GREATER CAMBRIDGE
SHARED PLANNING

Greater Cambridge Local Plan

Development Strategy Options – Summary Report

November 2020

Contents

Executive Summary

This report brings together the findings from an initial stage of work to develop the evidence base and test growth and spatial options for the Greater Cambridge Local Plan. The Greater Cambridge Local Plan is the emerging joint Local Plan for the Cambridge City and South Cambridgeshire District Councils covering the period up to 2041.

The work covered by this report follows on from the 'First Conversation' consultation held in early 2020 and is an important stage towards the identification of a 'preferred option' for the Local Plan.

This stage of work has involved:

- Commissioning specialist consultants to gather and analyse a range of baseline data and evidence about the Greater Cambridge area;
- Calculating the minimum requirement for new housing according to national government's 'standard method' and the jobs it would support, translated into a minimum growth level option;
- Forecasting future economic growth in Greater Cambridge, with particular focus on the sectors that the area excels in as well as past trends of economic growth, resulting in central and higher growth scenarios, translated into medium and maximum growth level options;
- Calculating what the housing levels would be to support those medium and maximum levels of forecast economic growth;
- Identifying a range of possible broad locations for new development, illustrating deliberately diverse approaches, from locating all development in Cambridge itself, to locating all development in our rural villages;
- Testing the possible growth levels across each of the different locations to understand how well they perform in relation to the themes and objectives of the Plan.

At this stage the Councils have not reached any view on the preferred approach for the new Local Plan. The interim evidence studies and other evidence to be prepared will continue and feed into the next steps to develop the preferred approach in terms of the level of growth to plan for, and where development should be located, including the sites that should be chosen. Further information about the plan-making process can be found in section 2 of this report.

Baseline evidence

The following baseline evidence has been gathered to date, and is published alongside this report:

- Greater Cambridge Local Plan Transport Evidence, and baseline report (Cambridgeshire County Council Transport Infrastructure Policy and Funding Team)
- Greater Cambridge Green Infrastructure Opportunity Mapping Baseline Report (LUC)

Identifying growth level options and strategic spatial options

Three different levels of growth have been identified, drawing on two key evidence studies, in order to test a range of options:

- Greater Cambridge Employment Land Review & Economic Evidence Base Study (GL Hearn, with SQW, Cambridge Econometrics, and Iceni Projects)
- Greater Cambridge Housing and Employment Relationships Report (GL Hearn with Iceni Projects, Justin Gardner and Cambridge Econometrics)

These are based on the government's standard method for calculating housing need ('minimum' growth level option) and economic forecasts resulting in central and higher growth scenarios, and their associated housing, which provide 'medium' and 'maximum' growth level options.

The employment and housing growth levels for each growth level option are shown below:

Growth level option	Employment (jobs) - total	Employment (jobs) - per year	Housing (dwellings) - total	Housing (dwellings) - per year
Minimum	45,800	2,181	36,700	1,748
Medium	58,500	2,786	42,000	2,000
Maximum	78,700	3,748	56,500	2,690

We are required to ensure a flexible Local Plan that can adapt to rapid change. We have therefore applied a 10% buffer to the housing figures included in the table above, resulting in the housing under each growth level option shown below:

Growth level option	Total housing (including 10% buffer)	Development already in the pipeline (including windfalls)	Additional housing to be allocated on sites in the new Local Plan
Minimum	40,300	36,400	3,900
Medium	46,200	36,400	9,800
Maximum	62,700	36,400	26,300

This would average between 180-1,250 additional homes per year above the current supply.

Further information about how these growth level options were developed can be found in section 3 of this report.

Six options for the broad location of development were included in the First Conversation consultation. We reviewed these in light of the responses to the consultation as well as undertaking an assessment of other potential approaches relevant to Greater Cambridge's geography:

- The Greater Cambridge Local Plan: strategic spatial options for testing – methodology document - (Greater Cambridge Planning Service) November 2020

This assessment resulted in the identification of two further potential approaches to locating development. This resulted in eight strategic spatial options being developed further for testing:

1. **Densification of existing urban areas.** This approach tests the implications of focusing new homes and jobs within Cambridge, because it is the main urban area and centre for services and facilities. The primary location for development within the urban area in Option 1 is at North East Cambridge.
2. **Edge of Cambridge – Outside Green Belt**. This approach tests the implications of delivering new homes and jobs in extensions on the edge of Cambridge, using land not in the Green Belt. The only large site on the edge of Cambridge not in the Green Belt is Cambridge Airport (safeguarded land in

the 2018 Local Plans), so this is tested as the primary location for development.

