Male workers could be at greater potential risk of job automation than female, but **education is the key differentiating factor** for individual workers;
- Automation will boost **productivity and wealth**, leading to offsetting additional job gains elsewhere in the economy but there is a risk that **income inequality** will rise;
- Economic, legal and regulatory constraints may restrict the pace and extent of increases in automation in practice.

A related phenomenon is the increasing ability to **customise products and services** through technology such as 3D printing in ways that were not previously possible. It is plausible that the trend of manufacturing activities migrating overseas to take advantage of a lower cost base will be reversed, i.e. a process of '**reshoring**' as a result of a shift in the balance between the 'push factor' of higher labour costs (with automation reducing the labour component in overall production costs) and the 'pull factors' of international logistics costs, higher skills requirements, and the need to be increasingly responsive to specific customer requirements. Therefore **artificial intelligence may create new knowledge-intensive industries**.

Personal mobility

Personal mobility is set to be revolutionised in the coming decades through breakthroughs in a range of technologies from energy generation and storage to digital processing power and AI. **Electrification and automation will make personal travel cheaper, cleaner, safer, easier to access, and more reliable**. Notions of public and private transport will become more blurred and payment mechanisms will change. **Transport and energy supply infrastructure will change**. There will be major social implications and since

[37] PwC, March 2017

the spatial development of towns and cities will be affected it is a key factor to consider in various aspects of planning for the Garden Communities.

Construction techniques

Offsite construction is set to substantially change the nature of the construction industry. As modular construction of rooms and panels takes place in factories with only the final assembly of these parts taking place onsite, **fewer but more skilled employees will be required** – for instance bricklayers will be less in demand but more technically-skilled staff will be required to operate and oversee automated machinery.

A complementary technological innovation rooted in digital communications is Building Information Modelling (BIM), which is a 3D model-based approach to designing and managing building projects. BIM, with carbon and efficiency analysis tools, can be used to **optimise the construction and long-term carbon footprint** of new-build developments. This is increasingly becoming a measure alongside cost in the assessment of designs. Within offsite construction it can be used to create **bespoke, energy-efficient designs**. As a result of government policy requiring its use in centrally-procured projects since 2016, **the UK is a world leader in BIM. Digital skills and connectivity are key to its effective use.**

The move towards a high-productivity, skill- and capital-intensive rather than labour-intensive model is welcome for two key reasons. First, it should permit an **acceleration of housebuilding and alleviation of Britain's housing shortage**. Second, the traditional construction industry is struggling to maintain staffing levels – *The Farmer Review of the UK Construction Labour Model* (2016) estimated that on current trends the available **construction labour force will decline by 20-25% over the next decade**, a trend which might be accelerated by future constraints on low-skilled labour from the EU27.

As offsite construction is used more widely and begins to play a major role in residential as well as commercial/industrial construction, the industry is likely to spread beyond its current geographic concentration in the North and Midlands and factories, possibly organised in clusters, are expected to exist at the regional or sub-regional level. As tasks currently completed at a decentralised, on-site level are centralised within larger factories serving a wider area, **we can expect construction to experience significant growth within some localities and significant decline within others**.

Energy

The energy market is in a state of flux. **Environmental and resource pressures** are driving radical technological change. As a consequence, a range of strategic challenges and opportunities have emerged in recent years[38], including:

- **Decreasing demand** due to transition from industrial to service economies, energy efficiency and demand-side management;
- **Decarbonisation** driven by **climate related policies**, but also resulting from reductions in the **cost of renewable generation** – especially solar and wind energy;

[38] Based on Cebr energy sector analysis.

- Destabilisation and **diminishing supply security** resulting from high penetration of intermittent renewable generation;
- **Electrification of transport** due to climate and air quality concerns, potentially stressing power supplies and transmission grids;
- Potential **electrification of space heating** due to climate concerns.

There are significant opportunities for capitalising on these circumstances in North Essex, as explained in the strategy options sections below.

Withdrawal from the European Union

Clearly considerable uncertainty remains as to the terms of the UK's departure from the European Union and even with regard to whether there will be a transition period after formal departure in March 2019. Cebr has reviewed the range of likely Brexit outcomes and considers the following issues to be material to the economic strategy decision-making for North Essex. These are summarised below:

Brexit

Labour supply challenges in sectors dependent on low-skilled workers may arise, but technological change could offset these.

The nearby Port of Felixstowe can take advantage of any growth in **non-EU trade**, with positive implications for inward investment, for instance **reshoring manufacturing**. However, new **trade frictions** with the EU may pose challenges for existing industry.

Any decline in the **Central London economy** would have negative effects on tax revenues and disposable incomes, but could increase the supply of high-skilled labour.

All of the above are highly dependent on the outcome of Brexit negotiations.

- Future **restrictions on low-skilled immigration from the EU27** are likely to pose labour supply challenges for sectors currently reliant on it including **agriculture, social care, and construction**. Health and social care also has to contend with increasing demand from an ageing population. However, the ongoing move towards offsite construction – a skill- and capital-intensive rather than labour-intensive model – may offset the loss of unskilled labour in construction and even free it up for other industries;
- The **globally-oriented Port of Felixstowe** largely handles non-EU trade (73% of 2016 traffic by tonnage) and has the infrastructure for handling of goods under WTO (World Trade Organisation) rules. It may therefore gain importance after Brexit, particularly if **new trade deals are struck**, making North Essex a stronger location for manufacturing investment;
- **Trade frictions may adversely affect integrated supply chains** between Britain and the EU27, e.g. in the aerospace and automotive industries. The recommended mitigation strategy is to ensure there is a well-diversified economic base in North Essex;

- Future prospects in some **financial and business services are sensitive to the outcome of negotiations**, e.g. financial passporting rights. Any resulting decline in employment in high value sectors in the central London economy would have a disproportionate impact on tax revenues and could therefore lead to cuts in public services and other reductions in UK living standards. It could also have deflationary effects on the local economy in North Essex and elsewhere through declines in residents' disposable incomes. Nevertheless any such **displacement might be expected to have somewhat positive impact on the availability of highly skilled labour** at the local level in London's commuting hinterland, which includes North Essex. Some people displaced from high income activities in central London might choose to seek alternative types of work closer to where they live. This could result in a more dynamic start-up culture or improvements in the talent pool available to growing local businesses or potential inward investors.
- A number of factors come together to indicate that there is potential for some **'reshoring' of manufacturing supply chains**. These include the imposition of customs barriers, changes in terms of trade resulting from devaluations in Sterling and reduced cost differentials as the labour cost component decreases through automation, as discussed above.

Industrial Strategy

Technological change together with the likelihood of new linkages needing to be forged following the UK's withdrawal from the European Union pose a formidable set of economic challenges and opportunities. At the same time, the UK has a set of long standing structural economic problems, many of which are linked, including:

- **A productivity gap** relative to comparator countries like the USA, Germany and France, including a 'long tail' of underperforming low productivity companies and persistent regional imbalances;
- A significant mismatch between available **workforce skill levels** and requirements in many sectors;
- Many **places offering inadequate access to economic opportunities**;
- Insufficient investment in research and development and a persistent **failure to commercialise and scale new ideas**;
- Insufficient strength in **high value manufacturing and exports**.

Industrial Strategy

Creative and digital sector deals are of particular relevance to North Essex given Colchester's existing strength.

A focus on **skills** may facilitate growth in modern and innovative sectors.

Support for **exporters, manufacturing, and renewable energy** all present opportunities.

The **Clean Growth** agenda could lead to growth in offshore wind, a strength in Tendring.

These UK needs to respond effectively to the issues discussed above to maximise future prosperity. A political consensus has emerged in favour of **concerted intervention** led by the Government to address this. Regionally based initiatives to devolve power to lower levels than central government are part of

this process, e.g. the Northern Powerhouse and Midlands Engine. National level **industrial strategy** is also emerging, with the publication of a White Paper in November 2017.[39] Some key aspects of this are set out below.

The stated aim of the Industrial Strategy White Paper is to make the UK the **world's most innovative nation by 2030**. The White Paper identifies four Grand Challenges that represent global trends that will shape a rapidly changing future and which the UK must embrace to ensure it harnesses all the opportunities associated with them. They are:

- **Artificial Intelligence** – the UK at the forefront of the artificial intelligence and data revolution;
- **Clean Growth** – maximising the advantages for UK industry from the global shift to clean growth;
- **Ageing Society** –harnessing the power of innovation to help meet the needs of an ageing society;
- **Future of Mobility** – becoming a world leader in the way people, goods and services move

The White Paper recognises that there needs to be a focus on 'place' in making the UK economy more globally competitive. In this light it promises to continue strengthening local decision making on infrastructure, and to make the most of places' strengths through, among other things, local Industrial Strategies – to **support locally significant sectors** and employers and local research and development. LEPS and Combined Authorities are expected to take a lead with these.

The Government will be going ahead with a series of **Sector Deals**, initially covering construction, life sciences, automotive and AI. The following further sector deals with potentially strong relevance to North Essex are under discussion:

- Creative Industries;
- Industrial Digitalisation;
- Nuclear Energy.

There is also a geographic dimension to the Industrial Strategy with the potential **future deals to be based on corridors or clusters**. A commitment to additional housing is seen as crucial to these. For example, the recent announcement of major investment in the Oxford – Milton Keynes corridor depends on the commitment by local authorities to build 1 million new homes over the next thirty years or so.

There is also emphasis on **improving skills in order to address the UK's persistent productivity gap**. The White Paper proposes the setting up of skills advisory panels and a national retraining programme. It also stresses an increased focus on **vocational and technical education**, with a commitment to delivering 3 million apprenticeship starts by 2020 and expansion of 'T level' technical qualifications. Extra funding for apprenticeships will be targeted at disadvantaged areas and poorer families.

The government has committed **£4.7 billion to R&D investment over the next 4 years**, including its Industrial Strategy Challenge Fund (ISCF) to respond to global challenges and the opportunities faced by the UK, which includes **£170 million to transform the construction sector** and help create affordable places to live and work that are safer, healthier and use less energy.

[39] "Industrial Strategy: Building a Britain Fit for the Future," Department for Business, Energy and Industrial Strategy, 2017.

Other notable features cited in the White Paper that are of potential relevance to the North Essex vision and economic strategy include:

- The Government has a **target for R & D investment** of 2.4% of GDP by 2027, and 3.0% in the longer term, placing the UK in the top quartile of OECD countries;
- There will be funding to support further **university-business collaborations based on existing research and innovation excellence** under the £115m per annum Strength in Places Fund;
- Manufacturing accounts for the majority of UK exports and for over 70% of R&D investment. **Productivity has increased four times faster in manufacturing** than the rest of the economy;
- The Government wants to encourage **exporting businesses, which account for 60% of the UK's productivity growth**, and deliver stronger employment growth and higher wages;
- There will be a **commercial investment programme** to support developing clusters.

Changing working patterns and lifestyles

Improved **digital connectivity** has profound implications for the way business is organised and conducted. In some cases it might enable activities that previously relied on certain types of cooperation facilitated by large organisations to be undertaken more independently, with more entrepreneurial approaches **enabling workers to operate independently or in looser affiliations**.

Working and lifestyle changes

Reduced reliance on traditional workplaces with implications for the importance of **digital infrastructure**.

Growth of the **lifestyle economy** emphasising quality of life and cultural factors.

Changes to the traditional model of **clustering** may benefit North Essex.

Digital connectivity also has implications for **where and when work is done**. In particular it enables many types of work to be undertaken outside standard working hours in traditional workplaces, e.g. at home. Areas offering homes with good facilities for digital working, including connections to **high quality digital infrastructure**, are likely to have a comparative advantage in attracting footloose digital workers (sometimes known as 'digital nomads'). As daily travel to work in offices for standard working hours becomes less typical, proximity to the office may become a less important factor in people's residential preferences. The corollary of this is that **cost and quality of life factors are likely to become more important factors**.

This suggests that traditional **clustering of activity may weaken** in the future. It has been argued that with the advent of improved communications, the ability of local areas to 'export' services to other areas

has increased in recent years.[40] This appears to represent a shift in favour of locations such as North Essex outside large cities, but there are some countervailing factors to consider.

There is also some evidence that lifestyle factors are becoming more important in determining people's choice of work itself, particularly amongst younger people. Research by Cebr on the 'Flat White Economy' has described the formation of local ecosystems in particular locations where **small scale creative businesses** thrive in symbiotic relationships, boosting the local economy. However many of the millennials who participate in these types of activities have a strong preference for spending their disposable income on city based experiences, the so-called 'coffee house culture'. This suggests that **alternative models of clustering are becoming relevant**. It is therefore important to be realistic about the range of people and activities that can be expected to be attracted to various forms of 'backyard capitalism' in non-urban locations.

Population and workforce factors

Population growth and ageing

Demographics and labour market

Population growth typical of the region and UK; slower in Tendring, rapid in Colchester.

Ageing population relative to comparators, largely due to Tendring.

Labour market outcomes slightly worse than in the wider region, with Braintree performing well.

North Essex's recent population growth was similar to that in Greater Essex[41], the Greater South East excluding London, and the UK, as Table 16 shows. However, this masks significant variation within the sub-region. Figure 19 shows the current age distribution in North Essex along with the 2039 forecast[42]. The wider regional and English picture is shown including the overall figures for the comparator regions to put these figures into context. They are broken down to the local authority level in Figure 20. Relative to the region and to England, **North Essex has a higher proportion of its residents in the oldest age brackets** and will continue to do so. The variation between local authorities within North Essex is considerable. **Colchester's profile resembles that of the comparators quite closely** whilst, both now and in the future, **Tendring has substantially higher shares in the 65+ age brackets** than anywhere else under consideration. **Braintree is in line with the sub-region overall.**

[40] Rowthorn, 2010.

[41] Greater Essex includes the areas covered by Essex County Council plus unitary authorities Thurrock and Southend-on-Sea

[42] Based on "*2014-based Subnational Population Projections for Local Authorities and Higher Administrative Areas in England*," ONS

Table 16: population growth in North Essex, Greater Essex and GSE excl. London, 2005 -2015

	2005 pop. ('000s)	2015 pop. ('000s)	Change
Braintree	139	150	+8%
Colchester	162	184	+14%
Tendring	140	141	+1%
North Essex	442	476	+8%
Greater Essex	1,656	1,787	+8%
GSE excl. London	13,766	15,022	+9%
UK	60,413	65,110	+7%

Figure 19: age distribution in North Essex, comparators, GSE excl. London, and England, 2018 (green) and 2039 (blue)

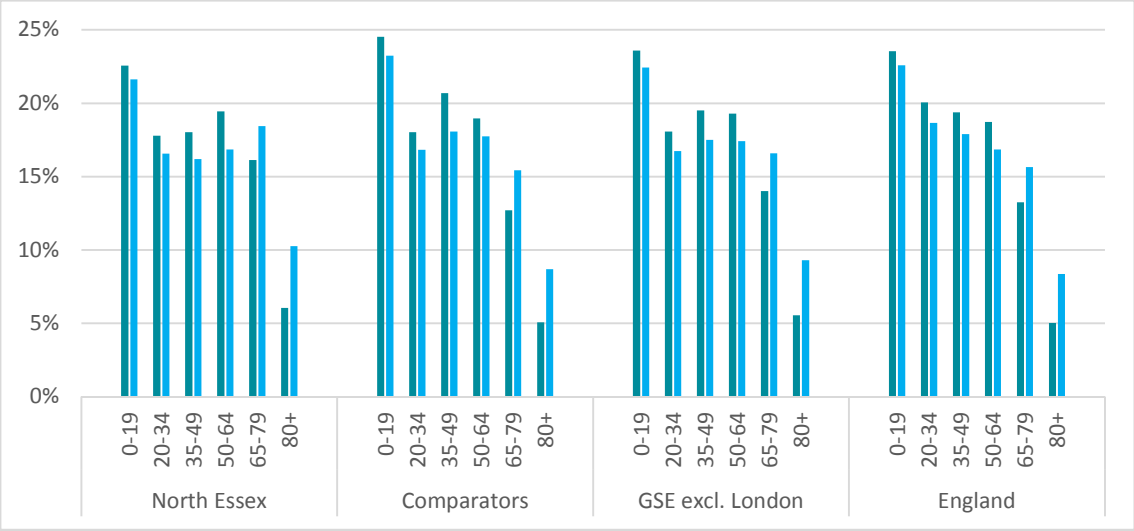
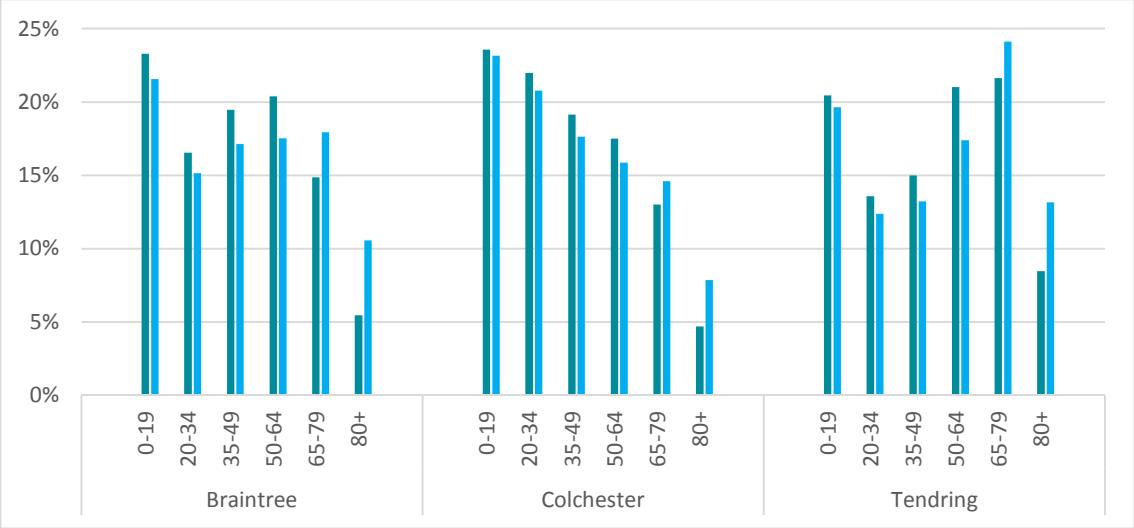


Figure 20: age distribution in Braintree, Colchester, and Tendring, 2018 (green) and 2039 (blue)



The Cambridge Econometrics demographic forecasts for the Garden Communities point out that the initial population in a new settlement is likely to be relatively young. They assume that 31.9% of those moving into new communities will be in the 25-34 age bracket based on data from Cambourne, Bar Hill, and Great Notley. Of course many of those moving into the Garden Communities will be North Essex residents already and therefore not additional to these forecasts, however **the project may still act to partly counteract the ageing of the area's population**.

Declining public health trends suggest that as the population ages there will be a growing incidence of diseases associated with unhealthy lifestyles. This will add to the pressure for greater **financial and personnel resource requirements for health and social care** associated with the ageing of the population. Areas such as Tendring, with disproportionately large populations in older age groups, are likely to face the most severe challenges of this kind.

Deprivation levels and standards of living

There is considerable variation in levels of deprivation within North Essex. Levels in most areas are consistent with much of the GSE outside London, although areas within the comparators are in many cases less deprived as measured by the Index of Multiple Deprivation (IMD)[43]. While there are some pockets of deprivation in Colchester town, Tendring exhibits significantly higher levels of deprivation than the rest of the sub-region. In terms of IMD rankings, Tendring is the 49th most-deprived local authority of the 326 in England – Braintree and Colchester are 197th and 185th respectively, as Table 17 shows. The patterns of gross disposable household income (GDHI)[44] per head in Figure 13 further illustrate this picture. The broader geographical context is illustrated in

Figure 21.

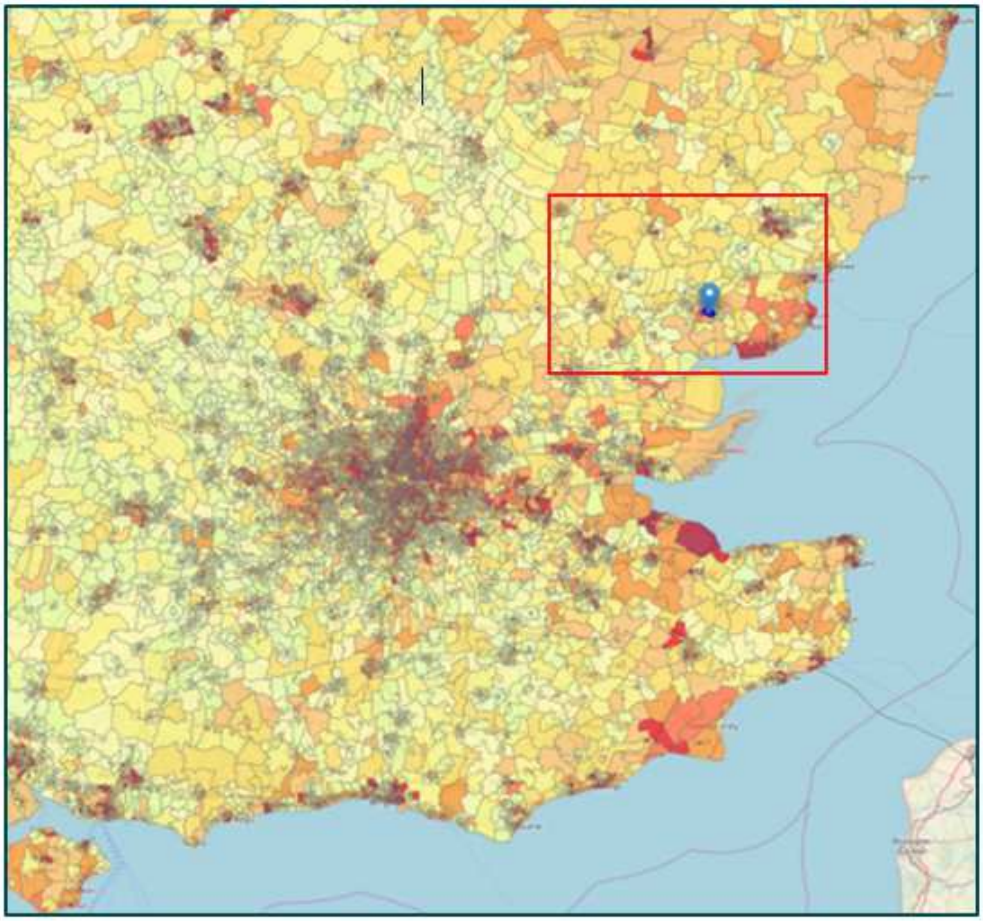
Table 17: IMD rank and GDHI / head in Colchester, Braintree and Tendring, 2015

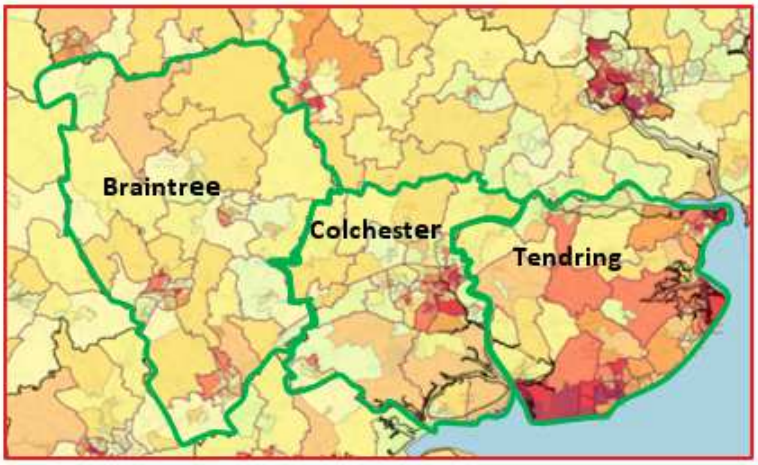
	IMD rank (2015)	GDHI / head (2015)
Braintree	197/326	£18,668
Colchester	185/326	£20,844
Tendring	49/326	£15,835

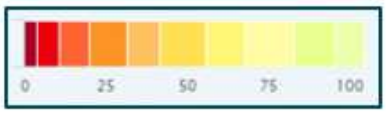
[43] From the ONS: 'The English Indices of Deprivation 2015 are based on 37 separate indicators, organised across seven distinct domains of deprivation which are combined, using appropriate weights, to calculate the Index of Multiple Deprivation 2015 (IMD 2015) (…) These are Income Deprivation; Employment Deprivation; Health Deprivation and Disability; Education, Skills and Training Deprivation; Crime; Barriers to Housing and Services; and Living Environment Deprivation'.

[44] Defined by the ONS as 'the amount of money that all of the individuals in the household sector have available for spending or saving after income distribution measures (for example, taxes, social contributions and benefits) have taken effect'.

Figure 21: Index of Multiple Deprivation in GSE and North Essex, by decile, 2015





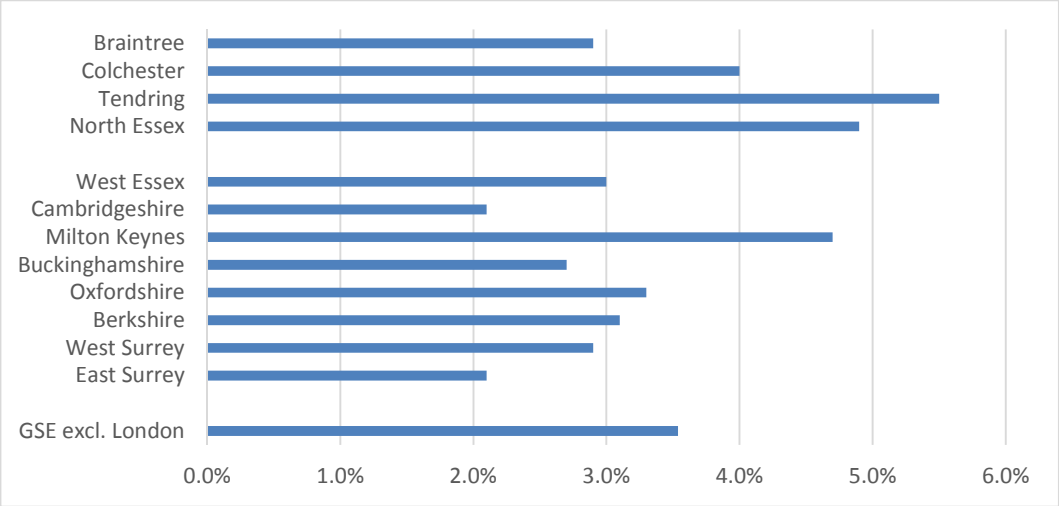


Labour market performance

Unemployment

Although unemployment is at historically low levels in all areas, it is higher in North Essex as a whole than in all the comparators and the Greater South East excluding London, as Figure 22 shows. When the local authorities within North Essex are considered separately, there is some variation. While Braintree's unemployment is in line with the comparators, **unemployment in Colchester and especially Tendring are well above the comparators**.

