GATWICK DIAMOND POST 2030 INFRASTRUCTURE STUDY

AECOM

January 2016

Executive Summary

AECOM were commissioned by the Surrey and West Sussex local authorities to prepare infrastructure studies for each county covering the period 2015 to 2030. A joint commission was also undertaken to produce this report which builds upon those pre 2030 infrastructure studies and focuses on the potential infrastructure requirements associated with longer term growth from 2030 to 2050 across the Gatwick Diamond area.

This report sets out the key findings from this study following a desk based assessment carried out by AECOM and ARUP (focusing on the transport infrastructure). It should be noted that this report is supported by a technical transport report produced by ARUP. The study has summarised a significant piece of technical analysis undertaken across the range of infrastructure types and across three different growth scenarios.

Total population change is forecast to increase across West Sussex but to decline in the Surrey Gatwick Diamond area of study between 2030 and 2050. This is as modelled by the Chelmer Model and is largely due to that model restricting population growth as a result of constrained housing projections forecasting fewer dwellings than needed to support positive population growth, with an ageing population and shrinking household size. Population change is forecast as dominated by an aging population and decline in school age and middle age cohorts which has direct impacts on forecast social infrastructure requirements as set out in this report.

The costs associated with additional infrastructure in the 2030-2050 period have been estimated as part of this study and whilst they do not include all future infrastructure due to the limitations of information that far ahead the study does estimate a minimum infrastructure cost for the whole study area of £1.27 billion which would increase to £1.62 billion in the case of Growth Scenario 3.

The Gatwick Diamond area is estimated to have a minimum infrastructure cost of £850 million which would increase to £1.19 billion in the case of Growth Scenario 3 (a £345 million increase).

With regards to background growth in line with Scenario 1, The study highlights the following key infrastructure findings for the post 2030 period:

- There appears to be sufficient investment planned for rail to accommodate the demand in all growth scenarios through to 2040 along the Brighton Main Line. Funding will need to be secured to ensure this is delivered.
- The Thameslink Programme and investment in capacity enhancements in central London is anticipated to significantly enhance the service levels and connectivity from the Brighton Main Line corridor and future development in the area should seek to maximise the rail capacity through spatial planning and focusing development around the rail corridor.
- Large sections of the M25 are expected to be at or approaching capacity by 2030 (and earlier in some cases) particularly between Jnc 6 (A22) to Jnc 10 (A3). Further enhancements to the M25 will be vital for maintain good connectivity with the wider strategic road network.
- Large sections of A25 between Dorking and Bletchingly will operate over capacity and the A23 between A272 at Bolney through to A273 at Pyecombe is expected to be approaching capacity.
- A number of junctions are expected to be operating over capacity across the network including M25 Jnc 6 and M23 Jnc's 10 and 11 and remaining at-grade junctions on the A27. A number of junctions within Crawley are expected to be operating at or near capacity post 2030.
- In relation to the total population change and the aging population, a significant infrastructure burden is forecast related to adult social services and specifically accommodation in residential, nursing and extra care housing. This challenge is not unique to Surrey and West Sussex and is a challenge being faced across the country.
- A decline in school age children in the post 2030 period will not only suggest a fall in demand for school facility development but also poses challenges for pre 2030 school planning to prevent unnecessary place capacity becoming an issue post 2030.

The additional growth requirements to support a second runway at Gatwick have also been considered with the following key findings for the post 2030 period:

- Infrastructure requirements are notably lower outside the Gatwick Diamond Area but significant within the West Sussex Gatwick Diamond Area.
- The main implication noted in this analysis has been that shown on the transport network and highways junctions associated with increased airport activity, employment and supporting homes.
- Scenario 3 would generate increased congestion on the M25 and Junctions 8 to 9 of the M23 operating close to capacity offering little resilience to incidents by 2050. A number of additional junctions will require improvements across the study area with a majority of these locations within Crawley and to the west of the Borough. Dependent on the location of future development to support additional growth, a potential western relief road for Crawley could be required.
- The uplift in future homes associated with scenario 3 and a second runway at Gatwick is assessed to require a scale of social infrastructure provision comparable to a substantial new community to include for example 2-3 new primary schools, a community and healthcare hub, a sports centre and supporting open space and recreation facilities.
- The theoretical additional housing associated with Growth scenarios 2 and 3 (which could equate to a new settlement or series of urban extensions) would present a significant challenge for authorities working within the Gatwick Diamond who already face challenges in accommodating planned growth.

GATWICK DIAMOND AREA

2015-2030:

Total New Homes: **40,833**

Infrastructure Costs: **£1,593,620,000**

Expected Funding: **£868,770,000**

Funding Gap: **£724,960,000**

2030-2050:

Scenario 1:

Additional Homes: **43,852**

Additional Infrastructure Costs: **£849,970,000**

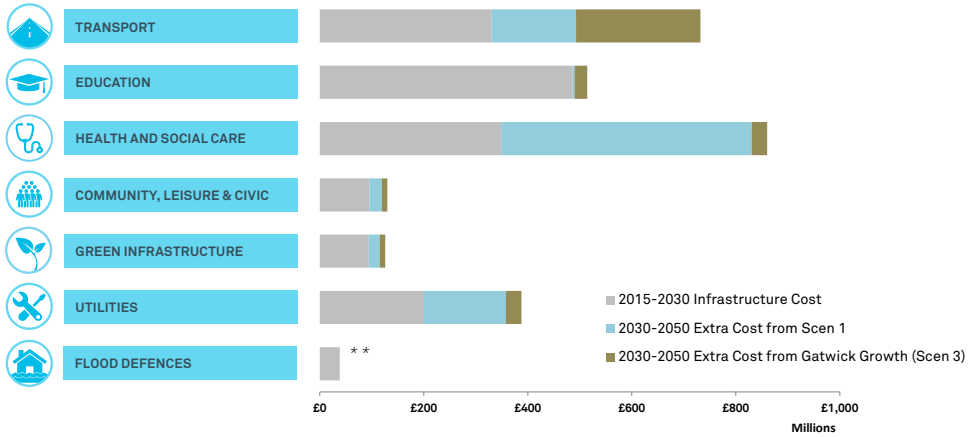
Scenario 3
(Inc. Gatwick Growth)

Additional Homes: **52,098**

Additional Infrastructure Costs: **£1,194,700,000**

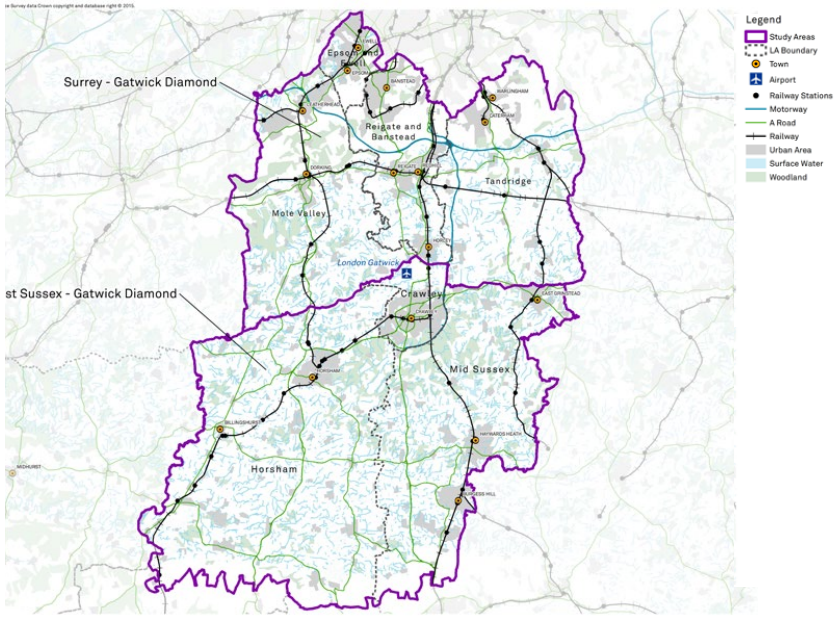
Cost Uplift from Gatwick Growth Scenario 3:

£344,730,000 (+41%)



INFRASTRUCTURE COSTS (2015-2050)

*** Post 2030 Flood defence costs not available*



Technical Note on Growth Scenarios:

Growth Scenario 1 - A baseline scenario which assumes there will be no second runway at Gatwick between 2030 and 2050. The scenario is based upon a continuation of the current planned growth

Growth Scenario 2 - Building upon the baseline scenario but including additional housing growth within the study area to support a Second Runway at Gatwick (generated a requirement for 9,300 extra homes).

Growth Scenario 3 - Building upon the baseline scenario but including additional housing growth within the study area to support a Second Runway at Gatwick (generated a higher requirement for 14,000 extra homes).

Technical Note on Report limitations:

This document has been produced relying on a number of data sets, assumptions and modelling work with associated limitations. These are set out within this document within the project parameters on page 8-9, the growth scenarios on page 17 and the project caveats on page 47.

CONTENTS

01

INTRODUCTION

This Gatwick Diamond Post 2030 Infrastructure Study has been prepared on behalf of West Sussex and East Surrey local authorities to provide a view of potential future development between 2030 and 2050 and the infrastructure requirements to support that growth.

This document aims to:

- Assess three possible growth scenarios covering the period 2030 to 2050.
- Review housing and population forecasts covering the period from 2030 to 2050
- Establish infrastructure projects required to support growth and consider the potential impacts of a second Gatwick runway.
- Present technical modelling of future infrastructure requirements based on AECOMs Social Infrastructure modelling and ARUPs transport modelling.
- Estimate the potential cost of delivering the infrastructure identified as required to support growth.
- Present a comprehensive picture at a strategic level and in a readily digestible format.

This document builds upon and should be read in conjunction with the supporting Infrastructure Studies for West Sussex and Surrey, which assess the current infrastructure capacity and potential impacts of 2015-2030 growth forecasts. Extracts of these two document are illustrated on the facing page.

This document presents analysis and findings based on available data at 2015 and therefore represents a point in time only.

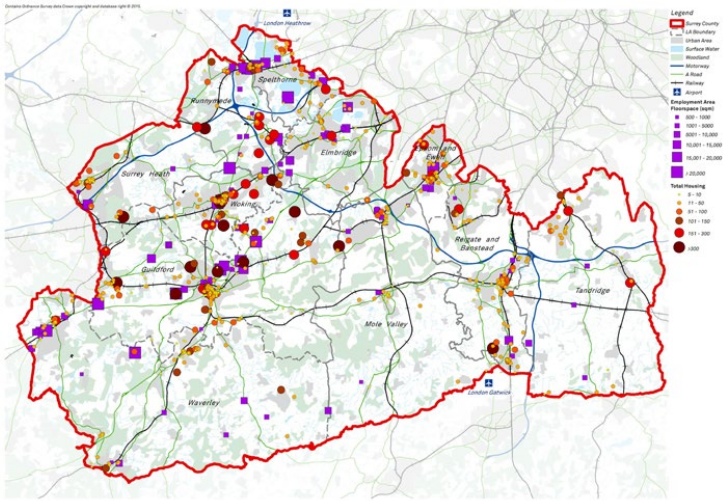


FIGURE A - STUDY AREA AND MAJOR HOUSING/EMPLOYMENT SITES
* This is based on the most up to date information at the time of publication and could be subject to change, subject to review of planning policy documents
Source: Local Authority data

SURREY

THE INFRASTRUCTURE STUDY IDENTIFIES THE FOLLOWING HEADLINES FROM 2015 TO 2030:

47,053
new homes

60,991
new people

59,000
new jobs

Total Infrastructure Costs: **£5,368,480,000**
Total Secured Funding: **£933,760,000**
Total Expected Funding: **£1,231,890,000**
Total Funding Gap: **£3,202,830,000***
% of Infrastructure Funded: **40%**

(considering both secured and expected funding)

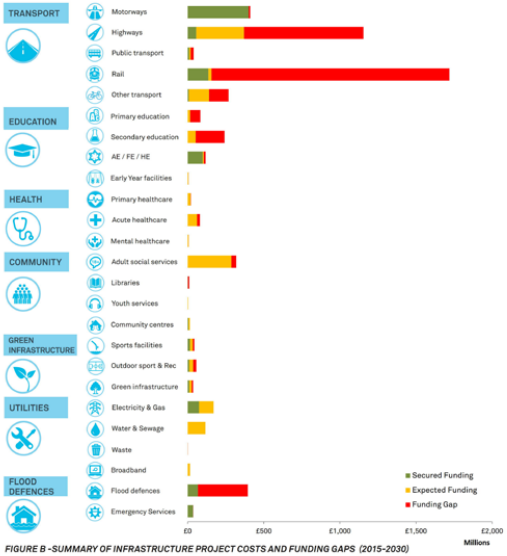


FIGURE B -SUMMARY OF INFRASTRUCTURE PROJECT COSTS AND FUNDING GAPS (2015-2030)

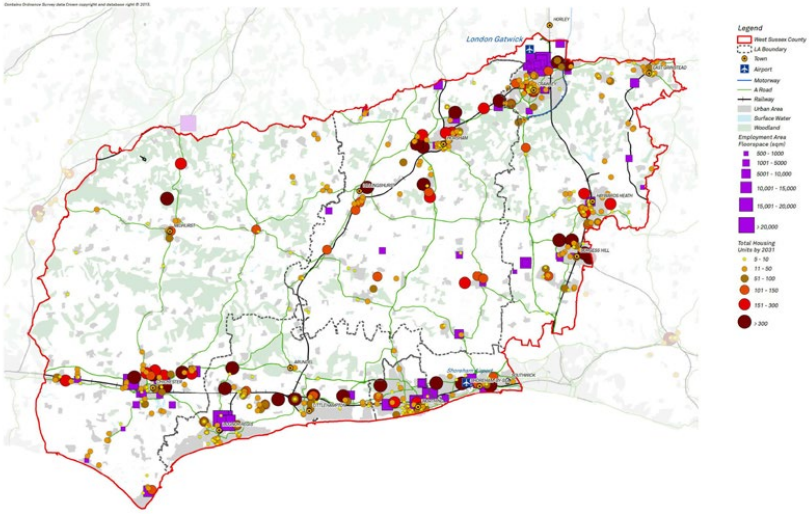


FIGURE A - STUDY AREA AND MAJOR HOUSING/EMPLOYMENT SITES
* This is based on the most up to date information at the time of publication and could be subject to change, subject to review of planning policy documents

WEST SUSSEX

THE INFRASTRUCTURE STUDY IDENTIFIES THE FOLLOWING HEADLINES FROM 2015 TO 2030:

48,930
new homes

63,300
new people

14%
workforce job growth

Total Infrastructure Costs: **£2,460,710,000**
Total Secured Funding: **£823,810,000**
Total Expected Funding: **£883,540,000**
Total Funding Gap: **£753,350,000**
% of Infrastructure Funded: **69%**

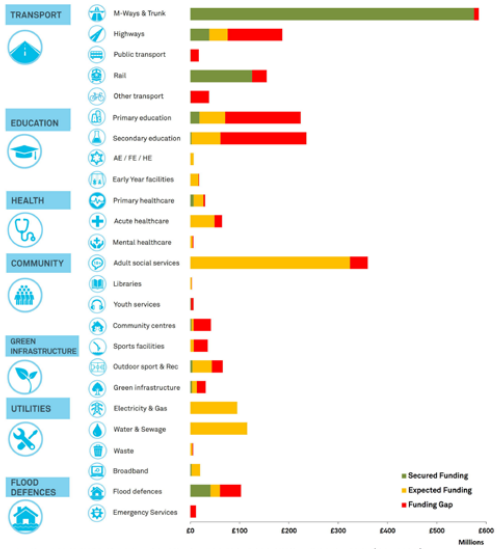


FIGURE B- SUMMARY OF INFRASTRUCTURE PROJECT COSTS AND FUNDING GAPS (2015-2030)

FIGURE 1.1 - EXTRACTS FROM THE SUPPORTING 2015-2030 INFRASTRUCTURE STUDIES FOR WEST SUSSEX AND SURREY COUNTY COUNCILS

PARAMETERS OF THE STUDY

This study has been prepared in accordance with the following parameters:

Growth Analysis Post 2030:

- The housing and population forecasts presented in this document represent our understanding of the growth context at July 2015 but it is recognised that this information is continually evolving and should therefore be treated as a snap shot in time only.
- A technical population modelling scenario forecast has been produced by RPS using a Chelmer Model on behalf of WSCC to inform the infrastructure study document and the technical infrastructure modelling associated with it. This is a bottom-up forecast based on the number of dwellings to be built in each individual district as advised by each local authority planning department in July 2015. It is important to note that these do not replace the WSCC standard population forecasts.
- This document is therefore supported by the RPS report 'West Sussex and East Surrey Infrastructure Study - Population Inputs'

Infrastructure Analysis Post 2030 period:

- The estimate of future social infrastructure requirements is based solely on technical modelling utilising the forecast population change between 2030 and 2050 and the application of benchmark planning standards to that population increase. Where a population decline has been forecast no additional infrastructure is assumed but no reduction in provision is modelled.
- The topic specific infrastructure analysis represents a snap shot in time and does not necessarily reflect all current work underway across the various service areas to address capacity issues and plan for change in service provision.
- The analysis does not include the impact of housing growth within London and bordering counties (East Sussex, Kent and Hampshire) which will have an impact of service demands within East Surrey and West Sussex, particularly along border areas.
- A project database has been created to record all identified project requirements, including the type, location and costs of those investments.
- Assessment of infrastructure need is based upon current technology and has not made assumptions associated with potential future changes in demand and use of facilities such as libraries or broadband.