3. **Edge of Cambridge – Green Belt**. This approach tests the implications of developing new homes and jobs in extensions on the edge of Cambridge, involving release of land from the Green Belt.
4. **New Settlements**. This approach tests the implications of focusing new development in new towns or villages which would include homes, jobs and supporting infrastructure. These would need to be connected to Cambridge by strategic transport infrastructure.
5. **Villages**. This approach tests the implications of spreading new homes and jobs out to the villages, with different amounts of growth dependent on the sustainability of the village in question.
6. **Public Transport Corridors.** This approach tests the implications of locating new homes and jobs along key public transport corridors and around transport hubs, extending out from Cambridge. This could be by expanding or intensifying existing settlements, or with more new settlements.
7. **Integrating jobs and homes – southern cluster.** This approach tests the implications of focusing new development close to existing and committed employment sites within the life sciences cluster area around the south of Cambridge, including homes at existing villages and at new settlements.
8. **Growth around public transport nodes – western cluster.** This approach tests the implications of locating new homes at Cambourne and along the A428 public transport corridor, on the basis that Cambourne is due to be served by a new East West Rail station and that Cambourne and the villages along the corridor are due to be served by the Cambridgeshire Autonomous Metro.

Each of the three growth level options were applied to each of the eight broad spatial locations, resulting in a set of 24 strategic spatial options for testing. These strategic spatial options focus on key locations to draw out the differences in impacts. Where a growth level option could not be achieved only within the focus of the option, other broad locations have been included to make up the numbers. In reality, the Local Plan could take elements from a number of different broad locations. The development of the strategic spatial options is summarised in Section 4 of this report and further detail can be found in the Greater Cambridge Local Plan: strategic spatial options for testing – methodology document published alongside this report**.**

Testing the strategic spatial options

Each of the 24 strategic spatial options has been assessed to understand its opportunities and challenges across the ‘big themes’ that have been identified for the Plan. Specialists on a range of topics relating to these themes, including those commissioned to gather baseline evidence, were commissioned to assess the

options impartially. Their findings have been published individually alongside this report, which draws together the findings from across the suite of studies. The studies now published in relation to each theme are:

- **Climate change:**
  - Greater Cambridge Local Plan strategic spatial options assessment: implications for carbon emissions (Bioregional and Etude)
  - Greater Cambridge Local Plan strategic spatial options assessment: Integrated Water Management Study (Stantec) – peer reviewed by Dr Geoff Parkin.

- **Biodiversity and green spaces**:
  - Greater Cambridge Local Plan strategic spatial options assessment: Green Infrastructure (LUC)
  - Greater Cambridge Local Plan strategic spatial options assessment: Habitats Regulations Assessment (LUC)

- **Wellbeing and social inclusion**
  - Greater Cambridge Local Plan strategic spatial options assessment: Equalities Impact Assessment (Greater Cambridge Planning Service)

- **Great places**:
  - Greater Cambridge Local Plan strategic spatial options assessment: Landscape & Townscape Considerations (Chris Blandford Associates)

- **Homes**
  - Greater Cambridge Local Plan strategic spatial options assessment: Housing Delivery Study – Interim Findings (AECOM)

- **Jobs**:
  - Greater Cambridge Local Plan Spatial Options Appraisal: Employment (GL Hearn, with SQW, Cambridge Econometrics, and Iceni Projects)

- **Infrastructure:**
  - Greater Cambridge Local Plan strategic spatial options assessment: Transport Evidence report (Cambridgeshire County Council Transport Policy Infrastructure and Funding Team)
  - Greater Cambridge Local Plan strategic spatial options assessment: Infrastructure Delivery Plan (Stantec)
  - Greater Cambridge Local Plan strategic spatial options assessment: Viability Assessment (Aspinall Verdi)

The findings should be considered interim and for a number of the topics covered it is not possible at this stage to draw firm conclusions, because this would be dependent on the actual sites chosen for each broad location, and at this stage the spatial options do not, in the main, identify actual sites for testing. Other evidence studies have been commissioned and are not yet complete – these will be published in due course. This includes a study looking at heritage impacts in more detail.

For Local Plans, the identification and subsequent testing of strategic development options through a Sustainability Appraisal is a central requirement of legislation and national policy. Councils must ensure that all reasonable alternatives have been identified; and that they are reasonable, realistic and relevant, taking into account the objectives and the geographical scope of the plan. In order to achieve this, during this stage of plan preparation a full range of growth and spatial alternatives have been developed and explored. An interim Sustainability Appraisal has been produced which brings together a comprehensive assessment in line with planning regulations.

- Greater Cambridge Local Plan strategic spatial options assessment: Interim Sustainability Appraisal of Strategic Spatial Options (LUC)

This report summarises the key findings of each study in relation to each growth and spatial option in section 5. Section 6 presents the key findings for each spatial option, and how this would vary under the minimum, medium and maximum growth level options.