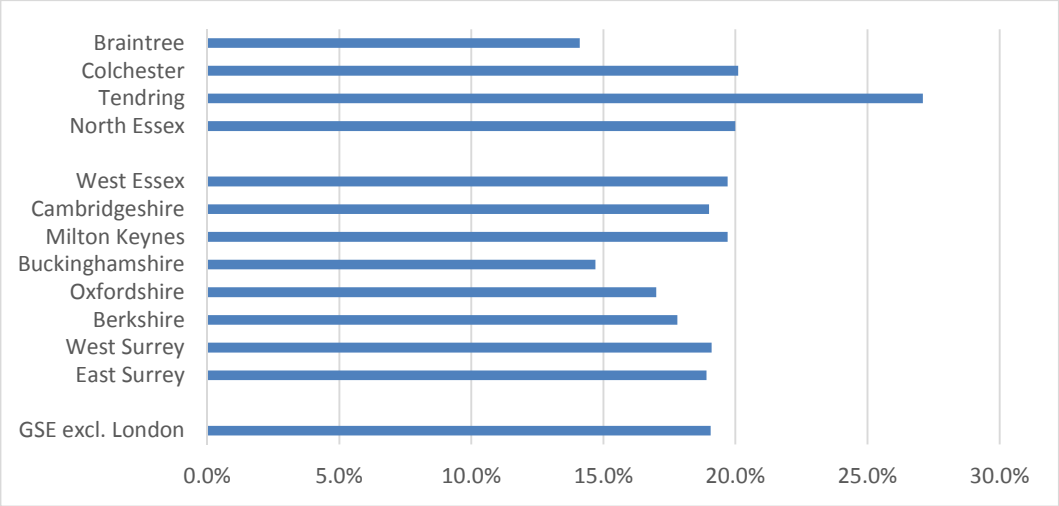
Figure 22: Unemployment in North Essex, comparators, and GSE excl. London, average for year to Sep. 2017



Economic inactivity

North Essex as a whole has a slightly higher level of economic inactivity than the comparators and Greater South East excluding London, as Figure 23 shows. When the local authorities within North Essex are considered separately it is clear that there are large variations within the sub-region. In comparison with the wider region and comparators, the level of **economic inactivity is considerably higher in Tendring**, considerably lower in Braintree and about the same in Colchester.

Figure 23: Economic inactivity in in North Essex, comparators, and GSE excl. London, average for year to Sep. 2017



Productivity and skill levels

GVA and productivity

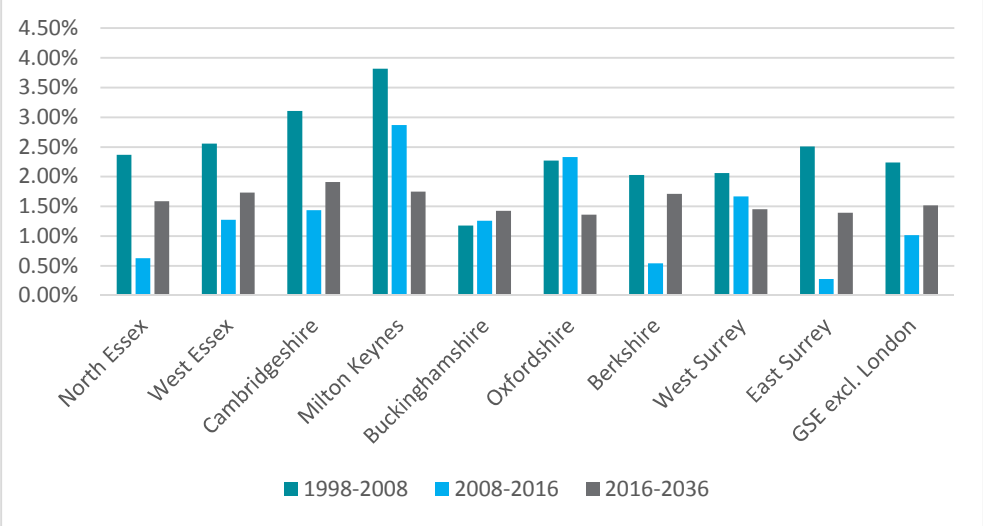
As Figure 24 shows, GVA growth in North Essex and most comparator areas declined to varying degrees in the post-recession period. North Essex experienced one of the sharpest falls – in the 1998 to 2008 period its growth was on a par with the wider region and comparators like Oxfordshire and Berkshire, but **in 2008-2016 North Essex had one of the lowest growth rates**. Cebr forecasts for 2016-2036 growth are included also.

GVA and productivity

On current trends, **GVA per capita** will not converge with that of the comparators or region. **GVA per employee** also lags behind.

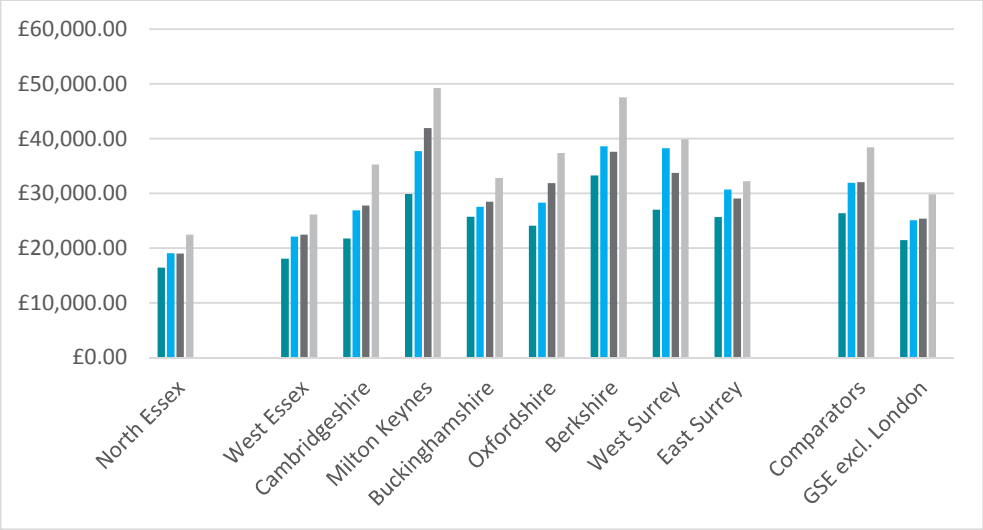
Skill levels have improved substantially across the country, but North Essex has fewer NVQ4+ qualified workers than comparators, the region, or the country.

Figure 24: GVA in North Essex, comparators, and GSE excl. London, historic annual average and trend forecast growth



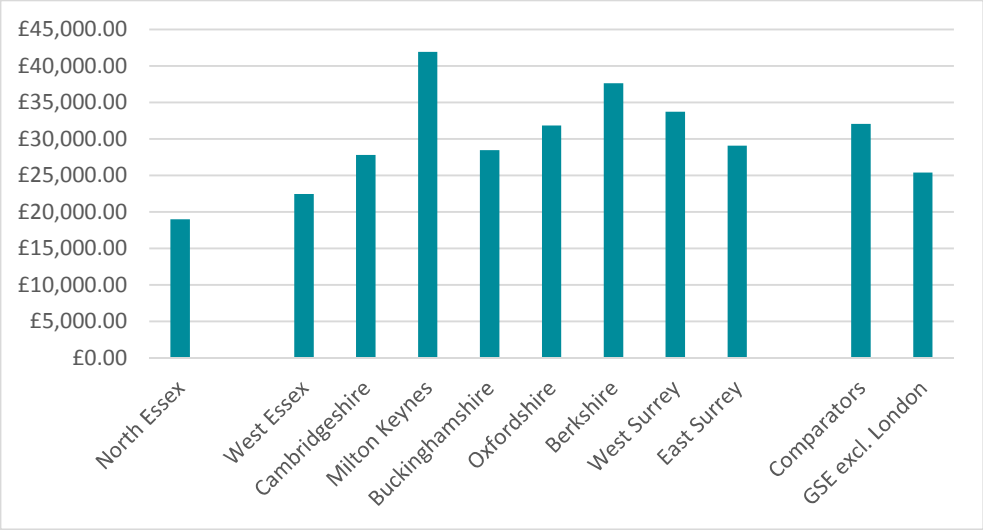
North Essex's GVA per capita is forecast by Cebr to be £22,498 in 2036, compared to £29,846 for the wider region and £38,413 for the high-performing comparators within it, as Figure 25 shows. It should be noted that **this does not represent workforce productivity alone**. GVA per capita is total GVA produced in an area divided by the number of residents. Productivity of workers affects GVA per capita, along with working age population as a proportion of total, participation rate, unemployment, and in- and out-commuting.

Figure 25: Historic and forecast GVA per capita in North Essex, comparators, and GSE excl. London in 1998 (green), 2008 (blue), 2016 (dark grey) and 2036 (light grey)



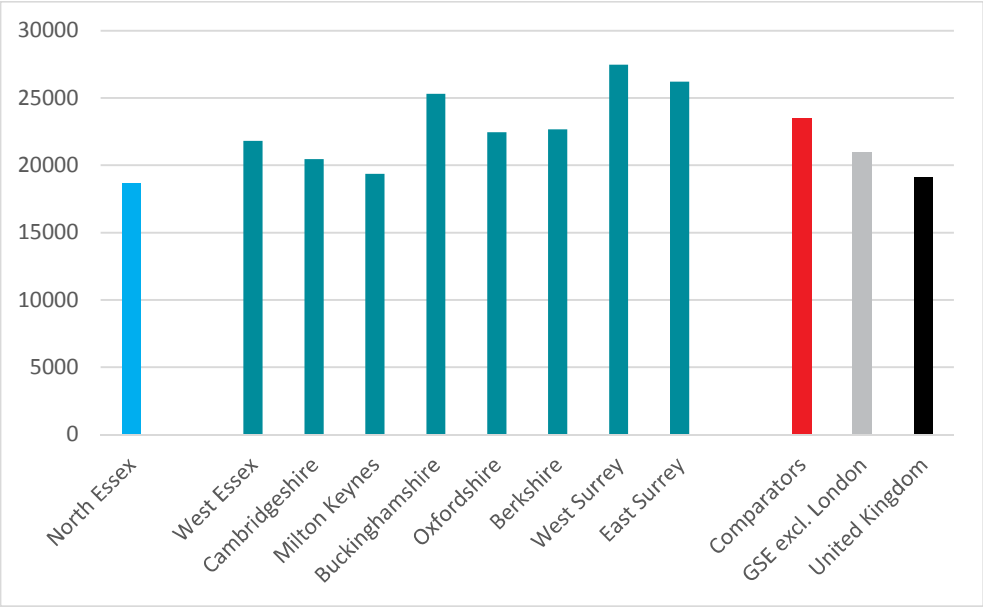
Nevertheless, the **lower GVA per capita in North Essex can partly be explained by productivity**, i.e. GVA per employee, as Figure 26 shows. Those employed in all comparators and the wider region produce more each year than those in North Essex.

Figure 26: GVA per employee (£), North Essex, comparators, and GSE excl. London, 2016



Turning to Gross Disposable Household Income, the difference between North Essex and the comparators and Greater South East excluding London is much smaller than that with respect to GVA per capita or GVA per employee, as Figure 27 shows**.** A likely reason for this is that a higher than average proportion of residents' income in North Essex is earned outside the area, e.g. by those commuting to London or other parts of Essex.

Figure 27: GDHI (£) in North Essex, comparators and GSE excl. London, 2015



Skills

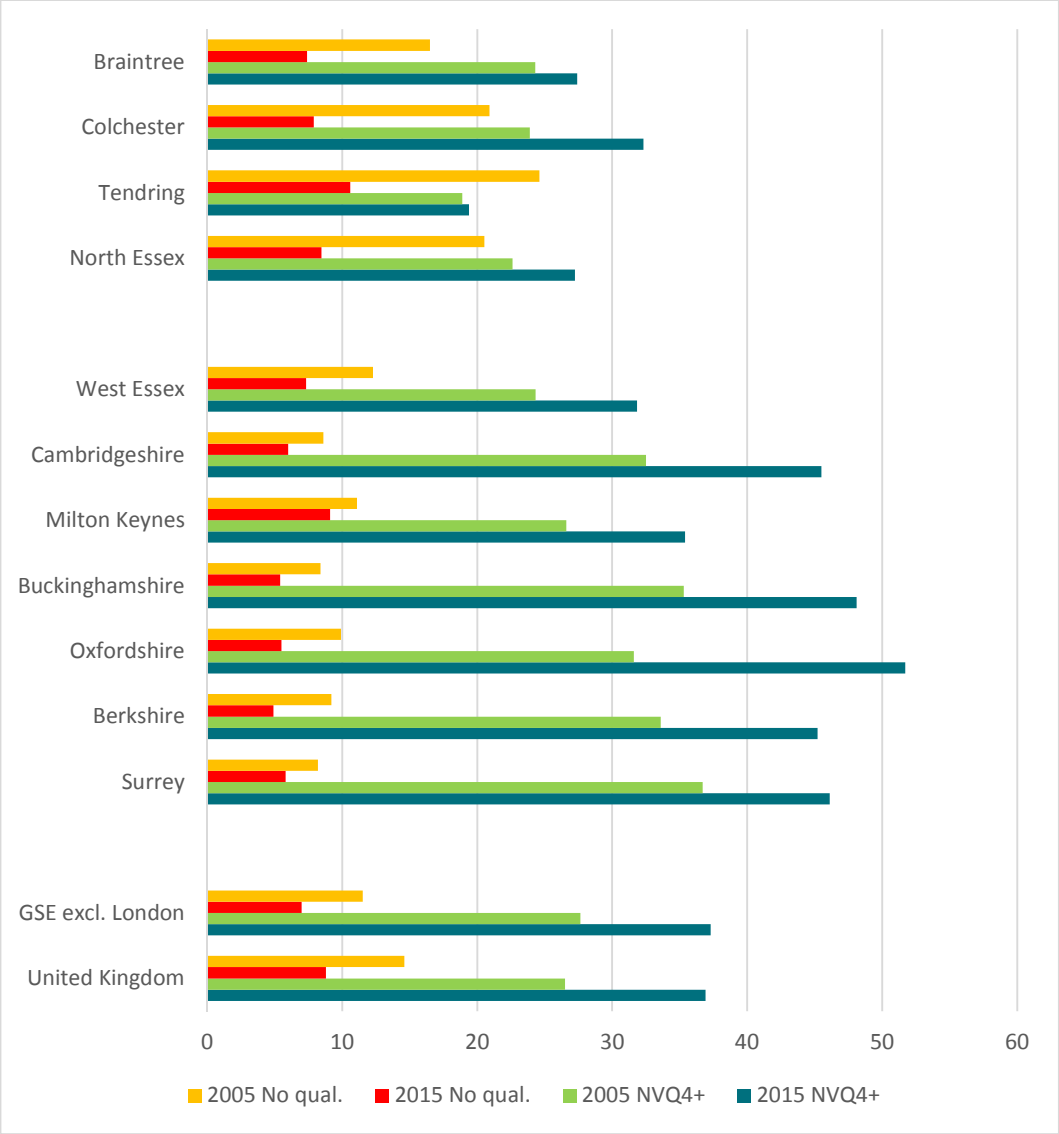
Nationally there has been a substantial fall in the percentage of the population with no qualifications and an even more impressive increase in the percentage with at least an NVQ Level 4 qualification (e.g. a Certificate of Higher Education, Higher Apprenticeship), as Figure 28 shows. These trends have occurred across all areas of interest, to varying degrees.

In 2005 the proportion of the population with no qualifications was far higher in all three districts in North Essex than in the comparators, Greater South East excluding London and UK. All three made much faster than average progress in addressing this issue and had significantly reduced the gap by 2015.

All three districts however clearly **underperform in terms of the proportion attaining the NVQ4+ level**, compared to the UK and wider region. Colchester was the best-performing of the three local authorities on this measure but it was still considerably behind nearly all of the comparator locations and was in fact behind the levels of the wider region and UK. Braintree and Tendring made much slower progress between 2005 and 2015 than any of the comparator areas, wider region or UK.

Most of the aspirational **comparator regions significantly outperform the UK and Greater South East excluding London**, with the interesting exception of Milton Keynes, which is a strong economic performer in many other respects. This suggests that serious work to improve skills levels is vital to begin to match their economic success.

Figure 28: Proportions of population with no qualification and NVQ4+, % in North Essex, comparators, GSE excl. London and UK, 2005 and 2015



Industry and economic structure

Business size

Percentages of total enterprises with over 50, 100, and 250 employees by area are shown in Figure 29. Urban centres such as Cambridge and Oxford attract significantly higher proportions of large businesses than other locations. North Essex has a similar profile to the Greater South East excluding London, and **Colchester attracts more large employers than Braintree or Tendring**.

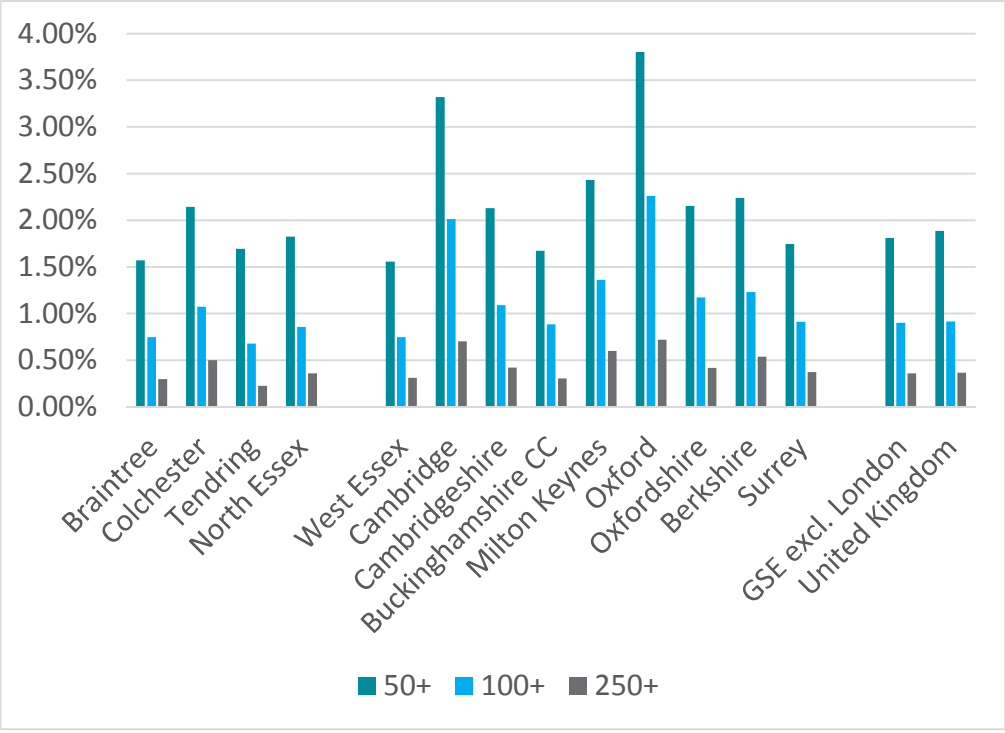
Sectors and businesses

Representation of **large businesses** is similar to the wider region and country, however high-performing comparators have significantly more of them.

Fast-growing sectors are under-represented but appear to be converging.

It should be stressed that having more large employers is not *per se* a good thing, and can partly be explained by sectoral mix. There will be large employers in low-productivity sectors and vice-versa. Considerations of current and potential employer size will however influence economic strategy, e.g. around provision of employment space. Also, there is evidence to indicate that **larger employers are on average more productive, at least in some sectors**. In their 2018 *Creative Nation* report Nesta finds that, controlling for firm size, the creative industries have higher productivity than other sectors, however micro-businesses are less productive and over-represented in the creative sectors. The policy implication is that **encouraging 'scale-up' within the creative sectors will do more to boost overall productivity than encouraging start-ups**.

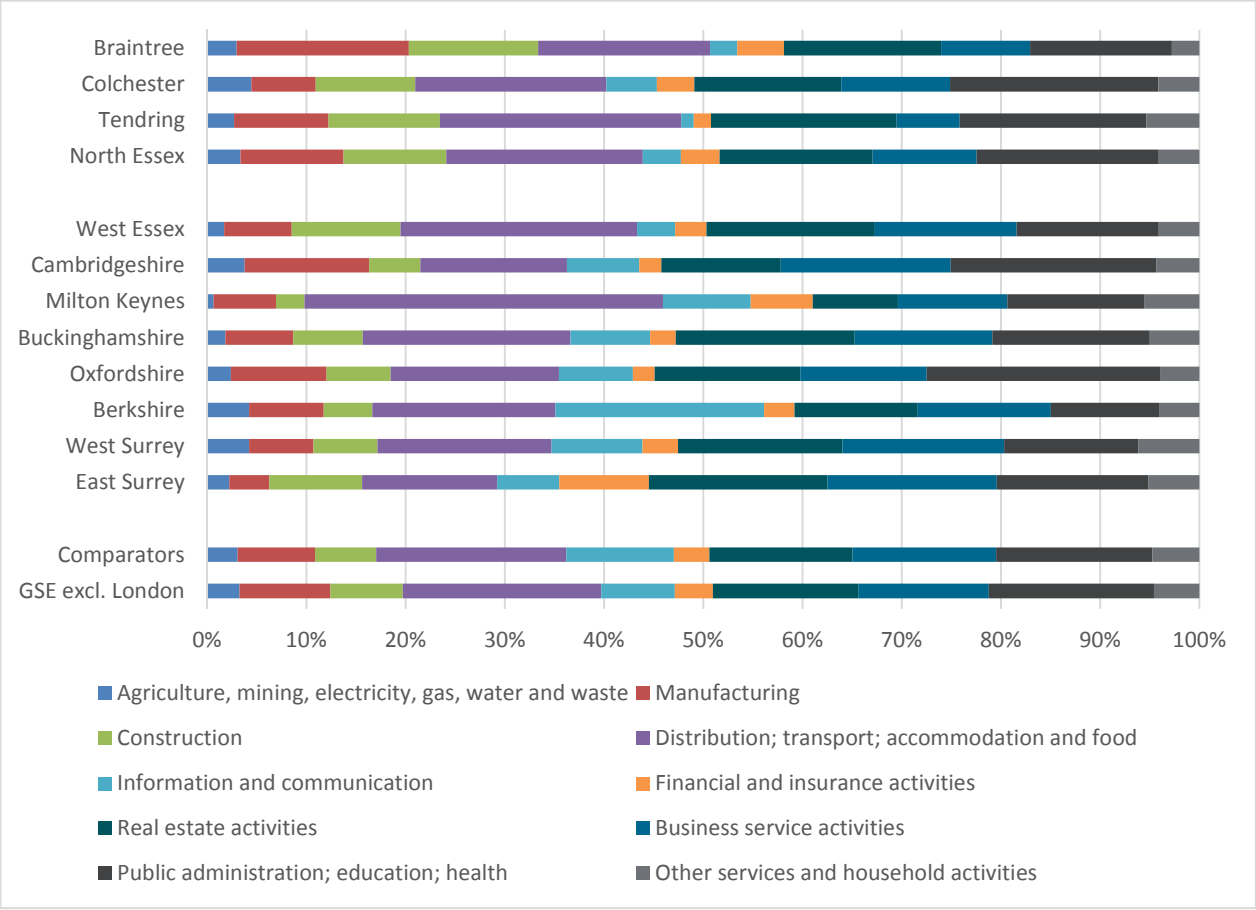
Figure 29: Total enterprises with over 50, 100 and 250 employees (%) in North Essex, comparators, GSE excl. London and UK



Sectoral strengths and gaps

The shares of GVA by SIC07[45] industry in areas of interest are shown in Figure 30. **Information and communication and business service activities** stand out as sectors which have much greater representation in the comparators and Greater South East excluding London than in North Essex.

Figure 30: Industry GVA shares (%), North Essex, comparators, GSE excl. London, 2016



GVA growth rates by industry for North Essex and the Greater South East excluding London were calculated by Cebr using deflators derived from ONS NUTS2 level GVA data. Table 18 shows the sectors ordered by their growth rate within the wider region from highest to lowest. Whilst information and communication and business service activities are under-represented in North Essex, they are both growing more quickly than in the wider region.

Industry groups can be categorised into those which are driven mainly by the need to serve the local population and those which form the 'export-oriented' (within the UK as well as internationally) **economic base**.[46] Number of enterprises (note: not GVA share) by Cebr classification of population-

[45] UK Standard Industrial Classification of Economic Activities 2007, used for classifying types of economic activity

[46] Chosen industry groups for each category, as per UK Business: Activity, Size and Location – 2017, Table 1. Within each of these there will no doubt be firms serving either or both of the population or the economic base, so this is a best approximation. Population-serving: Construction, motor trades, wholesale, retail, transport & storage, accommodation & food, property, public administration & defence, education, health, arts, entertainment, recreation & other services.

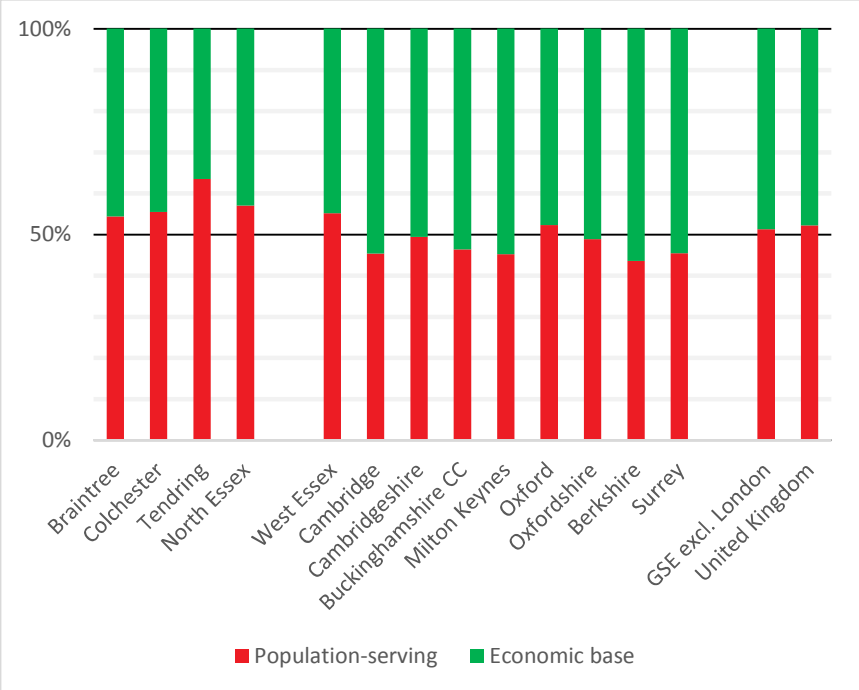
serving or economic base are shown in Figure 31 for the comparator areas. Figures also include Braintree, Colchester, Tendring, Cambridge, Oxford, and the United Kingdom.

Additional tables showing a full breakdown of the number of firms by broad industry group in each area and a breakdown of the development of different industry sectors in North Essex by share of GVA between 1998 and 2016 are included in Appendix 2.

Table 18: Annual average GVA growth North Essex and GSE excl. London, 1998 to 2016

	North Essex (%)	GSE excl. London (%)
Information and communication	**7.2**	**5.0**
Business service activities	**4.7**	**4.2**
Distribution; transport; accommodation and food	**1.6**	**1.8**
Construction	**1.5**	**1.7**
Other services and household activities	**1.1**	**1.7**
Public administration; education; health	**2.0**	**1.5**
Real estate activities	**1.7**	**1.5**
Agriculture, mining, electricity, gas, water and waste	**-0.5**	**0.8**
Financial and insurance activities	**-1.0**	**-0.2**
Manufacturing	**-0.8**	**-0.7**

Figure 31: Share of enterprises in economic base and 'population serving' sectors in North Essex, GSE excl. London and UK, 2017



Economic base: agriculture, forestry & fishing, production, information & communication, finance & insurance, professional, scientific & technical, business administration & support services

The population-serving industries comprise between 43% and 64% of the firms in the areas shown. The lowest percentages are in Berkshire, Milton Keynes, Cambridge, Surrey, and Buckinghamshire which are the most prosperous areas in general – **economic base sectors are the most productive and their growth should therefore be central to any aspirational economic strategy**.

Strategic planning and development

Housing supply shortages and developable land availability

Housing and development

The most successful areas of the wider region such as the **London-Stansted-Cambridge** corridor are facing supply-side constraints.

The GSE's key cities have limited scope to expand owing to Green Belt and other legislation.