Cost Analysis - Pre 2030 period (included in Chapter 6)

- The local authorities have undertaken considerable work to understand the infrastructure requirements to support their local plans. These IDPs have formed important source documents for the supporting West Sussex and Surrey Infrastructure Studies 2015-2030 and the costed infrastructure requirements identified within them. it should be noted that a number of the district and borough councils are currently in the process of updating their IDP.
- The costs of infrastructure presented in this document represent the sum of all entries in the 2015-2030 Infrastructure studies project database under that infrastructure theme and location. It should be noted that not all items in the project database have an associated cost due to a lack of project details from which to estimate costs. This therefore means that the costs presented in this summary document represent a minimum figure.

Cost Analysis - Post 2030 period:

- AECOM were responsible for the costing of all projects with the exception of transport projects that were undertaken by Arup.
- All social and green infrastructure and utility costs have been based upon the benchmarked demand modelling presented in this report with the application of benchmark build costs which are explained in more detail in chapter 7.
- Transport project estimates, undertaken by Arup, were based on estimating the potential scale of intervention for typical costs for junction works and road widening. Indicative cost ranges were adopted based on those identified through local authority IDPs as well as Arup benchmark ranges for these types of works.
- A full set of cost caveats have been included at the conclusion of this document and explain the predominant source of cost information by each infrastructure topic.

Funding Assumptions - Pre 2030 period (included in Chapter 6)

- The funding of infrastructure presented in this document is primarily based on the sum of all entries in the project database where a project has been identified

as having secured funding or is expected to receive funding from one or more sources.

- The existing understanding of project specific funding is not complete, in some cases due to the theoretical nature of the project costs, and will need to be advanced by all interested parties through project specific funding bids and through the future development of local authority Infrastructure delivery plans.
- Funding has been identified into two categories of secured and expected.
- Secured funding represents any project funding that has been identified within the district and borough IDPs or specifically noted as secured by source documents or discussions with stakeholders such as the Environment Agency.
- Expected funding includes potential funding from the public sector, the private sector and developer contributions.
- The expected funding category includes a theoretical assumption on the potential developer contributions to that service requirement based on the number of new dwellings forecast in that area. The details of how the potential developer contribution has been calculated is included in chapter 6.
- A number of working assumptions have had to be applied to other expected funding sources (both public and private) such as the likely NHS, Private sector and utility company contribution to project costs which are inevitable but cannot at this time be confirmed as in many cases the project costs identified have been generated theoretically and do not represent actual projects. These working assumptions are also set out in more detail in the West Sussex and Surrey Infrastructure Studies.
- It should therefore be noted that the funding estimates presented in this document are indicative and based on a number of working assumptions and in the case of the NHS have not been validated.

Funding Assumptions - Post 2030 period:

- Estimations of funding applicable to the post 2030 period has not been attempted in this study.

02

THE GATWICK DIAMOND

OVERVIEW OF THE DIAMOND

With Gatwick Airport at its heart, the 'Gatwick Diamond' is well known for the quality of its living environment and the strength of its local economy. Stretching from the southern edge of London to the northern boundaries of Brighton and Hove, the Diamond extends over a range of towns and villages, set in attractive countryside. Planning for the growth and development of the area presents the local authorities with significant challenges as they seek to protect the character and environment of the area, whilst meeting the needs of their communities in terms of economic, social and housing opportunity.

The Gatwick Diamond Initiative is a business-led partnership, with a focus on key strategic issues, the initiative partners with business leaders, business membership organisations, colleges and universities, local authorities, and government agencies to address the needs of the area to ensure it is a world-class place to live, work and do business.

The Gatwick Diamond does not have any formal boundaries but is broadly defined by a diamond-shaped area stretching between London and Brighton and extending west to Horsham and east to East Grinstead.

The Gatwick Diamond Initiative is funded by seven District and Borough Councils, two County Councils and Gatwick Airport. The local authorities are:

- Surrey County Council
- West Sussex County Council
- Epsom & Ewell Borough Council
- Mole Valley District Council
- Reigate & Banstead Borough Council
- Crawley Borough Council
- Horsham District Council
- Tandridge District Council
- Mid Sussex District Council

The Gatwick Diamond is acknowledged for its strengths both as a place to live and as a place to work. Its location, with Gatwick Airport at its centre and with high quality road and rail connections to London, Brighton and the wider South East, has been recognised in successive studies as a key factor in its attraction for businesses and residents alike. Proximity to the Airport and connectivity have helped create the conditions which have enabled the Diamond to grow as a national and international business location, whilst the variety of towns and villages has resulted in living environments suitable for those who look to work locally as well as those who commute longer distances for their work.

At the strategic level, however, there are significant issues which will need to be addressed if the prosperity of the area is to be maintained and enhanced. The Gatwick Diamond Local Strategic Statement sets these out as:

- *The Diamond's economy is experiencing greater competition from other locations in the South East*
- *Higher skill levels, and aspirations to those levels, are below average within the largest town, Crawley, and in pockets elsewhere*
- *An ongoing supply of suitable land and premises is needed to meet the demands of a changing economy and growing demand for housing*
- *New housing is needed to meet the expectations of a changing population but significant new development could, in some cases, change the character of towns and villages making them less attractive places in which to live and work*
- *Transport links have become increasingly congested and will require investment if the potential of the area is to be met*
- *Town centres meet day to day needs but, particularly for shopping, people have to travel out of the Diamond to obtain the quality of opportunities delivered by regional centres such as Bluewater, Kingston and Brighton*
- *The countryside, whilst an attractive and much valued resource, needs to be safeguarded if it is to maintain and strengthen its role*
- *Climate change and longer term issues of energy supply will require a concerted approach both within and across local authority boundaries*

FIGURE 2.1 - THE GATWICK DIAMOND

A SECOND GATWICK RUNWAY

A second runway at Gatwick was one of three short-listed proposals for airport expansion examined by the Airport Commission, chaired by Sir Howard Davies. Others included a north west runway option at Heathrow (a full length runway to the north west of the existing northern runway at Heathrow) and the "Heathrow Hub" proposal (an extension to the existing northern runway at Heathrow to the west).

Gatwick Airport Limited (GAL) is promoting the second runway scheme, a proposal for a full length runway to the south of and parallel to the existing runway at Gatwick Airport.

GAL submitted a significant body of information to the Airport Commission, including detailed technical appendices (available at http://www.gatwickairport.com/business-community/New-runway/Documents-library/).

Figure 2.2 on the facing page illustrates the proposed second runway scheme. GAL's case for a second runway, was summarised through a number of commitments:

- *A new runway by 2025. GAL suggested that the cost of the second runway at Gatwick is £7.8 billion, with all costs met by the private sector.*
- *An estimated £90 billion of economic growth benefits to the UK, based on GAL's assumption of greater air traffic and connections to new destinations*
- *GAL pledge that expansion at Gatwick will create around 120,000 new jobs and will fund a £50million housing and jobs programme enabling local authorities to deliver essential community infrastructure and provide young people with access to new jobs.*
- *Gatwick is stated to create additional capacity for more regional flights to other UK airports.*
- *The Environmental Impacts at Gatwick are stated to be lower than alternative solutions, with the potential to deliver 60% public transport use by 2040.*
- *The proposal includes improved transport connections with trains to London every two-and-a-half minutes and capacity doubled at local road junctions by 2025.*
- *GAL pledges a compensation package providing a 25% premium on top of market value for affected homeowners, a £5,000 infrastructure contribution to every home built as a result of airport expansion, and £1,000 per year contribution to council tax for local residents most affected by noise.*

GAL engaged RPS and Optimal Economics to undertake assessments on the local economy and required housing provision. The document *'RPS/Optimal - Local Economy: Employment & Housing Report'* considered the local authority areas around the airport within which 80% of the workforce lived in 2012. Within this area, a smaller area comprising most of the "Gatwick Diamond" is also looked at separately. Epsom and Ewell, whilst a member of the Gatwick Diamond grouping, has less than 1% of Gatwick workers living within its boundaries and was therefore not included in the Study Area.

The RPS/Optimal Local Economy Report concluded:

- *Based on maximum capacity of an expanded airport, it is estimated that up to 22,000 new jobs would be created within the Study Area by 2050, of which over 17,000 would be within the Gatwick Diamond. These jobs are either within the airport itself, closely related to its operation or arise directly as a result of the goods and services airport workers buy in the local economy.*
- *In relation to forecast airport employment growth, the additional employment associated with a two runway airport is estimated to represent around 2% of the total employment in the Study Area at 2051, although the proportion will again be higher in the Gatwick Diamond at just over 4%.*
- *Based on an increase of 22,000 jobs associated with the airport, an additional 9,300 households requiring new homes would move into the Study Area, around 5% of the total increase in households forecast to 2050/51.*
- *Over the 25 years from 2025 to 2050, the annualised maximum potential Gatwick related figure of 9,300 homes represents less than 400 homes per year spread over the local authorities in the Study Area. This is less than 7% of current annual planned house building rates in the Study Area as a whole.*
- *An assessment of current land supply for employment and housing in the Study Area and the Gatwick Diamond suggests that there appears to be broadly sufficient land to ensure that current and emerging plans could be realised to around 2030. Beyond that point, and thus during the majority of the period over which a 2 runway airport is expected to be reaching its capacity, there will be a requirement for additional housing and employment land allocations with or without an additional runway at Gatwick.*

The Airport Commission reported to Government in July 2015, concluding that the Heathrow North West Runway at Heathrow Airport, in combination with a significant package of measures to address environmental and community impacts presents the strongest case. The Heathrow North West Runway is identified as providing greater potential for Long Haul flights, while it identifies that substantial changes would need to be seen at Gatwick to deliver connectivity benefits on the same scale as Heathrow.

The commission also identifies Heathrow's position on the transport network, including links to High Speed 2, increased competition benefits to passengers, airlines and freight operators at Heathrow compared to Gatwick – the commission forecasts that the overall effect could be to increase GDP by 0.65-0.75% by 2050, amounting with carbon emissions traded to £131-147 billion in present value terms over the 60 years following expansion. This compares to £89 billion in GDP impacts from expansion at Gatwick. The relative case for expansion at Heathrow is strengthened with emissions limited to 37.5MtCO_2 in 2050, which sees the impacts of Heathrow expansion fall to £103-129 billion, but those of a second runway at Gatwick reduce to £44 billion.

GAL responded with "Areas of Concern" in August 2015 over a number of issues in the Commissions Final Report.

At September 2015, the Government is continuing to consider the recommendations of the Airports Commission and David Cameron recently stated that a decision would not be made by the end of 2015. Until a final decision is made by the Government, the prospect of the Gatwick Second Runway option remains.

FIGURE 2.2 - GATWICK SECOND RUNWAY PROPOSALS (REVISED OPTION 3 LAYOUT PLAN)

STUDY AREA DEFINED

This study considers all of West Sussex and the East of Surrey. From this point in the report the analysis of housing, population and infrastructure will be presented at three sub areas and not authority level. The sub areas are set out below and illustrated on the facing page.

SURREY GATWICK DIAMOND:

- Mole Valley
- Reigate & Banstead
- Tandridge
- Epsom & Ewell

WEST SUSSEX GATWICK DIAMOND:

- Crawley
- Horsham
- Mid Sussex

WEST SUSSEX COASTAL:

- Adur
- Arun
- Chichester
- Worthing

Analysis of future infrastructure requirements and associated costs are presented in this report at each of the three sub areas above, the combined Gatwick Diamond Area (Surrey and West Sussex parts combined) and the study area as a whole.

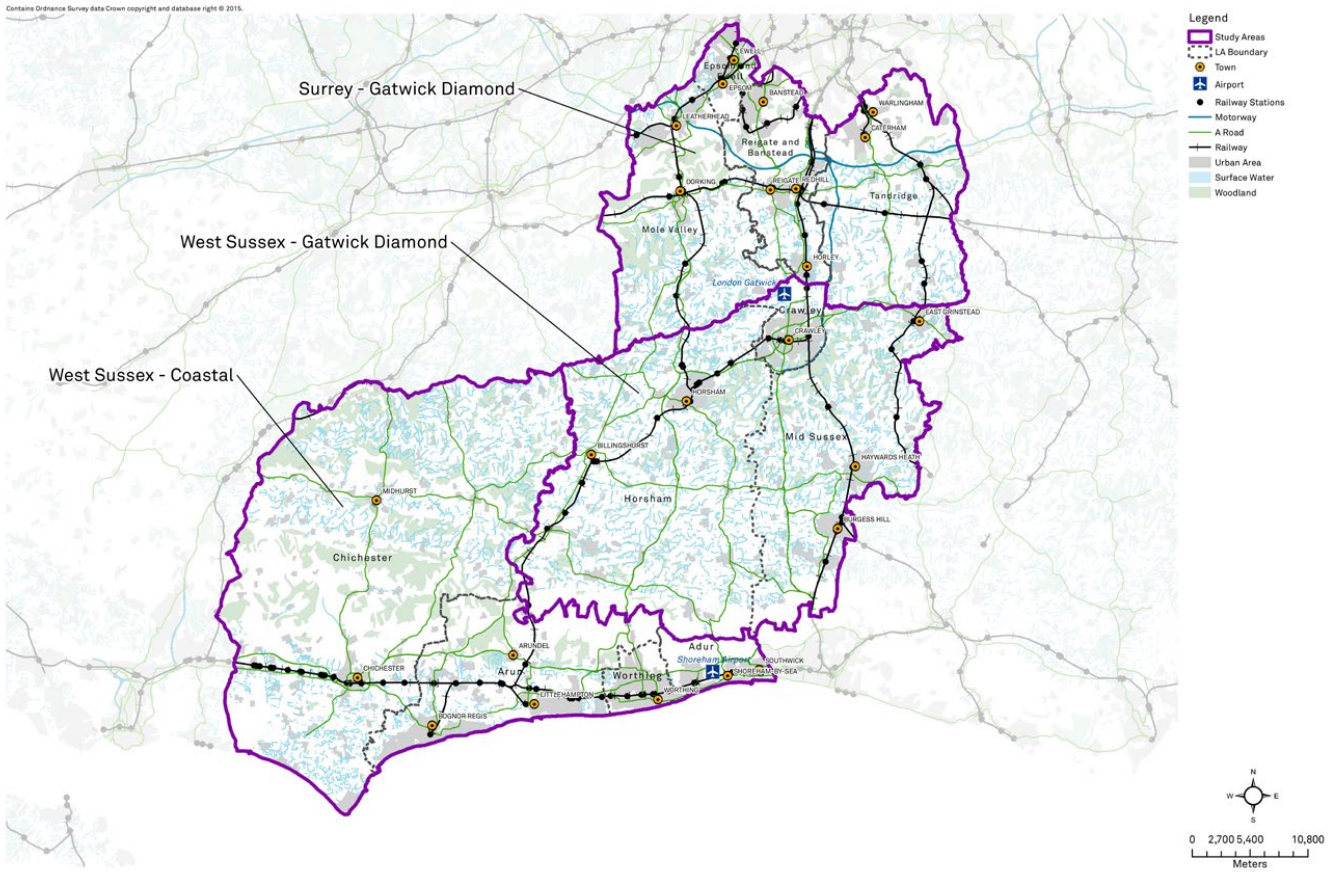


FIGURE 2.3 - STUDY AREA COVERING WEST SUSSEX AND EAST SURREY

03

GROWTH SCENARIOS

THIS SECTION AIMS TO SUMMARISE THE THREE SCENARIOS IN PLANNING FOR GROWTH IN THE GATWICK DIAMOND TO 2050.