Key findings

Section 7 of this report sets out the key findings and emerging issues and themes from the overall testing process. These are presented neutrally without any value judgements about the overall performance of the various options. This is important to avoid prejudging the outcomes of the continuing work to gather further evidence and to develop a preferred strategy for the new Local Plan.

- Most of the topic-based studies find that the minimum growth level option for most spatial options will have more limited challenges than the medium and higher growth level options.
- The minimum level of housing growth required under the government's standard method will not support the growth in jobs in the area that our economic evidence forecasts, which reflects the particular strengths of the Greater Cambridge economy.
- There are likely to be significant constraints with regard to water supply and housing delivery at the maximum level of growth identified.

- The relevant evidence finds, however, that these may not absolute barriers to achieving the highest growth levels tested, but rather that they cannot be achieved through 'business as usual'. Significant strategic interventions would be needed in both instances to have confidence that these currently unprecedented levels of growth are achievable.
- There is an explicit relationship between the testing outcomes for transport modes and the extent of carbon emissions. Transport is the greatest source of carbon emissions and, therefore, the location and distribution of growth is important in this regard. Initial modelling suggests that some clear conclusions can be drawn with regard to the best performing options with low car mode share or high levels of active travel because of their proximity to Cambridge.
- Proximity to Cambridge has a bearing on a range of other issues as well, including access to primary employment markets and pressures on existing infrastructure. For options that might locate development outside the city the importance of sustainable travel options is significant; as is self-containment through, for example, locating homes and jobs together.

Uncertainties

There are other issues that are likely to have a bearing on the preparation of the Greater Cambridge Local Plan.

The potentially prolonged economic uncertainty as a result of the Covid-19 pandemic and the UK's decision to leave the European Union could have impacts on the economy. It is too early for our evidence base to understand these impacts, and we will need to keep our evidence under review as the local plan is prepared.

National planning reforms proposed in the Planning for the Future White Paper, if implemented, would also have significant implications for the preparation and content of Local Plans.

1. Introduction

1.1 This report brings together the outcomes of work to develop, refine and test growth and spatial options identified by Cambridge City and South Cambridgeshire District Councils to inform the Greater Cambridge Local Plan. This follows on from the Issues and Options consultation (held in January and February 2020) – 'The First Conversation' - and is an important stage towards the identification of a 'Preferred Option' for the Local Plan development strategy. This in turn will inform draft site allocations for inclusion in the Plan. The Preferred Option will be published for consultation in summer/autumn 2021.

1.2 The report provides an overview of the approach used to identify the growth level options and the non-site specific spatial options. Consultation responses to 'The First Conversation', alongside a review of a wide range of other evidence sources, have helped to refine the spatial options to ensure that all reasonable options are identified. The Councils must be able to actively demonstrate that a robust and transparent process has been followed for identifying and testing strategic options, following the requirements of relevant legislation and national guidance, as well as local objectives.

1.3 A number of evidence studies have been commissioned to ensure that the options are tested rigorously to identify the opportunities and constraints associated with each one. These studies cover a number of important topics such as climate change, green infrastructure, water, housing delivery and transport. Sustainability Appraisal of the options has a central role in the testing process of their environmental, social and economic impacts. A summary of this evidence and the testing process is provided in this report, which then presents an analysis of the outcomes of the testing stage and presents some key findings for further consideration.

1.4 This report is intended to be read alongside the Sustainability Appraisal (reference document 17) as part of a comprehensive approach to understanding the issues and implications arising from the strategic options that have been developed and tested to date. This report does not form part of the Sustainability Appraisal, and should not be regarded as a substitute for it, nor does it seek to replace the purpose/function of the Sustainability Appraisal in the plan making process.

1.5 It is important to note that much of the evidence is at an interim stage and evidence gathering and analysis is ongoing. As such, the evidence may be subject to further change and so the findings in this report should be treated as interim before the supporting evidence is finalised.

1.6 Informal Member and stakeholder engagement will take place before the end of this year on the outcomes of this options assessment to date. This will provide an opportunity to seek views on key findings of the range of evidence that has been commissioned, the findings of the Sustainability Appraisal of strategic options, and what these mean for the strategy choices available. This will help inform the Councils' thinking as they move towards identifying a preferred option for consultation. At this stage the Councils have not reached any view on the preferred approach for the new Local Plan.

1.7 This report is intended to aid the engagement process by summarising work to date and, in particular, providing an overview of the testing of strategic options and analysis of the emerging issues and implications.