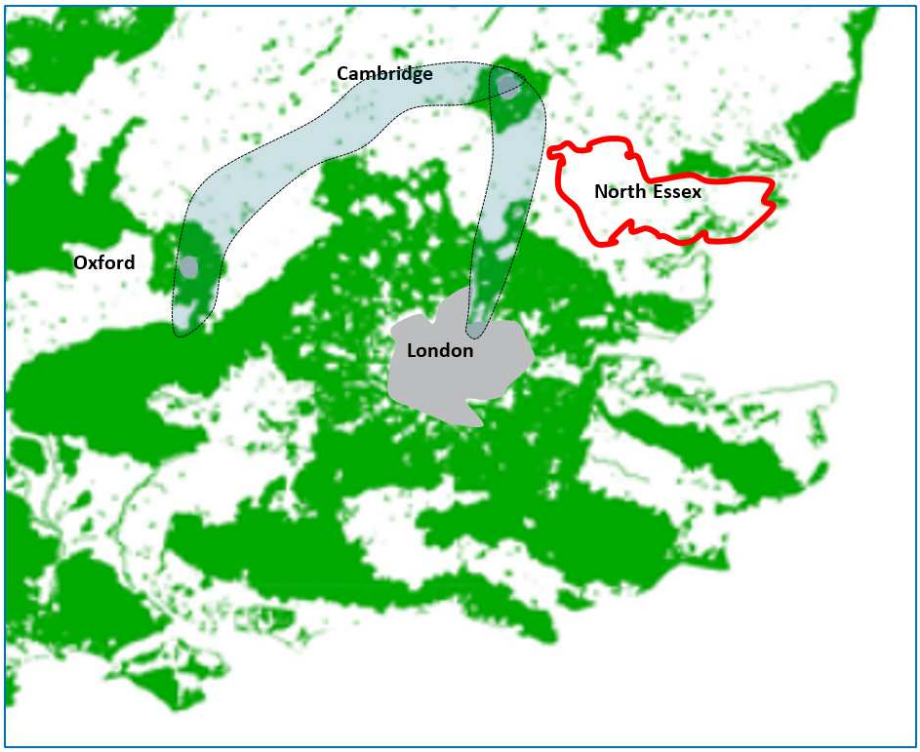
North Essex is well-placed to capitalise on this by providing suitable employment space and affordable housing for skilled workers.

The comparative economic success of many parts of the GSE has resulted in a number of strategic growth challenges, notably **chronic gaps between housing supply and demand** in some areas. This has led to a housing affordability crisis that threatens future employment growth, particularly in certain high productivity locations such as London and Cambridge. For example, each of these cities has recently seen the ratio of house prices to median incomes reach all-time highs of around 14.5[47] and firms have been increasingly reporting labour market shortages. It is probably no coincidence that some of the areas with the most acute affordability issues face the greatest constraints on supply.

The map in Figure 32 shows how Green Belt legislation prevents the physical expansion of cities such as London, Oxford and Cambridge, while other landscape designations (National Parks, Areas of Outstanding Natural Beauty, etc.) also **limit the scope for development in large areas of the GSE**.

[47] "UK Cities House Price Index - October 2017." Hometrack. See http//www.hometrack.com/uk/insight/uk-cities-house-price-index/october-2017-cities-index/.

Figure 32: Areas covered by designated protection from development in GSE, North Essex and strategic growth corridors



Strategic growth corridors

Partly as a consequence of this, and also to promote sustainable development patterns, housing and employment **growth is directed towards key strategic corridors in the region**. These typically follow existing corridors (e.g. London-Stansted-Cambridge) or planned infrastructure corridors (e.g. Oxford-Milton Keynes-Cambridge) linking existing clusters of high value activity. These are shown in Figure 32.

The London-Stansted-Cambridge corridor

As defined by the London Stansted Cambridge Corridor Growth Commission, the corridor stretches from the City of London to Peterborough, including West Essex (with Stansted Airport), eastern Hertfordshire, and most of Cambridgeshire. This area has enjoyed remarkable economic success in recent years:

- Employee jobs grew 10.5% between 2009 and 2014 (compared to UK growth of 4.1%);
- In knowledge industries, there was an employment growth rate of 18% between 2009 and 2014 (compared to UK growth of 10% UK rate) and the corridor now supports 303,000 of these jobs;
- The number of enterprises grew 28.4% from 2004 to 2013 (UK 13.4%);
- GVA grew 6.1% from 2010 to 2014 (UK 3.7%);
- Productivity stood 16% above the UK average in 2014.

The corridor's particular strengths are in ICT and Life Sciences – both **high-value, high-productivity, knowledge-intensive sectors** which are only likely to grow in future importance. This is reflected in the

skill level of the population – 44.1% of the working age population were qualified to NVQ4+ in 2014, compared to 35.8% in the UK.

The aspiration set out by the London Stansted Cambridge Growth Commission in their 2016 report is for the corridor to become a **global tech and life sciences region**. However, they highlight a number of supply-side obstacles to the realisation of this goal:

- The vacancy rate is 21% above the national average;
- There is a chronic housing shortage. When measured by the ratio of average house price to median income, Cambridge and London are among the least affordable cities in Britain. House price inflation 1995-2014 was 400% or more in Cambridge and several London boroughs.

As a neighbouring area which is less supply-constrained, **North Essex is ideally placed to loosen constraints in the corridor and attract investment and skilled employees**, for example with improved east-west connectivity and quality living and employment space in the Garden Communities.

Future development and regeneration within the corridor, in e.g. Broxbourne, Harlow, and Stevenage, is identified in the Growth Commission's report as one route to loosening these constraints. Crossrail 2[48] will greatly improve connectivity in the corridor, particularly in the southern section (the Upper Lea Valley), and is expected to unlock significant housing growth – the West Anglia Taskforce estimates 100,000[49] homes. These locations may compete with North Essex for valuable industries in the future. However, with better connections to Stansted and Cambridge and the right future strategy, North Essex could plausibly do well from this opportunity.

The Oxford-Milton Keynes-Cambridge corridor

The National Infrastructure Commission (NIC) was asked to provide the government with proposals and options to maximise the **potential of the Oxford-Milton Keynes-Cambridge corridor as a single, knowledge-intensive cluster** that competes on a global stage, protecting the area's high quality environment, and securing the homes and jobs that the area needs.

The Commission's central finding, reported in its interim report[50] is that "*a lack of sufficient and suitable housing presents a fundamental risk to the success of the area. Without a joined-up plan for housing, jobs and infrastructure across the corridor, it will be left behind by its international competitors. By providing the foundations for such a strategy, new east-west transport links present a once in-a-generation opportunity to secure the area's future success.*"

Key points include:

- The Cambridge-Milton Keynes-Oxford corridor forms a ribbon around the north and west of London's green belt. It is home to 3.3 million people and hosts some of the most productive, successful and fast growing cities in the UK, two leading universities, knowledge intensive high-tech firms and highly skilled workers;

[48] Through the four-tracking of parts of the West Anglia Main Line

[49] 50,000 in the Upper Lee Valley, 40,000 from Waltham Cross to Stansted, 10,000 to the north of Stansted

[50] "Interim Report: Cambridge – Milton Keynes – Oxford corridor," national Infrastructure Commission, 2017

- Rather than a connected cluster of fast-growing places, Cambridge, Milton Keynes and Oxford have developed as **distinct city economies, each positioned on different radial routes** about 50 miles from London;

- The success of the area has fuelled exceptionally strong demand for housing across the corridor and in its key cities, which has not been matched by supply. **The lack of housing supply is leading to high house prices and low levels of affordability**, for both home ownership and private rental. The ratio of median house prices to earnings is 13:1 in Cambridge and 12:1 in Oxford making them two of the least affordable cities in the UK;

- This situation is exacerbated by **poor east-west transport connectivity and limited 'last mile'[51] capacity** into certain centres and other employment locations. In contrast to strong north-south radial links extending from London, east-west trips across the corridor are difficult, slow and unreliable. As a result, commuting between key hubs on the corridor is almost non-existent and the area does not function as a single labour market;

- Major **road and rail infrastructure projects as well as local initiatives are planned** to help unlock up to 1 million new homes in the corridor by 2050.

Transport

Overview

The Greater South East is one of the best connected regions in the World. Taken together, London's airports give it by far the best international connections of any city in the World and the region is served by major passenger and freight ports such as Dover, Felixstowe, Harwich, and Southampton. There are also well developed rail and road networks connecting the region to the rest of the UK. Parts of the transport system serving the GSE however have severe capacity issues and are in need of expansion and modernisation. These issues mean that the experience of using the transport system is at times stressful or uncomfortable and journey speeds are typically slower than in less crowded parts of the country. The surface transport system is also highly orientated towards London. **The National Infrastructure Commission has identified the need for much improved orbital**

Transport infrastructure

Proximity to **international connections** at the Haven Ports and Stansted Airport.

East-west connectivity is limited, particularly by rail, with a stronger **north-south** connection to London.

Crossrail will reduce journey times to Heathrow and the M4 corridor to the west of London.

Restoration of a **rail link west of Braintree could better link North Essex to Cambridge and Stansted Airport,** enhancing the benefits of their proximity.

[51] The movement of freight or passengers from a transportation hub to their final destination, e.g. from a railway station, freight terminal, or airport to a retailer or home.

connectivity around London to release constraints and encourage growth, allowing it to attract increased investment and employment over time.

Connectivity and infrastructure within North Essex reflect the broader picture to some extent. **It is well located in relation to a number of international trade and transport nodes** including Stansted Airport (the fourth-busiest in the UK) and the Haven Ports at Harwich and Felixstowe all of which are highly relevant to its future economic role. Rail connectivity between Colchester and London via the Great Eastern Main Line (GEML) is good. There are branch line connections serving Braintree, Clacton, Harwich and other locations within the sub-region. Significant investment is planned in rail services, with fleets of new commuter and inter- city trains for the GEML on order. There are also plans to improve line speeds on the GEML in order to address a long standing aspiration to achieve a journey time of 90 minutes between London and Norwich (currently the fastest journey is around 110 minutes).

Table 19 provides typical travel times by road and rail from the major settlements within each local authority in North Essex to regional and national centres including international connections.

Table 19: Typical road and rail journey times between North Essex and selected locations

	Braintree		Colchester		Clacton	
	Road	Rail	Road	Rail	Road	Rail
Port of Harwich*	60	77	40	30	38	72
Chelmsford	47	25	50	18	78	49
Ipswich	75	67	55	19	65	62
Port of Felixstowe*	88	132	60	60	68	133
Stansted Airport	34	115	65	105	90	142
Cambridge	80	150	108	112	135	154
Gatwick Airport	103	131	115	116	135	156
Norwich	140	110	125	61	135	105
Heathrow Airport**	108	137	135	130	155	162
London**	125	61	150	54	170	86
Milton Keynes**	125	138	150	130	170	165
Oxford	170	186	190	173	210	212
Birmingham**	185	194	205	176	225	220
Leeds	235	243	255	226	275	263
Manchester**	290	243	310	226	330	263

Road: Google Maps estimates for arrival by 9:00 on Wednesday the 18th of April 2018
Based on shortest time given, taken midpoint of range provided
Rail: Times taken from National Rail website, leaving at 8:00 on Wednesday the 18th of April 2018
Shortest time of those shown selected i.e. this isn't necessarily for a train departing at 8am
*Distances to Harwich International and Felixstowe stations used
**Multiple stations available: used Heathrow Underground, London Liverpool Street, Milton Keynes Central, Birmingham New Street, Manchester Piccadilly

East-west connections in North Essex

East-west connectivity is relatively poor both within North Essex and between the London-Stansted-Cambridge corridor and Colchester (and therefore Tendring) as Table 19 shows. In particular, between Colchester and Braintree the A120 is single-lane and the Witham to Braintree branch line is single-track with attendant capacity limits. This means that while Braintree has a good road connection to Stansted Airport, Colchester and Tendring residents face much longer driving times.

There is no direct rail connection between North Essex and key locations in the London-Stansted-Cambridge corridor so such journeys have to be made via Stratford or Liverpool Street for Stansted[52] or Ipswich for Cambridge. This means that the **rail travel time is almost two hours between Braintree and Stansted, which are just 18 miles from each other by road**. Although rail travel between Colchester and Stansted is slightly faster than this, rail is still highly uncompetitive for this journey, taking around 40 minutes longer than road.

No investment is committed to addressing this strategic connectivity gap at present. **Bishop's Stortford Town Council has called for the restoration of the Braintree-Bishop's Stortford branch line in response to the Garden Communities project**. This line connected the two towns and intermediate villages until its closure to passengers in 1952 and freight in 1972. The effect on rail travel times between the three districts in North Essex and Stansted would be transformative[53], particularly if further investment allowed direct journeys from Colchester to Braintree.

A comprehensive **rapid transit system** within the sub-region, linking existing settlements and the new communities, would enable it to function as a single labour market, enhance quality of life, and improve the appeal of North Essex to tourists. This may include light rail, guided or unguided busways, or trams, as covered in the North Essex Rapid Transit Study. Reducing travel times within in the sub-region would also improve access to areas beyond it, e.g. Stansted, Cambridge, and London for those areas which are currently less well connected to them.

Connections between North Essex and other parts of the GSE and beyond

There is also relatively poor connectivity between North Essex and other parts of the GSE, particularly to the west of London by rail, e.g. to Heathrow, and **links to other parts of the UK are also relatively slow**, as Table 19 shows. The ambitions for regional rebalancing of the economy set out in the Industrial Strategy White Paper and through initiatives such as the Northern Powerhouse and Midlands Engine imply that links to the Midlands and North could be more important in the future.

Committed investments on the rail network will go some way to addressing this issue by improving connectivity within London and between London and the Midlands and North. In particular, **Crossrail[54] will improve links across London**, including a direct rail link between Shenfield (Essex) and Heathrow Airport. This will benefit North Essex through interchange opportunities at Liverpool Street or Stratford and will provide better connectivity not only with west London but also many parts of the 'arc of prosperity' to the west, e.g. Reading and the Thames Valley corridor. It will eventually provide good access to HS2 services at Old Oak Common, with very fast links to all the major metropolitan regions in the Midlands and North, e.g. Manchester, Liverpool, Leeds, Birmingham.[55]

HS2 also poses a challenge to North Essex and other areas away from the route as their relative rail journey times to key locations will deteriorate markedly compared to those enjoyed by locations on the route. Journey times between central London and locations such as Birmingham and even Crewe will be shorter than the current rail journey time between Liverpool Street and Colchester.

---

[52] In practice coach travel between North Essex and Stansted is common – however this is an inherently slower means than train travel and faces the issue of the A120's limitations

[53] even the 1922 journey time of 43 minutes from Braintree to Bishop's Stortford would represent a 63% reduction on today – in reality a modern rail service could offer a journey time of say 20 minutes (depending on the number of intermediate stations).

[54] Due to open fully in 2019.

[55] For example, after Phase 2b of HS2 opens in 2033 it should be possible to reach Manchester from Colchester in around 2.5 hours, as opposed to almost 4 hours at present.

4 Options for the Vision and Strategy

Consideration of the opportunities for wider economic strategy, in the context of North Essex's economic geography and current indicators, informs distinct strategy scenarios. These are used as the basis for our future economic projections and final strategy recommendations.

Introduction

It is clear that the Garden Communities will have particular investment requirements associated with their construction in accordance with Garden City Principles. There will need to be place making investment, **specific to the vision for each community** influenced by, among other things, the economic vision and strategy. Similarly there will be many decisions about the housing delivery itself that should reflect the overall vision for the communities, e.g. about the mix and type of tenure, affordability mix, style of construction, role of different types of developers (including self-builders) etc. It is beyond the scope of this strategy to consider these matters in detail.

The decision to develop the Garden Communities represents a unique opportunity to change the economic trajectory of North Essex, and our focus has been on demonstrating this. Our approach has been to **identify the strategic challenges and opportunities that are relevant** and to identify means of addressing and leveraging them. If outcomes are to be optimised, there will need to be an integrated approach to planning by NEGC Ltd, local and national government and a range of strategic partners, and we aim to investigate the key elements that will be required in this.

The first part of this section identifies a **'toolkit' of interventions for consideration in the strategy**. There are strong interactions between these elements but for the sake of clarity we present them as follows:

- **Opportunities for leveraging existing plans and initiatives and sector strengths** in the wider sub-region and beyond to inform:
    - Decisions about the approach to the **design and delivery of the Garden Communities**, in particular:
        - Offsite construction;
        - Local energy provision;
        - Ultra – fast broadband;
    - **The wider approach to supporting the development of the sub-region**, in particular:
        - Nuclear energy projects;
        - Renewable energy;
        - Expansion of University of Essex and university – business partnerships;
        - London-Stansted-Cambridge corridor;
        - Other opportunities in the Greater South East.

- Additional **'external' requirements to unlock the full economic potential** of North Essex:
    - Integrated investment in local, sub-regional, and strategic transport connections;
    - Skills provision to address particular issues in North Essex and a more general need to ensure future workforce skills are well aligned to the available opportunities.

The second part of the section **sets out the broad alternative strategy scenarios**. This packages elements of the toolkit with appropriate assumptions about the approach to delivering the Garden Communities. We have identified two basic strategy scenarios:

- A 'lifestyle led' scenario;
- An 'inward investment led' scenario.

The scenarios are informed by considering plausible alternative 'economic futures' for the North Essex sub-region in the light of the full range of challenges and opportunities set out in the preceding section.

Both scenarios are intended to be consistent with the vision of Garden Communities built according to Garden City Principles. **They are an attempt to provide plausible choices for the vision and strategy**, reflecting reasonable alternative views of future challenges and opportunities and different interpretations of potential risk and reward or attitudes to it.

The scenarios are defined at a high level, which is appropriate to the stage of development of the project. **Our focus is on identifying interactions between potential elements together with their main impacts and expected economic and social outcomes**. We include some observations on the likely particular strengths of the individual communities, which are considered in more detail in the Strategic Recommendations chapter.

Opportunities for leveraging existing plans and sector strengths

Delivery of Garden Communities

Offsite construction

Offsite construction and Building Information Modelling (BIM) used effectively in tandem could deliver significant benefits for the new Garden Communities and North Essex generally. Directly, they can drive **cost-efficient construction of high-quality, sustainable homes designed on a bespoke basis according to Garden City Principles**. Indirectly, if North Essex is a first mover within the region this could **spur a sub-regional specialism in these new, high-tech methods and prevent a decline in the local construction industry** – as discussed this is currently a low-growth, low-productivity area but has the potential to be a dynamic, high-productivity sector as technological change takes hold, driving growth in GVA and skilled employment.

The construction of the Garden Communities presents a chance for North Essex to establish itself in this industry. Even within the next five years offsite construction is set to grow substantially in importance and disrupt the market. Large housebuilders are more likely to be able to adapt than smaller operations. There will be impacts in related industries also, e.g. architecture – BIM methods are different from those used in traditional architecture.

Opportunities: Garden Communities delivery

Offsite construction is an industry North Essex is well-placed to attract, and could be used to create quality sustainable homes.

Local energy generation boosts sustainability and could create employment.

Digital infrastructure is key in attracting certain sectors and digital home-workers.

All of the above boost the quality of life offer of the Garden Communities.

Catering for the **ageing population** and aiming to mitigate impacts by promoting independence and longer working lives.

The currently proposed I-CONSTRUCT project could provide a crucial boost to innovation in the local construction industry, including off-site construction, should it go ahead. If successful it would see the creation of a 629m^2 Innovation Hub in Braintree, supporting SME innovation in construction and utilities provision and supply chain development across the SELEP[56] area, and would be unique within the Greater South East. Its aims include the incubation of new SMEs, job creation, and increased innovation as measured by new product launches. Colchester Institute is a delivery partner for the project, and **this could lead to an early offer within North Essex of vocational courses and qualifications geared towards offsite construction**. Given that the industry is in its infancy, precisely assessing skills requirements is difficult, however the Construction Industry Training Board's 2017 report *Faster, Smarter, More Efficient: Building Skills for Offsite Construction* identified as an issue a lack of offsite-focused rather than generic training. Local provision of relevant skills will further improve North Essex's offer to the industry and ensure that it works for existing residents rather than relying on sourcing skilled labour from elsewhere in the country. The direct benefits of the project in terms of new jobs and businesses could be amplified if North Essex succeeds in establishing itself as an innovative centre for offsite construction with the skilled workforce and supply chain to match.

The existing construction maintenance industry serving traditionally-constructed buildings can expect a gradual drop-off rather than a collapse. Provision of infrastructure connections and the foundations onto which a modular building is placed will be done in the traditional way for the foreseeable future. It is unlikely that existing housing stock will be replaced by modular housing very rapidly. This gradual change will mitigate potential impacts on traditional construction in areas like North Essex (Tendring in particular) where construction is a relatively high proportion of the economy – not all workers in the current industry will necessarily be able to transfer their skills to offsite. However higher productivity in construction does open the door to more rapid recycling of the housing stock in the long term – **ultimately this presents an opportunity if North Essex has established itself within the modernised construction industry and a challenge if it has not**.

When considering the sectoral picture in the Challenges and Opportunities section, construction was classified as a population-serving sector rather than part of the trade-oriented economic base. It is also a sector with relatively low and stagnant productivity. In the UK from 1994 to 2015, productivity grew by approximately 50% in manufacturing and by 30% in services and the whole economy. In construction it barely increased.[57] The rise of offsite will begin to change this. As a higher proportion of value-add takes

[56] South East Local Enterprise Partnership, comprising Sussex, Essex, and Kent including associated unitaries

[57] The Farmer Review of the UK Construction Labour Model, 2016

place away from the intended location of a property, what is produced in one area may meet demand elsewhere – not just nearby domestically but even overseas if marine links exist. **There is every reason to expect significant productivity increases** under a move to a manufacturing-style system.

Important factors in offsite construction investment decisions will include digitalisation (as BIM requires **high-speed Internet**), road and marine links for transport of the finished product and sourcing of inputs, and an appropriately-skilled workforce.

Offsite construction

Garden Communities present an opportunity to realise a **first-mover advantage**.

Potential for major productivity gains and creation of **skilled employment**.

Developing relevant **skills** through I-CONSTRUCT and Colchester Institute will be key.

Physical and digital **infrastructure** will also be important.

Major residential construction projects in the **wider region** make this a long-term opportunity.

North Essex's **proximity to the Haven Ports** is an advantage in cost-effective sourcing of aggregates and construction materials from e.g. Scotland or the European continent, and the potential export of completed components. Given the high-tech nature of offsite and potential for greater automation, **the University of Essex** could also prove to be an asset. After **construction of Sizewell and Bradwell** is complete, a cohort of workers from these projects will be freed up to transfer their experience and skills to residential and commercial construction. To ensure that this happens, interventions should take place to see that: a workforce equipped with the relevant IT and other skills is available; road infrastructure can accommodate regular transportation of building materials and housing modules; and Internet speeds are competitive. Indeed, all of these interventions will help ensure that an EDF construction facility to serve Sizewell and Bradwell is based in North Essex.

There are arguments to be made for each of the Garden Communities as a location for offsite construction facilities: for example[58] I-CONSTRUCT should particularly benefit the two either side of Braintree, the Port of Harwich is close to Tendring-Colchester Borders and could be instrumental in serving Sizewell and Bradwell. However, it is not currently clear what the efficient scale of production in offsite construction will be. Unless small facilities are viable one in each Garden Community is unlikely to be feasible.

As construction – or at least its growing offsite element – becomes a more desirable, high productivity sector, there will be competition between locations to attract value-adding facilities to serve the large increase planned in the rate of housing construction. If North Essex is successful in establishing a hub based on its proximity to input supply via the Haven Ports, suitable physical and digital infrastructure, and a skilled workforce it could be well placed to succeed in this sector, helping to supply not just the Garden Communities but also the **major programmes of housing associated with transport infrastructure investment in neighbouring corridors and in London**.[59]

[58] These and other arguments are considered in more detail in the Strategic Recommendations

[59] For example, 100,000 homes are expected to be unlocked in the London - Stansted – Cambridge corridor and the NIC has developed integrated plans for unlocking 1 million homes in the Oxford – Milton Keynes corridor by 2050.

Local energy

The construction of the Garden Communities themselves provides **opportunities to develop small-scale energy generation**. There is a national trend towards localisation of energy generation for two key reasons: minimisation of transmission and distribution losses and the potential to use excess heat in 'district heating' schemes, as an alternative to traditional gas-fired heating. District heating will help to lower domestic energy consumption and achieve the Garden Communities' carbon-neutral goal. Greater energy efficiency – achieved both by district heating and the design of the houses more generally (insulation can be improved by offsite manufacturing due to more precise production techniques) – will lower energy bills within the communities, making them more attractive to potential residents. **Clean Growth is part of the Industrial Strategy**, however encouraging a switch from older and less environmentally-friendly systems can be difficult. An advantage of newly-constructed settlements such as Garden Communities is that the greenest technologies can be used from the start, so implementing this would be well-aligned with government objectives and easy relative to retrofitting.

Colchester's Northern Gateway will employ a district heating scheme using a water source heat pump (but not generating electricity). **Further projects based around the Garden Communities could also include development of generating capacity –** in addition to the benefits mentioned above this would provide an opportunity for the further local development of the energy technology industry. Generators could be gas-fired or even small nuclear reactors, using Stable Salt Reactor (SSR) technology. SSR reactors would use a fuel consisting of molten salt and uranium or plutonium, be intrinsically safer as caesium and iodine fission products form stable salts rather than remaining gaseous, and are projected to be competitive on price - £30 per MWh, less than one third of the Hinkley Point C strike price.

Ultra-Fast Broadband

The installation of the Colchester Ultra-Fast Broadband network means that town centre businesses can now access upload and download speeds of **one gigabit per second**. Expansion of this network is planned, including to the new Northern Gateway development.

Colchester has this network in place well before other parts of the country (indeed, before some even have superfast broadband) – these speeds are unique within Essex outside Southend. **This represents a clear competitive advantage in attracting innovative, knowledge-intensive businesses** which rely on high-speed Internet like high-tech manufacturing, life sciences, and the creative industries – the 37 Queen Street creative incubator in Colchester town centre was one of the first locations to benefit from this connectivity.

Investing to extend ultra-fast broadband to the Garden Communities and the entire sub-region would provide a **major source of place-based competitive advantage**. It would help attract major high-tech investments, create an environment in which digitally-oriented start-ups can flourish, and improve quality of life in the Garden Communities.

The government has signalled as part of the *Future Telecoms Infrastructure Review* that full-fibre broadband should be fitted as standard in all new homes and has set further targets for its expansion to the rest of the country.[60] Therefore **expansion in North Essex would be aligned with Industrial Strategy objectives and funding may be made available**. Other areas of the country may however begin to catch up, so rapid action will be needed for North Essex to maintain its edge and ensure a first-mover advantage in attracting businesses which rely on high-speed Internet.

[60] https://www.bbc.co.uk/news/business-44921764

Demographic considerations

The ageing population within North Essex and particularly Tendring identified in the previous chapter is a potential issue, as it will **increase pressure on the social care sector**, which is predominantly low-skilled. Measures to minimise this pressure are desirable because:

- Limiting labour demands will **maximise potential growth of high-productivity employment**;
- Future **constraints on unskilled labour from the EU could emerge** and present challenges to meeting demand, however unskilled labour from other sectors may be released due to automation;
- Doing so will offset **national and local fiscal challenges** associated with care provision.

Designing and delivering Garden Communities which support independent, healthy living is one strategy. However, the population of new settlements is likely to be disproportionately young, and encouraging instead a higher non-working population in them could limit their potential as centres of employment and economic activity to lift up the performance of North Essex as a whole. Improving access across the whole of North Essex to **social and leisure opportunities for those in or approaching old age** would be one way of improving physical and mental health and therefore reducing care costs.