Technical Note on Growth Scenarios:

The housing growth forecasts presented in this document have been collated and prepared by RPS on behalf of WSCC. The data behind these forecasts was provided by the LPAs but represents only the working assumption on likely housing delivery at July 2015 and do not necessarily represent the latest local plan position.

Detailed explanations of the methodology employed to generate these housing forecasts is set out within the associated **RPS report - West Sussex and East Surrey Infrastructure Study - Population Inputs'**.

***Technical Note on DfT TEMPro Model:**

The TEMPro (Trip End Model Presentation Program) software is used for transport planning purposes. The forecasts include population, employment, households by car ownership, trip ends and simple traffic growth factors.

For further Information refer to:

www.gov.uk/government/collections/tempro

SCENARIO 1

This is a baseline scenario which assumes there will be no second runway at Gatwick between 2030 and 2050. The scenario is based upon **a continuation of the current planned growth** as set out in the district and borough local plans to 2030 (and presented in the West Sussex and Surrey Infrastructure Studies) but continued in this case to 2050. These were largely based on assuming that current planned house building levels would continue beyond 2030 although for some local authorities projected house building declined due to assumed capacity issues.

SCENARIO 2

Building upon the baseline scenario associated with continued local plan growth from 2030 continued to 2050 with the additional impacts of a second runway at Gatwick. The level of growth associated with growth at Gatwick is in line with the evidence provided by GAL to the Davies Commission. This includes additional housing growth to support a Second Runway at Gatwick of **9,300 extra homes.** Direct airport employment patterns have been used as a proxy for future housing distribution to allow a high level assessment of infrastructure requirements and costs across the area as a whole. Catalytic Growth not included as this will be driven by local policy decisions to support catalytic growth (or not).

SCENARIO 3

Also building upon the baseline scenario associated with continued local plan growth from 2030 continued to 2050 with the additional impacts of a second runway at Gatwick. The level of growth associated with growth at Gatwick is also in line with the evidence provided by GAL to the Davies Commission but this utilised a slightly different methodology and alternatively includes additional housing growth to support a Second Runway at Gatwick of **14,000 extra homes**. Direct airport employment patterns have again been used as a proxy for future housing distribution.

LIMITATIONS OF FORECASTING

This document is looking further ahead than conventional planning documents and technical studies. Beyond a five, ten or even fifteen year horizon certainty in terms of future scenarios and associated impacts become very difficult to predict. A number of important caveats must be set out before presenting the study forecasts and associated infrastructure observations:

- Housing forecasts up to 2030 are based on a series of meetings and discussions between WSCC , SCC and the district and borough councils included in this study. Chapter 7 sets out in detail the caveats associated with these housing figures.
- Direct airport employment patterns have been used as a proxy for distributing additional growth from the second runway scenarios (at local authority level).
- A Chelmer Model has been employed by RPS on behalf of WSCC to forecast the change in population between 2015 and 2040. The model only forecasts this far into the future.
- WSCC have extended the Chelmer model forecasts from 2040 to 2050 employing a continuation of the change exhibited in the 10 years prior to 2040.
- Post 2030 housing distribution has been considered specifically with regards to future transport infrastructure requirements and the working assumption has been to assume a distribution of growth within each of the District and Boroughs in line with the DfT TEMPro Model*.
- The ability of Local authorities in close proximity to Gatwick to physically accommodate this theoretical housing need based on potential land availability has not been included within this assessment.

3.1 HOUSING FORECASTS

In preparation for this study WSCC engaged consultants RPS to collate an agreed set of project specific housing trajectories to inform the technical modelling undertaken as the basis for this study.

The following observations can be made when reviewing the housing forecasts for the study area:

- The majority of the housing growth forecast across the study area will be required in the West Sussex Gatwick Diamond Area, increasing by between 32,900 and 39,300 additional dwellings (depending on the scenario experienced) which equates to a growth rate of between 17% and 20%.
- West Sussex Coastal area is forecast to experience the second largest increases but at a lower rate than in the West Sussex Gatwick Diamond area with increases of between 29,000 and 29,700 (depending on scenarios) equivalent to a 13% growth rate.
- Surrey Gatwick Diamond area is forecast to deliver additional dwellings between 2030 and 2050 but at a lower level than that seen in West Sussex. The Total additional dwellings are forecast between 10,900 and 12,800 (depending on the scenario experienced) which equates to a growth rate of between 6% and 7%.
- The West Sussex Gatwick Diamond is seen to require the vast majority of the additional increases generated through Scenarios 2 and 3.

It is important to stress the theoretical nature of these forecasts, particularly post 2030. A number of caveats accompany these forecasts as set out within the project parameters on page 8-9, the growth scenarios on page 17 and the project caveats on page 47).

Technical Note on Housing Forecasts:

The housing forecasts presented in this document have been collated and assessed by RPS on behalf of WSCC. The data behind these forecasts was provided by the LPAs but represents only the working assumption on likely housing delivery at July 2015 and do not necessarily represent the latest local plan position.

Importantly, analysis of the latest ONS population forecasts and associated DCLG household forecasts for West Sussex and Surrey suggests the housing figures presented within this section could underestimate future housing growth to a significant degree. The exact extent of this underestimation is hard to quantify however due to the number of variables of objectively assessed housing need but it is considered reasonable to assume the forecasts in this study represent a minimum scenario of housing growth.

Detailed analysis and explanations of the methodology employed to generate these housing forecasts is set out within the associated **RPS report - West Sussex and East Surrey Infrastructure Study - Population Inputs'**.

TOTAL DWELLINGS	2016	2031			2050		
		SCENARIO 1	SCENARIO 2	SCENARIO 3	SCENARIO 1	SCENARIO 2	SCENARIO 3
Surrey Gatwick Diamond	165,610	178,807	179,276	179,514	189,713	191,455	192,339
West Sussex Gatwick Diamond	167,852	193,862	195,416	196,193	226,808	232,580	235,466
West Sussex Coastal	208,143	231,063	231,231	231,315	260,095	260,719	261,031
Gatwick Diamond Area	***333,462***	***372,669***	***374,692***	***375,707***	***416,521***	***421,035***	***427,805***
Complete Study Area	***541,605***	***603,732***	***605,923***	***607,022***	***676,616***	***684,754***	***688,836***

DWELLING CHANGE	EXTRA DWELLINGS 2031-2050			DIFFERENCE BETWEEN SCENARIOS 1 & 3	% CHANGE 2031-2050		
	SCENARIO 1	SCENARIO 2	SCENARIO 3		SCENARIO 1	SCENARIO 2	SCENARIO 3
Surrey Gatwick Diamond	10,906	12,179	12,825	1,919	6%	7%	7%
West Sussex Gatwick Diamond	32,946	37,164	39,273	6,327	17%	19%	20%
West Sussex Coastal	29,032	29,488	29,716	684	13%	13%	13%
Gatwick Diamond Area	***43,852***	***49,343***	***52,098***	***8,246***	***12%***	***13%***	***14%***
Complete Study Area	***72,884***	***78,831***	***81,814***	***8,930***	***12%***	***13%***	***13%***

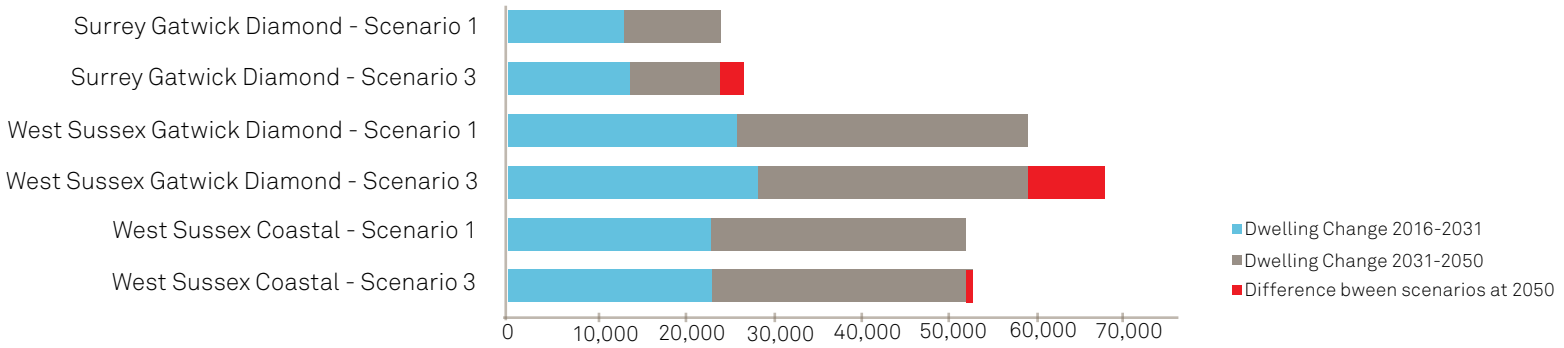


FIGURE 3.1 - FORECAST DWELLING CHANGE 2015 - 2050

3.2 POPULATION FORECASTS

In preparation for this study WSCC engaged consultants RPS to produce a set of project specific population forecasts to inform the assessment of infrastructure needs presented in this report. It is important to note the following points with regards to the population forecasts:

- RPS have used a Chelmer Population Model to generate the population forecasts. The Chelmer Model only produces forecasts from 2011 to 2041.
- The Chelmer Model provide outputs by district and borough in 5 year phases and by key age cohorts.
- Strictly for the purposes of this study and the requirement to assess change to 2050 as opposed to 2041, WSCC have extended the forecast from 2041 to 2050 through the extrapolation of growth rates from 2036 to 2041.
- The Chelmer Model forecasts population based on ONS Census assumptions but importantly to this study, constrains the growth through the availability of projected new dwellings (and therefore available households). The outputs are considerably lower than ONS population projection (which are not constrained by forecast housing supply).
- Some districts are forecast by the Chelmer Model to experience a population decline post 2030, particularly in areas of Surrey which is primarily due to the model constraining the population through a lack of forecast housing units.

The following observations can be made when reviewing the Chelmer population forecasts for the study area:

- The majority of the population growth forecast across the study area will be generated in the West Sussex Gatwick Diamond Area, increasing by between 36,300 and 52,200 additional people (depending on the scenario experienced) which equates to a growth rate of between 8% and 12%.
- West Sussex Coastal area is forecast to experience population increases but at a considerably lower rate than in the Gatwick Diamond area with increases of between 10,900 and 12,500 (depending on scenarios) equivalent to a 2% to 3% growth rate.
- Surrey Gatwick Diamond area is forecast to decline in total population post 2030 based on the constrained housing forecasts which do not match the number of homes required to allow the population to continue growing at a positive rate. The population is forecast to fall by between 25,600 and 30,600 people (depending on the scenario experienced) which equates to a decline of between 6% and 8%.
- Despite the forecast decline in population in the Surrey Gatwick Diamond Area the study area as a whole is forecast to experience an increase in population from 2030 to 2050.
- Social infrastructure modelling in the following chapter has only considered the increase in population forecast and not modelled the decline in infrastructure demand in the Surrey area as this strategic assessment cannot review the potential future usage and potential closures of existing social infrastructure and any associated cost savings.
- For the study area as a whole, the difference between the total change from Growth Scenario 2 and 3 compared to the Baseline Growth Scenario 1 is notable. Growth Scenario 2 is forecast to generate an additional 15,000 people and Growth Scenario 3 is forecast to increase the population by 22,500 additional people, this results in a 3% population growth rate as opposed to a 1% population growth rate.
- The West Sussex Growth Area is seen to generate the vast majority of the additional increases forecast through Scenarios 2 and 3.

Whilst these population forecasts are theoretical in nature it should be noted that the dynamics of this change in population must also be considered as we plan for supporting infrastructure. Additional housing to support employment opportunities generated by Gatwick could potentially attract a working age household profile with greater impacts on local services (nurseries, primary schools etc) and also different patterns of commuting on the transport network.

Technical Note on Population Forecasts:

Detailed analysis and explanations of the methodology employed to generate these population forecasts is set out within the associated **RPS report - West Sussex and East Surrey Infrastructure Study - Population Inputs'**.

The RPS report sets out the methodology behind the Chelmer Population model including the baseline population assumptions such as migration, fertility rates, mortality rates and household representative rates.