2. Overview of the Plan-Making Process

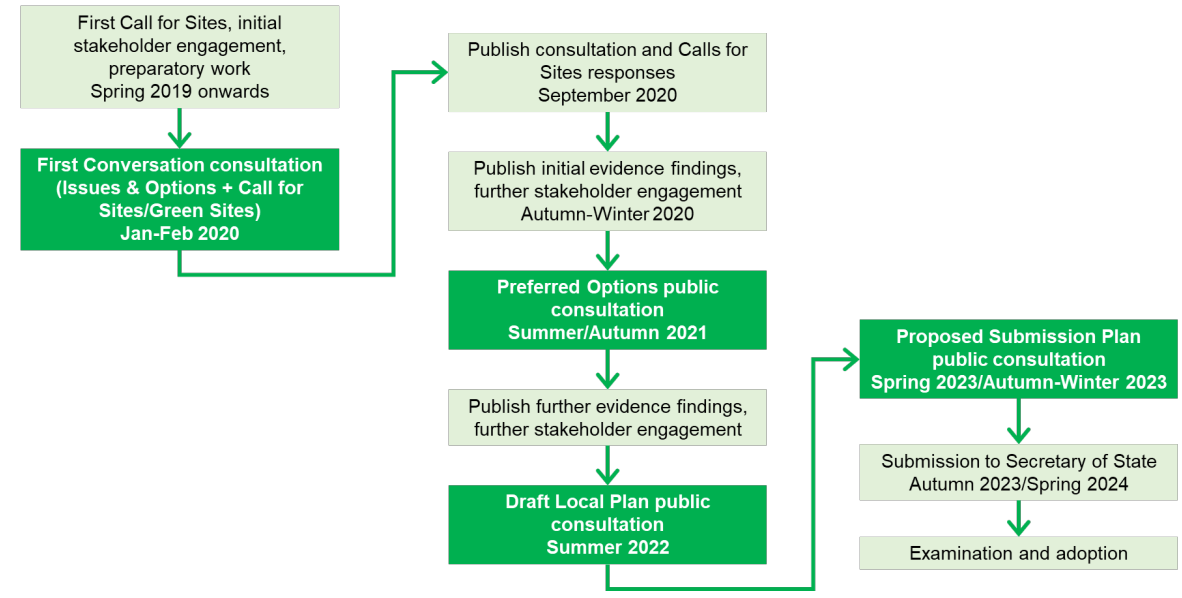
2.1 The Local Plan process to date

2.1.1 Through the City Deal with Government in June 2014, Cambridge City Council and South Cambridgeshire District Council committed to develop a joint Local Plan for the Greater Cambridge area. The engagement process for the new plan started last year with an independent Lessons Learned and Good Practice review, engaging with key stakeholders via structured discussions looking back at the preparation of the adopted 2018 Cambridge and South Cambridgeshire Local Plans in terms of processes and outcomes. In addition, in July and September 2019, Greater Cambridge Shared Planning Service held a series of Local Plan workshops.

2.1.2 This early engagement informed preparation of an issues and options public consultation, which ran for six weeks in January and February 2020. 'The First Conversation' consultation explored important issues that have and will influence how the Local Plan is developed, giving people the opportunity to inform and shape its direction before it is drafted. A large volume of responses and comments were received; initial headlines from the consultation responses were reported to both Councils' Members in June this year and they were published in full in September.

2.1.3 Preferred Options public consultation is planned for summer/autumn 2021, including a preferred strategy and draft site allocations for homes and jobs. The process of Local Plan preparation is set out below.

Process of Local Plan preparation



2.2 Plan-making requirements: the need to test reasonable options

2.2.1 The National Planning Policy Framework (NPPF) defines the purpose of the planning system as contributing to the achievement of sustainable development. For Local Plans the identification and subsequent testing of strategic development options through a Sustainability Appraisal is a central requirement of legislation and national policy.

2.2.2 Councils must ensure that all reasonable alternatives have been identified and considered; and that all such strategic options identified are reasonable, realistic and relevant, and take into account the objectives and the geographical scope of the plan.

2.2.3 The Climate Act 2008 is of particular significance to preparation of the Greater Cambridge Local Plan. Due to amendments in 2019, this now includes a target of net zero carbon emissions by 2050. The implications of the Act are that a key part of Local Plan options testing will be to consider their impact on carbon emissions and climate change, and to understand the role of the options in responding to the journey towards zero carbon by 2050. Both Councils have declared a climate emergency in response to the significance of climate change as a global issue.

2.2.4 Taking account of this requirement and other strategic issues, 'The First Conversation' consultation identified four big themes that will influence how homes, jobs and infrastructure are planned. These drew on the feedback the Councils received from Councillors, communities and businesses while preparing the document. The 'Greater Cambridge Local Plan First Conversation, Call for Sites and Call for Green Sites Data Report' highlights that most respondents agreed with the big themes, with 52% either agreeing or strongly agreeing overall.