An alternative approach is the **promotion of longer working lives**, identified in the Government Office for Science's report *Future of an ageing population*[61] as a major opportunity to mitigate the effects of demographic change across the UK. The benefits of doing so can be summed up as follows:

- **The direct boost to GVA** from having more people in work;
- **Potential improvements to cognitive function** – those in employment perform better on almost every measure, though remaining in work later in life is likely to be an effect of good cognitive function, not just a cause of it;
- **Reduced care requirements** as a result of the above. This not only reduces demands on the health and social care sector but also on family members who provide care – they are less likely to work full-time and more likely to be economically inactive than the general population, so overall workforce participation may be improved.

Economic strategy can support longer working lives as follows:

- Promotion of a **wide range of opportunities for high-quality employment in the local area** will help encourage people to remain in the workforce since time and money costs of commuting are minimised, making it easier to maintain a high quality of life while continuing to work;
- Garden Community design can **enable home-working through design of dwellings and provision of digital infrastructure**. Older workers are already disproportionately likely to use their home as a workplace[62] as this and other forms of flexible working help them to remain in work whilst balancing it with other responsibilities such as caring for a spouse or for grandchildren. In fact, this benefits carers of all ages who are enabled to stay in employment through the flexibility it offers;

[61] Referenced in the government's 2017 Industrial Strategy under Ageing Society

[62] Percentage of UK workers using home as a workplace in 2014 by age group – 16-24: 5.1%, 25-49: 12.3%, 50-64: 18.3%, 65+: 38.3%. *Future of an Ageing Population*, page 60.

- **Adult learning** is heavily focused on younger age groups at present, however by targeting it at those later in life as well it is possible to keep their skills relevant as requirements – most notably digital skills – change and therefore increase participation among this group.

Another opportunity arising from the UK's ageing population is the potential for **age-related innovation, drawing on the artificial intelligence strength of the University of Essex** to develop technology-based solutions for healthy, independent living. This would follow the example of and possibly include collaboration with the Positive Ageing Research Institute at Anglia Ruskin University. If other elements of the strategy – namely employment space and skills – are in place, commercialisation of research could lead to benefits not just for the university but the whole area, creating employment in these new industries, which will of course only grow as the UK's elderly population does.

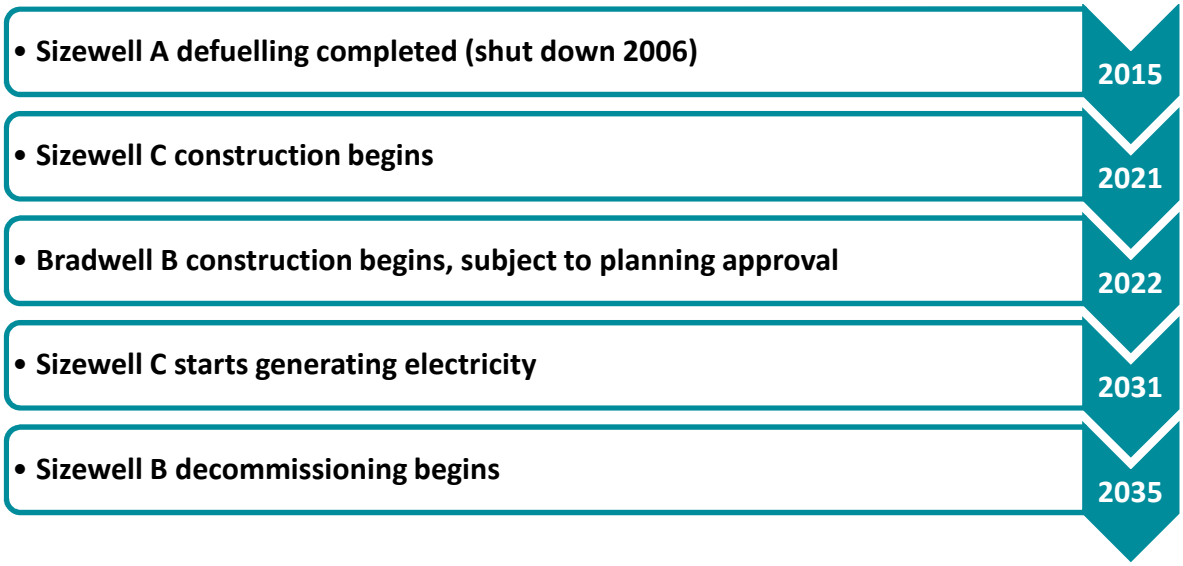
Ageing population will undoubtedly pose challenges for the UK as a whole, particularly North Essex. However, a forward-looking strategy designed to **enable those who want to work later into life to do so and promote health and independence** will help to maximise economic success in this demographic context.

Supporting the development of the sub-region

Nuclear energy projects

Nuclear projects are planned at Sizewell and Bradwell in the coming years, presenting major opportunities for North Essex. These are shown on the timeline in Figure 33.

Figure 33: Timeline of key events at Sizewell and Bradwell



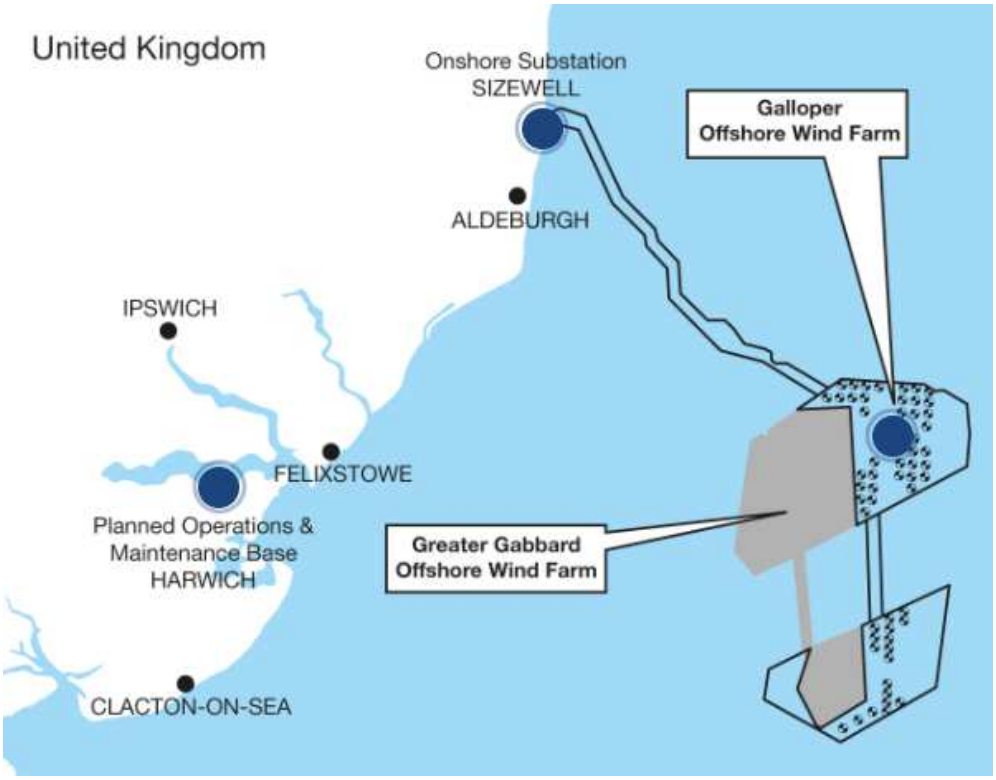
EDF has identified North Essex as a potential site for offsite construction of nuclear facilities and associated buildings, as geographical constraints at the Bradwell and Sizewell sites make onsite construction logistically difficult. The Port of Harwich facilitates cost-effective access to inputs and is equidistant between the two destination sites. There are expected to be two employment peaks during reactor construction, with around 6,000 jobs needed at each. Skills developed by those constructing

nuclear plants offsite could be transferred to the production of residential and commercial buildings, furthering the growth of the North Essex offsite construction industry to serve the wider area.

Renewable energy

The Suffolk-Essex energy coast is already a significant asset for North Essex. The Port of Harwich services offshore wind delivery for areas from Suffolk to Kent, and there is a strong presence of manufacturing industries serving offshore wind across North Essex, particularly in Braintree. For instance the Greater Gabbard Offshore Wind Farm (140 turbines[63]) and recently-completed Galloper Offshore Wind Farm (56 turbines[64]) are located near Harwich and the latter will be serviced by an Operations and Maintenance Base in Harwich which will employ 70 people.[65] This is shown in Figure 34. One of the four 'Grand Challenges' identified in the government white paper *Industrial Strategy: Building a Britain fit for the future* is Clean Growth, with offshore wind identified as an area where government will work with business to grow the industry – in fact Greater Gabbard is already planning expansion. Therefore **significant further development is likely and North Essex is well-placed to capitalise on its existing strengths** both in manufacturing and operations.

Figure 34: Greater Gabbard and Galloper Offshore Wind Farm Map



North Essex's geography does not lend itself to use of wave or tidal power. Given relatively high levels of sunlight in North Essex solar power may be an option. Building new solar farms on land would face severe planning and cost constraints, however siting them offshore or designing them into the Garden Communities are options. Significant technical hurdles do however remain to effectively marrying solar

[63] http://www.4coffshore.com/windfarms/greater-gabbard-united-kingdom-uk05.html
[64] http://www.galloperwindfarm.com/about/
[65] https://www.energylivenews.com/2018/04/03/full-throttle-for-353mw-uk-offshore-wind-farm/

power with battery technology for a reliable supply. Onshore wind as well as offshore may be viable but would face substantial planning constraints. Other energy options include biomass, using imported woodchips from Europe or North America or waste sourced from local agriculture (unlikely to be viable beyond a radius of about 30km), and growing of energy crops; either for burning to produce energy or for conversion into biofuels. 50% of the setup cost of establishing energy crops is currently subsidised by the EU, however this may be subject to change in the near future.

Opportunities: sub-regional

Nuclear energy projects provide opportunities for offsite construction and the Port of Harwich.

Existing strength in **renewable energy** for Tendring and Braintree could grow under the Industrial Strategy.

Expansion at the **University of Essex** together with its existing strength in AI and robotics provide opportunities for growth of the emerging creative cluster. Applications in other industries include nuclear decommissioning.

Stansted Airport expansion plans could make North Essex more attractive to major investment, depending on the future strength of transport links. These are also relevant to attracting the growth of the **London-Stansted-Cambridge corridor**.

The University of Essex and the Creative Industries

The University of Essex, located to the east of Colchester and near the proposed Tendring-Colchester Borders community, presents several exciting opportunities for growth in North Essex. **Employment space for knowledge-intensive industries is already being provided** by the construction of a 3,500 sq m (38,000 sq ft) Innovation Centre at the existing research and technology park, the Knowledge Gateway. The university can act as a talent pipeline for these industries, with 4,500 graduating each year – if the industries exist to provide some of them with gainful employment and retain them in North Essex after graduation the effect could be transformative. Even in the absence of the Garden Communities or NEGC Ltd interventions, the provision of this employment space will **facilitate the expansion of Colchester's existing creative cluster** and could provide a boost to nuclear decommissioning and offsite construction in the area.

The university is expanding rapidly; its 2013 strategic plan targeted a **50% increase in student numbers by 2019 with further growth thereafter**. This may include a new engineering department – an exciting prospect as the East of England currently lacks a research-intensive university with an engineering specialty and a local orientation. Given the substantial upfront cost of construction, this relies on finding a business partner.

Robotics will play a greater role in the nuclear decommissioning process in the future; as automation will also be used in offsite construction there could be **opportunities for the University of Essex in artificial intelligence, which is an existing area of strength** for it. The university is part of the National Centre for Nuclear Robotics, a consortium working to develop robotics with applications in the nuclear industry.

Across the UK, collaborations between academia and industry ("**university-business partnerships**") are forming the basis of **high-productivity, knowledge-intensive clusters**. Prominent examples in high-tech manufacturing include the National Automotive Innovation Centre in Warwick and the Advanced Manufacturing Research Centre in Sheffield. The University of Essex already shares its expertise with

local businesses through consultancy, contract research, and Knowledge Transfer Partnerships[66]. Therefore research opportunities identified in this strategy – for example using AI in nuclear robotics, offsite construction, and health and care innovation – could be commercialised, **generating high-skilled employment and growing the economic base**.

The Garden Communities project will provide the opportunity to attract skilled workers through the provision of quality homes. Employment space provided alongside these should take into account sectors which may expand based on the current and future specialisations of the University of Essex. Specific interventions to support the university's expansion and the development of successful business partnerships could include:

- Employment space provision around Tendring-Colchester Borders geared towards engineering and high-tech manufacturing, to complement the provision for digital and creative industries already underway at the Innovation Centre;
- Provision of student-suitable homes within the Tendring-Colchester Borders community;[67]

Unfortunately, Colchester's recent bid to attract a Channel 4 creative hub was not successful[68]. This could have provided around 100 direct jobs, although the experience of the BBC's movement of London jobs to MediaCity in Salford suggests the net employment effect would have been minimal[69]. Nevertheless, hosting a major broadcaster may have boosted the wider profile of Colchester and North Essex and attracted further investments. With this in mind, **future opportunities to attract major creative sector investments could be highly advantageous for North Essex**.

Stansted Airport expansion

Stansted Airport is currently focused on the low-cost and leisure markets, and its connectivity to North Essex is not as good as its proximity would suggest[70]. Therefore it is presently of limited importance in firms' investment decisions, though this could change in the near future as **Stansted has set a more ambitious path for growth** since its acquisition by Manchester Airports Group. A strategic plan for developing the airport over the period to 2030 includes transformative investment in the facilities and expansion of capacity:

- In April 2017 planning permission was granted for a £130m purpose-built arrivals building, expected to take up to three years to complete. Investment in other improvements in the main terminal is planned, with completion expected by 2022;
- The airport expects to reach its current planning cap of 35 mppa (million passengers per annum) by the early 2020s – a substantial increase over the 25.9m served in 2017;
- It has submitted a planning application to raise this cap to 43 mppa[71], which would be the most efficient use of its single runway.

---

[66] https://www.essex.ac.uk/business/expertise

[67] http://investessex.co.uk/blog/200m-expansion-of-the-university-of-essex#.WqY_LGrFK00

[68] http://www.eadt.co.uk/news/ipswich-and-colchester-miss-out-on-channel-4-creative-hub-scheme-1-5541294

[69] http://www.centreforcities.org/press/bbc-move-salford-brought-jobs-boost-mediacity-minimal-impact-employment-across-greater-manchester/

[70] Detailed travel times on Table 19, in Chapter 3: Strategic Challenges and Opportunities

[71] Within the same flight numbers and carbon emission restrictions

All this is to be accompanied by an **increase in long-haul and business-oriented flights**, so the airport could become a much more significant investment factor in the coming years. Likely sectors include logistics and high-value manufacturing and business services given their role in the airport's supply chain and freight export opportunities arising from expansion – **Stansted is already the UK's third-largest freight airport**. The expansion programme includes warehouse, industrial, and office space near the airport[72], however potential growth in these sectors should be borne in mind when making employment space and skills decisions for North Essex, as the provision immediately around Stansted may not fully satisfy demand.

Employment opportunities for North Essex residents are likely to increase as a result of these developments and with improved transport links these sectors may expand into the area. These may include innovative, high-tech logistics, building on proximity to both Stansted and Harwich and the research specialties of the University of Essex.

Greater economic integration with the London Stansted Cambridge Corridor

This corridor is highly **prosperous but currently facing severe labour and housing supply-side constraints** to growth. These may yet be loosened within the corridor through regeneration of its underperforming areas such as Harlow or new developments such as Alconbury Weald, northwest of Cambridge.

Given North Essex's proximity to the corridor and particularly to Stansted Airport, it may be able to capitalise on the corridor's expansion. **Attracting high-tech industries and their skilled employees** to North Essex (especially West of Braintree, which will be in the closest proximity to Stansted and connected by a dual carriageway section of the A120) and would boost the sub-region's productivity and create further direct and indirect employment opportunities for residents. Strategy which ensures the corridor's continued growth benefits North Essex would include:

- Providing a **quality of life offer** in the Garden Communities (particularly West of Braintree) that attracts highly skilled and mobile workers;
- Improving **STEM and IT skills** among residents, ideally via partnerships between educational institutions and employers[73];
- Developing **east-west connectivity** to reduce journey times from North Essex to Stansted and Cambridge[74];
- Constructing **quality employment space** tailored to industries struggling to expand within the corridor[75]

With a major growth area in high-tech, future-oriented industries on its doorstep and the chance to change economic trajectory provided by the Garden Communities, North Essex has an exciting

[72] Ranging from 10,000-400,000 sq ft (1,000-37,000 sq m), https://www.magproperty.co.uk/locations/london-stansted-airport/development/

[73] This is a key recommendation of the London Stansted Cambridge Corridor Growth Commission's report in response to industries there struggling to source the workforce they need

[74] Whilst this may be outside the direct control of NEGC Ltd, the combination of Stansted expansion and the additional population in North Essex will make a strong case for national government to improve road and rail capacity

[75] The Chesterford Research Park in Uttlesford provides approximately 900,000 sq. ft. of space for biotechnology and pharmaceutical R&D – there may be sufficient demand to justify such a facility in West of Braintree

opportunity to support the growth of the London Stansted Cambridge Corridor and even become part of it, extending the 'arc of prosperity' to the east.

Additional requirements

Transport Infrastructure improvements

A full assessment of strategic transport requirements is outside the scope of this report and our approach is therefore restricted to some general observations and identification of high level opportunities.

The agenda for improving strategic roads in North Essex is well established, with key strategic projects that will unlock opportunities in the Garden Communities and across the sub-region including:

Opportunities: wider considerations

Improved **east-west** connectivity is particularly important and road improvements are planned.

Ambitious **rail investments** could connect the Garden Communities with each other and with strategic locations.

Skills improvements are vital given the gap with comparator regions and to realise opportunities from automation.

- A dual carriageway link to replace the existing single carriageway section of the A120 between Braintree and the A12 west of Colchester;
- A12 capacity enhancements, including widening to three lanes between Chelmsford and Ipswich.

In addition to local road connections, there are plans for a **sustainable public transport** system to serve the existing and proposed settlements in North Essex. We have reviewed the North Essex Rapid Transit study undertaken by Essex County Council. It is clear that further work will be needed to identify feasible options in detail.

Our observations on broad transport requirements are as follows:

- Appropriate **local and strategic transport links will be critical** to the attractiveness of the Garden Communities as places to work, live, and invest in;
- If designed appropriately they will enable an **ambitious approach to future sustainability**. We recommend a fully integrated approach to the strategic planning of the settlements, recognising the link between viable development densities and the quality of transport provision;
- Decisions around local transport planning provide concrete **opportunities to align with Industrial Strategy objectives** (Clean Growth, Artificial Intelligence) and Garden Community principles around healthy lifestyles and public transport, e.g. with cycle-sharing schemes and autonomous vehicles for short journeys within settlements;
- There is a clear **gap in east-west connectivity**, both at the sub-regional and more strategic level. In addition to the A120 road scheme we believe there could be very substantial benefits arising from creating a direct public transport link between Stansted Airport and Braintree (and therefore the rest of North Essex);

- **We believe there are some strategic considerations that favour investment in a heavy rail infrastructure based approach** (with conventional or tram – train operation or both). Garden Communities will grow the economic mass of the sub-region, increasing the viability of rail schemes (which are characterised by large economies of scale and 'indivisibilities' in the provision of capacity). In our view further work on heavy rail infrastructure options should be carried out to supplement the findings of the North Essex Rapid Transit Study, which did not investigate this mode.

Figure 35: Potential orbital rail connections serving Garden Communities using a new Braintree to Stansted link

We have done some high level thinking about a possible new **direct rail link between Stansted and Braintree** and the possibility of linking it to the GEML at Witham[76] with a new east-facing chord[77] and junction. It should be noted that this is intended to be illustrative and that no feasibility work has been

[76] There is little unused capacity on the GEML but new 'east – west services' could potentially use capacity freed up by diversion of freight from Felixstowe onto an upgraded cross country route via Nuneaton (30+ trains per day) and a future 'digital railway' signalling upgrade.

[77] The curved piece of track shown between Braintree and Colchester – this would allow direct rail journeys between the two rather than requiring interchange at Witham. With this in place direct services between e.g. Cambridge and Clacton or Ipswich and Stansted would be made possible.

undertaken by Cebr[78]. This approach could serve a number of markets simultaneously, as shown in Figure 35. For example, it could:

- Provide a **public transport link between the three Garden Communities and also with Colchester, Ipswich, Clacton, Harwich and other locations** which would help improve access to employment opportunities for Garden Community residents and others across the sub-region;
- Link the whole of North Essex to Stansted Airport, improving prospects for rail in surface access trips to and from the airport, and **promote international business and tourism**;
- Provide direct services between Colchester and the London Stansted Cambridge Corridor, and possibly locations on the planned Cambridge-Milton Keynes-Oxford route, encouraging **greater economic integration between these corridors**. This would also improve journey times to the Midlands and north and reduce the need to travel via London;
- **Provide an alternative route for Braintree to London services**, e.g. through extending the Stansted Express to Braintree (we believe a journey of under an hour would be feasible). This could free up capacity on the GEML to meet growth in other markets.

Skills interventions

The challenges and opportunities section identified the **vital importance of investment to modernise and improve skills**. We consider low or poorly matched skills to be a key risk factor to the success of the strategy. Key considerations we have identified are:

- Digitalisation and AI are expected to make **30% of all UK jobs susceptible to automation in the next 15 years**. Cebr analysis indicate that North Essex's exposure to this is in line with the national picture;
- The **Industrial Strategy White Paper identifies addressing skills as a priority** in addressing the UK's chronic productivity gap with its peers;
- There are **significantly lower skill levels in all parts of North Essex than in the comparator regions** and rates of improvement in the sub-region over the last ten years have not matched other locations in the GSE or UK;
- Skills are vital if the population of North Essex is to **access opportunities that the strategy identifies**, and will be a factor in determining how successful the area is in attracting inward investment;
- **Substantial investment in improving skills will be needed** to address low participation issues in particular areas, especially Tendring, and to ensure the workforce is able to meet emerging requirements.

[78] However, a scheme which would achieve many of the same objectives is outlined on p. 133-136 of *Beyond HS2*, a May 2018 report by Greengauge 21. They propose a high speed line from Stratford to Stansted, branching from there to Cambridge and Colchester, thus linking the West Anglia and Great Eastern Main Lines. This would reduce journey times along the London Stansted Cambridge Corridor, between North Essex / Suffolk / Norfolk and London, and provide interchange with HS1, as well as connecting North Essex to Stansted. http://www.greengauge21.net/wp-content/uploads/Beyond_HS2WEB.pdf

With the right quality of life offer and interventions on employment space and infrastructure it is plausible that modern, high-skilled employers will be attracted to North Essex. Without development of skills among the local population, however, these industries will rely on bringing in skilled workers from elsewhere and the benefits to the existing population will be limited.

The Industrial Strategy places a strong focus on expanding apprenticeships and technical education. By working with further education providers such as Colchester Institute it should be possible to take full advantage of this. Doing so will be important across the sub-region to ensure that the opportunities automation brings are fully realised and significant employment losses do not occur – this is particularly pertinent to manufacturing activity around Braintree. The intersection of deprivation issues and a particularly acute skills shortfall in Tendring mean that the **additional Industrial Strategy funding to support apprenticeship take-up in disadvantaged areas** ought to be available. If this opportunity is realised participation and deprivation issues there may be ameliorated.

More detailed options or recommendations on skills are beyond the scope of this strategy. It is however clear that in all scenarios a **North Essex skills strategy and action plan should be developed** as a key element of the economic planning for the Garden Communities and North Essex sub-region.

Strategy scenarios

The construction of three garden communities with 43,000 new homes over the next 50 years will influence the competitive position of North Essex in many ways. In the previous section we set out a wide range of strategic factors that are expected to play a role in shaping the area's economic future. In this section we have identified some opportunities that existing plans and local strengths provide to the Garden Communities and wider sub-region together with some analysis to help identify further transport and skills requirements.

This is a high level assessment of a very wide sweep of issues over lengthy periods of time and there is considerable uncertainty surrounding many aspects of it. Some of the opportunities may not appear as we envisage; some of the challenges may be resolved and others may intensify. There is room for alternative views about many of these factors and also for different attitudes to risk.

To reflect this we set out below **two alternative high level scenarios** that reflect plausible futures but with some different assumptions about the development of the economic base and the nature of the population that moves into the Garden Communities. From these flow some different transport and skills requirements and a different set of impacts and outcomes. There are a number of factors in common to both scenarios, namely the assumptions about:

- Consistency with Garden City Principles including the importance of a strong focus on 'place quality', and the need for integrated planning of infrastructure and other interventions;
- Opportunities set out in the toolkit in relation to delivering the Garden Communities:
    - ultra-fast broadband provision;
    - local energy;

The scenarios are best seen as **two plausible cases** but are not mutually exclusive. Our strategy recommendations at the end of this report draw on opportunities and interventions identified in both scenarios to give a 'blended' approach.

Scenario 1: "lifestyle led"

Lifestyle led scenario

Focus on the **quality of life** offer to attract and retain skilled workers.

A greater role for **freelancers and entrepreneurs**, particularly in creative sectors.

Digital infrastructure central to strategy.

In this scenario there is a **less interventionist approach to inward investment** which means the local economic base has fewer large companies offering opportunities to the existing population. The vision instead is that it will **develop more organically** on the basis of remote opportunities in the wider economy that can be serviced by individuals working in North Essex who rely on **digital communications and transport links** for occasional business travel. The implication is that the economic base is **more skills intensive and less capital intensive**. **'**Place competitiveness' is relevant at the level of the individual and the basis for this is the attractive **'lifestyle' offer** that the Garden Communities and wider area offer (coast, countryside, culture etc).

It is assumed that:

- Technological changes enable significant numbers of workers to work either remotely from their employers' bases or independently as '**backyard capitalists**';
- There is a strong focus on provision and development of **cultural amenities** in the Garden Communities and wider area;
- The Garden Communities are successful in **attracting highly skilled younger workers** from outside the North Essex area who:
    - Do not need or want to travel to work daily and who are seeking a high quality, sustainable but affordable environment in which to live. The **ultra-fast broadband offer is a major pull factor** as it will enable both home working and leisure options;
    - Have (or are planning to set up) home based businesses that will contribute to the local economic base. They will value the ultra-fast broadband and the **high quality living environment** as will they spend a lot of time in the area.

This scenario is focussed on generating **higher average disposable incomes** as opposed to closing the GVA per capita gap with the comparators. Both home based workers and backyard capitalists will generate disposable income by providing high value services that are sold outside the area. They will spend a proportion of that in the sub-region on leisure, education and other services, boosting local incomes through indirect economic multiplier effects. In the case of home workers for companies outside North Essex, earned income will not contribute directly to local GVA whereas earned income of North Essex-based entrepreneurs will represent a direct economic impact.

The University of Essex's provision of employment space and digital specialisations, together with existing strengths of the creative sector in Colchester, should **spur continued growth of the area's start-up culture**. Other opportunities associated with the proximity of the University of Essex include the retention of ambitious graduates who are attracted to the lifestyle offer of high-quality affordable homes with ultra-fast broadband in the Garden Communities. These graduates are likely to provide the workforce for expansion of creative businesses, or to set up their own. **Expansion of high-end digital infrastructure** to most or all of North Essex will of course be integral to this strategy. It should also be future-proofed, to allow for rapid upgrades to infrastructure as higher speeds become available, so the area can maintain a competitive edge.

Both in the design of the Garden Communities and in the wider area, policy to promote and improve the **place quality** of North Essex is central to this scenario. Green space provision is of course central to the Garden Community approach in any case, and attention should also be paid to fostering a broader cultural scene[79]. Developing cultural amenities in the existing settlements – for example drawing on Colchester's Roman history – is perhaps of greater importance, and will have the additional benefit of promoting tourism in the wider area. Research into quality of place[80] as a draw for creative people suggests that authenticity is key and quality of place emerges over time, so focusing on and bringing out the area's existing cultural strengths is likely to be more fruitful than attempting to create new ones in the Garden Communities.