TOTAL POPULATION	2016	2031			2050		
		SCENARIO 1	SCENARIO 2	SCENARIO 3	SCENARIO 1	SCENARIO 2	SCENARIO 3
Surrey Gatwick Diamond	390,987	399,423	400,702	401,349	368,770	373,425	375,781
West Sussex Gatwick Diamond	392,497	430,955	435,048	437,094	467,294	481,981	489,326
West Sussex Coastal	441,711	466,554	466,957	467,157	477,482	478,931	479,664
Gatwick Diamond Area	***783,484***	***830,378***	***835,750***	***838,443***	***836,063***	***855,405***	***865,107***
Complete Study Area	***1,225,195***	***1,296,932***	***1,302,707***	***1,305,600***	***1,313,545***	***1,334,336***	***1,344,771***

POPULATION CHANGE	EXTRA PEOPLE 2031-2050			DIFFERENCE BETWEEN SCENARIOS 1 & 3	% CHANGE 2031-2050		
	SCENARIO 1	SCENARIO 2	SCENARIO 3		SCENARIO 1	SCENARIO 2	SCENARIO 3
Surrey Gatwick Diamond	-30,653	-27,277	-25,568	3,487	-8%	-7%	-6%
West Sussex Gatwick Diamond	36,339	46,933	52,232	15,893	8%	11%	12%
West Sussex Coastal	10,928	11,974	12,507	1,579	2%	3%	3%
Gatwick Diamond Area	***5,685***	***19,655***	***26,644***	***20,959***	***1%***	***2%***	***3%***
Complete Study Area	***16,613***	***31,629***	***39,171***	***22,558***	***1%***	***2%***	***3%***

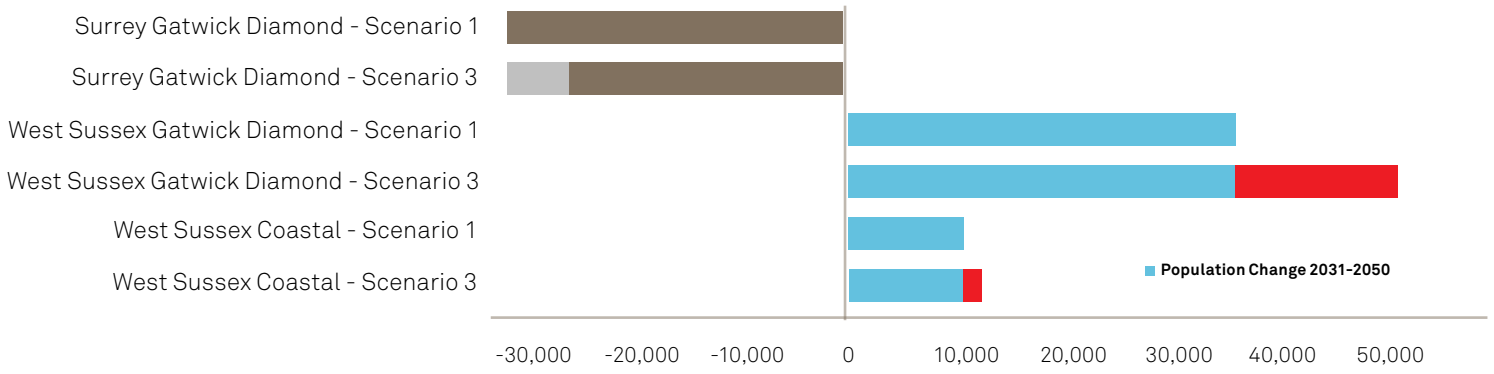


FIGURE 3.2 - FORECAST POPULATION CHANGE 2031 - 2050

3.3 AGE SPECIFIC POPULATION FORECASTS

The Chelmer Model allows us to understand the age specific changes in the forecast population as well as the total population change. This is particularly important when considering associated demands for social infrastructure which is heavily influenced by specific age cohorts.

Education facility demands are unsurprisingly linked to the change in child age number, health and social care is particularly influenced by the changing age profile of the population with increases in the retired population presenting continual challenges to the national health service and adult social care commissioners.

Important observations on the age specific population forecasts includes:

- A significant decline in school age children (and early year aged children) is seen across the study area as a whole.
- Over 70 year olds increases considerably across all three areas.
- West Sussex Gatwick Diamond area contrasts the others with an small increase in primary age children.
- West Sussex Gatwick Diamond area also experiences the smallest decline in secondary age children.
- The impact of the Scenarios 2 and 3 on the total population is notable but the age profile is largely unchanged.

TOTAL STUDY AREA AGE PROFILE	2031-2050 TOTAL CHANGE			2031 -2050 % CHANGE		
	SCENARIO 1	SCENARIO 2	SCENARIO 3	SCENARIO 1	SCENARIO 2	SCENARIO 3
85+	58,757	58,976	59,092	81%	81%	82%
71-84	76,623	77,278	77,616	41%	41%	41%
65-70	-3,862	-3,429	-3,204	-4%	-3%	-3%
55-64	-24,050	-22,902	-22,331	-14%	-13%	-13%
45-54	-9,754	-7,683	-6,646	-6%	-5%	-4%
35-44	-36,629	-33,190	-31,474	-24%	-22%	-21%
25-34	16,869	18,864	19,858	15%	16%	17%
16-24	-26,745	-26,059	-25,710	-24%	-23%	-23%
0-15	-34,602	-30,228	-28,033	-16%	-14%	-13%
Total	***16,613***	***31,629***	***39,171***	***1***%	***2***%	***3***%

Detailed analysis and explanations of the methodology employed to generate these population forecasts is set out within the associated **RPS report - West Sussex and East Surrey Infrastructure Study - Population Inputs'**.

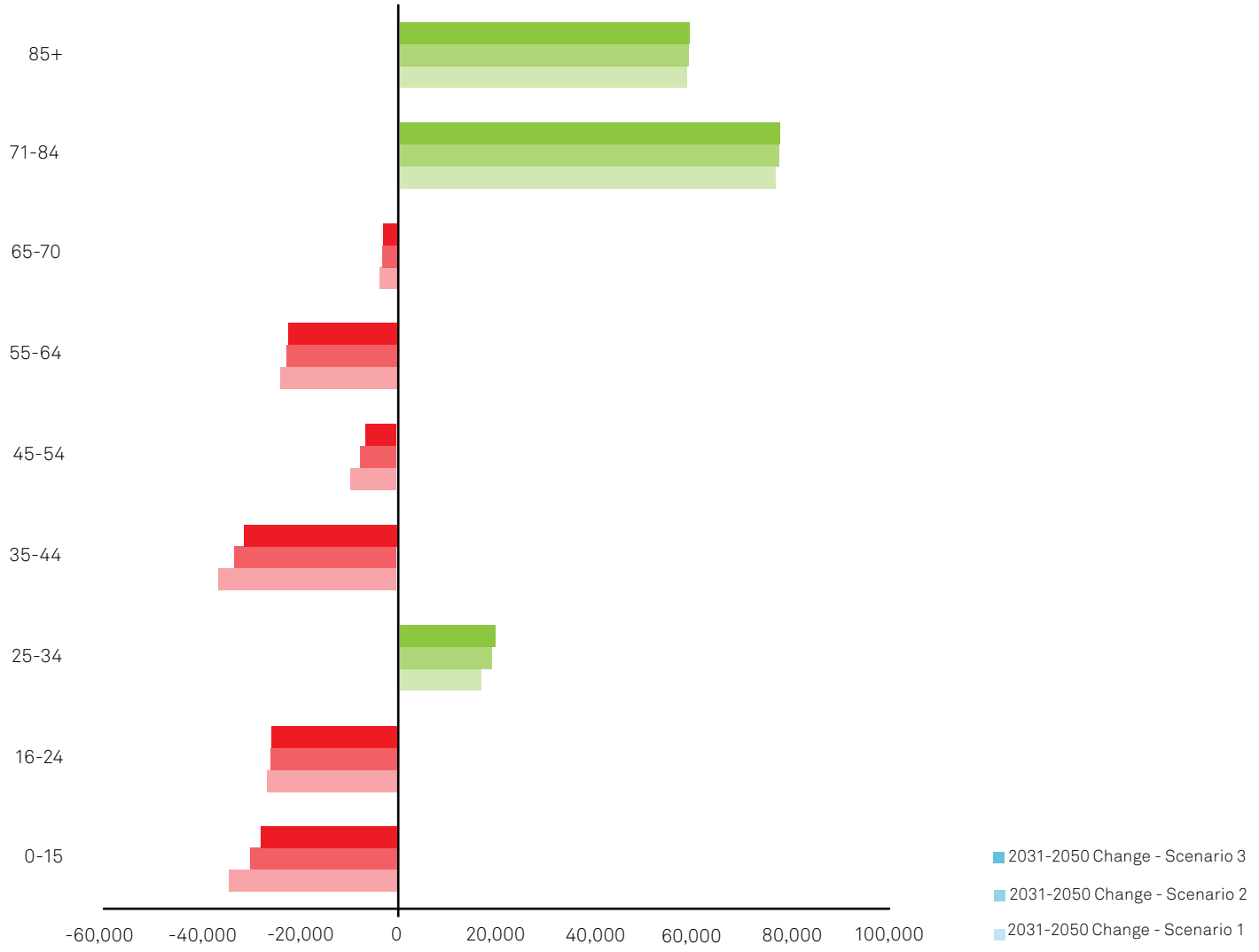


FIGURE 3.3 - FORECAST POPULATION AGE PROFILE CHANGE 2031 - 2050

04


15 5m
M4 The WEST Reading Slough
London (W & C) Heathrow (Terminals 1, 2 & 3) M4
(M40, M1, M11) Oxford, Watford, Stansted M25

IMPLICATIONS OF GROWTH

THIS SECTION PRESENTS AN ASSESSMENT OF FUTURE INFRASTRUCTURE REQUIREMENTS AGAINST GROWTH FORECASTS FROM 2030 TO 2050.

This covers the following infrastructure categories:

4.1 TRANSPORT

- Highways and Roads
- Public Transport
- Rail and other modes

4.2 SOCIAL & GREEN INFRASTRUCTURE

- Education
- Health and Social Care
- Community, Leisure and Civic
- Open Space and Green Infrastructure

4.3 UTILITIES

4.4 FLOOD PROTECTION

Detailed infrastructure assessments of the existing capacity issues and forecast change between 2015 and 2030 have been carried out and presented in detail within the supporting Surrey Infrastructure Study and the West Sussex Infrastructure Study.

The following is considered here for each type of infrastructure where possible

- Estimated capacity issues across the area at 2030
- An understanding of infrastructure requirements to support forecast growth
- An analysis of any existing proposed projects and costs for investment post 2030

4.1 TRANSPORT

Assessments of each growth scenario were undertaken for the road and rail networks. These considered the impact of Growth Scenario 1 through to 2050 and the level of investment needed to maintain the operation of the network and in addition, what further investment would be required to support Growth Scenario 3.

A review of the future operation of the road network was undertaken using computer models available from Highways England and West Sussex County Council. These were updated to include the travel demands likely to be generated from each Growth Scenario. For Growth Scenario 3, the models were also updated to reflect the latest proposals at Gatwick in relation to proposed access works to the M23 Junction 9 and a number of access junctions. The models were used to estimate the likely level of congestion at junctions and on longer stretches of road.

The rail network was assessed using outputs from Gatwick's R2 Airport Surface Access Strategy (R2 ASAS) as this was the latest available rail assessment work in the area and considered local plan growth. This provided rail forecasts through to 2040 including scenarios with increases in background demand and scenarios with additional air passenger and employee demand.

The rail demand associated with the additional housing under Growth Scenario 3 is likely to be limited. Commuting journeys recorded in the 2011 census indicated between 2.9 and 14% of journeys in the study area were by rail. Based on typical trip making per household from the National Travel Surveys, the additional housing is likely to generate around 370 extra journeys in the peak hour by rail. In the context of background demand growth through to 2040 and the study area extent, this increase is likely to be small. As such, the future performance of the rail networks is based on the outputs from the R2 ASAS work for both Growth Scenarios.

ASSESSMENT OF GROWTH SCENARIO 1

Road traffic modelling has identified that:

- There are a number of planned schemes either committed or in current strategies and policies that address major congestion hotspots in the study area including the M23 between Junction 8 to 10 and several sections of the A27 through to 2030. (See the West Sussex and Surrey Infrastructure Studies 2015).
- A number of schemes identified to support major development proposals through the region will be critical in maintaining the operation of the road network.
- In addition, road traffic modelling identified a further 33 junction locations that are expected to be operating at capacity by 2030 and 42 junctions by 2050, with no current proposals identified. (See Figures 4.2 and 4.3)
- By 2030, southern sections of the M25 between Junction 5 (M26) and Junction 9 (A24) are expected to be approaching capacity and by 2050 this is expected to be at or in excess of capacity .
- A22 into East Grinstead from the north is expected to be heavily congested from 2030 onwards.
- A number of single lane sections along the A25 between Dorking and Redhill are expected to be approaching capacity (particularly between Godstone and Redhill and Dorking and Betchworth) from 2030 onwards.
- Some single carriageway sections of the A2004 and A2220 within Crawley are expected to be approaching capacity by 2030 and significantly congested by 2050.
- Dual carriageway sections of the A23 in Crawley between Cheals Roundabout (A2220) to the A23/A2219/A2011 roundabout are expected to be approaching capacity by 2050.
- Two lane dual carriageway sections of the A23 between Pyecombe and Warninglid are expected to be approaching capacity by 2030 and at capacity by 2050.

Assessments of the future operation of the rail network has indicated that:

- Funded schemes are expected to reduce crowding on services below existing levels. (See Figure 4.1)
- Anticipated enhancements along the Brighton Main Line (BML) are expected to provide sufficient capacity for additional background demand through to 2040.

ASSESSMENT OF GROWTH SCENARIO 3

This scenario had higher growth due to the assumption of a second runway at Gatwick Airport (R2) and additional housing growth. Road traffic modelling showed that:

- The M23 southbound between J8 and J9 is expected to be busy although under capacity in this scenario.
- The A23 north of the M25 is likely to be significantly congested although this is an existing issue with no known improvement proposed.
- The M25 J7 eastbound off slip onto the M23 is expected to be near capacity although it is unclear at this stage the extent of works that will be undertaken at Junction 7 as part of the M23 J8 to J10 Smart Motorway works.
- A number of junctions within Crawley are likely to be adversely affected by additional traffic requiring some level of intervention (such as localised widening or signalisation). See Figure 4.1

The assessment assumed that Gatwick's proposed R2 mitigation is in place, i.e. introduction of grade separation

at J9 of the M23 and various works on the roads around the airport. Due to the use of employment as a proxy for housing distribution much of the additional development related growth is focused around Crawley / Mid Sussex / Horsham and Reigate and Banstead and hence no impact is reported along the coast.

By 2050, a number of strategic junctions are expected to exceed capacity including M25 J6 and M23 Junctions 10 and 11. Stretches of the A23 are also anticipated to be at or approaching capacity along with remaining at grade junctions along the A27. No adverse impact is reported under this scenario along the A27 due to the focus of additional development around Crawley, Horsham, Mid Sussex and Reigate and Banstead (due to the use of employment as a proxy for housing distribution).

Background growth in rail demand by 2050 is expected to drive increases in crowding with the forecast pattern of air passenger arrivals at Gatwick only expected to generate an additional 8% northbound passengers in the morning peak 3 hours into London by 2050. Demand associated with the additional housing provision is expected to be relatively small and as such not expected to affect the operation of the network as reported in the Gatwick R2 ASAS.

The analysis supporting the Gatwick R2 ASAS suggested that sufficient capacity along the BML exists through to 2050 to cater for the increases in demand associated with expansion. In this time frame, additional BML capacity or alternative north south improvements are likely to be important to accommodate wider growth in the region

Network Rail's current investment commitments do not extend beyond 2019 but the Sussex Area Route Study published in September 2015 suggests additional measures are likely to improve services particularly along the West Coastway linking into the Brighton Main Line, the Brighton Main Line itself and the electrification and provision of additional services on the North Downs Line.