2.2.5 The big themes are:

- **Climate change** – how the plan should contribute to achieving net zero carbon, and the mitigation and adaptation measures that should be required through developments.
- **Biodiversity and green spaces** – how the plan can contribute to our 'doubling nature' vision, the improvement of existing, and the creation of new, green spaces.
- **Wellbeing and social inclusion** – how the plan can help spread the benefits of growth, helping to create healthy and inclusive communities.

- **Great places** – how the plan can protect what is already great about the area, and design new developments to create special places and spaces.

2.2.6 In addition, broad spatial choices of where to locate new development were identified as reasonable options for the initial consultation. These drew on the development strategy options considered for the Councils' adopted Local Plans and took account of spatial options identified in the recent Cambridgeshire & Peterborough Independent Economic Review (CPIER), as well as other approaches taken nationally.

2.2.7 The six high level spatial choices were:

- Densification of existing urban areas
- Edge of Cambridge - outside the Green Belt
- Edge of Cambridge - Green Belt
- Dispersal - new settlements
- Dispersal - villages
- Public transport corridors

2.2.8 'The First Conversation' consultation acknowledged that the best strategy could potentially involve some growth in all of these locations, but in different proportions depending upon the prioritisation of the themes in the plan. The intention of these options was to test the main choices available, acknowledging that the final preferred strategy may represent a hybrid of these.

2.2.9 Green Belt is an important policy designation, plays an important role in maintaining the special qualities of Cambridge as an historic city and of the surrounding area. However, the Green Belt also restricts growth on the edge of Cambridge, a location that has sustainability advantages in terms of access to jobs and services and reducing trips by the private car that could help mitigate our climate impacts. National planning policy requires that local plans consider the impact on sustainable development of channelling growth outside the Green Belt. We have therefore included green belt options in the testing process. At the same time, recent changes in national policy also mean that alternatives have to be fully explored before land can be removed from the Green Belt. This will be an important issue for the plan.

2.2.10 Building on the initial options set out in 'The First Conversation', the Councils have identified three growth level options for homes and jobs, and eight strategic (non-site specific) spatial options for testing. The following sections provide an overview of how the strategic options were developed and tested.

3. Growth Level Options for Testing

3.1 National Policy

3.1.1 Description of the options and detailed explanation of how they were developed is provided in The Greater Cambridge Local Plan: strategic spatial options for testing – methodology document (see reference document 1). The following two sections provide an overview of the approach and the main issues.

3.1.2 National planning policy in the NPPF requires that evidence on growth levels should:

- identify the objectively assessed needs for housing and other uses;
- be up to date, taking into account market signals;
- consider economic growth potential; and
- consider the role of key sectors and clusters in driving potential future growth.

3.1.3 In addition, national policy says that Local Plans should support the Government's objective of significantly boosting the supply of homes, by enabling a sufficient amount and variety of land to come forward where it is needed. Plans should provide, as a minimum, the number of homes informed by a local housing need assessment, conducted using the standard method in national planning guidance – unless exceptional circumstances justify an alternative approach which also reflects current and future demographic trends and market signals. Account should be taken of any unmet needs arising from neighbouring areas.

3.2 Identifying reasonable growth level options

3.2.1 The nationally set standard method provides the basis for the Councils' minimum housing need. Currently, this amounts to 1,743 additional homes a year. This has been set as the minimum growth level option as it is the minimum number of additional homes that the Local Plan must cater for. Work has been undertaken to identify the total number of jobs and related employment land needed to correspond with this level of additional housing growth.

3.2.2 National guidance indicates that there will be circumstances where it is appropriate to consider whether actual housing need is higher than that

derived from the standard method. None of the examples provided[1] are directly applicable to circumstances in Greater Cambridge. However, in accordance with national objectives to consider an area's economic growth potential, the continuing strength of the Greater Cambridge economy as evidenced in the CPIER provides justification for exploring higher employment and related housing figures. A key aim for the Cambridgeshire and Peterborough Combined Authority is that economic output will double over the next 25 years, with an uplift in GVA from £22bn to over £40bn[2].

3.2.3 The Greater Cambridge Employment Land Review & Economic Evidence Base Study considered a range of approaches to identifying employment futures for Greater Cambridge, drawing on the available historic employment data. At this point in time the report has not considered the economic impacts of the Covid-19 pandemic. This evidence base will be kept under review including in relation to the impacts of Covid19.