The combination of a digitally-skilled workforce, excellent quality of life offer, and modern digital infrastructure could accelerate the **clustering of and future investment by creative and digital businesses**, and provide a 'sticky offer' which keeps businesses in the area when they grow rather than seeing them migrate to London.

We expect that there would be **incremental growth in the existing economic base** of the sub-region, although high rates of automation in some sectors, e.g. manufacturing, may mean there is considerable displacement of established jobs. Commuting patterns would likely continue roughly as they do presently. Opportunities in logistics and other lower skilled jobs are likely to be generated through expansion of Stansted and activities at the Port of Harwich.

In this scenario the lower skilled local population will find employment in population-serving activities that benefit from the increase in effective demand generated by the Garden Communities. Skills training and other interventions are focused on addressing specific issues of worklessness in particular locations within the sub-region. It is assumed that there is good **sub-regional transport** to support the lifestyle offer but high investment in strategic east-west rail connectivity is not critical to its success.

Our view of the likely particular strengths of each of the three garden communities in this scenario is as follows:

- Tendring-Colchester Borders – expansion of the existing creative cluster including activities linked to the University of Essex, off site construction;
- Colchester-Braintree Borders – start-ups, creative sector;
- West of Braintree – growth of existing local employers, activities with links to Stansted and some economic integration with the London-Stansted-Cambridge corridor.

[79] i.e. a 'café culture' to drive expansion of the 'Flat White economy'

[80] https://urbanland.uli.org/industry-sectors/what-draws-creative-people-quality-of-place/

Scenario 2 'Inward Investment Led'

Inward investment led scenario

Focus on attracting **inward investments** and **developing skills** of the population.

A major role for **large employers**, growing the economic base.

Transport infrastructure and employment space central to strategy.

In this scenario there is a **proactive approach to attracting inward investment** into the sub-region in order to attract more large employers and generate a range of high quality **employment opportunities for the existing population** of North Essex. The vision is to exploit the opportunities arising from technological and other changes and mitigate adverse effects e.g. of automation on people, in order to create a **strong, diverse and resilient local economic base**. It is therefore more focused on opportunities for applying technological developments to particular industrial sectors and less reliant on backyard capitalism and remote digital working. This is an ambitious vision requiring **high levels of investment in skills, capital and infrastructure**.

It is assumed that:

- Technological change will create a number of **valuable opportunities in traditional sectors** of the economy as well as causing **new industries** to emerge;
- The Garden Communities are successful in attracting **large scale inward investments** in modernising sectors by major employers;
- Local educational institutions effectively work with employers to **develop the skills required** to make these investments viable, for example through apprenticeship provision;
- There is a strong emphasis on **improving participation through skills development** in areas of low employment and **measures to make longer working lives more appealing**;
- Local authorities, educational institutions, and employers form **networks to compete for government funding** (e.g. Industrial Strategy) which magnifies the effect of other interventions;
- The housing offer in the Garden Communities is tailored to meeting **housing demand from the local population** and from those moving to work in emerging sectors in the area;
- There is a focus on providing **large scale employment space** in the Garden Communities and elsewhere in the sub-region.

This scenario is focussed on **redressing the gap in productivity and GVA per capita** that exists between North Essex and the comparator regions in the 'arc of prosperity' around London. The inward investment is expected to generate a large number of well paid jobs, providing a direct boost to local GVA and a high proportion of income earned by workers would be spent on services in the local economy, generating indirect economic multiplier effects. Furthermore, such **inward investment could stimulate local clusters of related high value activities**. Examples of the sectors under consideration and the strategies to grow them can roughly be categorised as follows:

*Local – identifying and growing **existing North Essex strengths**:*

- **Creative:** working to expand the existing Colchester-centred cluster by meeting employment space and digital infrastructure requirements;
- **Established manufacturing:** tailoring local skills provision to facilitate expansion of existing (mainly Braintree-based) businesses and finding out if local employers would expand into newer premises were they provided;
- **Energy:** leveraging existing strength and opportunities provided under the Industrial Strategy to further expand offshore wind generation around the Port of Harwich.

*Regional – making North Essex a desirable location for expansion of **strong clusters nearby**:*

- **Life sciences and IT:** skills, employment space, and infrastructure (physical and digital) solutions to encourage expansion of the cluster in the London-Stansted-Cambridge Corridor;
- **Finance and insurance:** encourage siting of back-office functions from London-based companies by providing appropriate employment space.

*National/International – competing for **wider opportunities**:*

- **High-tech manufacturing:** using the AI and robotics strengths of the University of Essex to encourage university-business partnerships and ensure North Essex is an appropriate place to commercialise research;
- **Construction:** skills and digital infrastructure improvements to establish North Essex as a centre for offsite construction, able to supply major housing and infrastructure projects (including Sizewell and Bradwell) in the Greater South East.

The approach maximises the opportunities arising from existing strengths in the area and potential **alignments with the Government's Industrial Strategy, with a focus on exports, productivity, skills, and developing successful sectors**. 'Place competitiveness' is relevant not just at the individual level but at the level of business location decision making. Relevant factors in this will be the **quality of life available to a potential workforce and local skills availability**. There is still a role for the lifestyle economy – indeed given the existing strength of the creative sector in Colchester and the opportunities afforded by the University of Essex, its expansion is probably a given even in the absence of the Garden Communities – but the strategy is less dependent on the ability of the sub-region to attract younger, footloose workers and entrepreneurs.

In this scenario, residents of the sub-region would be much less dependent on commuting to London as the area would have a much stronger economic base of its own. This should mitigate some possible Brexit related risk to Central London employment. The area would however be more economically integrated with other parts of the GSE, particularly the high-tech **London-Stansted-Cambridge Corridor**. It is possible that in time it will be viewed as an extension of it.

This scenario is **more active in relation to the lower skilled local population**, seeking to ensure there is a good match between the emerging economic base and the skills of the local workforce in order to attract major investments from companies seeking a skilled workforce. The quality of life offer of the Garden Communities will act as another draw to companies who want to be assured of holding on to these employees.

The economic outcomes envisaged in this scenario are dependent not only on good local transport links but also on **high levels of investment being committed to improving strategic transport links**, including east-west public transport connectivity with the London-Stansted-Cambridge corridor (and beyond). This will enable improved strategic transport links with other high growth corridors, to Stansted Airport (promoting trade, investment and visitor economy in the sub-region) and the rest of the UK.

This scenario is **higher risk – higher reward** and more dependent upon funding for large scale infrastructure investment from Government and wider political support – however the business case may also be more attractive to a Government pursuing the Industrial Strategy, with which this scenario is strongly aligned.

We think the three Garden Communities would be more integrated, with more interchangeable strengths in this scenario. Notwithstanding this, our view of the likely particular strengths of each of them is as follows:

- Tendring-Colchester Borders – inward investment associated with University of Essex's research strengths, with larger scale employment space for off-site construction industry, possibly renewable energy and environmental business cluster;
- Colchester-Braintree Borders – inward investment in digital and finance, digital start-ups, interaction with the London-Stansted-Cambridge corridor;
- West of Braintree – strong economic interactions with the London-Stansted-Cambridge corridor with high tech inward investment.

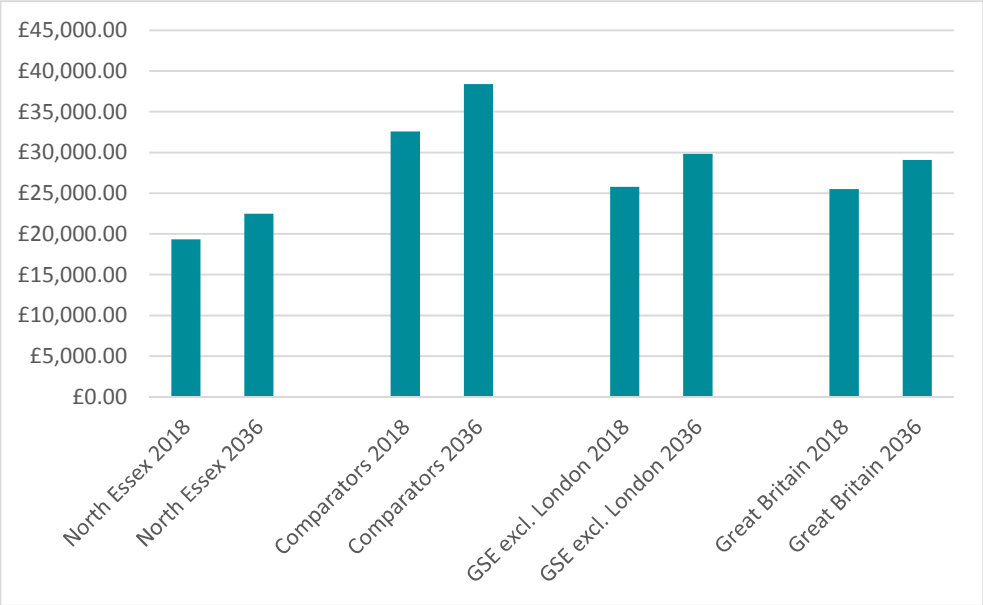
5 Economic Forecasting

Potential future economic performance in North Essex is estimated based on:
(1) Current trend growth
(2) Assessment of future trends' impact
(3) Direct and indirect impacts of construction
(4) Impact of Garden Community residents
(5) Strategy scenarios
Impacts to 2036 are considered first, followed by those to 2071 and estimated fiscal impacts.

Stage 1: Baseline trends

Cebr produces NUTS 3 level forecasts to 2036 for Great Britain based on current and past data to provide a **central estimate of future GVA and employment levels**. GVA per capita in 2018 and forecast for 2036[81] are shown in Figure 36 and used as our baseline position for the future economic trajectory of North Essex, the comparator regions we have identified, the wider region, and Great Britain.

Figure 36: GVA per capita forecasts, 2036



[81] Based on Cebr GVA forecasts and ONS population projections

On a continuation of present trends, North Essex's relative position will not change. Intervention which increases local growth – both that directly related to the Garden Communities' construction and wider economic strategy – could kick-start a process of convergence with high-performing comparator regions.

Stage 2: Future trends

As discussed under *Strategic Challenges and Opportunities*, exogenous **national and international factors will also influence North Essex's economy independently of local economic strategy** and affect other regions of interest.

Having reviewed the wider non-geographic factors and the economic characteristics of the areas under consideration, we see the impacts of the non-geographic factors in each area as highly uncertain and difficult to quantify. We expand on our thinking for each major theme below:

Exogenous impacts

The impact of future technological and political developments is highly uncertain.

Automation is expected to have a similar impact across North Essex and the comparators.

Brexit has upside and downside risks for international trade and downside risks for labour supply. Overall North Essex is likely to do better from it than the comparators.

Developments in the **energy market** favour North Essex relative to the comparators given its strength in renewable energy.

Overall we assume that North Essex experiences **slight positive** impacts on GVA and employment relative to trend owing to these factors.

Digital communications

These technologies have expanded rapidly in recent years and reshaped other industries in entirely unforeseen ways. Other things being equal, areas of existing strength in the digital industries – for example Reading and Cambridge – can expect to benefit the most from future innovation. However, North Essex is experiencing rapid growth from a low base in this sector, and the University of Essex has strong digital specialisations, so may also do well out of future changes.

The impact is likely to be positive across the board, but the extent and incidence of benefits is difficult to foresee.

Automation

Cebr has conducted analysis to estimate the **proportion of jobs susceptible to automation** in North Essex, the comparator areas, the Greater South East excluding London, and Great Britain. This was based on sectoral GVA shares in each area and a PWC study on the percentage of jobs at high risk of automation in each sector of the economy. **Across the four areas compared the difference in proportion of jobs affected was negligible**, at just under 30%[82] in all of them. Areas in which automation is

[82] See Appendix 3 for methodology behind this

considered relatively likely and North Essex's sector share was atypical include manufacturing (which is over-represented) and information and communication and business service activities (both under-represented) – these effects cancelled out leaving a similar at-risk percentage overall. Given the different sectoral shares, the impact of automation in North Essex may be greater or lesser than that in the comparators, depending on the extent to which it does or doesn't materialise in different sectors.

Jobs being 'lost' to automation is not necessarily a bad thing. Higher productivity results in higher GVA overall. Whilst it is possible that those replaced by robots are left with no work or very low-paid work, their redundancy may create a pool of labour to be employed elsewhere, perhaps in new industries. The extent to which each of these occurs is partially dependent on national and local initiatives to retrain and re-employ workers. Within North Essex, **the University of Essex's strength in Artificial Intelligence can help ensure that the opportunities are fully realised** – it already works with SMEs to implement AI and improve productivity.

Where the extent of automation is greater, both the risks and the opportunities are also greater. On balance **the effect of automation is likely to be positive**, though exactly how positive it will be for each of these areas is not clear.

Personal mobility

The impact of innovations here, for example self-driving cars, is uncertain as these technologies are largely in their infancy. It may be a few years or a matter of decades before they are widely adopted. To the extent that innovations in personal mobility entail increased automation they may put some people out of work.

Overall the effect of these innovations is **likely to be uniformly positive across the country** but it is not clear how large this effect will be or how soon it will materialise.

Construction techniques

Innovations in construction – chiefly offsite methods – have the **potential to make housing cheaper and quicker to build**. The benefits of this are likely to concentrate in two types of area:

a) Those in which housing supply is highly constrained and expansion of cheaper housing could facilitate employment and output growth.
b) The areas which ultimately host this industry and the highly-skilled jobs that go with it. Others will lose out as traditional construction and its low-skilled jobs disappear.

Housing supply is constrained in comparators, notably Cambridge, so they stand to benefit more strongly. North Essex and the GSE will also benefit, perhaps to a lesser extent as their housing constraints are less acute. Where the industry will be sited is less clear at present.

Energy market changes

Increasing demand for electricity matched with radical changes to supply as part of the move towards renewables will pose challenges, particularly for energy-intensive industries. **Areas with current or potential strength in renewables could do well, however.**

The impact on key future industries like digital communication and high-tech manufacturing could be negative if energy supply becomes more expensive and less reliable. Therefore the growth of these industries could be adversely affected. **Given the existing strength around Harwich, North Essex stands to benefit from expansion of the offshore wind industry**.

Brexit

At the time of writing negotiations are ongoing and a wide range of outcomes are possible. For all areas under consideration **both positive and negative outcomes are plausible** in the coming years when considering issues such as labour supply and international trade. Factors like automation and changes in construction and transportation technology will help mitigate downside labour market risks.

On balance, the downside risks are probably stronger for the comparators and wider region with their connections to London. The capital's concentration of business services and finance are highly sensitive to the outcome of negotiations. **North Essex has opportunities via the Haven Ports**, whose freight operations are oriented beyond the EU.

Industrial Strategy

If the Industrial Strategy works as intended it will have a broadly positive impact across the country, particularly by improving **productivity and international competitiveness**. As the policy is still in its infancy it is unclear whether or not these benefits will indeed occur.

The strategy could benefit the already-strong comparators through its focus on growing existing areas of strength. North Essex may also do well out of the move towards renewable energy and the aim of closing regional disparities. However, it is not clear which area is likely to benefit more.

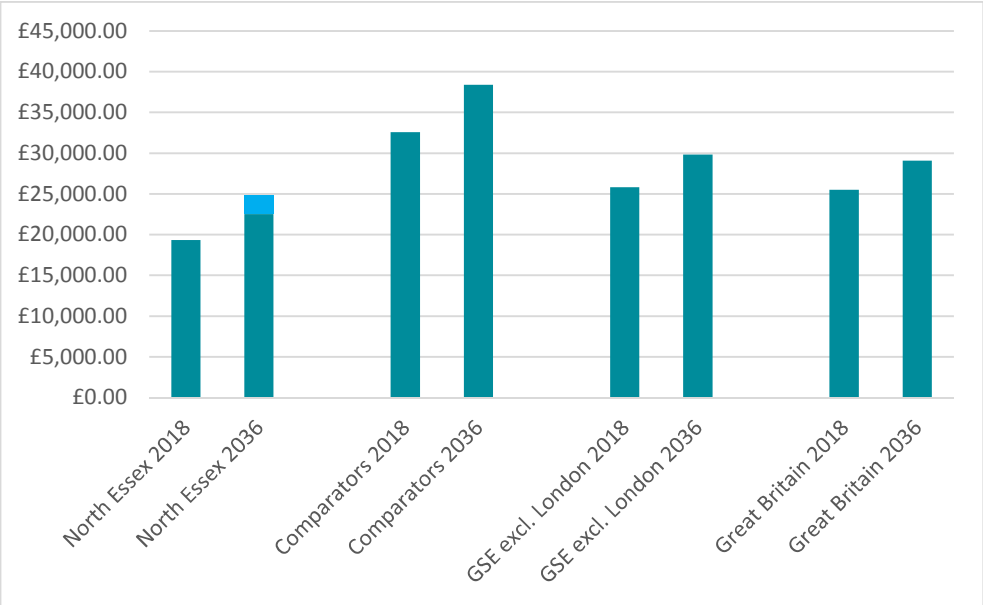
Changing working patterns

A move towards homeworking and freelancing and away from existing clusters would check the growth of comparators and **may benefit less urban locations like North Essex**. However it is not clear whether or not this will happen, and even if it does other models of clustering (the 'Flat White Economy') may emerge.

Future economic impacts of non-geographic factors

On most of the issues under consideration impacts are highly uncertain, and it is not clear which areas will benefit or lose out more. However, North Essex seems well placed to benefit from the move towards renewable energy and is better placed than its comparators when it comes to Brexit. When accounting for these wider factors in our projections **we assume that North Essex's GVA and employment in 2036 are higher by 10% and 5% respectively**[83]. Some convergence is therefore expected to occur. GVA per capita for 2036 increases by £2,250 to £24,748, as shown in Figure 37.

Figure 37: GVA per capita to 2036, with anticipated future trends



[83] Roughly equivalent to extra annual growth of 0.5% in GVA and 0.25% in employment from 2018 to 2036, so these assumptions are reasonably cautious

Stage 3: Construction impacts (direct)

The additionality framework

Direct construction impacts

We consider a **traditional** construction case, and an **innovative** construction case. In the latter, high-quality homes are built using locally-based offsite construction. The estimated net impact is much larger in this case due to higher GVA per house and lower leakage.

Additionality (or additional impact) is the effect of an intervention on a target measure or measures when compared to a baseline. The construction of up to 43,000 new homes within North Essex over a 50-year period is a major intervention which will lift GVA and create jobs in the area – the extent to which this happens depends on choices made in the construction of the homes. When assessing the additional impact on the economy, both the reference position – construction that would be happening anyway – and the impact of the Garden Communities project upon it should be considered.

The following three factors are key to determining the final outputs for the reference and intervention cases:

Leakage: The proportion of outputs which do not benefit the target group – in this case, the proportion of GVA from construction not accruing to North Essex.

Displacement: The extent to which intervention displaces output that would have happened in the absence of intervention. Provision of housing in Garden Communities is likely to reduce construction activity elsewhere (indeed, this is part of the reason for their construction).

Economic multiplier: Further economic activity driven by supply chain effects and additional local income (this determines the **indirect** and **induced** impacts of the Garden Communities' construction).

We consider two intervention cases for the Garden Communities project:

Traditional: Garden Communities are built in an 'off-the-shelf' manner using standard construction techniques and there are no interventions around skills, infrastructure etc.

Innovative: High-quality homes are built in the Garden Communities, using offsite construction from a facility or facilities based in North Essex; this would minimise leakage and maximise the economic multiplier. Assumed to be the result of intervention to attract inward construction investment, e.g. improving skills, making a success of the I-CONSTRUCT innovation hub to develop businesses along the supply chain.

Direct GVA effects of Garden Communities construction

Based on *North Essex Garden Communities Employment & Demographic Studies* from Cambridge Econometrics[84], the total number of new houses constructed in the Garden Communities each year from 2032-2036 will be 1,020, rising to 1,100 until 2051 and dropping thereafter. For our 2036 GVA per capita estimates we use the figure of **1,020 houses built each year in the Garden Communities**.

Based on target figures (sourced from each authority's local plan) for houses built per year in each of the three local authorities, our baseline figure for houses constructed per year is 2,186 – this is the number of homes we assume would be built each year in and around existing settlements in the absence of the Garden Communities project. **With the Garden Communities helping to provide housing, the amount of construction elsewhere in the sub-region should fall. We assume a displacement rate of 0.4** for the intervention cases, i.e. construction in areas other than the Garden Communities falling to 60% of what it was. With the additional 1,020 homes being built this takes total annual construction to 2,332, thus overall housing construction in the innovative and traditional construction cases increases slightly relative to the reference case, as shown in Table 20.

Table 20: Gross and net construction

		Innovative	Traditional	Reference
Gross construction	Garden Communities	1020	1020	0
	Wider area	2186	2186	2186
Net construction	Total homes built	2332	2332	2186

In assessing the overall contribution to growth, we also need to estimate how much each house built increases total GVA. Using ONS figures for GVA and employment by industry, **GVA per worker within UK construction today is £46,706**. We apply this to the traditional construction methods used in the reference and traditional cases, along with an assumption of 1.5 person-years per house – based on a Home Builders' Federation report which estimated this from firm surveys and housebuilding levels. This gives **GVA per traditionally-constructed house of £70,059**. WRAP (Waste & Resources Action Programme) conservatively estimates that 27% less labour is required for offsite construction based on a case study – i.e. workers in offsite are roughly 37% more productive, giving **GVA per worker of £63,981**. We continue to assume 1.5 person-years per house as the homes built in this case are of a higher quality. This gives a **GVA per innovatively-constructed house of £95,971**[85], as shown in Table 22.

[84] Which provides five-yearly estimates for cumulative homes built, based on dwellings trajectories agreed until 2034 by the local authorities with build-out held constant until the mid-point of the total target for each community is reached

[85] More efficient construction may mean that costs are lower, so higher GVA per house does not necessarily translate into higher house prices

Table 21: GVA per house (£) calculations

Innovative	£95,971
Traditional	£70,059
UK construction GVA, 2016	£108,124,000,000
Workers, Oct-Dec 2016	2315000
Construction GVA/worker	£46,706
Person-years/house	1.5
Offsite GVA/worker	£63,981
Offsite person-years/house	1.5
Offsite labour saving	0.27

Table 22: Gross construction GVA

		Innovative	Traditional	Reference
GVA/house	Garden Communities	£95,971	£70,059	£0
	Wider area	£70,059	£70,059	£70,059
Gross construction	Garden Communities	£97,890,304	£71,459,922	
	Wider area	£153,148,422	£153,148,422	£153,148,422

Gross construction GVA, accounting neither for leakage nor displacement, is calculated in Table 7. **Not all of the GVA created by the Garden Communities will go to firms and employees in North Essex** – we apply a leakage factor to account for this. **For the reference and traditional scenarios we assume leakage of 0.4. In the innovative scenario 0.2 is used**, as shown in Table 23, reflecting that an offsite construction facility and skilled workers for it are located in North Essex, so a higher proportion of the Garden Communities' construction spending goes to local firms.

Table 23: Leakage and displacement rates

	Innovative	Traditional	Reference
Leakage rates	0.2	0.4	0
	0.2	0.4	0.4
	Innovative	Traditional	Reference
Displacement rates	0.4	0.4	0

Our leakage and displacement factors can now be applied to the earlier gross GVA figures to give the **net local direct effects** of housing built both within the Garden Communities and the wider area in the innovative, traditional, and reference scenarios, as shown in Table 24.

Table 24: Net local direct effects

		Innovative	Traditional	Reference
Leakage	Garden Communities	£19,578,061	£28,583,969	
	Wider area	£30,629,684	£61,259,369	£61,259,369
Gross local direct effects	Garden Communities	£78,312,244	£42,875,953	
	Wider area	£122,518,737	£91,889,053	£91,889,053
	Displacement	£49,007,495	£36,755,621	
Net local direct effects	Garden Communities	£78,312,244	£42,875,953	
	Wider area	£73,511,242	£55,133,432	£91,889,053
	Total	£151,823,486	£98,009,385	£91,889,053

The net local direct effect is the total GVA impact of construction in each case. From these figures we can get the **total net additional local direct effects** of the innovative and traditional cases – i.e. their net local direct effect less that of the reference case, as shown in Table 25. The far lower impact in the traditional case reflects the higher leakage of benefits out of North Essex and the lower GVA per house.

Table 25: Total net additional local direct effects

	Innovative	Traditional	Reference
Total net additional local direct effects (innovative)	**£59,934,433**		
Total net additional local direct effects (traditional)		**£6,120,332**	

Based on total net local direct effects in GVA terms and our figures for GVA per worker in construction, the direct employment impact of the Garden Communities is estimated in Table 26. We assume uniform GVA per worker in the innovative case because offsite construction is more likely to be used in other local construction in this scenario, given that production facilities to supply the Garden Communities will have been established.

Table 26: Direct employment impacts

	Innovative	Traditional	Reference
GVA/construction worker	£63,981	£46,706	£46,706
Total net local direct effects	£151,823,486	£98,009,385	£91,889,053
Direct construction jobs	2373	2098	1967
Net direct jobs	406	131	

Stage 4: Construction impacts (Indirect and induced effects)

The economic multiplier reflects the extent to which the initial intervention drives further economic activity. There are two channels through which this additional activity is stimulated:

Supply linkage multiplier (indirect): purchases made along the supply chain to meet demand from beneficiaries of the initial intervention. Increased by stronger supply chain linkages within the area under consideration, i.e. this **multiplier is higher if those firms meeting the initial demand buy a higher proportion of their inputs from within North Essex**.

Other construction impacts

A higher multiplier is assumed in the **innovation** case, generating greater indirect and induced effects of construction.

Assuming that those attracted to the Garden Communities are likely to be young (and therefore working) the **new residents** slightly boost GVA per capita.

In the innovation case, **GVA per employee** for new residents is assumed to be higher due to quality housing attracting skilled workers, boosting growth further.

Income multiplier (induced): additional local expenditure by those who derive incomes as a result of direct or indirect impacts from the initial intervention. The **higher the proportion of this income spent in North Essex the higher is this multiplier**.

The cumulative effect of the two can be expressed by a composite multiplier. The English Partnerships (now Homes England) *Additionality Guide* provides estimated composite multipliers based on size of area under consideration (higher for larger areas) and strength of indirect and induced effects. Based on these we use a **multiplier of 1.25 for the reference and traditional cases and 1.4 for the innovative case**. Applying these multipliers to the net local direct effects calculated previously gives the estimated indirect and induced impacts of constructing the Garden Communities, as shown in Table 27.

Table 27: Composite multipliers applied to net local direct effects

		Innovative	Traditional	Reference
Net local direct effects	Garden Communities	£78,312,244	£42,875,953	
	Wider area	£73,511,242	£55,133,432	£91,889,053
Multiplier effects	Garden Communities	£31,324,897	£10,718,988	
	Wider area	£29,404,497	£13,783,358	£22,972,263

Adding the indirect and induced effects implied by these multipliers gives the **total net additional local effects accounting for the direct, indirect, and induced impact** of each case. Table 28 summarises full outputs including these.