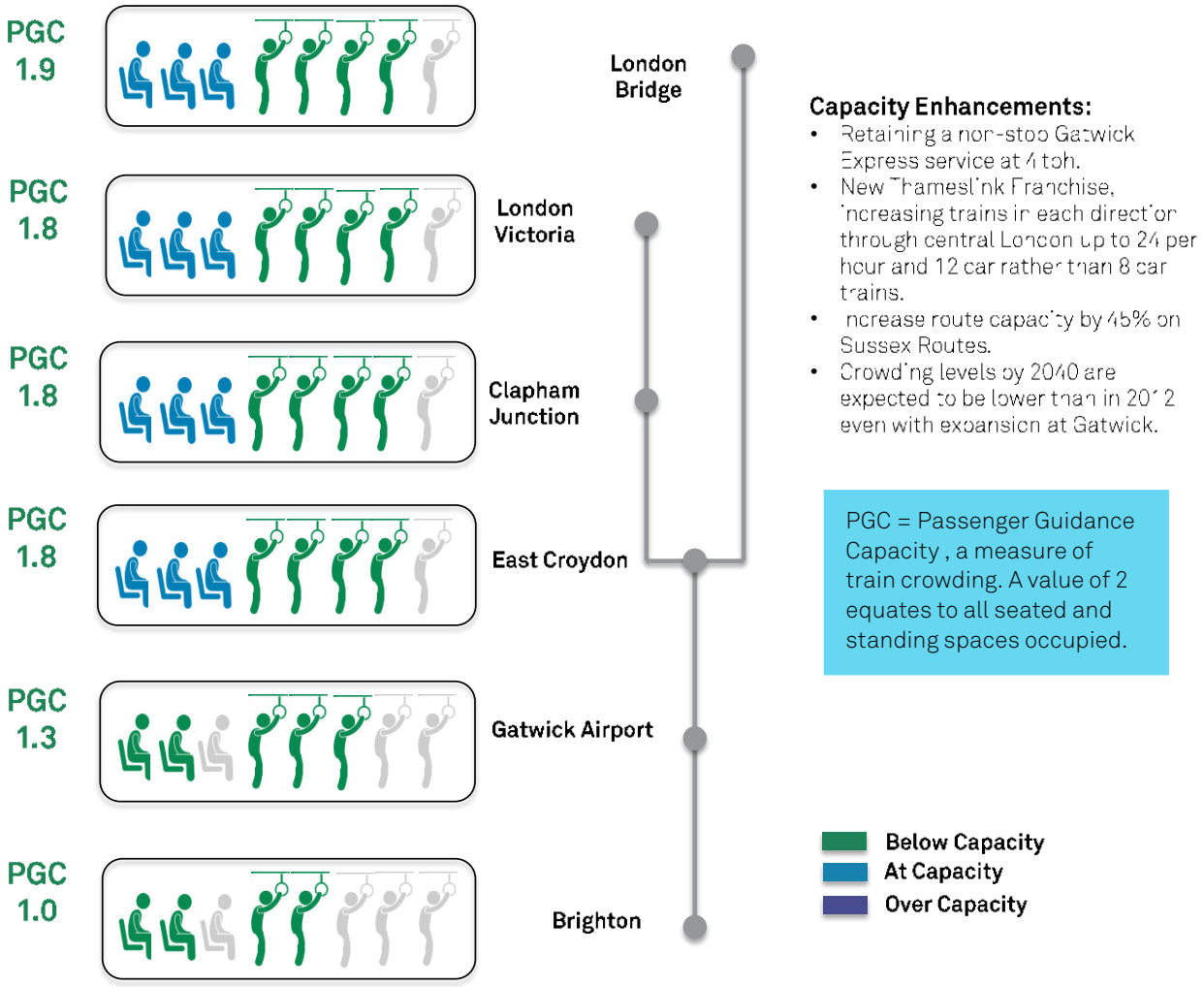


FIGURE 4.1 - BRIGHTON MAIN LINE CAPACITY AT 2025 AND PLANNED ENHANCEMENTS

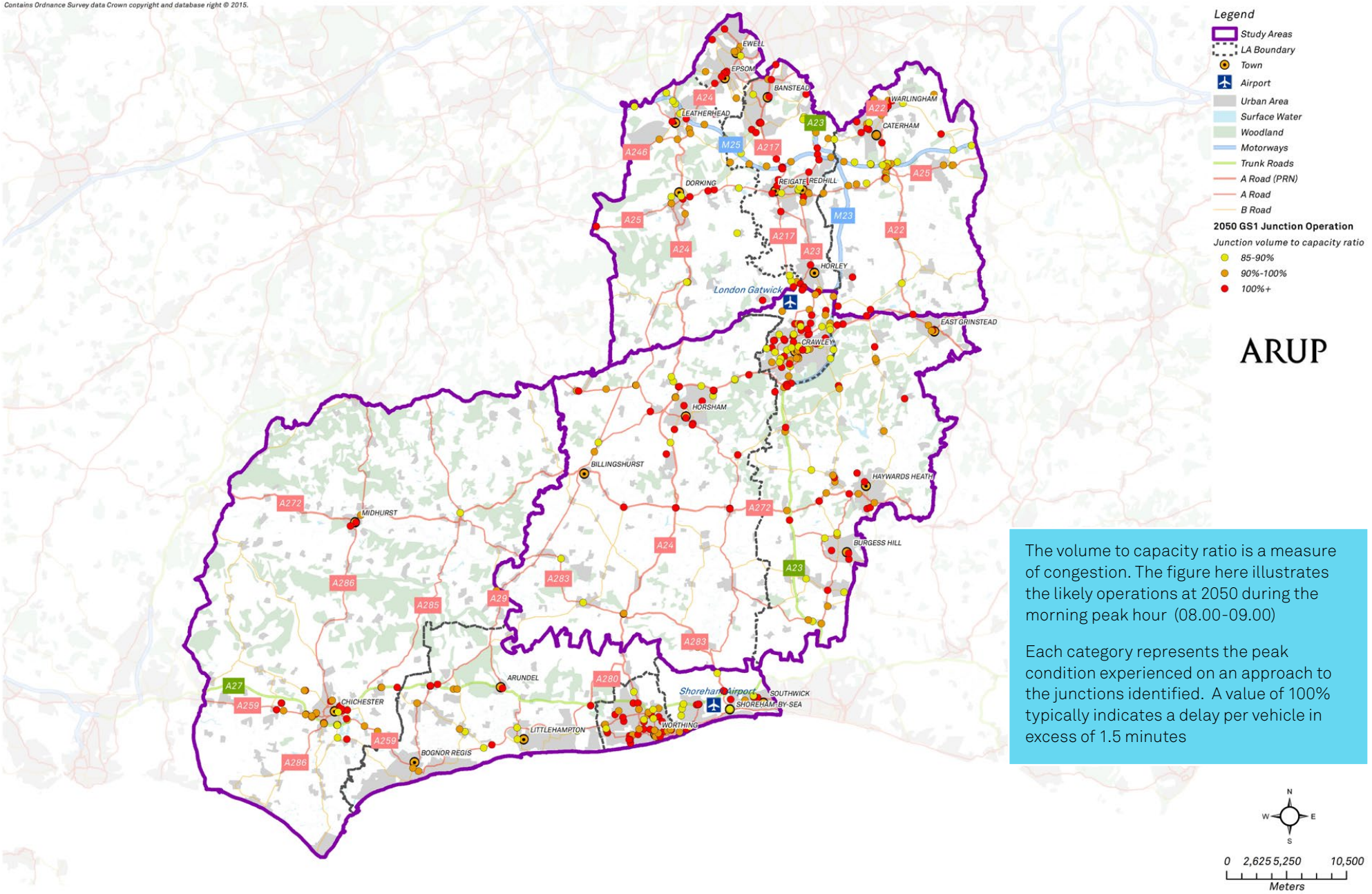


FIGURE 4.2 - GROWTH SCENARIO 1 - JUNCTION CAPACITY AT 2050

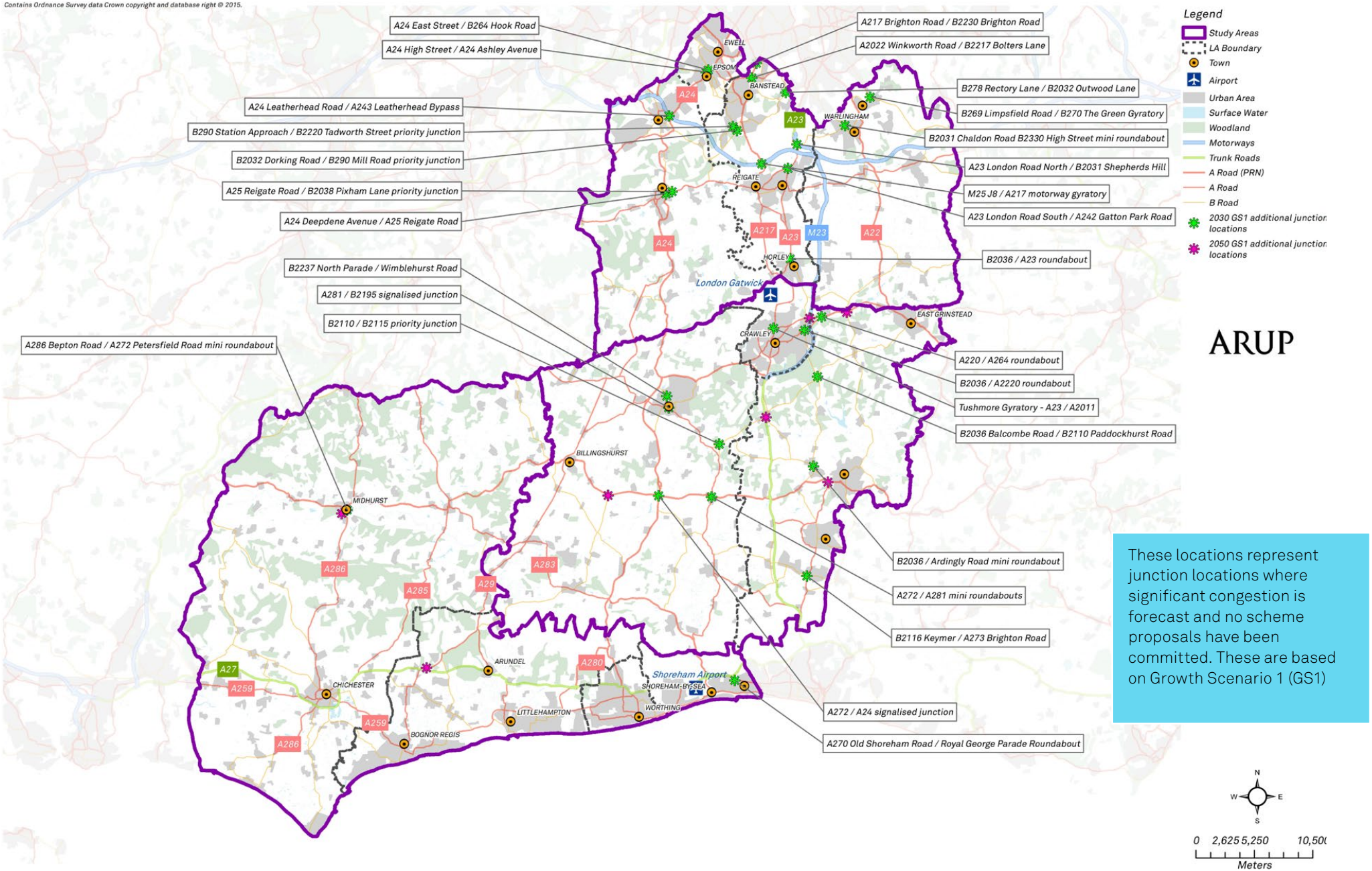


FIGURE 4.3 - GROWTH SCENARIO 1 - NETWORK LOCATIONS AFFECTED BY ADDITIONAL DEVELOPMENT

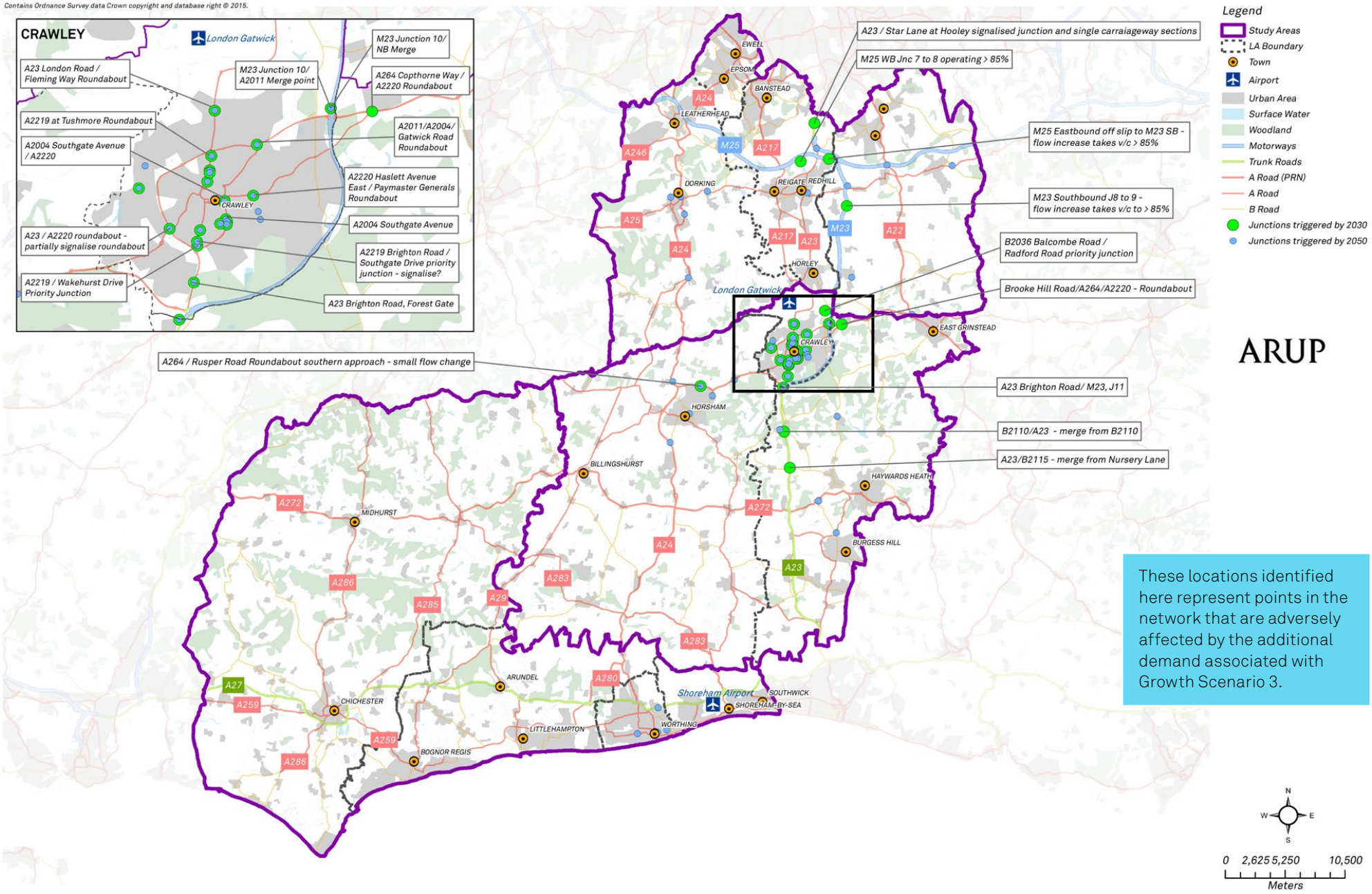


FIGURE 4.4 - GROWTH SCENARIO 3 - NETWORK LOCATIONS AFFECTED BY ADDITIONAL DEVELOPMENT

KEY FINDINGS FROM TRANSPORT ANALYSIS

The rail analysis undertaken in this study has identified that:

- There appears to be sufficient investment in rail to accommodate the demand in all growth scenarios through to 2040 along the Brighton Main Line. This includes commitments through to 2019 (CP5) and priorities for 2019-24.
- The Thameslink Programme and investment in capacity enhancements in central London is anticipated to significantly enhance the service levels and connectivity from the Brighton Main Line corridor.
- Future development in the area could seek to maximise the rail capacity through spatial planning and focusing development around the rail corridor.

The road analysis has indicated that:

- By 2030 in Growth Scenario 1, assuming committed projects are delivered, there appears to be good coverage of committed and likely future road improvements across the strategic road network.
- Some unplanned, additional investment in junction improvements is likely to be required to support growth by 2030 centred on Crawley.
- Growth Scenario 3 demand in 2030 results in increases in congestion within Crawley at a number of junction locations requiring mitigation.