3.2.4 The assessment included consideration of data informing the CPIER. The CPIER's future employment forecast was not used directly as an option because it provides an aggregated view of the whole Cambridgeshire & Peterborough economy, rather than a sector-by-sector view at a Greater Cambridge level.

3.2.5 The approach followed in the Councils' Employment Land Review & Economic Evidence Base Study is based on consideration of realistic employment forecasts for Greater Cambridge that would take account of the continued fast economic growth seen in recent years. The work uses recent and longer-term historic growth rates to forecast the future performance of the Greater Cambridge economy and key sectors within it. These key sectors have been identified through an examination of which parts of the economy have driven growth in the recent past. The findings of this work set out a range of employment forecasts, with the upper level – 'higher' - outcome placing greater weight on fast growth in the recent past, particularly in key sectors, and the lower level – 'central' – outcome considered the most likely, taking into account long term patterns of employment.

3.2.6 The 'central' employment forecast has been selected as the basis for a 'medium growth' option and the 'higher' employment forecast has been selected as a 'maximum growth' option.

[1] Planning Practice Guidance, Housing and Economic Needs Assessment, Paragraph: 010 Reference ID: 2a-010-20190220
[2] Cambridgeshire and Peterborough Devolution Deal. March 2017.

3.2.7 Additional employment generates a demand for additional housing from those who move into an area to take up those jobs. To provide a consistent understanding of the homes that might be required to support jobs, alongside an understanding of the minimum housing need and the jobs that that minimum would support, these employment figures have then been converted into housing growth figures (the Greater Cambridge Housing and Employment Relationships Report (reference document 3).

3.2.8 To translate jobs growth to housing growth it is necessary to apply a number of assumptions, including in particular commuting assumptions. In the first instance, the Greater Cambridge Housing and Employment Relationships Report (reference document 3) used a default assumption of Census 2011 commuting patterns (noting that the Census remains the most up to date comprehensive source of commuting data until publication of Census 2021 data) to inform the identification of:

- housing growth levels generated by the Central and Higher employment growth forecasts. Applying these existing commuting assumptions provides an understanding of the number of homes that might need to be provided to meet those higher forecasts, both within Greater Cambridge and in locations outside of Greater Cambridge.
- the jobs growth supported by the Standard Method housing figure. Existing commuting patterns are assumed to be carried forward under the standard method, where it is used by adjoining districts as part of their own plan making.

3.2.9 For the Central and Higher employment growth forecasts, the Greater Cambridge Housing and Employment Relationships Report (reference document 3) also undertook a sensitivity test to understand the total additional housing growth generated by additional jobs above those supported by the Standard Method, if that growth were to be delivered in full within the Greater Cambridge area. This assumed that all those workers filling the additional jobs would live within Greater Cambridge (a 1:1 commuting ratio) rather than assuming further in-commuting from neighbouring districts. Across Greater Cambridge, using the 1:1 ratio for additional jobs shows housing growth for Greater Cambridge around 114 dwellings per annum (dpa) higher for the Central forecast and 141 dpa (for the Higher forecast) than when using the Census 2011-based commuting assumptions.

3.2.10 For the purposes of testing of strategic options, the minimum and medium option assumes the continuation of 2011 Census commuting patterns, relying on this as a default assumption. For the maximum growth level option, the Councils assumed the 1:1 commuting assumption, in order to test a maximum

housing growth level for Greater Cambridge to go with the maximum jobs forecast. Applying these assumptions at this strategic options stage does not prejudice a decision on which approach the Councils might take on this issue when determining a preferred growth level option for the plan itself.

3.2.11 In summary, the range of reasonable growth level options to be considered are as follows: This table is followed by the comparable adopted Local Plan figures for context (albeit note that this was for a very slightly shorter plan period of 20 years):

Table 1: Employment and housing growth level options for each growth level option 2020-41 (rounded up to the nearest hundred)

Growth level option	**Employment (jobs) - total**	**Employment (jobs) - per year**	**Housing (dwellings) - total**	**Housing (dwellings) - per year**
Minimum	45,800	2,181	36,700	1,748
Medium	58,500	2,786	42,000	2,000
Maximum	78,700	3,748	56,500	2,690

Note: The testing of the maximum growth level option used interim findings from the evidence studies of 79,500 jobs and 57,000 homes, which were subsequently refined in the final study as shown in the table above. The differences from the final figures are not considered to be significant in the context of this strategic testing stage.

3.2.12 The comparable adopted 2018 Local Plan figures are shown below. These are for a very slightly shorter plan period of 20 years.

Table 2: Adopted Local Plans 2018 growth levels, 2011-31

Source	**Employment (jobs) - total**	**Employment (jobs) - per year**	**Housing (dwellings) - total**	**Housing (dwellings) - per year**
Cambridge & South Cambridgeshire Local Plans 2018	44,100	2,205	33,500	1,675

3.2.13 Based on the evidence available and taking account of national policy, it is considered that the growth level options identified provide a sufficient and reasonable range for appraisal at this stage.