Table 28: Summary of direct, indirect, induced effects of Garden Communities construction

		Innovative	Traditional	Reference
Gross construction	Garden Communities	1020	1020	0
	Wider area	2186	2186	2186
Net construction	Total homes built	2332	2332	2186
GVA/house	Garden Communities	£95,971	£70,059	£0
	Wider area	£70,059	£70,059	£70,059
Gross construction	Garden Communities	£97,890,304	£71,459,922	
	Wider area	£153,148,422	£153,148,422	£153,148,422
Leakage	Garden Communities	£19,578,061	£28,583,969	
	Wider area	£30,629,684	£61,259,369	£61,259,369
Gross local direct effects	Garden Communities	£78,312,244	£42,875,953	
	Wider area	£122,518,737	£91,889,053	£91,889,053
	Displacement	£49,007,495	£36,755,621	
Net local direct effects	Garden Communities	£78,312,244	£42,875,953	
	Wider area	£73,511,242	£55,133,432	£91,889,053
	Total	£151,823,486	£98,009,385	£91,889,053
Total net additional local direct effects (innovative)		**£59,934,433**		
Total net additional local direct effects (traditional)			**£6,120,332**	
Multiplier effects	Garden Communities	£31,324,897	£10,718,988	
	Wider area	£29,404,497	£13,783,358	£22,972,263
Total net local effects (direct plus multiplier effects)		£212,552,880	£122,511,731	£114,861,316
Total net additional local effects (innovative)		**£97,691,564**		
Total net additional local effects (traditional)			**£7,650,415**	

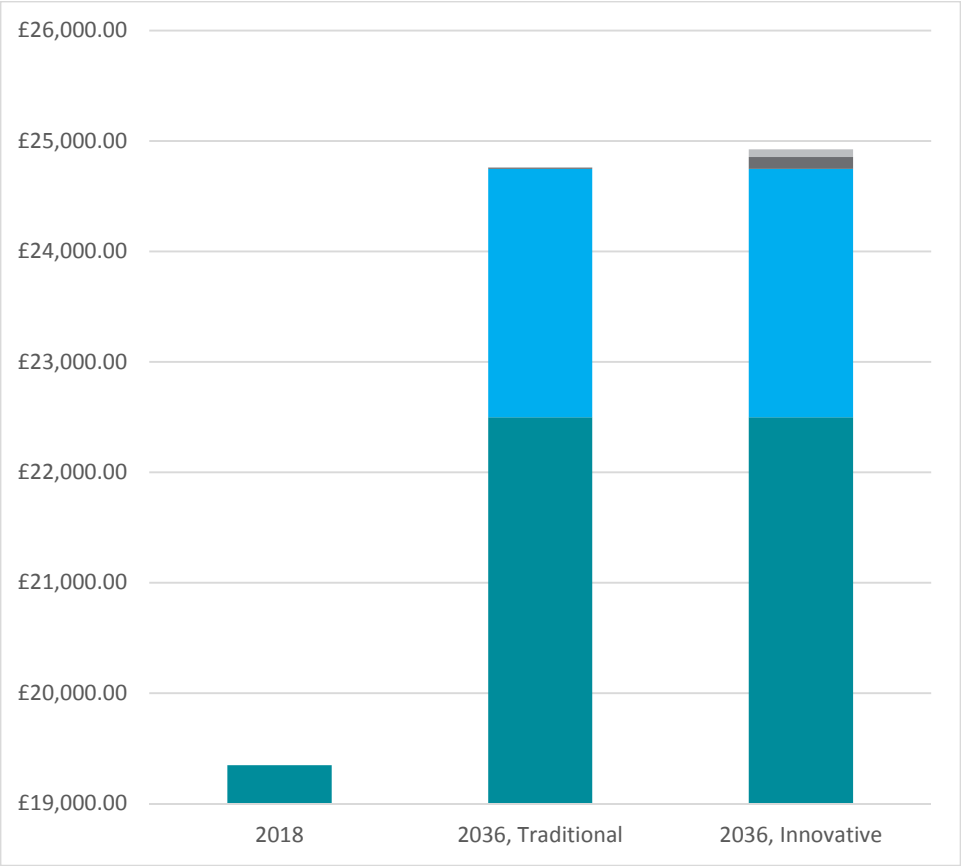
Adding multiplier effects will of course create jobs as well as GVA. We assume GVA per worker of £66,009 (the baseline figure projected for 2036) to estimate additional jobs. Table 29 shows all employment impacts.

Table 29: Total employment impacts

		Innovative	Traditional	Reference
Jobs impact (direct)	GVA/construction worker	£63,981	£46,706	£46,706
	Total net local direct effects	£151,823,486	£98,009,385	£91,889,053
	Direct construction jobs	2373	2098	1967
	Net direct jobs	406	131	
Jobs impact (indirect)	GVA/worker	£66,009	£66,009	£66,009
	Multiplier effects	£60,729,394	£24,502,346	£22,972,263
	Indirect/induced jobs impact	920	371	348
	Net induced/indirect impact	572	23	
Jobs impacts	Total jobs	3293	2470	2315
	Net jobs	978	154	

These effects are shown in addition to the trend GVA per capita and the increase from future exogenous growth outlined in the previous chapter, as Figure 38 shows (note the truncated axis). **For the traditional case the impacts are negligible. For the innovative case the GVA per capita uplifts are £108 from the direct effect and £68 from the indirect and induced effects.**

Figure 38: North Essex GVA per capita incorporating direct, indirect, induced impacts of Garden Communities construction



Effect of increased population

Above and beyond the direct, indirect, and induced impacts of the construction of the Garden Communities themselves, the **additional population they attract to the area will drive further economic activity**. There are two key caveats to bear in mind:

- Increased population almost certainly translates into higher GVA but **does not necessarily translate into higher GVA per capita** – if new residents are no more productive or likely to participate in the labour market than existing residents, for example.
- As mentioned previously, **only some of the Garden Communities residents will be new to North Essex**, so not all of the GVA from within the Garden Communities can be treated as additional.

When estimating the GVA impact of additional population we assume:

- Trajectories for new construction in the Garden Communities as estimated by Cambridge Econometrics, **consistent with those used for our direct and indirect impact assessments**;

- An average of **2.3 residents per house**, again based on Cambridge Econometrics[86];
- That **half of the Garden Communities' population will be additional** to the existing population;
- **0.4 employees per resident** – in the baseline forecasts there are initially 0.39, dropping to 0.35 due to the ageing population. We increase this slightly as the expected age profile in new communities is younger;
- In the **traditional** case, **GVA per employee in line with the baseline figure** for the year;
- In the **innovative** case, **GVA per employee for these new employees 20% higher** than the baseline figures, to account for higher quality homes attracting more affluent residents.

Projected effects on population, employees, and GVA in 2022, 2029, and 2036 are shown in Table 30. All numbers are additional relative to the baseline/reference – hence as 50% of residents are assumed to be new and there are 2.3 residents in total per house, this table shows 1.15 new residents per new house.

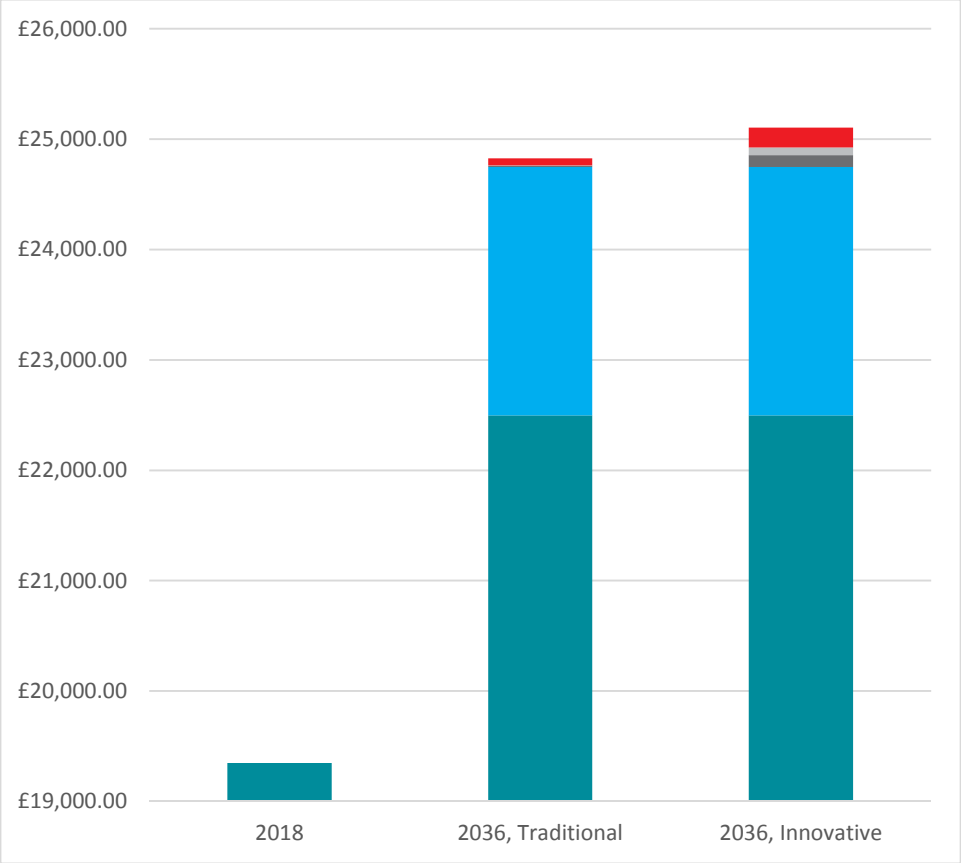
Table 30: Projected effects of Garden Communities residents

		2022	2029	2036
Houses	West of Braintree	90	1,320	3,700
	West of Colchester	40	1,160	3,700
	East of Colchester	150	1,500	3,400
	Total	**280**	**3,980**	**10,800**
Population	West of Braintree	104	1,518	4,255
	West of Colchester	46	1,334	4,255
	East of Colchester	173	1,725	3,910
	Total	**322**	**4,577**	**12,420**
Employees	West of Braintree	41	607	1,702
	West of Colchester	18	534	1,702
	East of Colchester	69	690	1,564
	Total	**129**	**1,831**	**4,968**
GVA (construction)	West of Braintree	£2,201,470	£36,470,548	£117,697,660
	West of Colchester	£978,431	£32,049,875	£117,697,660
	East of Colchester	£3,669,116	£41,443,804	£108,154,607
	Total	**£6,849,017**	**£109,964,227**	**£343,549,928**
GVA (innovation)	West of Braintree	£2,641,764	£43,764,657	£141,237,192
	West of Colchester	£1,174,117	£38,459,850	£141,237,192
	East of Colchester	£4,402,939	£49,732,565	£129,785,528
	Total	**£8,218,820**	**£131,957,072**	**£412,259,913**

[86] Anticipating 17,250 residents and 7,500 homes at the end of the plan period, implying 2.3 residents per house which is in line with the national average as per the 2011 Census

Looking at GVA per capita, we see the additional population is expected to increase it, as shown in Figure 39 (note the truncated axis). **In the traditional case, there is an impact of £63**, even though GVA per employee is assumed to be in line with the existing population – this is because we have assumed a younger population and therefore a relatively high number of workers. **In the innovative case, higher GVA per employee lifts GVA per capita even more, by £181.**

Figure 39: GVA per capita including effect of Garden Communities population



Summary of direct, indirect, and induced effects

Simply **building the Garden Communities in a non-innovative way is expected to have a negligible impact on the economy**. Existing construction activity and jobs from within the area would largely be redeployed from building within existing settlements to building new ones, with only a small increase in total construction output.

If the opportunity to build new communities in an innovative way is taken, more productive jobs will be created and the economic boost will be more significant, on the basis of our assumptions around GVA per employee and construction requirements in offsite construction. Locally-based industry and the skilled workforce to supply it will maximise the proportion of this GVA which benefits North Essex and the indirect and induced effects triggered by the project.

As construction technology develops, improved productivity may reduce the number of workers required to build the Garden Communities. However, if a modern construction industry becomes established in North Essex it could supply housing demand elsewhere, for example in London and the Oxford-

Cambridge corridor. **This would provide more highly-productive employment both during and after the construction of the Garden Communities**. We do not model this but the opportunity is there.

The population in the Garden Communities could also boost prosperity. **The greater the extent to which new residents are of working age, participating in the labour force, and highly productive, the greater this effect will be**. Though we have not accounted for it yet, highly-skilled new residents may further boost prosperity for existing North Essex residents, for instance by establishing businesses and providing employment opportunities. This is considered in Stage 5.

Stage 5: Wider economic vision and strategy

Future growth strategy scenarios

In the **inward investment-led scenario**, we assume that:

- **North Essex increases its employment-to-population ratio to that of the comparator regions by 2036**, as a result of intervention which has taken place to attract major employers and create jobs, thereby increasing participation and decreasing out-commuting[87].
- **The GVA produced by each of these additional employees is valued at the GVA per employee implied by the baseline and future trends, so they are as productive as other employees in the sub-region**. The 'new' employees are a mix of highly skilled, productive residents now working in North Essex rather than commuting elsewhere and new entrants to the labour force (i.e. those formerly economically inactive) who are expected to be less productive than average – we assume these effects cancel each other out.

Strategy scenarios and final outputs

In the **inward investment led** scenario, the employment-to-population ratio in North Essex reaches that of the comparators with a corresponding effect on GVA.

In the **lifestyle led** scenario, neither employment nor GVA grow as quickly.

In both scenarios, higher GVA growth from **innovative** construction is assumed.

With **innovative** construction and the **inward investment led** scenario, GVA per capita in 2036 increases by nearly 25% above our previous estimate, roughly **halving the disparity with the comparators**.

In the **inward investment led** scenarios roughly 48,000 additional jobs are implied, compared to 16,000 in the **lifestyle led** scenarios. As 10,800 new houses are expected by this point, the **'one job per house'** aspiration is met in both cases, based on these high-level scenario estimates.

[87] Employment in the comparators is 43.5% of their population. In North Essex it is 35.9% in the traditional construction case and 36.1% in the innovative construction case

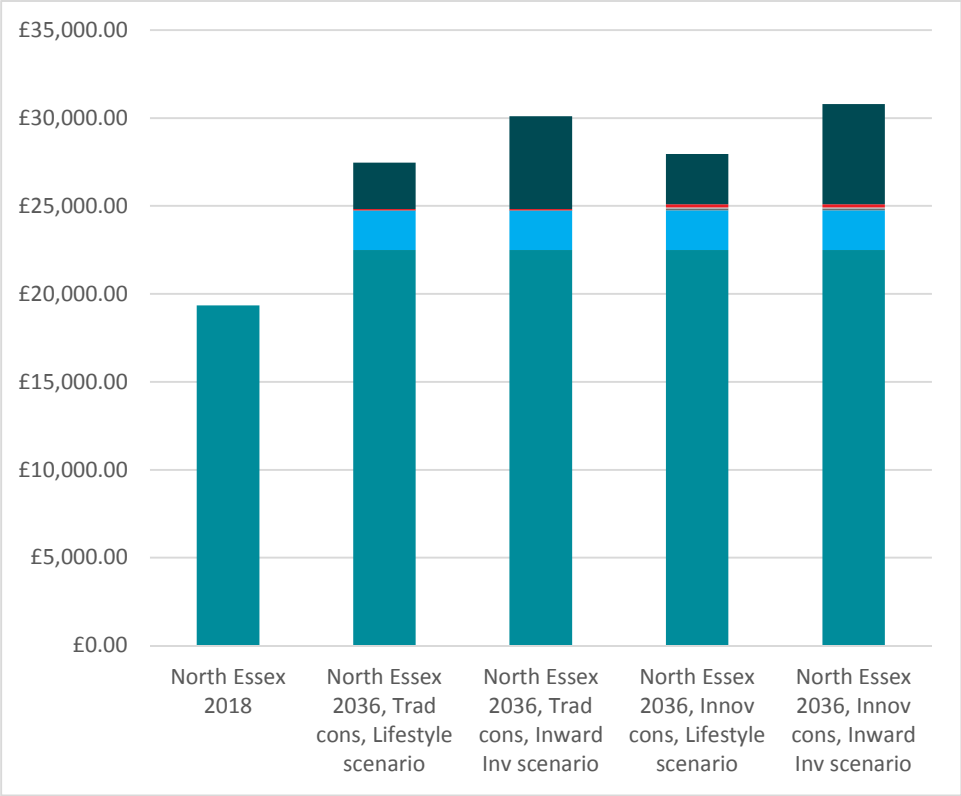
In the **lifestyle-led scenario**, **we assume that employment increases each year at a quarter of the rate and GVA at half the rate implied by the inward investment-led scenario**. Highly skilled and productive people are being attracted to the area, and those that work or establish businesses within it make significant contributions to GVA. However, we envisage less of a focus on increasing participation and skills in this scenario.

It is also reasonable to assume a degree of interaction with choices about how the Garden Communities are built – in each case **we assume that in the innovative construction case the GVA uplifts are 10% higher**:

- In the **lifestyle-led** scenario, more modern and bespoke homes built using innovative methods will improve the quality of life offer and make attracting skilled professionals easier;
- In the **inward investment-led** scenario, establishing offsite construction within North Essex could act as a catalyst to further commercial development, perhaps including clustering of similar industries.

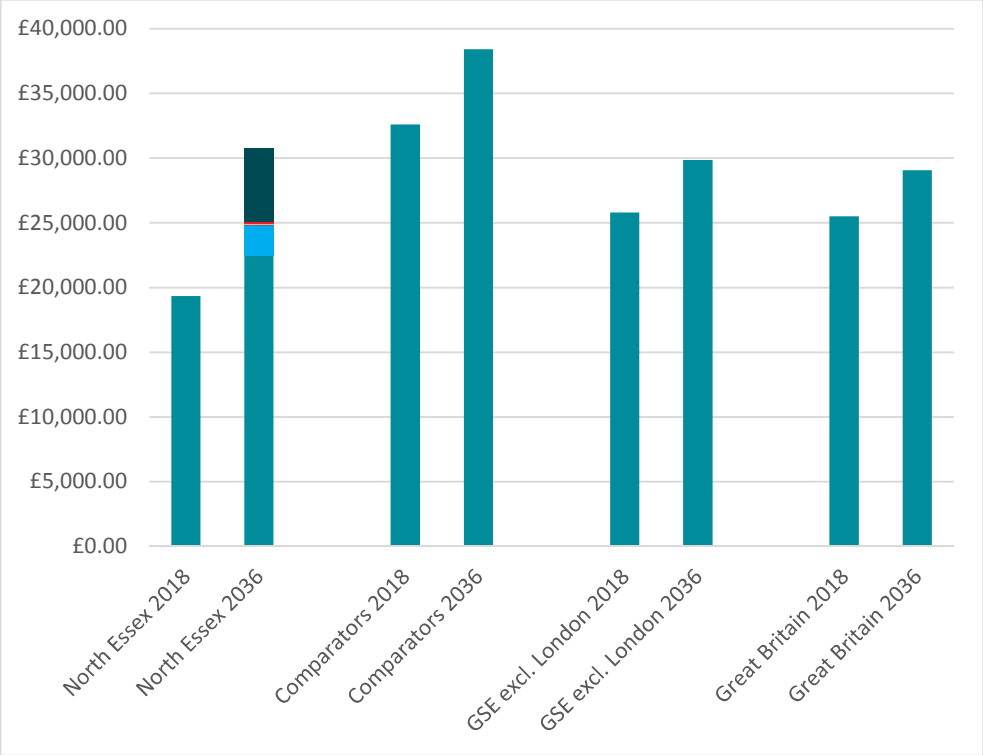
The estimated GVA per capita in 2036 for **each permutation of Garden Communities construction case** (traditional, innovative) **and strategy scenario** (lifestyle, investment) is shown in Figure 40 along with GVA per capita in 2018 for context.

Figure 40: Final projected outcomes for GVA per capita in North Essex



As the greatest projected increase in GVA per capita is delivered by the combination of **innovative construction and an inward investment-led strategy**, we compare this outcome with 2018 and 2036 levels for the comparators, Greater South East excluding London, and Great Britain, as shown in Figure 41. **This outcome would see North Essex overtake Great Britain and the wider region, and roughly halve the gap relative to the high-performing comparator regions**.

Figure 41: Maximum estimated North Essex GVA per capita vs comparators



2036 estimates of GVA, employment[88], GVA per worker, and GVA per capita are summarised in Table 31 for North Essex under each scenario, the comparators, the Greater South East excluding London, and Great Britain. Reading down the table, they follow the stages discussed above in order:

- **Trend growth based on Cebr forecasts;**
- **Above forecasts with our expected impact of future trends that will happen with or without the Garden Communities added;**
- **Trend and future growth with construction impacts for both the traditional and innovative construction cases added, with these results split into components;**
- **Final results including the impact of economic strategy – each permutation of construction and economic strategy choice is shown.**

[88] Employment estimates here are not comparable with those from Cambridge Econometrics' *North Essex Garden Communities Employment & Demographic Studies*, which exclude Tendring for the purpose of their forecasts.

Table 31: 2036 results by stage, construction case, and economic strategy

		GVA	Employment	Population	GVA per worker	GVA per capita
Trend growth		£12,468,639,253	188,892	554,200	£66,009	£22,498
Trend and future growth		£13,715,503,179	198,337	554,200	£69,153	£24,748
Traditional	Direct	£13,721,623,511	198,468	554,200	£69,138	£24,759
	Indirect/induced	£13,723,153,594	198,491	554,200	£69,137	£24,762
	Population	£14,066,703,521	203,459	566,620	£69,138	£24,826
Innovative	Direct	£13,775,437,612	198,742	554,200	£69,313	£24,856
	Indirect/induced	£13,813,194,743	199,314	554,200	£69,304	£24,925
	Population	£14,225,454,656	204,282	566,620	£69,636	£25,106
Traditional	Lifestyle	£15,561,629,775	214,268	566,620	£72,627	£27,464
Innovative	Lifestyle	£15,838,558,725	214,886	566,620	£73,707	£27,953
Traditional	Investment	£17,056,556,029	246,695	566,620	£69,140	£30,102
Innovative	Investment	£17,451,662,795	246,695	566,620	£70,742	£30,800
Comparators		£199,177,139,530	2,257,486	5,185,100	£88,230	£38,413
GSE excl. London		£521,013,479,260	7,007,452	17,456,600	£74,351	£29,846
Great Britain		£2,030,167,204,223	30,845,906	69,827,506	£65,816	£29,074

To put North Essex's figures in context, they are shown in Table 32 as a change relative to the trend and future 2036 levels, i.e. to where we expect they would be in the absence of the Garden Communities and economic strategy.

Table 32: 2036 changes in North Essex metrics relative to 2036 trend and future levels

		GVA	Employment	GVA per worker	GVA per capita
Traditional	Lifestyle	13.46%	8.03%	5.02%	10.97%
Innovative	Lifestyle	15.48%	8.34%	6.59%	12.95%
Traditional	Investment	24.36%	24.38%	-0.02%	21.63%
Innovative	Investment	27.24%	24.38%	2.30%	24.45%

These results show that the inward investment-led scenario is associated with higher growth in both GVA and employment, reflecting greater participation, focus on improving skills, and lower reliance on commuting. This results in substantial increases in GVA per capita however impact on GVA per worker is much more limited.

The lifestyle-led scenario has lower – but still substantial – effects on GVA per capita, with a more impressive effect on GVA per worker, reflecting the influx of highly-skilled professionals.

The employment impact is of particular interest, given the **'one job per house'** aspiration which is central to Garden City principles. Therefore Table 33 separates jobs impact by stages of our forecasting for each scenario. On these assumptions **'one job per house' is met for all scenarios in 2036**, comfortably so for

the inward investment-led scenarios – employment increase exceeds the 10,800 houses constructed in 2036[89]. **It should be borne in mind that these are high-level estimates, not detailed forecasts**.

Table 33: North Essex jobs by stage and scenario, 2036

		Traditional construction		Innovative construction	
		Lifestyle	Investment	Lifestyle	Investment
Trend	1	188,892	188,892	188,892	188,892
Future growth	2	9,445	9,445	9,445	9,445
Construction, direct	3	131	131	406	406
Indirect and induced	4	23	23	572	572
Population	4.5	4,968	4,968	4,968	4,968
Economic strategy	5	10,809	43,236	10,603	42,412
Total additional jobs (stages 3-5)		**15,931**	**48,358**	**16,549**	**48,358**
Garden Community houses expected		10,800			

Extrapolation to 2071 and implied GVA shares

GVA extrapolation and convergence with comparators

As an indicative exercise, we extrapolate these projections to 2071 to see when in theory North Essex could experience convergence with the comparator areas and under which scenarios, and whether or not the fulfilment of 'one job per house' continues to hold. In doing this we assume:

- Stage 1 growth in GVA and population continues until 2071 at the average annual rate seen in 2032-2036;
- Stage 2 growth in GVA reverts to Stage 1 trend after 2036;
- Construction impacts in Stages 3 and 4 are weighted according to Garden Communities construction as projected by Cambridge Econometrics[90];

[89] Based on the work of Cambridge Econometrics

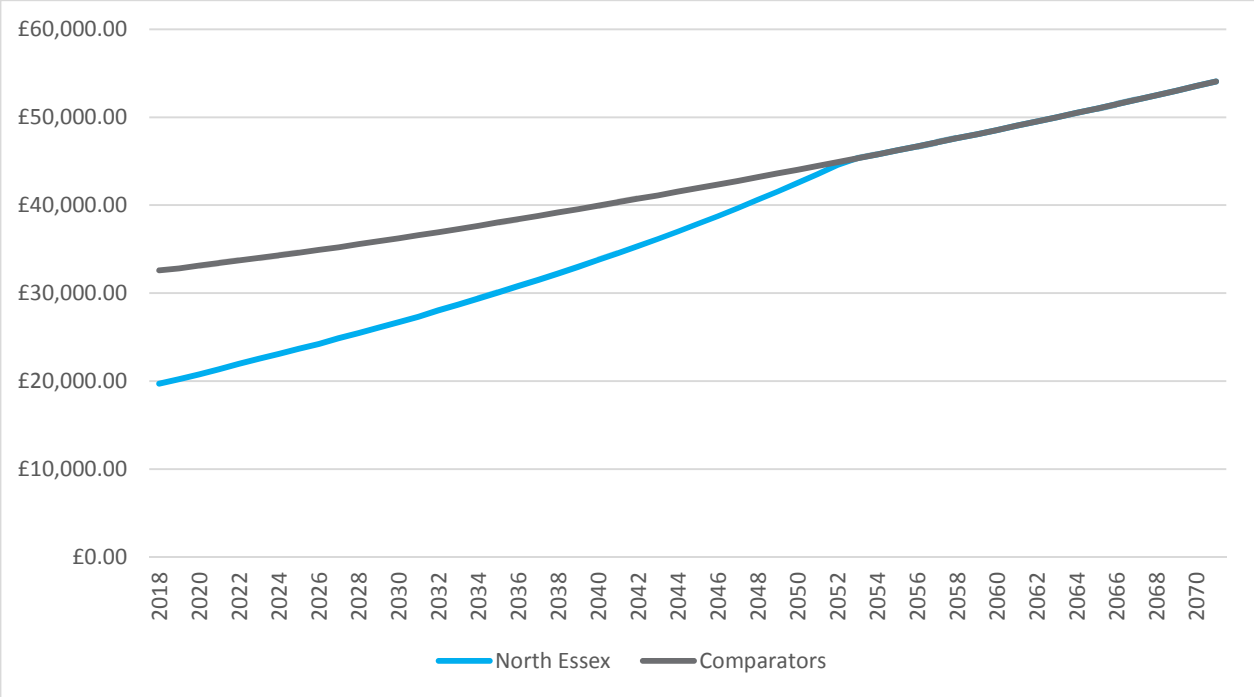
[90] In 2036 construction is at 1020 houses per year, reaching a peak of 1100 just after. By 2071 construction on West of Braintree and Tendring-Colchester Borders is expected to be complete, with that on Colchester-Braintree Borders continuing at just 400 houses per year. Therefore these impacts are much smaller than in 2036.

- Stage 5 growth in the inward investment scenario continues at 2032-2036 rate until GVA per capita convergence with comparators has been achieved, after which GVA per capita grows at the same rate as the comparators', in the lifestyle scenarios GVA and employment growth continue in ;
- Employment as a proportion of population remains constant after 2036 in Stages 1 and 2, and in Stage 5 once convergence with the comparators has been achieved;

Therefore these are reasonably straightforward extrapolations.