By 2050 under Growth Scenario 1:

- Large sections of the M25 are expected to be approaching or in excess of capacity particularly between Jnc 6 (A22) to Jnc 10 (A3). Further enhancements to the M25 will be vital to maintain good connectivity with the wider strategic road network.
- Large sections of A25 between Dorking and Bletchingly are operating over capacity, likely to be driven by M25 congestion.
- The A23 between A272 at Bolney through to A273 at Pyecombe is expected to be approaching capacity.
- A number of junctions are expected to be operating over capacity across the network including M25 Jnc 6 and M23 Jnc's 10 and 11 and remaining at-grade junctions on the A27 (as shown in figure 4.2).

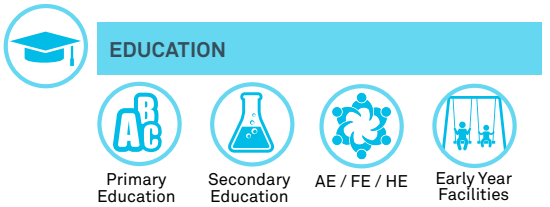
The additional demand from Growth Scenario 3 in 2050 results in:

- Increases in congestion on the M25.
- M23 J8 to 9 is operating close to capacity.
- The Gatwick R2 proposals for road network improvements appear to deliver sufficient capacity to accommodate the uplift in demand local to the airport.
- A number of additional junctions require improvements across the study area (as shown in figure 4.2). A majority of these locations are within Crawley.

More detailed examination of the long term housing forecasts should be undertaken to consider how housing could be located. Particularly the proportion within Crawley and neighbouring districts such as Horsham and Mid Sussex as well as development location.

This will have a significant effect on the scale of mitigation required to support Growth Scenario 3. Schemes such as the Crawley Western Relief Road could help support additional development in the local area. Identifying an appropriate scheme will be dependent on the location of additional development. The review should consider the potential offering of sustainable transport measures to reduce car based impact. Consideration of redistributing growth to neighbouring districts with good rail access (e.g. Horsham and parts of Mid Sussex) maybe also be an alternative.

4.2 SOCIAL & GREEN INFRASTRUCTURE



EDUCATION MODELLING

The Surrey and West Sussex Infrastructure Studies have reviewed the existing capacity of education facilities across the study area. These documents have also established the likely future requirements in terms of additional places and facilities. The costs associated with that requirement to 2030 are included in the cost summaries in chapter 5.

The county councils, local authorities and early year and FE providers do not typically forecast or plan post 2030 and as such we do not have a set of agreed future requirements to support longer term growth. For this reason the 2030-2050 education requirements presented here are based on a theoretical assessment of need based simply on the population change presented earlier in the report combined with the planning benchmarks presented. Key findings include:

- The baseline scenario 1 forecast estimates a decline in school age pupils post 2030 across all areas. This results in no addiitonal demands for school places and very limited demand for early year provision.
- The forecasts suggest that additional facilities required in the period between 2015 and 2030 may not have the same level of demand post 2030 which would need to be factored into decision on pre 2030 investment.
- The forecasts are restricted through consideration of total pupil numbers across a large area and not focusing on specific housing developments which may create localised demand for additional facilities post 2030.
- Growth Scenario 3 creates a notable impact over Scenario 1 equating to a new communities demand for 445 nursery places, 5.2 primary school form entries and 87 additional adult learners.

Planning assumptions utilised in this demand modelling:

- *Early year uptake and adult learning client numbers based on best practice standards from comparable infrastructure planning projects.*
- *School places based on typical county and national planning standards on pupils per standard form entry.*

ADDITIONAL THEORETICAL INFRASTRUCTURE REQUIREMENTS BETWEEN 2030-2050

SCENARIO 1 INFRASTRUCTURE	*EARLY YEAR PLACES*	*PRIMARY SCHOOL FE*	*SECONDARY SCHOOL FE*	*ADULT LEARNING CLIENTS*
Surrey Gatwick Diamond *	-	-	-	-
West Sussex Gatwick Diamond	9	0.0	0.0	182
West Sussex Coastal	0	0.0	0.0	55
Gatwick Diamond Area	***9***	***0.0***	***0.0***	***182***
Complete Study Area	***9***	***0.0***	***0.0***	***236***

SCENARIO COMPARISON	*EARLY YEAR PLACES*	*PRIMARY SCHOOL FE*	*SECONDARY SCHOOL FE*	*ADULT LEARNING CLIENTS*
Total Study Area - Scenario 1	9	0.0	0.0	236
Total Study Area - Scenario 3	454	5.2	0.0	324
Impact of Gatwick Growth	***445***	***5.2***	***0.0***	***87***

* Note: As set out in population section, the total population within Surrey Gatwick Diamond area is forecast to fall between 2030 and 2050 due to insufficient identified housing supply to support growth which results in no additional social infrastructure post 2030. This is caveated as purely theoretical and a product of the modelling and unlikely in reality given past trends of population growth over time across this area.

HEALTH AND SOCIAL CARE MODELLING

The Surrey and West Sussex Infrastructure Studies have reviewed in detail the existing capacity of health and social care facilities across the study area. These documents have also established the likely future requirements in terms of additional facilities. The costs associated with that requirement to 2030 are included in the cost summaries in chapter 5.

Social care commissioners and the National Health Service do not typically forecast or plan post 2030 and as such we do not have a set of agreed future requirements to support longer term growth. For this reason the 2030-2050 requirements presented here are based on a theoretical assessment of need based simply on the population change presented earlier in the report combined with the planning benchmarks presented. Key findings include:

- Whilst the primary, acute and mental healthcare forecasts are notable and vital investment in the post 2030 period they are dwarfed in comparison to the forecast demand in social care accommodation directly linked to the estimated increases in over 70 year olds across the area.
- Assuming typical residential, nursing and extra care facility bed capacities (70 beds) these forecast demands amount to approximately 140 additional social care facilities in total.
- Whilst the West Sussex Coastal Area does not have the highest forecast level of housing or total population growth, it is forecast to have the greatest increase in over 70 year olds and subsequently the greatest demand for additional facilities.
- The impact of Gatwick growth on demands is shown to be in line with the increase in population between scenarios and equates to a new community demand for a healthcare hub (10 GPs) and 2-3 care homes.

Planning assumptions utilised in this demand modelling:

- *GP demand based on NHS benchmark standard of 1800 patients per GP*
- *Dental and Hospital demand based on existing UK ratio of provision against population.*
- *Adult Social Care accomodation demand based on Housing LIN SHOP Tool*

ADDITIONAL THEORETICAL INFRASTRUCTURE REQUIREMENTS BETWEEN 2030-2050

SCENARIO 1 INFRASTRUCTURE	*GPS*	*DENTISTS*	*ACUTE HOSPITAL BEDS*	*MENTAL HEALTH BEDS*	*SOCIAL CARE - NURSING CARE BEDS*	*SOCIAL CARE - RESIDENTIAL CARE BEDS*	*SOCIAL CARE - EXTRA CARE BEDS*
Surrey Gatwick Diamond *	-	-	-	-	1,127	995	790
West Sussex Gatwick	20	17	71	15	1,128	996	810
West Sussex Coastal	6	5	21	4	1,507	1,330	1,056
Gatwick Diamond Area	***20***	***17***	***71***	***15***	***2,255***	***1,991***	***1,600***
Complete Study Area	***26***	***22***	***93***	***19***	***3,762***	***3,322***	***2,656***

SCENARIO COMPARISON	*GPS*	*DENTISTS*	*ACUTE HOSPITAL BEDS*	*MENTAL HEALTH BEDS*	*SOCIAL CARE - NURSING CARE BEDS*	*SOCIAL CARE - RESIDENTIAL CARE BEDS*	*SOCIAL CARE - EXTRA CARE BEDS*
Total Study Area - Scenario 1	26	22	93	19	3,762	3,322	2,656
Total Study Area - Scenario 3	36	30	127	26	3,819	3,372	2,680
Impact of Gatwick Growth	***10***	***8***	***34***	***7***	***57***	***50***	***24***

* Note: As set out in population section, the total population within Surrey Gatwick Diamond area is forecast to fall between 2030 and 2050 due to insufficient identified housing supply to support growth which results in no additional social infrastructure post 2030. The exception to this is the elderly population which is forecast to increase significantly which therefore generates a continued demand for Adult Social Care. This is caveated as purely theoretical and a product of the modelling.

COMMUNITY, LEISURE AND CIVIC

The Surrey and West Sussex Infrastructure Studies have reviewed in detail the existing capacity of community, leisure and civic facilities across the study area. These documents have also established the likely future requirements in terms of additional facilities. The costs associated with that requirement to 2030 are included in the cost summaries in chapter 5.

Like education and healthcare providers, local authorities and community facility operators are unlikely to plan post 2030 and as such we do not have a set of agreed future requirements to support longer term growth. For this reason the 2030-2050 requirements presented here are based on a theoretical assessment of need based simply on the population change presented earlier in the report combined with the planning benchmarks presented. Key findings include:

- The forecast decline in population post 2030 in the Surrey Gatwick Diamond results in no additional community and leisure facilities.
- West Sussex Gatwick Diamond area shows a notable requirement for additional community and library space and indoor sports facilities (equivalent to two typical sport centres).
- Forecast declines in school age children post 2030 result in no additional youth service requirements.
- The impact of Gatwick growth on demands is shown to be in line with the increase in population between scenarios and equates to a new community demand for a multi use community hub (1,000-1,500 sq.m) and a sports centre and swimming pool.

Planning assumptions utilised in this demand modelling:

- *Community facility space and youth facility client numbers based on best practice standards from comparable infrastructure planning projects.*
- *Library space demand based on County planning standards*
- *Indoor sport facility demands based on Sport England Active Places Facility Calculator*

ADDITIONAL THEORETICAL INFRASTRUCTURE REQUIREMENTS BETWEEN 2030-2050

SCENARIO 1 INFRASTRUCTURE	*LIBRARY SPACE (SQ.M)*	*YOUTH FACILITY CLIENTS*	*COMMUNITY SPACE (SQ.M)*	*SWIMMING POOL LANES*	*SPORTS COURTS*	*INDOOR BOWL RINKS*
Surrey Gatwick Diamond *	-	-	-	-	-	-
West Sussex Gatwick Diamond	1,163	0	2,362	7	11	3
West Sussex Coastal	350	0	710	2	3	1
Gatwick Diamond Area	***1,163***	***0***	***2,362***	***7***	***11***	***3***
Complete Study Area	***1,513***	***0***	***3,072***	***9***	***14***	***4***

SCENARIO COMPARISON	*LIBRARY SPACE (SQ.M)*	*YOUTH FACILITY CLIENTS*	*COMMUNITY SPACE (SQ.M)*	*SWIMMING POOL LANES*	*SPORTS COURTS*	*INDOOR BOWL RINKS*
Total Study Area - Scenario 1	1,513	0	3,072	9	14	4
Total Study Area - Scenario 3	2,072	42	4,208	12	20	5
Impact of Gatwick Growth	***559***	***42***	***1,136***	***3***	***6***	***1***

* Note: As set out in population section, the total population within Surrey Gatwick Diamond area is forecast to fall between 2030 and 2050 due to insufficient identified housing supply to support growth which results in no additional social infrastructure post 2030. This is caveated as purely theoretical and a product of the modelling and unlikely in reality given past trends of population growth over time across this area.

OPEN SPACE & GREEN INFRASTRUCTURE

Open Space & Recreation

Strategic Green Infrastructure

OPEN SPACE & GREEN INFRASTRUCTURE MODELLING

The Surrey and West Sussex Infrastructure Studies have reviewed in detail the existing provision of open space, recreation and green infrastructure across the study area. These documents have also established the likely future formal land requirements. The costs associated with that requirement to 2030 are included in the cost summaries in chapter 5.

The 2030-2050 requirements presented here are based on a theoretical assessment of need based simply on the population change presented earlier in the report combined with the planning benchmarks presented.

The forecast decline in population post 2030 in the Surrey Gatwick Diamond results in no additional open space and recreation demands. This should be caveated as a wide area forecast and will not pick up local developments which are likely to require onsite and local off site open space provisions.

With increased levels of growth, the demand for different types of land use will increasingly mean that green infrastructure will need to be multifunctional. As such, greater attention to how green infrastructure will be integrated into development or how new communities access green space will need to be considered carefully.

In addition to the site specific demand for additional green infrastructure resulting from development, growth is likely to put greater stresses on the natural processes that the wider landscape supports. The provision of these beneficial and valuable ecosystem services could be undermined by development and will require a coordinated landscape scale approach to ensure that development can be sensitively accommodated and developer contributions can be used to enhance this functionality.

Planning assumptions utilised in this demand modelling:

- *Turf Pitches demand based on Sport England Active Places Facility Calculator*
- *Playing Field and parkland demand based on Fields in Trust playing pitch planning standards*
- *Childrens Playspace demand based on GLA Playspace planning standards.*
- *Natural Green Space based on Natural England plannng standards.*
- *Allotment demand based on National Allotment society planning standards*

ADDITIONAL THEORETICAL INFRASTRUCTURE REQUIREMENTS BETWEEN 2030-2050

SCENARIO 1 INFRASTRUCTURE	ARTIFICIAL TURF PITCHES	PLAYING FIELDS (HA)	CHILDREN'S PLAYSPACE (HA)	NATURAL GREEN SPACE (HA)	PARKLAND (HA)	ALLOTMENTS (HA)
Surrey Gatwick Diamond *	-	-	-	-	-	-
West Sussex Gatwick	1	43.6	0.0	36.3	14.5	7.3
West Sussex Coastal	0	13.1	0.0	10.9	4.4	2.2
Gatwick Diamond Area	***1***	***43.6***	***0.0***	***36.3***	***36.3***	***14.5***
Complete Study Area	***1***	***56.7***	***0.0***	***47.3***	***18.9***	***9.5***

SCENARIO COMPARISON	ARTIFICIAL TURF PITCHES	PLAYING FIELDS (HA)	CHILDREN'S PLAYSPACE (HA)	NATURAL GREEN SPACE (HA)	PARKLAND (HA)	ALLOTMENTS (HA)
Total Study Area - Scenario 1	1.3	56.7	0.0	47.3	18.9	9.5
Total Study Area - Scenario 3	1.8	77.7	1.6	64.7	25.9	12.9
Impact of Gatwick Growth	***0.5***	***21.0***	***1.6***	***17.5***	***7.0***	***3.5***

* Note: As set out in population section, the total population within Surrey Gatwick Diamond area is forecast to fall between 2030 and 2050 due to insufficient identified housing supply to support growth which results in no additional social infrastructure post 2030. This is caveated as purely theoretical and a product of the modelling and unlikely in reality given past trends of population growth over time across this area.

4.3 UTILITIES

Post 2030 specific utility company investment plans and forecast impacts on the strategic utility network are not available. For the purpose of this study AECOM have estimated additional utility connection costs associated with delivering the forecast new dwellings across the three growth scenarios presented earlier. Key observations on the impacts of forecast growth on utility provision is set out below:

ELECTRICITY:

Electricity network distribution services across the Gatwick Diamond is primarily the responsibility of UK Power Networks (UKPN). UKPN consider the network reinforcement requirements of the Gatwick Diamond area through their Regional Development Plans (The SPN RDP for Chessington/Laleham / West Weybridge covering the Surrey area and the SPN RDP Bolney covering the West Sussex area, the latest of which have planning horizons of 2015 to 2023. These RDPs have considered local plan growth to 2023 but not beyond and therefore provide no specific assessments of potential impacts on capacity between 2030 and 2050.