4. Identification of Strategic Spatial Options

4.1 Introduction

4.1.1 Work has been undertaken to assess further whether the spatial choices set out in the Greater Cambridge Local Plan: First Conversation consultation are indeed reasonable; and to identify whether there are any additional reasonable spatial options that should be added to the First Conversation choices.

4.1.2 Assessment of the First Conversation consultation responses confirmed that all six original options should be taken forward for strategic options testing. Understanding whether there are any additional reasonable spatial options included sifting a long list of 97 ideas. These are set out in The Greater Cambridge Local Plan: strategic spatial options for testing – methodology document (reference document 1 ~ see Appendix 2: Identifying the full range of reasonable spatial options, Annex B: Sifting assessment of long list of additional ideas and Annex C: Full testing of short-listed additional sites).

4.1.3 This full assessment identified the following two options as being reasonable and substantively different to the six First Conversation options:

- Supporting a high-tech corridor by integrating homes and jobs (southern cluster); and
- Expanding a growth area around transport nodes (western cluster).

Consequently, eight choices were taken forward for testing as strategic options. A broad description of each of these is set out below.

Spatial Option 1: Focus on Densification of existing urban areas

This approach would focus new homes and jobs within Cambridge, because it is the main urban area and centre for services and facilities. The primary location for development within the urban area is at North East Cambridge: this is the last major brownfield site within Cambridge urban area and is being taken forward separately via an Area Action Plan.

Spatial Option 2: Focus on Edge of Cambridge: outside Green Belt

This approach would create new homes and jobs in extensions on the edge of Cambridge, using land not in the Green Belt. The only large site on the edge of Cambridge not in the Green Belt is Cambridge Airport.

Spatial Option 3: Focus on Edge of Cambridge: Green Belt

This approach would create new homes and jobs in extensions on the edge of Cambridge, involving release of land from the Green Belt.

Spatial Option 4: Focus on New Settlements

New settlements would establish a whole new town or village, providing homes, jobs and supporting infrastructure in a new location, and would need to be supported by strategic transport infrastructure connecting to Cambridge.

Spatial Option 5: Focus on Dispersal: Villages

This approach would spread new homes and jobs out to the villages.

Spatial Option 6: Focus on Public transport corridors

This approach would focus homes and jobs along key public transport corridors and around transport hubs, extending out from Cambridge. This could be by expanding or intensifying existing settlements, or with more new settlements.

Spatial Option 7: Supporting a high-tech corridor by integrating homes and jobs (southern cluster)

This approach would focus new homes close to existing and committed jobs within the life sciences cluster area around the south of Cambridge, including homes at existing villages and at new settlements.

Spatial Option 8: Expanding a growth area around transport nodes (western cluster)

This approach would focus new homes at Cambourne and along the A428 public transport corridor, on the basis that Cambourne is due to be served by a new East West Rail station and that Cambourne and the villages along the corridor are due to be served by the Cambridgeshire Autonomous Metro (CAM).

4.2 Bringing the growth and spatial options together

4.2.1 The next stage involved identifying the level and broad distribution of growth for each of the eight spatial options identified above, to include:

- Identifying the minimum, medium and maximum growth balance to find through new allocations; and
- distributing growth between a range of broad areas of supply (recognising that the approach to the options testing stage is at a strategic level and not site-specific).

4.2.2 To inform the approach taken to distributing growth, a number of factors were taken into account, including:

- Overarching principles – derived from legislation and national policy relevant to testing of options;
- Key policy principles – derived from national policy;
- Opportunities and constraints - including factors such as existing and proposed transport infrastructure, assumed delivery rates, and environmental constraints.

Overarching principles

4.2.3 The following principles are used to guide further development of the spatial options:

- Not to predetermine any key element of the spatial strategy, such that no single broad spatial location for growth is included in all options.
- Be reasonable options, including:
    - informed by high-level estimates of the capacity and availability of broad sources of supply, taking into account environmental constraints;
    - informed by evidence-based assumptions about delivery rates; and
    - based on a consistent set of assumptions.
- Take a 'policy-off approach' in respect of policy designations such as Green Belt and development frameworks (this approach assumes that these policy designations do not apply to enable a fuller consideration of development opportunities. Note the exception to this principle is Spatial Option 2: Edge of Cambridge – non Green Belt option, which explicitly seeks to explore a scenario in which the Green Belt was retained in its current form, in order to test all reasonable options, and also to address the NPPF principle referred to below at 4.2.4).