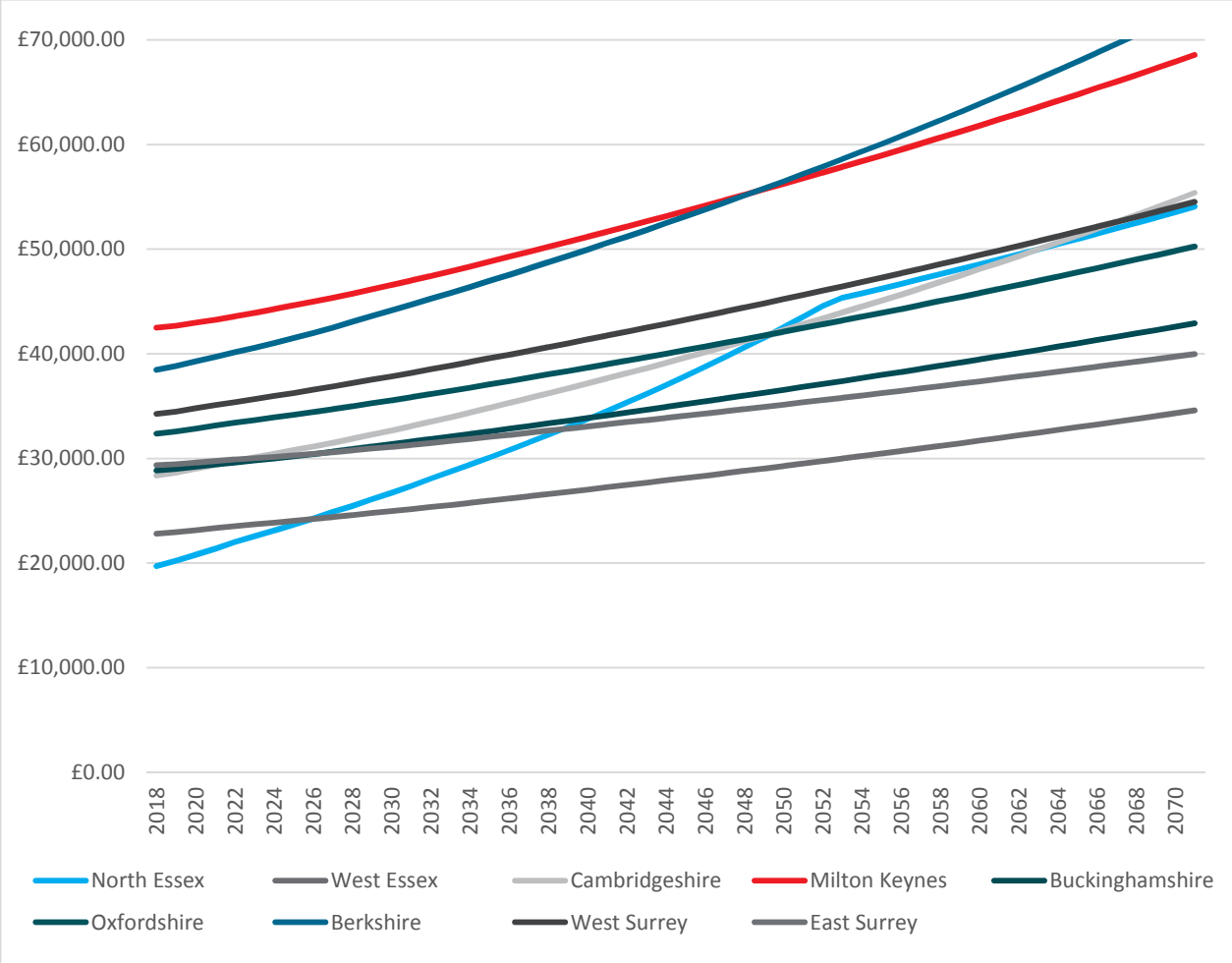
On the basis of these assumptions, **North Essex's GVA per capita reaches the comparators' in 2053** in the 'best' scenario of innovative construction and the inward investment-led scenario. Implied trajectory from 2018 to 2071 is shown in Figure 42.

Figure 42: GVA per capita in North Essex and comparators (combined) to 2071



To give further context to this growth scenario, Figure 43 shows it along with GVA per capita for each individual comparator. **In 2071 North Essex could be considered part of the 'arc of prosperity' on these assumptions** – its GVA per capita would be just below those of West Surrey and Cambridgeshire.

Figure 43: GVA per capita in North Essex and comparators (separate) to 2071



- Full breakdown of these results as for 2036 are shown in Table 34, Table 35, and Table 36.

Table 34: 2071 results by stage, construction case, and economic strategy

		GVA	Employment	Population	GVA per worker	GVA per capita
Trend growth		£20,759,275,545	235,741	691,652	£88,060	£30,014
Trend and future growth		£22,835,203,100	247,528	691,652	£92,253	£33,015
Traditional	Direct	£22,837,603,230	247,579	691,652	£92,244	£33,019
	Indirect/induced	£22,838,203,263	247,589	691,652	£92,243	£33,020
	Population	£24,433,811,169	264,885	734,892	£92,243	£33,248
Innovative	Direct	£22,858,706,799	247,687	691,652	£92,289	£33,049
	Indirect/induced	£22,873,513,517	247,911	691,652	£92,265	£33,071
	Population	£24,788,243,005	265,207	734,892	£93,467	£33,730
Traditional	Lifestyle	£32,082,961,587	278,653	734,892	£115,136	£43,657
Innovative	Lifestyle	£32,260,177,505	278,895	734,892	£115,672	£43,898
Traditional	Investment	£39,732,112,004	319,957	734,892	£124,180	£54,065
Innovative	Investment	£39,732,112,004	319,957	734,892	£124,180	£54,065
Comparators		£339,266,255,971	2,732,060	6,275,124	£124,180	£54,065
GSE excl. London		£858,709,295,979	8,598,306	21,419,652	£99,870	£40,090
Great Britain		£2,960,574,213,385	34,624,035	78,380,256	£85,506	£37,772

Table 35: 2071 changes in North Essex metrics relative to 2071 trend and future levels

		GVA	Employment	GVA per worker	GVA per capita
Traditional	Lifestyle	40.50%	12.57%	24.80%	32.23%
Innovative	Lifestyle	41.27%	12.67%	25.39%	32.96%
Traditional	Investment	74.00%	29.26%	34.61%	63.76%
Innovative	Investment	74.00%	29.26%	34.61%	63.76%

Table 36: North Essex jobs by stage and scenario, 2071

		Traditional construction		Innovative construction	
		Lifestyle	Investment	Lifestyle	Investment
Trend	1	235,741	235,741	235,741	235,741
Future growth	2	11,787	11,787	11,787	11,787
Construction, direct	3	51	51	159	159
Indirect and induced	4	9	9	224	224
Population	4.5	17,296	17,296	17,296	17,296
Economic strategy	5	13,768	55,072	13,687	54,749
Total additional jobs (stages 3-5)		**31,125**	**72,429**	**31,367**	**72,429**
Garden Community houses expected		37,600			

Future sectoral shares

In order to see convergence with the GVA per capita of the comparators in 2053, North Essex may need to match their sectoral shares, or at least achieve a similar profile. This is by no means essential – a different balance of sectors could achieve the same overall result. Nevertheless it is informative to consider the nature of the economic activity which underlies the performance of the 'arc of prosperity'.

We assume that in the **baseline**[91], GVA from each sector in both North Essex and the comparators grows in line with the UK[92]. This produces GVA shares as shown in Table 37 for selected years.

Therefore these are the shares that would result if each sector grows at Cebr's forecast UK rate in both North Essex and the comparators. The key insight is that **business services and information and communication would remain under-represented** in North Essex.

Table 37: Baseline sectoral GVA shares for North Essex and comparators - 2016, 2036, 2053, 2071

North Essex Baseline	2016	2036	2053	2071
Agriculture, mining, electricity, gas, water and waste	3.4%	3.0%	2.8%	2.4%
Manufacturing	10.4%	8.5%	6.8%	5.2%
Construction	10.4%	10.9%	11.0%	10.7%
Distribution; transport; accommodation and food	19.8%	20.5%	20.3%	19.6%
Information and communication	3.8%	5.6%	7.4%	9.8%
Financial and insurance activities	3.9%	3.1%	2.5%	1.9%
Real estate activities	15.4%	13.0%	11.0%	9.0%
Business service activities	10.5%	14.7%	18.9%	23.9%
Public administration; education; health	18.4%	17.2%	16.2%	14.8%
Other services and household activities	4.1%	3.5%	3.1%	2.7%

Comparators Baseline	2016	2036	2053	2071
Agriculture, mining, electricity, gas, water and waste	3.1%	2.6%	2.3%	1.9%
Manufacturing	7.8%	6.1%	4.6%	3.3%
Construction	6.2%	6.1%	5.9%	5.4%
Distribution; transport; accommodation and food	19.2%	18.8%	17.7%	16.0%
Information and communication	10.8%	14.9%	18.9%	23.5%
Financial and insurance activities	3.6%	2.7%	2.1%	1.5%
Real estate activities	14.4%	11.5%	9.3%	7.1%
Business service activities	14.5%	19.3%	23.5%	28.0%
Public administration; education; health	15.7%	14.0%	12.5%	10.7%
Other services and household activities	4.7%	3.9%	3.3%	2.6%

Table 38 shows the differences between comparator and North Essex baseline GVA shares. This shows that significant growth in the two sectors mentioned above, as a share of total GVA, would be required

[91] i.e. the absence of intervention, the 'Trend and future growth' scenario

[92] Based on Cebr national forecasts of GDP growth by sector – the different growth rates in North Essex, the comparators, and the UK plus our assumed extra growth from future factors means that the overall GVA under these assumptions will not be the same as that in our 2036 forecasts. However, the sectoral shares are important here, not overall GVA.

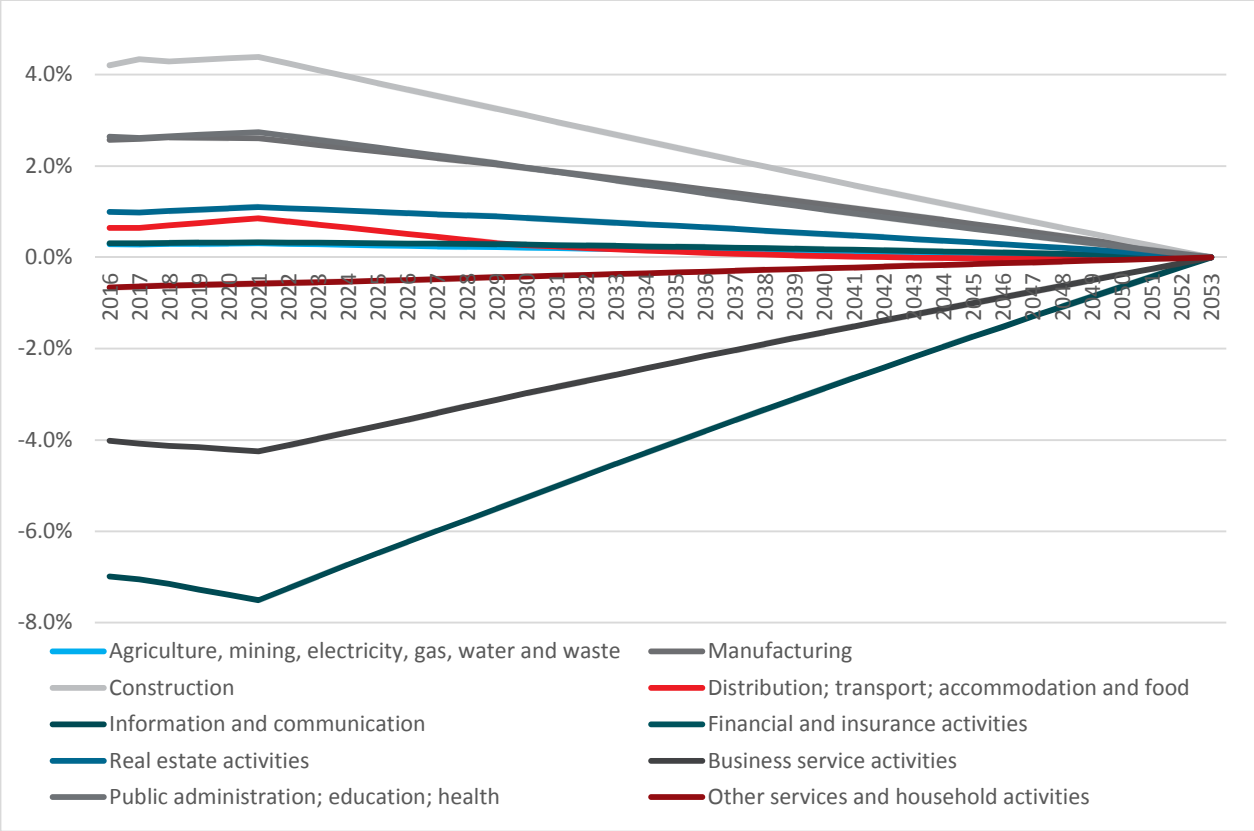
to bring North Essex's economic structure into line with the comparators. The remaining sectors (apart from 'Other services and household activities') would decline in importance.

Table 38: Relative GVA shares, required convergence to 2053

Comparator GVA shares relative to North Essex	2016	2036	2053	2071
Agriculture, mining, electricity, gas, water and waste	-0.3%	-0.4%	**-0.5%**	-0.5%
Manufacturing	-2.6%	-2.4%	**-2.2%**	-1.9%
Construction	-4.2%	-4.7%	**-5.1%**	-5.3%
Distribution; transport; accommodation and food	-0.6%	-1.7%	**-2.6%**	-3.6%
Information and communication	7.0%	9.3%	**11.5%**	13.7%
Financial and insurance activities	-0.3%	-0.4%	**-0.4%**	-0.4%
Real estate activities	-1.0%	-1.5%	**-1.7%**	-1.9%
Business service activities	4.0%	4.6%	**4.6%**	4.1%
Public administration; education; health	-2.6%	-3.2%	**-3.7%**	-4.1%
Other services and household activities	0.7%	0.4%	**0.1%**	0.0%

These figures are **not based on a bottom-up assessment of the precise effects of different interventions**; rather they provide an indication of what convergence with the high-performing regions located in the 'arc of prosperity' around London would look like over time. Difference in sector shares under a path of **straight line convergence with the comparators from 2021 onwards** (i.e. after the start of the Garden Communities' construction) is shown in Figure 44.

Figure 44: Difference between North Essex and comparator sector shares, straight line convergence 2021-2053



Projected GVA shares in 2053 by each comparator individually are shown in Figure 45. There is substantial variation among these for all sectors, demonstrating that **a variety of sector mixes could be compatible with economic success**. For example, whilst Berkshire and Milton Keynes are the top two areas by GVA per capita according to the 2071 projections above, there are substantial differences in sector representation – distribution, transport, accommodation and food are dominant in Milton Keynes whereas Berkshire has a much higher representation of information and communication.+

Figure 45: GVA shares by comparator, 2053

	West Essex	Cambs.	Milton Keynes	Bucks.	Oxon.	Berks.	West Surrey	East Surrey
Agriculture, mining, electricity, gas, water and waste	1.3%	2.9%	0.5%	1.4%	1.8%	2.9%	3.1%	1.7%
Manufacturing	4.3%	7.6%	3.8%	4.2%	6.0%	4.1%	3.9%	2.5%
Construction	11.0%	5.0%	2.8%	6.9%	6.5%	4.3%	6.2%	9.2%
Distribution; transport; accommodation and food	23.3%	14.0%	34.2%	19.9%	16.5%	15.6%	16.3%	13.0%
Information and communication	7.1%	13.1%	15.9%	14.5%	13.7%	33.7%	16.2%	11.4%
Financial and insurance activities	1.9%	1.3%	3.7%	1.5%	1.3%	1.6%	2.1%	5.4%
Real estate activities	11.6%	7.9%	5.7%	12.0%	10.0%	7.4%	10.8%	12.0%
Business service activities	24.5%	28.4%	18.3%	23.2%	21.7%	20.0%	26.6%	28.6%
Public administration; education; health	12.0%	16.8%	11.3%	13.0%	19.6%	8.0%	10.8%	12.6%
Other services and household activities	3.0%	3.1%	3.9%	3.5%	2.9%	2.5%	4.2%	3.7%

Estimated fiscal impacts

Finally, we consider some broad estimates of the impact of the Garden Communities project and wider strategy on **Council Tax and Business Rates revenue**.

Council Tax

Table 39 gives the number of houses in each Garden Community based on the estimates from Cambridge Econometrics for 2036 and 2071. These form the basis of our estimates of the Council Tax base.

Table 39: 2036 and 2071 expected dwellings by Garden Community

Houses by GC	West of Braintree	Colchester-Braintree Borders	Tendring-Colchester Borders	Total
2036	3,700	3,700	3,400	10,800
2071	11,700	17,700	8,200	37,600

DCLG provides 2017-18 data on number of **dwellings and Band D equivalents**[93] by local authorities. Figures for the North Essex authorities with the ratio between the two are shown in Table 40.

Table 40: Dwellings and Band D equivalents by local authority

Council Tax Base, October 2017	Braintree	Colchester	Tendring
Total number of dwellings on the valuation list	64,153	80,423	69,743
Tax base after allowance for council tax support (Band D equivalent)	52,364	62,424	48,185
Dwellings: Band D equivalent ratio	1.23	1.29	1.45

Applying the ratios from Table 40 to number of dwellings in each community gives **anticipated Band D equivalents in each Garden Community in 2036 and 2071**. These are shown in Table 41. The ratio for Braintree is used for West of Braintree, and the ratio for Colchester is used for both Colchester-Braintree Borders and Tendring-Colchester Borders; for the latter this ratio is used rather than Tendring's as the community will be in close proximity to Colchester so we assume a similar make-up of housing and Council Tax adjustments to it, rather than mirroring the more atypical mix found in Tendring.

Table 41: Estimated Band D equivalents by Garden Community, 2036 and 2071

Band D equivalents by Garden Community	West of Braintree	Colchester-Braintree Borders	Tendring-Colchester Borders
2036	3,020	2,872	2,639
2071	9,550	13,739	6,365

[93] The difference between the two is explained not just by distribution of properties within bands A-H but by discounts, premiums, and local tax support e.g. for empty homes, single occupancy, disability.

In 2017/18, the Band D Council Tax rates were £1,597 in Braintree, £1,595 in Colchester, and £1,583 in Tendring – this includes County Council Tax, Police and Crime Commissioner and Fire Service Charges, and Local Authority-level Council Tax including parish precepts. We have estimated total Council Tax revenues by Garden Community for two scenarios – **no real terms increase** in Council Tax rates, and a **1% per annum increase**. These are shown in Table 42 and Table 43 respectively.

Table 42: Council Tax revenue by Garden Community, no real-terms change in rates

Anticipated revenue, no real-terms change in Council Tax rates	West of Braintree	Colchester-Braintree Borders	Tendring-Colchester Borders	Total
2036	£4,823,095	£4,580,713	£4,177,635	£13,581,442
2071	£15,251,408	£21,913,138	£10,075,472	£47,240,018

Table 43: Council Tax revenue by Garden Community, 1% annual real-terms increase in rates

Anticipated revenue, 1% annual real-terms increase in Council Tax rates	West of Braintree	Colchester-Braintree Borders	Tendring-Colchester Borders	Total
2036	£8,172,569	£7,761,861	£7,078,859	£23,013,289
2071	£25,842,989	£37,131,064	£17,072,543	£80,046,596

Therefore we anticipate that in **2036** the Garden Communities will generate Council Tax revenues of between **£13.5 million and £23.0 million**. In **2071** this will rise to between **£47.2 million and £80.0 million**.

Business Rates

Business Rates are a function of the **rateable value of commercial property. We assume the rateable value: GVA** (and therefore Business Rates: GVA) **ratio remains constant over time**, so our estimated contributions to GVA from economic strategy (i.e. above the trend and future levels) will give implied business rates impact for each scenario.

DCLG data is available for Business Rates net revenue by local authority. Table 44 shows calculations of total revenue in North Essex and, using baseline GVA for 2018 gives the ratio of Business Rates to GVA which will be used for further calculations.

Table 44: Calculation of North Essex Business Rates revenue, ratio to GVA, 2018

Net amount receivable	**2017-18**	**Braintree**	£40,838,062
		Colchester	£61,651,949
		Tendring	£24,684,090
		North Essex	£127,174,101
North Essex GVA	**2018**		£9,404,949,612
Business Rates: GVA ratio			**0.0135**

The uplift in GVA relative to the baseline (trend and future growth) multiplied by this ratio gives implied uplift in Business Rates revenue for each economic strategy scenario, shown in Table 45. The expected revenue in the absence of intervention is also shown for context.

Table 45: Implied Business Rates uplifts by scenario, 2036

GVA by scenario, 2036	Trend and future growth		£13,715,503,179
	Traditional	Lifestyle	£15,561,629,775
	Innovative	Lifestyle	£15,838,558,725
	Traditional	Investment	£17,056,556,029
	Innovative	Investment	£17,451,662,795
Baseline Business Rates revenue, 2036			£185,461,577
Implied Business Rates uplift, 2036	Traditional	Lifestyle	£24,963,397
	Innovative	Lifestyle	£28,708,041
	Traditional	Investment	£45,177,849
	Innovative	Investment	£50,520,498

The above exercise is repeated with our 2071 figures in Table 46.

Table 46: Implied Business Rates uplifts by scenario, 2071

GVA by scenario, 2071	Trend and future growth		£22,835,203,100
	Traditional	Lifestyle	£32,082,961,587
	Innovative	Lifestyle	£32,260,177,505
	Traditional	Investment	£39,732,112,004
	Innovative	Investment	£39,732,112,004
Baseline Business Rates revenue, 2071			£308,778,520
Implied Business Rates uplift, 2071	Traditional	Lifestyle	£125,048,556
	Innovative	Lifestyle	£127,444,877
	Traditional	Investment	£228,480,671
	Innovative	Investment	£228,480,671

Therefore the Stage 5 impacts we estimate are **£25.0 million to £50.5 million in 2036 and £125.0 million to £228.5 million in 2071**, based on the assumption of a constant relationship between GVA and rateable value of commercial property. If rateable values grow more slowly than GVA however, the impact will be reduced, and vice-versa.

6 Strategy Recommendations

On the basis of our assessment of North Essex, its current strengths, challenges, opportunities, and options for future economic growth we make a set of high-level recommendations for future strategy to make the most of the Garden Communities.

Overview

The strategy scenarios set out in Options for the Vision and Strategy are best taken as two indicative extremes: the wholly organic growth route on the one hand, and an aggressive approach to attracting inward investment and major employers on the other. Finite resources dictate that **pursuing both extremes at once is not feasible, however the optimal strategy should aim to identify and realise the most rewarding opportunities from each** and where there are synergies in the required interventions, to make the most of them.

Components of the strategy

Key elements of our strategy recommendations are considered below.

Strategy: components
Boosting **quality of life** and **area visibility**.
Mix of **housing** to support a range of residents.
Developing and retaining workforce **skills**.
Fostering **networks** and **partnerships** of businesses and education providers.
Investing in transport and digital **infrastructure**.
Quality **employment space** provision.

Quality of life and area visibility

Quality of life

Improving the quality of life offer in North Essex is both **an intrinsic benefit, and one that can drive positive economic impacts**. It will help to develop existing clusters, for example the creative and digital industries, by attracting skilled workers and increasing the proportion of the 4,500 graduates per year from the University of Essex who opt to stay in the area. Major national and international employers looking to invest in new areas will also be attracted by the quality of life available for their employees.

The Garden Communities themselves will be a major element of this quality of life. Holistic planning, provision of green spaces, and housing quality and affordability are all key to the **Garden Community principles**. Decisions about the mix of types and tenures to provide are also crucial in meeting the needs of all types of residents the communities will need to house: young first time buyers from the area,

skilled workers and entrepreneurs moving in and looking to rent affordably, employees of major companies investing in the area, who are likely to bring families with them, and so on. Catering for all of these is central to making the Garden Communities work for those already in the area and to delivering sustainable economic growth.

The economic strategy should also deliver **affordable, convenient public transport and best-in-class digital infrastructure** across North Essex, both bringing economic gains as well as direct quality of life benefits. Within the Garden Communities, provision of **cheap, sustainable energy and heating** should be possible – for instance through district heating schemes or local energy generation – as the new settlements are planned 'from the bottom up'.

Finally, **North Essex should promote and develop its existing cultural and leisure strengths**. These include the picturesque Constable Country around Braintree and Colchester, Braintree's position as a retail destination, cultural and historical assets in Colchester, and the Tendring coastline and the associated tourism industry.

Area visibility

A closely-related but separate factor to quality of life is the outside **perception and awareness of North Essex as a place to live, study, visit and invest in**. As with quality of life the Garden Communities project can be an enormous benefit here – building the first settlements under garden community principles since the early 20th century will help to put the sub-region 'on the map' and in the minds of individuals or businesses looking for a desirable place to live or invest. Building on existing tourist and heritage assets as mentioned above will have much the same effect. Success in attracting major and prolific investments[94] could spur a virtuous circle as further investors and skilled individuals are drawn to the area. Given its importance, area visibility should be treated as a distinct focus in future economic planning.

Skills development

When we considered the economic metrics of North Essex alongside comparators, **skills stood out strongly as an area of weakness**. Whilst Tendring lags the other authorities by some way, even best-performing Colchester is significantly behind the comparators and the wider region. It is both likely and desirable that other elements of the strategy, not least the construction of the Garden Communities, will improve these metrics by bringing in skilled people from elsewhere; however an inclusive approach will also consider the current residents of North Essex.

Work to improve skills in the area must therefore be central to any future strategy, and failure here is a key risk factor to the future success of North Essex. Close co-ordination with established local employers, potential investors, and educational institutions will be required to identify what skills are needed and how they can be met. The exact mix of training and qualifications to provide will depend on the choice of sectors pursued, and flexibility over these in a rapidly-changing economic environment will be key.

Under the Industrial Strategy, government policy is moving strongly in favour of apprenticeships and technical education, so aligning with this could unlock funding, particularly in Tendring. Equipping workers with technical skills which employers want could go a long way to **boosting participation and**

[94] For example the ultimately unsuccessful bid to attract a Channel 4 creative hub to Colchester

realising the opportunities of automation, both in keeping existing industry competitive and growing new industries.

Skills requirements to encourage the **expansion or movement of high-tech activity from clusters like the London-Stansted-Cambridge Corridor** will be different. Within these industries there will be a role for technical skills and apprenticeships, however close links between employers and education providers will be needed to ensure qualifications are appropriate and to connect graduates with employers. Fortunately, the **University of Essex's existing digital strengths are already well aligned with industries in the corridor**. Its upcoming expansion offers further opportunities to ensure its graduates can participate in these industries.

These interventions should be directed towards all generations. Given the scale of the ageing population in North Essex, the opportunity to **meet fiscal and healthcare challenges by promoting work later in life** should not be missed. Digital skills in particular are likely to be lacking among older workers and if improved could (along with good digital infrastructure) **enable flexible home-working** which can be balanced with other commitments rather than seeing people forced into retirement.

Business-education networks and partnerships

As identified in the skills strategy above, co-ordination with local education providers and current and potential employers is key to identifying precise skills requirements and developing programmes to improve them such as apprenticeships. **Business-education collaborations including formal sectoral networks** can bring further benefits which mean that fostering them within North Essex is highly desirable.

University-business partnerships elsewhere in the country have proven to be a successful means of commercialising research, **maximising the benefit to the whole area of having a university**. The University of Essex already works with local businesses to help them benefit from its expertise in AI and is stepping up its provision of employment space for the creative and digital sectors, so this is underway already and **further growth should be supported**.