GAS:

As SGN forecast a small decrease in annual and peak day demands due to increased efficiencies and renewable incentives, it is anticipated that provision of gas infrastructure to support further development will need to be reviewed on a site by site basis. It should not be assumed that the existing networks have sufficient capacity to supply all proposed development, however, it can be presumed that necessary capacity will be developed on a reactive basis by the gas Distribution Network Operator.

WATER AND WASTEWATER:

With regards to the impact of additional growth associated with a second runway at Gatwick, the water and sewerage companies are aware of significant growth potential around the Gatwick area. Our correspondence suggests that they have not made any specific allowance within their business plans to accommodate this growth. Although each development site within the Gatwick growth area will need to be assessed individually, we do not anticipate the requirement for any significant new trunk mains as a result of the developments, however, some localised reinforcements will probably be required. In terms of wastewater treatment, it is almost certain that localised sewer upgrading works will be required. As well as these, a number of existing WwTW may require upgrading to ensure process capacity is available and comply with environmental consenting.

BROADBAND:

Surrey County Council and West Sussex County Council are currently embarking upon significant Superfast Broadband programmes with the ambition to reduce the number of unconnected premises to a minimal level in the short terms (pre 2020). County council and commercial provider programmes do not look as far as 2030 and we therefore have no post 2030 study area wide scenario on broadband capacity to assess. As stated earlier the cost of connecting the forecast new dwellings to broadband has been costed but this cost is assumed to be borne by the developers and commercial operators.

The additional housing forecast between 2030 and 2050 across the Study area and particularly in the Gatwick Diamond area will undoubtedly generate a significant impact upon the existing broadband infrastructure and will require capacity upgrades ahead of those increased demands. Ongoing collaboration between the county councils and commercial broadband providers will be essential in monitoring this coverage and capacity issue and ensuring adequate and timely investment is secured.

Additional housing and employment growth in the Gatwick Diamond area as a result of Scenarios 2 and 3 will also present additional capacity demands on the super fast broadband network with investment essential to support the economic and social success of the Gatwick Diamond.

This study does however consider a time period spanning twenty years (and terminates thirty five years ahead of the present in 2015). Technological advances will undoubtedly impact upon the assumed cost and delivery of broadband or its future alternative but for the purposes of this assessment a continuation of current technology and broadband delivery is assumed.

4.4 FLOOD PROTECTION

Considering flood defences and protection requirements post 2030 is difficult with limited modelling or project pipeline consideration beyond 2030. Modelling has not been undertaken as part of this study to assess flood defence requirements post 2030.

The risk of fluvial flooding is not currently as high in the north of study area as the south, but surface water flooding could become an issue if the expansion of Gatwick airport included in Growth Scenarios 2 and 3 go ahead without the necessary schemes put in place to manage risk.

As set out earlier the population forecasts suggest significant population growth across much of the coast, particularly in the towns of Littlehampton, Worthing and Shoreham-by-Sea. There is considerable investment planned in coastal flood protection for these areas.

Discussions with WSCC and the Environment Agency as part of West Sussex Infrastructure Study identified some pipeline projects that were likely to take place between 2030 and 2050 as part of their Pre-candidate "Pipeline" Capital Projects but these were confined to Arun district only. Discussions with SCC and the Environment Agency as part of Surrey Infrastructure Study did not identify specific flood defence projects post 2030.

In its submission and response to the Airports Commission, GAL has commissioned CH2M Hill to undertake an assessment of flood risk and water as a result of Gatwick Airport expansion. This concludes that the Gatwick second runway scheme had been the subject of extensive consultation with the Environment Agency and the local Water Companies and that

- *It would be compliant with the Water Framework Directive (WFD) in respect of restoring waters to good ecological potential, and ensuring the good chemical quality of discharged water;*
- *It would not give rise to increased flood risk to surrounding communities;*
- *It could be supplied with potable water without causing a deficit in the local water company's water resource region;*

CH2M Hill issued a response to initial Airport Commission findings in January 2015. This concluded that in its final analysis of the relative performance of the schemes, the Commission should acknowledge more clearly:

- *That the Gatwick scheme is in principle compliant with statutory requirements, and poses no significant issues with water supply and wastewater treatment;*


05

LONG TERM INFRASTRUCTURE COSTS

THIS SECTION PRESENTS A HIGH LEVEL ESTIMATE OF INVESTMENT REQUIRED TO DELIVER THE IDENTIFIED INFRASTRUCTURE

As set out earlier this report is supported by detailed infrastructure studies covering the period 2015 to 2030 across all of Surrey County and West Sussex County. Those infrastructure studies have established an estimated cost of delivering infrastructure to support planned growth to 2030. Those reports have also sought to establish a estimate of funding identified to meet those costs.

This report focuses on the potential additional infrastructure costs associated with growth post 2030 to 2050. Across the following pages a summary of the supporting document financial conclusions are presented for the period 2015-2030 which is then accompanied by an estimate of additional infrastructure costs to support the potential 2030-2050 growth.

It is important to note that the 2030-2050 cost estimates are very high level and theoretical in all instances as no definitive plans for investment for the post 2030 period have been made apparent to this study.

All social and green infrastructure and utility costs have been based upon the benchmarked demand modelling presented in the previous chapter with the application of benchmark build costs which are explained in more detail in chapter 7.

All transport costs have been based upon the ARUP Transport study that accompanies this report and are also based purely on theoretical estimates of additional infrastructure required to alleviate modelled congestion issues in the post 2030 period.

Important points to note with regards to the estimated additional infrastructure costs post 2030:

- Education costs are very low which is directly linked to the Chelmer population model outputs which suggest a decline in school age population post 2030.
- Health and Social Care costs are notably the largest element of social infrastructure costs and this is predominantly associated with additional Adult Social Care accommodation costs (residential, nursing and extra care accommodation).
- Future costs associated with flood defences have not been estimated due to the complexity of this topic post 2030 with the unknown elements of climate change and no definitive location for future housing sites.

GATWICK DIAMOND AREA

2015-2030:

Total New Homes: **40,833**

Infrastructure Costs: **£1,593,620,000**

Expected Funding: **£868,770,000**

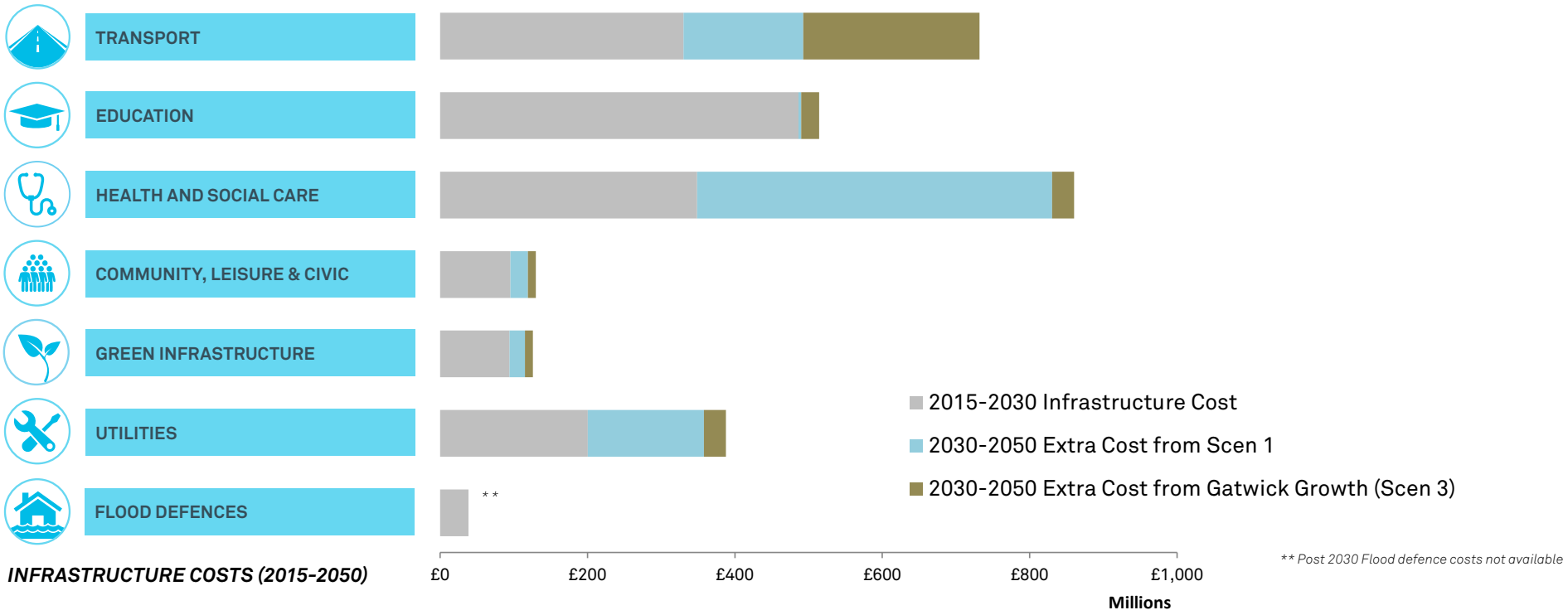
Funding Gap: **£724,960,000**

2030-2050:

Additional Homes: Scenario 1: **43,852**
Scenario 3: **52,098**

Additional Infrastructure Costs: Scenario 1: **£849,970,000**
Scenario 3: **£1,194,700,000**

Cost Uplift from Gatwick Growth (Scenario 3): **£344,730,000 (+41%)**



INFRASTRUCTURE COSTS (2015-2050)

*** Post 2030 Flood defence costs not available*

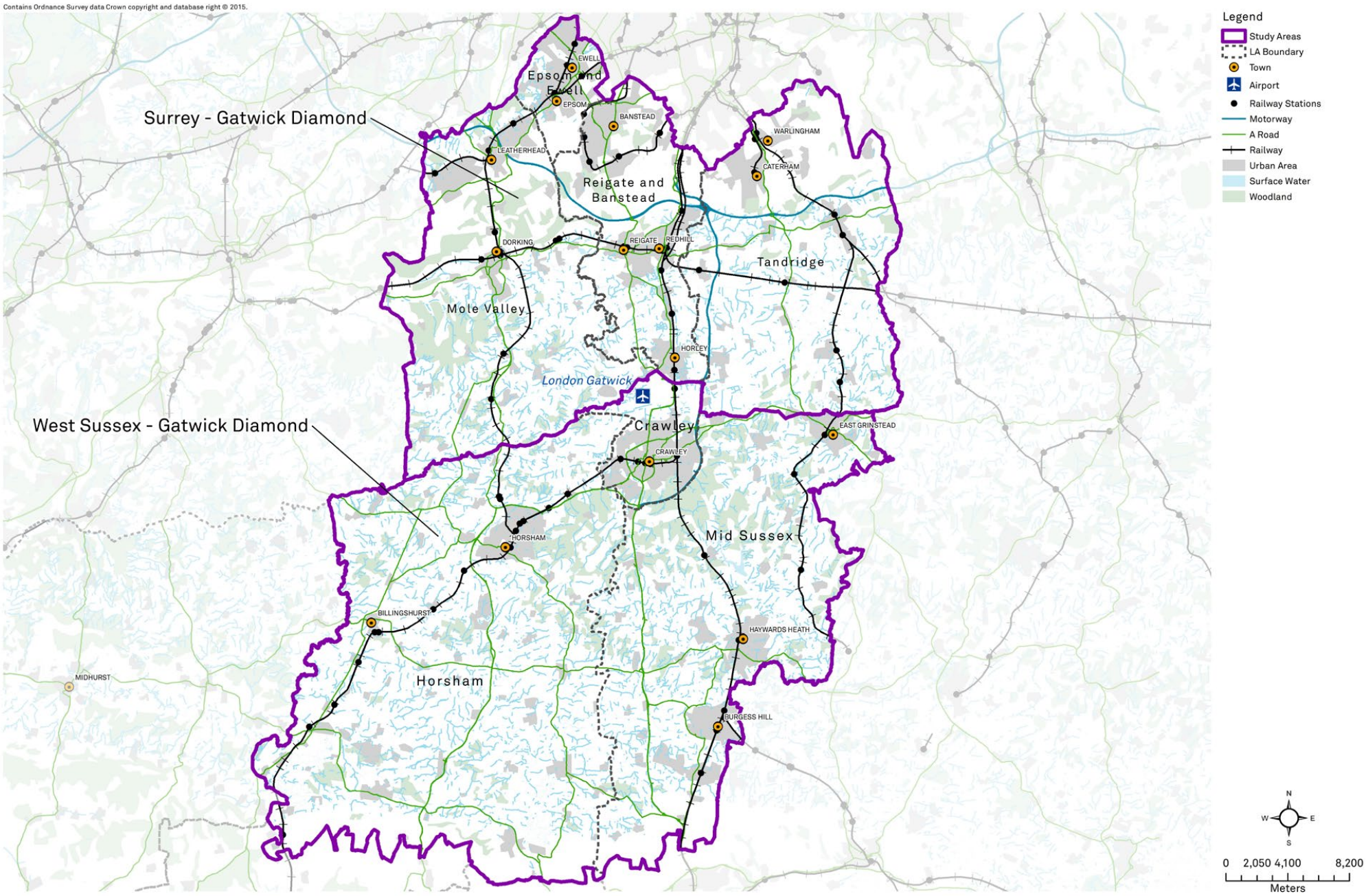


FIGURE 5.1 GATWICK DIAMOND AREA

GATWICK DIAMOND SUB AREAS

WEST SUSSEX GATWICK DIAMOND

2015-2030:

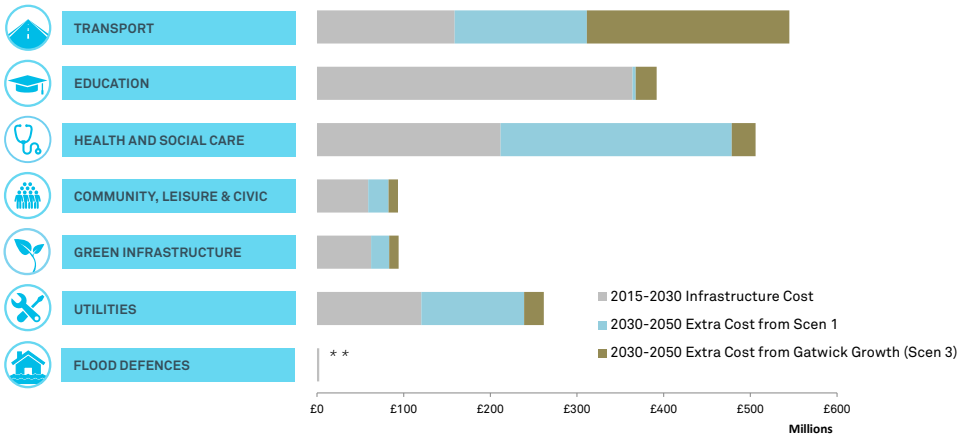
Total New Homes: **26,010**
Infrastructure Costs: **£978,930,000**
Expected Funding: **£499,780,000**
Funding Gap: **£479,180,000**

2030-2050:

Scenario 1: Additional Homes: **32,946**
Additional Infrastructure Costs: **£585,850,000**

Scenario 3: Additional Homes: **39,273**
Additional Infrastructure Costs: **£915,800,000**

Cost Uplift from Gatwick Growth Scenario 3: **£329,950,000 (+56%)**



INFRASTRUCTURE COSTS (2015-2050) *** Post 2030 Flood defence costs not available*

SURREY GATWICK DIAMOND

2015-2030:

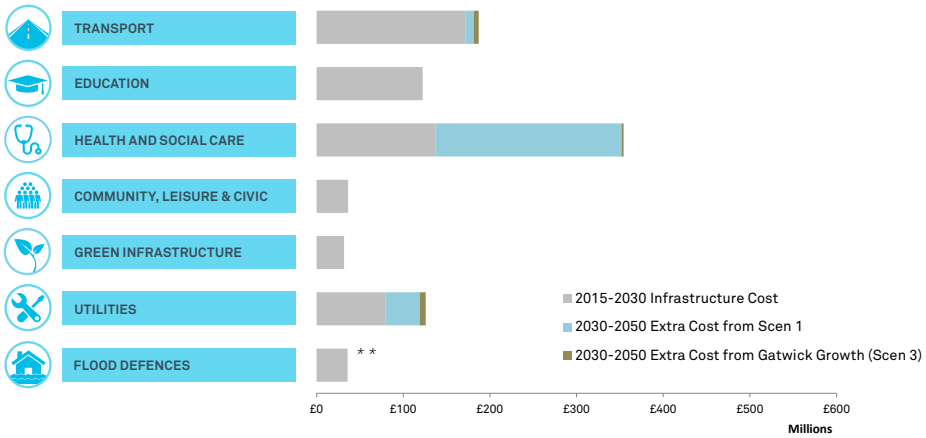
Total New Homes: **14,823**
Infrastructure Costs: **£614,690,000**
Expected Funding: **£368,990,000**
Funding Gap: **£245,780,000**

2030-2050:

Scenario 1: Additional Homes: **10,906**
Additional Infrastructure Costs: **£264,120,000**

Scenario 3: Additional Homes: **12,825**
Additional Infrastructure Costs: **£278,900,000**

Cost Uplift from Gatwick Growth Scenario 3: **£14,780,000 (+6%)**



INFRASTRUCTURE COSTS (2015-2050) *** Post 2030 Flood defence costs not available*

REST OF STUDY AREA

WEST SUSSEX COASTAL

2015-2030:

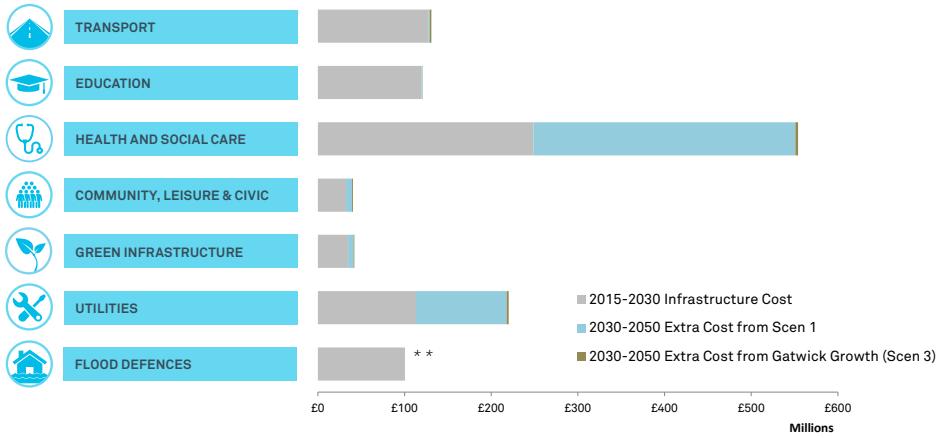
Total New Homes: **22,920**
Infrastructure Costs: **£776,800,000**
Expected Funding: **£509,610,000**
Funding Gap: **£267,220,000**

2030-2050:

Scenario 1: Additional Homes: **29,032**
Additional Infrastructure Costs: **£422,330,000**

Scenario 3: Additional Homes: **29,716**
Additional Infrastructure Costs: **£432,120,000**

Cost Uplift from Gatwick Growth Scenario 3: **£9,790,000 (+2%)**



INFRASTRUCTURE COSTS (2015-2050) *** Post 2030 Flood defence costs not available*

TOTAL STUDY AREA (DIAMOND + COASTAL)

2015-2030:

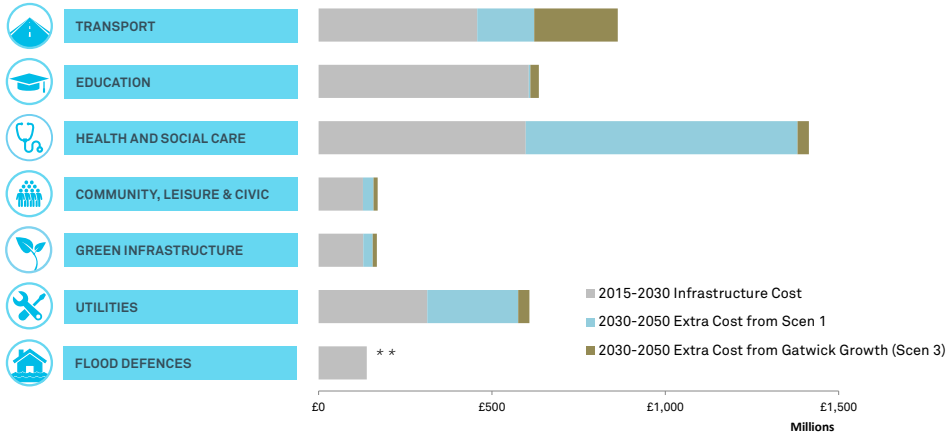
Total New Homes: **63,753**
Infrastructure Costs: **£2,370,420,000**
Expected Funding: **£1,378,380,000**
Funding Gap: **£992,180,000**

2030-2050:

Scenario 1: Additional Homes: **72,884**
Additional Infrastructure Costs: **£1,272,300,000**

Scenario 3: Additional Homes: **81,814**
Additional Infrastructure Costs: **£1,626,820,000**

Cost Uplift from Gatwick Growth Scenario 3: **£354,520,000 (+28%)**



INFRASTRUCTURE COSTS (2015-2050) *** Post 2030 Flood defence costs not available*

06

CONCLUSIONS

This study has summarised a significant piece of technical analysis undertaken across the range of infrastructure types and across three different growth scenarios.

The baseline Scenario 1 level of growth sees a continuation of the growth forecast between 2015 and 2030 which equates to a considerable increase of 72,800 homes from 2030 to 2050 across the study area as a whole. Growth Scenario 3 suggests a worst case scenario of 81,800 homes from 2030 to 2050.

Total population change is forecast to increase across West Sussex County but to decline in the Surrey County area of study. This is as modelled by the Chelmer Model and is largely due to that model restricting population growth as a result of constrained dwelling growth and the ageing population and shrinking household size.

Population change is forecast as dominated by an aging population and decline in school age and middle age cohorts which has direct impacts on forecast social infrastructure requirements as set out in this report.

The costs associated with additional infrastructure in the 2030-2050 period have been estimated as part of this study and whilst they do not include all future infrastructure due to the limitations of information that far ahead the study does estimate a minimum infrastructure cost for the whole study area of £1.27 billion which would increase to £1.62 billion in the case of Growth Scenario 3.

The Gatwick Diamond area is estimated to have a minimum infrastructure cost of £850 million which would increase to £1.19 billion in the case of Growth Scenario 3 (a £345 million increase).

With regards to background growth in line with Scenario 1, The study highlights the following key infrastructure findings for the post 2030 period:

- There appears to be sufficient investment planned for rail to accommodate the demand in all growth scenarios through to 2040 along the Brighton Main Line as indicated in the Sussex Area Route Study for CP6 / CP7. Funding will need to be committed by Network Rail to ensure this is delivered. The Arun Valley, North Downs and Kent routes will continue to play an important role in providing east / west rail connectivity to the area. Additional BML capacity or alternative north south improvements are likely to be important to accommodate wider growth in the region well beyond 2040.
- The Thameslink Programme and investment in capacity enhancements in central London is anticipated to significantly enhance the service levels and connectivity from the Brighton Main Line corridor and future development in the area should seek to maximise the rail capacity through spatial planning and focusing development around the rail corridor.
- Large sections of the M25 are expected to be at or approaching capacity by 2030 (and earlier in some cases) particularly between Jnc 6 (A22) to Jnc 10 (A3). Further enhancements to the M25 will be vital for maintain good connectivity with the wider strategic road network.
- Large sections of A25 between Dorking and Bletchingly will operate over capacity and the A23 between A272 at Bolney through to A273 at Pyecombe is expected to be approaching capacity.
- A number of junctions are expected to be operating over capacity across the network including M25 Jnc 6 and M23 Jnc's 10 and 11 and remaining at-grade junctions on the A27. A number of junctions within Crawley are expected to be operating at or near capacity post 2030.
- In relation to the total population change and the aging population, a significant infrastructure burden is forecast related to adult social services and specifically accommodation in residential, nursing and extra care housing. This challenge is not unique to Surrey and West Sussex and is a challenge being faced across the country.
- A decline in school age children in the post 2030 period will not only suggest a fall in demand for school facility development but also poses challenges for pre 2030 school planning to prevent unnecessary place capacity becoming an issue post 2030.

The additional growth requirements to support a second runway at Gatwick have also been considered with the following key findings for the post 2030 period:

- Infrastructure requirements are notably lower outside the Gatwick Diamond Area but significant within the West Sussex Gatwick Diamond Area.
- The main implication noted in this analysis has been that shown on the transport network and highways junctions associated with increased airport activity, employment and supporting homes.
- Scenario 3 would generate increased congestion on the M25 and Junctions 8 to 9 of the M23 operating close to capacity offering little resilience to incidents by 2050. A number of additional junctions will require improvements across the study area with a majority of these locations within Crawley and to the west of the Borough. Dependent on the location of future development to support additional growth, a potential western relief road for Crawley could be required.
- The uplift in future homes associated with scenario 3 and a second runway at Gatwick is assessed to require a scale of social infrastructure provision comparable to a substantial new community to include for example 2-3 new primary schools, a community and healthcare hub, a sports centre and supporting open space and recreation facilities.
- The theoretical additional housing associated with Growth scenarios 2 and 3 (which could equate to a new settlement or series of urban extensions) would present a significant challenge for authorities working within the Gatwick Diamond who already face challenges in accommodating planned growth.

07

STUDY CAVEATS

GROWTH SCENARIOS

The housing numbers and approach utilised within this report were agreed with the relevant District and Boroughs provided that the Study recognizes that:

- For Surrey Districts and Boroughs, figures to 2031 reflect known completions, planned growth in Local Plans and projected completions where available. Post 2031, planned growth trajectories are assumed to continue for Mole Valley and Tandridge. For Epsom & Ewell and Reigate & Banstead figures reflect projected delivery rates. The ability of those local authorities to deliver those additional homes on identified sites has not been reviewed as part of this assessment.
- For West Sussex Districts and Boroughs, planned local plan growth trajectories are assumed to continue between 2031 and 2050. The ability of those local authorities to deliver those additional homes on identified sites has not been reviewed as part of this assessment.
- Two additional growth scenarios have been considered above the continuation of planned growth (Scenario 1) which accomodate the potential additional housing needs associated with a second Runway at Gatwick. It should be noted that direct airport employment patterns have been used as a proxy for future housing distribution at local authority level to allow a high level assessment of infrastructure requirements and costs across the area as a whole.
- As stated in the RPS appendix document, planned house building based on adopted or emerging plans extending out to around 2030 provides a clear basis for estimating future population to that date. Beyond 2030, however, it is necessary to make some further assumptions about possible numbers of additional homes (and thus population) that do not relate directly back to existing or emerging plans. Without such assumptions it would not be possible, however, to undertake the high level assessment of infrastructure requirements. Nevertheless, it must be recognised that forecasting so far ahead is relatively unusual and must be treated with considerable caution. Such long range estimates also have no policy basis whatsoever. They simply represent possible future scenarios in respect of which there is no implication that they should ever be treated as objectives to be achieved.
- The study does not account for any additional unmet demand for housing in London or Brighton & Hove being met from within the study area – if there were to be housing growth in the study area to accommodate unmet demand in London or Brighton then the infrastructure deficit would increase
- The theoretical housing numbers are generated on a district by district basis to provide an indication of growth to 2050 to support an infrastructure calculation. Whilst it is assumed that the overall housing growth will be accommodated within the study area (and therefore the infrastructure ask associated with it can be calculated) it is not suggested that the housing number identified for each District or Borough will necessarily be accommodated within that District and Borough and therefore the infrastructure provision may also need to be met within a different District or Borough area
- The Growth generated by the second runway at Gatwick aligns to that included in the GAL submission to the Airports Commission. To support the infrastructure calculations direct airport employment patterns have been used as a proxy for future housing distribution only for the purposes of this study and only to allow a high level assessment of infrastructure requirements and costs across the area as a whole.
- On this basis this growth has been distributed between the Surrey Districts / Boroughs within the study area, the Gatwick Diamond West Sussex Districts / Boroughs and the Coastal West Sussex Districts / Boroughs. As would be expected the impact on the area closest to Gatwick is more significant that the impact on the areas furthest geographically from Gatwick. This does not take account of any future changes in the nature of employment at the airport and / or changing travel options and / or the constraints to / opportunities for housing development that exist across the study Area and / or the sustainability implications of the assumed housing distribution.
- The ability of local authorities to deliver the theoretical housing associated with the second runway at Gatwick has not been reviewed as part of this assessment. This has been raised as a particular challenge for authorities such as Crawley, which based on the theoretical assumptions of the housing and population growth scenarios accomodate a larger share of the additional growth and have notable constraints to further land availability.
- The use of this distribution for this Study does not imply a commitment on behalf of any of the authorities within the Study Area to deliver housing over and above the levels set out in their existing Local Plans.
- Catalytic Growth has not been included on the basis that this will be driven by local policy decisions to support catalytic growth (or not).

COST ESTIMATES

Costing estimates are provided within this document and should be qualified as high level estimates given a lack of detailed scheme information. These cost caveats apply to all topics within this report:

- Healthcare Projects and Social Care Accommodation
- Community, Library and Youth Spaces
- Open Space Provision
- Community Learning
- Children's Playgrounds
- Indoor and Outdoor Sports facilities
- Electricity Connections
- Gas Connections
- Potable, Waste and Surface Water Infrastructure
- Communications
- Waste Facilities
- Transport

AECOM were responsible for the costing of all projects with the exception of transport projects that were undertaken by Arup.

Transport project estimates, undertaken by Arup, were based on estimating the potential scale of intervention for typical costs for junction works and road widening. Indicative cost ranges were adopted based on those identified through local authority IDPs as well as Arup benchmark ranges for these types of works.

No detailed transport costing has been undertaken at this stage. In developing a long term strategy for improvements to the network more detailed modelling / assessment should be undertaken to determine the appropriate scale of mitigation required based on highway engineering and detailed traffic engineering.

The following caveats apply to all costing provided by AECOM and ARUP:

- The information on which the cost estimates are based is very limited at this stage. As such, all of the costs are to be treated as "indicative" of the type of works stated rather than a specific estimate of the actual works.
- The works are assumed to relate to a level greenfield sites with good access and no abnormal restrictions in respect of working hours and the like.
- Estimates have excluded all land purchase, demolition and site preparation that may be required.
- In respect of ground conditions, estimates have excluded the impact of encountering archaeological remains, contamination, high water table level, major "soft spots" and underground obstructions. It also excludes encountering and diverting existing utilities and drainage.
- In the absence of sufficient details of the individual sites that will be developed, we have excluded any allowances for external works i.e. all works outside of the building footplate.
- The costs are all based on a notional project that starts and completes in July 2015 and therefore all inflation costs are excluded.
- Estimates have excluded professional fees and survey works and all other consultants fees and planning / building regulation costs that would apply to the works.
- Estimates have excluded all phasing and temporary works that could apply to the works.
- Estimates have excluded all maintenance and operational costs.
- Estimates have excluded all loose fixtures, fittings and equipment and in particular specialist equipment.
- Estimates have excluded all VAT.