The Industrial Strategy will make significant funding available to support innovation and R&D, and winning this may require major bids by business-led networks or consortia. Ensuring these networks exist well in advance will therefore increase the chances of successful bids to win government support for major, innovative, job-creating projects.

Infrastructure

Transport infrastructure

Improved transport within North Essex can boost productivity by making the area function more as a single labour market. To this end **public transport schemes to connect the new and existing settlements should be put in place and improvements to east-west connectivity such as an A120 upgrade should be sought**. The North Essex Rapid Transit Study provides useful insights on public transport improvements within the sub-region. First- and last- mile connectivity could be provided with innovative solutions like cycle-sharing schemes or even autonomous vehicles if technology permits – these would align well with Industrial Strategy objectives of Clean Growth and Artificial Intelligence, and with Garden Community principles of promoting public transport and, in the case of cycle-sharing, healthy lifestyles.

Integration with successful clusters beyond North Essex, such as the London-Stansted-Cambridge Corridor, will be held back by the current lack of orbital connectivity. The A120 upgrade and – more ambitiously – a new rail connection west of Braintree would allow North Essex to benefit more from the proximity of this prosperous area. A notable exclusion from the North Essex Rapid Transit Study is the consideration of heavy rail, but the **Garden Communities will make rail investment in North Essex more viable** and we consider that a Braintree – Stansted connection could deliver considerable value, so merits further detailed work.

Digital infrastructure

Building on the existing ultra-fast broadband in Colchester town centre to **provide the whole area with best-in-class digital infrastructure would have direct economic impacts and boost quality of life**. Furthermore, it is important for businesses across the board in terms of sizes and sectors – e.g. for freelancers in the digital and creative sectors and for major employers in life sciences and high-tech manufacturing. Ensuring that broadband speeds are as fast as possible both for residents and businesses, and that they can be upgraded to keep up with new technology, is **valuable regardless of the mix of sectors ultimately pursued** and would give North Essex a distinctive competitive advantage – given the roll-out of faster Internet planned under the Industrial Strategy, funding may be made available for this, however North Essex will need to intervene quickly to expand provision before other locations catch up.

Employment space

Decisions about sectors to target will determine the balance between stimulating growth of existing industries and attracting new ones to North Essex. **Local employers considering expansion and potential outside investors should be consulted about their requirements** on size and nature of employment space. Locational factors will matter strongly here, with each garden community offering proximity to different infrastructure and other assets.

As far as is possible, employment space in and around the new communities and current or planned public transport links should be provided with the Garden City Principles of nearby employment opportunities and sustainable transport in mind.

Sectoral considerations

Building up North Essex's economic base ultimately relies on making more high-quality jobs available by expanding existing areas of strength and developing new ones. Key sectors are considered below with recommendations about what interventions should be used and where.

Strategy: key sectors and locations

West of Braintree: digital and logistics from London-Stansted-Cambridge corridor, building on manufacturing strength

Colchester-Braintree Borders: creative cluster, finance and insurance from London

Tendring-Colchester Borders: construction, creative cluster, logistics and manufacturing from Port of Harwich and offshore energy

Construction

The construction industry has been experiencing stagnant productivity for decades. The combination of **future labour supply constraints and recent technological developments make a move towards the skill- and capital-intensive offsite construction model appear irresistible**. The construction demand from the Garden Communities alone makes a compelling case for offsite facilities to be based in North Essex. Further to this, substantial residential construction is planned in the wider region, and EDF has already identified North Essex as a potential location for construction of its two planned nuclear plants, so there could be **major supply chain opportunities** here.

North Essex also benefits from ready access to inputs via the Port of Harwich and the presence of the University of Essex with its potentially relevant specialisms in AI and robotics. **Should the I-CONSTRUCT project in Braintree successfully go ahead, it will amplify the case for construction investment in North Essex by supporting innovation across the supply chain**. The precise skills requirements for offsite construction are as yet unclear, but the I-CONSTRUCT hub through its proposed partnership with Colchester Institute could ensure North Essex is a leader in developing them. Employment space required is likely to consist of large facilities with excellent digital infrastructure, similar to those required for advanced manufacturing.

Another unknown is what the efficient scale of production in offsite construction will be, i.e. whether one or two large facilities only will be feasible, or a larger number of smaller plants. There are arguments in favour of each new community as a future location of an offsite construction facility:

- **West of Braintree:** Proximity to the potential I-CONSTRUCT hub could ensure that innovative businesses well-aligned with offsite methods are located in the area. The London-Stansted-Cambridge corridor is also nearby and is expected to generate substantial construction demand – capturing some of this market could provide significant long-term business;
- **Colchester-Braintree Borders:** Similar distance from Braintree and therefore I-CONSTRUCT as West of Braintree, encouraging investment. The community itself is the largest of the three proposed and will generate demand into the 2070s;
- **Tendring-Colchester Borders:** Particularly good access to the Port of Harwich, beneficial not just for access to inputs but customers too – particularly Sizewell and Bradwell; therefore a facility here could serve the industrial rather than residential market. Within Tendring the traditional

construction sector is over-represented and there is a large pool of unskilled labour who could be trained and employed in the industry[95].

Creative and digital

Building on this established strength in Colchester, the Garden Communities provide a chance to attract skilled professionals and entrepreneurs in these fields through an affordable housing and quality of life offer. As the University of Essex is central to this sector through its digital specialisation, provision of employment space, and as a talent pipeline, the nearby **Tendring-Colchester Borders** community is likely to see a lot of the growth here. The creative industries are important and expanding throughout Colchester, exemplified by the success of the 37 Queen Street creative incubator. Therefore the **Colchester-Braintree Borders** community should also support the growth of this cluster.

Developing the creative industries within these communities will require:

- **Employment space with excellent digital infrastructure**, catering for large investors, startups , and freelancers (i.e. business incubators);
- **Quality of life and cultural offer** across North Essex which is attractive to those in the creative industries, including University of Essex graduates who may be encouraged to stay in the area;
- **Provision for relevant skills**, particularly digital, in the sub-regional skills strategy.

Aside from developing Colchester's creative cluster, the area also has an opportunity to attract digitally-focused activity from the **London-Stansted-Cambridge Corridor**, most likely in and around the **West of Braintree** community. In addition to the employment space, quality of life, and skills factors mentioned above, the strategy for encouraging this growth must include **improved orbital transport infrastructure**.

Given its central location, there is the potential for **Colchester-Braintree Borders** to become a major creative hub with activities originating both from the university-centred cluster in Colchester and the London-Stansted-Cambridge Corridor.

Finance and insurance

This sector has a limited presence in Colchester already with firms such as Hiscox, and there may be further opportunities to encourage siting of functions – particularly back-office – from firms based in central London. As **Colchester-Braintree Borders** will sit along the Great Eastern Main Line, it is the clear choice when it comes to encouraging these sectors. **Major investments may require employment space to cater for employees numbering in the hundreds** so provision should bear this in mind. Skills required are broad, including accounting and digital.

[95] Improving skills here would also be a 'win' from an inclusion, anti-deprivation, and participation-boosting perspective

Logistics and manufacturing

Developments at the Port of Harwich and Stansted Airport create opportunities for the development of freight logistics businesses in the **Tendring-Colchester Borders** and **West of Braintree** communities respectively. Stansted's expansion programme does include significant employment space in the vicinity of the airport, however North Essex may also be able to benefit also. It could capitalise on its air and marine connections along with the robotics specialisation at the University of Essex to move towards more innovative methods in logistics.

As these international connections become more important as locations for the import and export of freight – particularly Stansted given its major ongoing expansion – companies may be encouraged to site manufacturing operations close to them. In the case of Braintree this would build on existing strength which includes high-tech sectors such as aerospace manufacturing, and Tendring could grow its importance in the supply chain for offshore energy as major expansion of this industry continues off the Essex-Suffolk coast.

This can be made more likely through provision of:

- Large logistics or manufacturing-suitable **employment space**;
- **Digital infrastructure** (particularly for high-tech manufacturing);
- Development of **technical skills** among the population;
- **Transport infrastructure** linking the sub-region to Harwich and Stansted;
- Promotion of **business partnerships** with the University of Essex to increase effective use of AI.

Proposed KPIs

When measuring the success of the Garden Communities, NEGC Ltd and its stakeholders will need to consider performance across a number of measures, not all of which will be measurable in a quantitative fashion. Below we set out proposed measures and targets for KPIs. In most cases, North Essex closing or even eliminating the gap with the comparator regions identified should be the goal.

Key Performance Indicators

GVA per capita convergence with comparators.

Addressing **participation** and **deprivation** issues.

Improving **skills** across North Essex.

Aiming to become a centre of **innovation** and attracting substantial **investment**.

- **GVA per capita:** our most ambitious scenario sees this rise from £19,300 (59% of the comparators' level) in 2018 to £30,800 (80%) in 2036. Therefore **North Essex should as an ambitious target aim to reach 80%[96] of comparator GVA per capita by 2036**, with total convergence in the longer run – our earlier extrapolations to 2071 suggest this could happen in 2052, though this would represent a highly ambitious target year;
- **Participation/economic inactivity:** increasing employment to be in line with that of the comparators was identified in the forecasting chapter as crucial to convergence of GVA per capita. Improving participation in the labour market should be viewed as a social good as well as from a purely economic perspective.

  As identified in Chapter 3, economic inactivity is significantly higher in Tendring (at 27.1%) than in Braintree (14.1%) or Colchester (20.1%). **Reducing inactivity in Colchester and particularly Tendring to be in line with the level seen in the Greater South East excluding London** (currently 19.1%) whilst maintaining Braintree's strong performance would see North Essex attain an impressively high level of workforce participation.
- **Deprivation:** closely linked to participation and likely to be solved along with it. The issue is most significant in Tendring, and a long-term aspiration should be to improve its Index of Multiple Deprivation rank – it is currently 49th out of 326 authorities so getting it out of the top 100 seems a reasonable goal. Colchester's middling position on the IMD masks pockets of deprivation within the borough which ought to be addressed also.
- **Skills:** this has been identified as an area of particular weakness across the sub-region, albeit with some variation between authorities. Addressing it must be key to enhancing workforce participation and productivity and therefore GVA. Given the length of time taken to enact skills interventions, we must be careful not to set impossibly ambitious targets.

  In 2015 the percentage of North Essex residents with NVQ4+ qualifications was 27.2% and the percentage with no qualifications was 8.5%. In the Greater South East excluding London the figures were 37.3% and 7.0% respectively. Both of these disparities should be addressed, but the more pressing is the NVQ4+ percentage – **halving the gap with the wider region by 2036** seems

[96] It is probably most sensible to frame this target in relative rather than absolute terms as wider factors may positively or negatively affect economic factors across the board

a sensible target. Given the fundamental importance of skills to overall economic output, closure of the GVA per capita gap is unlikely if the skills disparity is not fully addressed eventually.

- **Innovation:** as the workforce becomes more skilled, North Essex should target an increased level of innovation, harnessing for instance the potential I-CONSTRUCT innovation hub and the University of Essex's expansion. This might be measured through patent applications, targeting a similar level to that in comparator areas.
- **Investment:** attracting major inward investments from domestic and foreign companies will form a key part of building the North Essex economic base and expanding quality employment. A target level with reference to previous and comparator attainment could therefore be developed.

Appendix 1: Commuting flows into and out of North Essex by local authority

Data is shown across the following two pages for selected local authorities in the East of England – based on most common destinations for each of the North Essex authorities, plus Cambridge – and the London region. Columns show usual residence (i.e. origin) and rows show place of work (destination). Braintree, Colchester, and Tendring figures are aggregated to the North Essex level.

Reading from the top and inspecting rows gives the number who live in the place shown in the column and work in that shown in the row, e.g. 10,051 North Essex residents work in Chelmsford.

place of work	usual residence: Braintree	Colchester	Tendring	**North Essex**	London	Chelmsford	Uttlesford	Babergh
Braintree	26,964	3,617	811	**31,392**	746	2,634	886	1,142
Colchester	3,665	45,269	8,737	**57,671**	696	949	235	2,440
Tendring	391	3,784	26,124	**30,299**	185	116	153	670
North Essex	**31,020**	**52,670**	**35,672**	**119,362**	**1,627**	**3,699**	**1,274**	**4,252**
London	7,151	6,093	2,488	**15,732**	2,926,149	14,080	5,118	1,558
Chelmsford	6,854	2,525	672	**10,051**	2,423	36,228	979	344
Uttlesford	3,830	483	254	**4,567**	1,224	962	13,006	145
Babergh	1,211	1,266	632	**3,109**	156	66	30	14,789
Maldon	1,363	1,384	161	**2,908**	314	1,727	46	55
Ipswich	249	1,434	1,071	**2,754**	289	97	29	5,006
Basildon	867	468	171	**1,506**	5,052	4,618	153	54
St Edmundsbury	878	180	97	**1,155**	218	57	219	2,269
Suffolk Coastal	99	437	445	**981**	144	35	8	1,216
Brentwood	596	274	96	**966**	5,162	2,523	175	38
Mid Suffolk	106	245	193	**544**	102	14	19	1,475
Cambridge	320	59	32	**411**	990	89	1,383	145
Norwich	12	55	20	**87**	274	11	18	48

place of work	usual residence: Maldon	Ipswich	Basildon	St Edmundsbury	Suffolk Coastal	Brentwood	Mid Suffolk	Cambridge	Norwich
Braintree	1,339	447	320	620	125	170	111	31	18
Colchester	1,137	1,315	203	139	538	76	420	23	44
Tendring	82	406	22	31	178	7	109	2	9
North Essex	**2,558**	**2,168**	**545**	**790**	**841**	**253**	**640**	**56**	**71**
London	3,025	1,149	17,826	828	1,234	12,813	924	2,457	519
Chelmsford	4,122	210	3,221	93	103	1,656	90	36	26
Uttlesford	130	62	155	777	26	132	43	392	17
Babergh	41	3,633	14	1,120	997	8	1,363	22	30
Maldon	9,379	44	258	15	23	87	19	2	4
Ipswich	56	34,626	29	712	11,036	16	5,217	41	134
Basildon	1,274	61	32,213	27	29	1,970	36	4	5
St Edmundsbury	14	746	9	28,721	301	10	5,569	325	116
Suffolk Coastal	22	7,268	13	232	26,773	2	2,118	8	64
Brentwood	446	28	2,992	18	16	8,872	20	8	9
Mid Suffolk	11	3,857	8	1,714	1,631	3	16,443	23	194
Cambridge	13	97	24	2,858	70	18	288	33,704	128
Norwich	4	160	9	131	226	4	333	49	32,123

Appendix 2: Firms by industry group, sectoral GVA shares

Percentage of firms by broad industry group in North Essex and selected areas, figures sourced from ONS, *UK Business: Activity, Size and Location – 2017*. Industry groups defined by Cebr as population-serving are in red, economic base in green.

	Braintree	Colchester	Tendring	North Essex	West Essex	Greater Essex	Cambridge	Cambridgeshire	Buckinghamshire CC	Milton Keynes	Oxford	Oxfordshire	Berkshire	Surrey	GSE excl. London	United Kingdom
Constr.	17.7	15.7	18.4	17.1	17.6	18.2	6.4	12.6	11.6	9.6	8.1	11.5	10.2	12.2	13.6	12.0
Motor trades	3.4	3.2	4.6	3.6	2.6	3.2	0.9	2.9	2.7	2.6	1.2	2.8	2.4	2.4	2.9	2.8
Wholesale	4.8	3.9	3.4	4.1	5.1	4.1	2.3	4.1	4.1	4.3	2.3	3.5	4.0	3.5	3.9	3.9
Retail	5.2	7.1	8.7	6.8	5.8	6.5	6.1	5.4	5.2	5.1	7.6	5.7	5.2	5.4	6.4	7.4
Transport & storage	3.7	2.9	4.1	3.5	4.3	4.6	1.1	3.4	2.8	4.6	2.1	2.7	3.9	2.6	4.0	4.1
Accom. & food	4.3	5.1	7.6	5.4	3.7	4.5	7.2	4.7	3.3	3.4	7.4	4.9	3.4	3.5	4.7	5.6
Property	3.0	3.6	2.9	3.2	4.2	3.3	3.5	3.2	4.0	3.0	3.2	3.5	2.7	3.4	3.2	3.5
Public admin. & defence	0.7	0.4	0.6	0.6	0.3	0.3	0.0	0.6	0.4	0.3	0.1	0.6	0.2	0.1	0.4	0.3
Education	1.9	1.9	1.9	1.9	2.0	1.8	4.0	2.2	1.9	1.8	4.4	2.3	1.7	1.7	1.9	1.8
Health	3.4	5.8	4.9	4.7	3.6	4.3	5.4	3.9	3.8	5.2	7.3	4.0	4.0	3.7	4.2	4.5
Arts, ent., rec. & other svcs.	6.0	5.9	6.3	6.0	5.9	5.6	8.1	6.3	6.5	5.3	8.5	7.2	5.8	6.8	6.2	6.3
Agri., forestry & fishing	6.1	3.6	6.0	5.1	3.8	2.9	2.1	7.2	3.5	1.2	0.6	5.3	1.3	1.3	3.5	5.5
Production	7.7	5.4	7.2	6.7	5.8	6.0	3.6	6.2	4.9	4.8	2.8	4.8	4.2	3.8	5.3	5.6
Info. & comm.	6.7	8.0	4.4	6.6	7.5	7.7	15.5	9.6	11.6	18.5	12.1	9.6	17.3	12.9	9.8	8.1
Finance & insurance	1.1	2.2	1.0	1.5	1.9	1.9	1.7	1.4	1.8	2.1	1.5	1.4	1.9	2.7	1.8	2.1
Prof., scientific & tech.	16.4	17.3	11.1	15.4	16.9	16.7	24.0	18.6	22.8	19.5	22.8	21.8	22.6	24.4	19.2	17.9
Business admin. & supp. svcs.	7.6	8.1	6.9	7.6	9.0	8.4	7.7	7.7	9.0	8.9	7.9	8.2	9.2	9.5	9.1	8.6

Industry sectors in North Essex and constituent local authorities by share of GVA, 1998 and 2016:

	Braintree		Colchester		Tendring		North Essex	
	1998	2016	1998	2016	1998	2016	1998	2016
Agriculture, mining, electricity, gas, water and waste	4.1%	3.0%	5.6%	4.5%	3.6%	2.7%	4.6%	3.5%
Manufacturing	26.8%	17.4%	12.5%	6.5%	12.3%	9.5%	17.3%	10.9%
Construction	10.0%	13.0%	8.4%	10.0%	8.7%	11.2%	9.0%	11.3%
Distribution; transport; accommodation and food	18.0%	17.3%	19.2%	19.2%	24.4%	24.3%	20.0%	19.8%
Information and communication	1.9%	2.7%	3.8%	5.1%	0.8%	1.3%	2.4%	3.4%
Financial and insurance activities	2.9%	4.7%	6.6%	3.8%	2.8%	1.7%	4.4%	3.6%
Real estate activities	14.7%	15.8%	14.4%	14.8%	22.0%	18.7%	16.3%	16.1%
Professional and administrative services	7.6%	9.0%	9.7%	11.0%	5.2%	6.4%	7.9%	9.2%
Public administration; education; health	11.8%	14.3%	16.9%	21.0%	16.4%	18.8%	15.1%	18.2%
Recreation, other services and household activities	2.2%	2.8%	3.0%	4.1%	3.9%	5.4%	2.9%	3.9%

Appendix 3: Analysis of jobs at risk from automation

A PwC study[97] into the technical feasibility of automation across sectors provides figures for the percentage of jobs by UK industry sectors at potential high risk of automation by the early 2030s. Cebr aggregated these by SIC07 sector to give percentages for each.

	Employment share of total jobs (%)	Job automation (% at potential high risk)
Agriculture, mining, electricity, gas, water and waste	2.30%	32.81%
Manufacturing	7.60%	46.40%
Construction	6.40%	23.70%
Distribution; transport; accommodation and food	26.40%	41.61%
Information and communication	4.10%	27.30%
Financial and insurance activities	3.20%	32.20%
Real estate activities	1.70%	28.20%
Business service activities	17.20%	24.26%
Public administration; education; health	25.40%	16.64%
Other services and household activities	5.90%	19.88%

Data on employment by sector at the NUTS 3 level is not available, therefore for each area under consideration the percentage of jobs at risk in each sector was weighted by that sector's share of GVA, for which data is available. Therefore these figures are approximate.

The product of % of jobs at risk and % GVA share for each sector was summed for each of North Essex, the comparators as a whole, the Greater South East excluding London, and Great Britain. Despite differing sector shares, results were remarkably close, so the central estimate for the impact of automation (the percentage at the end of the table) is the same across these areas.

[97] https://www.pwc.co.uk/press-room/press-releases/Up-to-30-percent-of-existing-UK-jobs-could-be-impacted-by-automation-by-early-2030s-but-this-should-be-offset-by-job-gains-elsewhere-in-economy.html

Job automation (% at potential high risk)	N. Essex		Comps.		GSE excl. London		GB	
32.81%	3.37%	0.011	3.08%	0.010	3.27%	0.011	4.46%	0.015
46.40%	10.37%	0.048	7.79%	0.036	9.15%	0.042	10.01%	0.046
23.70%	10.37%	0.025	6.16%	0.015	7.30%	0.017	6.18%	0.015
41.61%	19.82%	0.082	19.17%	0.080	19.98%	0.083	18.37%	0.076
27.30%	3.83%	0.010	10.82%	0.030	7.42%	0.020	6.17%	0.017
32.20%	3.90%	0.013	3.59%	0.012	3.86%	0.012	6.66%	0.021
28.20%	15.43%	0.043	14.43%	0.041	14.62%	0.041	13.97%	0.039
24.26%	10.47%	0.025	14.49%	0.035	13.18%	0.032	12.43%	0.030
16.64%	18.37%	0.031	15.73%	0.026	16.64%	0.028	17.54%	0.029
19.88%	4.08%	0.008	4.74%	0.009	4.57%	0.009	4.19%	0.008
		29.68%		29.32%		29.63%		29.76%

Bibliography

Department for Business, Energy & Industrial Strategy (2017), *Industrial Strategy: building a Britain fit for the future*. Available at https://www.gov.uk/government/publications/industrial-strategy-building-a-britain-fit-for-the-future

Government Office for Science (2016), *Future of an Ageing Population*. Available at https://www.gov.uk/government/publications/future-of-an-ageing-population

Essex Economic Commission (2017), *Enterprising Essex: Opportunities and Challenges*. Available at http://www.essexgrowth.co.uk/media/1023/essex_economic_report.pdf

London Stansted Cambridge Corridor Growth Commission (2016), *Findings and Recommendations of the London Stansted Cambridge Corridor Growth Commission*. Available at http://www.lsccgrowthcommission.org.uk/wp-content/uploads/2016/07/LSCC-Growth-Commission-Final-Report-full.pdf

Mark Farmer (2016), *The Farmer Review of the UK Construction Labour Model*. Available at http://www.constructionleadershipcouncil.co.uk/wp-content/uploads/2016/10/Farmer-Review.pdf

University of Essex Strategic Plan 2013-19. (2013). [online] University of Essex, pp.2-12. Available at: https://www.essex.ac.uk/about/strategic-plan

ONS

House Price Statistics for Small Areas (HPSSAs), HPSSA Dataset 9. Median price paid for administrative geographies, Table 1a, Table 2a, Table 3a

Local labour market indicators for NUTS3 areas

Regional gross disposable household income (GDHI) by local authority

Regional gross value added (income approach) reference tables, Table 2, Table 6

Regional gross value added (production approach) reference tables, Table 3

UK Business: Activity, Size and Location – 2017, Table 11

Regional Gross Value Added (Balanced) by Local Authority in the UK (experimental statistics)

2014-based Subnational Population Projections for Local Authorities and Higher Administrative Areas in England

NOMIS annual population survey, qualifications data

NOMIS location of usual residence and place of work by sex (MSOA level)

Nesta

Mateos-Garcia, J. and Bakhshi, H. (2016), *The Geography of Creativity in the UK*. Available at https://www.nesta.org.uk/publications/geography-creativity-uk

Mateos-Garcia, J., Klinger, J., and Stathoulopoulos, K. (2018), *Creative Nation*. Available at https://www.nesta.org.uk/publications/creative-nation

Cambridge Econometrics

May-Gillings, M. (2017), *North Essex Garden Communities Employment & Demographic Studies*.

Nuclear industry

Magnox. 2018. Sizewell A. [online] Available at: https://magnoxsites.com/site/sizewell-a#phases

East Anglian Daily Times. 2017. Sizewell C nuclear power station could become operational in 2031, says head of EDF Energy. [online] Available at: http://www.eadt.co.uk/business/sizewell-c-nuclear-power-station-to-become-operational-in-2031-says-head-of-edf-energy-1-5256823

Bradwell B. 2017. Community Update Letter – October 2017. [online] Available at: https://bradwellb.co.uk/community-update-letter-october-2017/

EDF Energy. 2018. Sizewell B power station. [online] Available at: https://www.edfenergy.com/energy/power-stations/sizewell-b

Offsite construction

Joey Gardiner. 2017. Can prefab homes solve UK's housing crisis?. [online] Available at: https://www.theguardian.com/sustainable-business/2017/jan/26/prefab-homes-uk-housing-crisis-modular-offsite-construction-manchester-liverpool-energy-efficiency

BBC. 2017. Chancellor announces million Cambridge to Oxford homes plan. [online] Available at: http://www.bbc.co.uk/news/uk-england-42084216

Faster, Smarter, More Efficient: Building Skills for Offsite Construction. (2018). [online] Available at: https://www.citb.co.uk/documents/research/offsite_construction/offsite_construction_full_report_20170410.pdf

Energy

Modern Power Systems. 2017. The Stable Salt Reactor: Transforming the promise of the molten salt fuel concept into a viable technology. [online] Available at: http://www.modernpowersystems.com/features/featurethe-stable-salt-reactor-transforming-the-promise-of-the-molten-salt-fuel-concept-into-a-viable-technology-5748063/

Haven Gateway. 2013. Harwich Offshore. [online] Available at: http://www.haven-gateway.org/harwich_offshore.htm

GOV.UK. 2012. Industrial energy and non-food crops: business opportunities for farmers. [online] Available at: https://www.gov.uk/guidance/industrial-energy-and-non-food-crops-business-opportunities-for-farmers

Transport infrastructure

MAG London Stansted Airport. 2018. London Stansted Airport commits to long-term growth within approved flight and noise limits. Available at: http://mediacentre.stanstedairport.com/london-stansted-airport-commits-to-long-term-growth-within-approved-flight-and-noise-limits/

Hertfordshire Mercury. 2018. Bishop's Stortford train line would need to be extended to "stop commuters" coming into town if West of Braintree Garden Community is approved. Available at: https://www.hertfordshiremercury.co.uk/news/hertfordshire-news/bishops-stortford-train-line-would-1035054

East Anglian Daily Times. 2016. Scandal and sugar beet: The forgotten Braintree to Bishop's Stortford railway. Available at: http://www.eadt.co.uk/scandal-and-sugar-beet-the-forgotten-braintree-to-bishop-s-stortford-railway-1-4746626

Digital infrastructure

Colchester Ultra Ready. 2018 Ultra Fast Broadband. [online] Available at: https://colchesterultraready.co.uk/colchester-a-great-place-for-business/ultrafast-connectivity/

DCLG

Council Taxbase local authority level 2017

Council Tax levels set by local authorities in England 2017 to 2018: Table 7: 2017-18 Council Tax (average Band D) and % change on 2016-17, individual local authorities

National non-domestic rates collected by councils in England: forecast for 2017 to 2018: National non-domestic rates collected in England 2017 to 2018: local authority data