Spatial principles

4.2.4 The NPPF has been used to identify a number of additional key policy principles to take into account. These are:

- Flexible plan-making to allow the plan to adapt to rapid change - a flexibility buffer of 10% is added to each growth level option for testing;
- Account for environmental constraints;
- Account for cross boundary impacts;
- Deliverable, including in the first five years;
- Include a proportion of small sites;
- Integrate development with infrastructure;
- Support sustainability of rural settlements;
- Make effective use of land; and
- Account for the importance of Green Belt (this has resulted in, among other things, the inclusion of options that locate development outside of Cambridge Green Belt boundaries and also options that locate development within Cambridge Green Belt boundaries).

Opportunities and constraints

4.2.5 Opportunities and constraints have been identified to understand the different implications for the spatial options.

4.2.6 Opportunities include:

- existing and planned transport infrastructure, particularly awareness of opportunities in public transport corridors, including the level of certainty of delivery of schemes;
- existing strategic employment locations have been mapped to support identification of development opportunities close to them;
- consideration of existing services in villages (identified using a proxy of settlement hierarchy designations included in the South Cambridgeshire Local Plan 2018) supports the NPPF spatial principle of incorporating assumptions about locating growth first in settlements with the greatest range of services and access to infrastructure; and
- environmental opportunities, including understanding broad priority areas for green infrastructure.

4.2.7 Identified constraints include delivery rates: to account for the NPPF requirement for local plans to be deliverable, current delivery rates as used in the councils' adopted housing trajectory were used to inform the strategic spatial options for the minimum and medium growth level options. However, using these in early testing under a maximum growth level option led to

unrealistic and unreasonable spatial choices to support a deliverable and sustainable plan to 2041. For example, using such historic rates would mean that, say, ten new settlements would be needed to achieve sufficient delivery to achieve the maximum option by 2041, which it would clearly be unrealistic to deliver simultaneously. Further to this, considering sustainability objectives would suggest it would be more sustainable to concentrate growth in a smaller number of locations which could support greater infrastructure provision and generate greater critical population mass. Drawing on the above, the maximum growth level option for testing was compiled assuming delivery rates that were increased significantly beyond historic rates. In doing so, the Councils were not indicating that they had evidence to demonstrate that such a step change increase in delivery rates was achievable (see reference to the Housing Delivery Study Interim Findings (reference document 11) which suggests that in fact such rates will only be possible with significant interventions and/or alternative delivery models).

4.2.9 Environmental constraints provide a rough guide to where would be appropriate or not to locate development when considered at a strategic level. Environmental constraints include flood zones and statutorily designated historic and natural features.

4.2.10 The next sections set out the approach to determining the balance to find in relation to growth levels, and key assumptions relating to sources of supply, including broad locations, capacity, availability, delivery and further evidence required for later stages of the plan-making process.

4.3 Establishing the amount of additional development required

4.3.1 Significant levels of development are allocated in the adopted 2018 Local Plans and will come forward during the period of the Greater Cambridge Local Plan. Together with current estimates for windfall development this amounts to 36,400 new homes currently anticipated to be developed by 2041 based on currently anticipated build out rates. A further 8,600 homes on these existing sites, at new settlements, are anticipated to be built after 2041 based on currently anticipated build out rates. Delivery from the adopted plans will be reviewed carefully and the supply could change, including as a result of a review of windfalls. Nonetheless, this figure is considered a reasonable assumption for the testing of strategic options. Taking account of these commitments and windfalls, the balance of homes to plan for against each growth level option is set out below.

Table 3: Residual Housing Growth requirements used for testing strategic spatial options, 2020-41 (rounded up to the nearest hundred)

Growth level option	**Total housing (including 10% buffer)**	**Development already in the pipeline (including windfalls)**	**Additional housing to be allocated on sites in the new Local Plan**
Minimum	40,300	36,400	3,900
Medium	46,200	36,400	9,800
Maximum	62,700	36,400	26,300

Notes:
1. The testing of the maximum growth level option used interim findings from the evidence studies of 57,000 homes (therefore 62,700 homes with a 10% buffer) rather than 56,500 homes as set out at Table 1 (which would give a total housing figure including 10% buffer of 62,150 homes). The differences from the final figures are not considered to be significant in the context of this strategic testing stage.

2. As noted above at paragraph 4.2.7 the maximum growth level option for testing was compiled assuming higher delivery rates than previously achieved in order to give a reasonable option for testing. Under this assumption, higher delivery rates at committed new settlements were assumed, adding around 8,600 dwellings to the assumed commitments to 2041 (therefore 45,000 rather than 36,400), such that the residual housing to find in new allocations for the purposes of testing was reduced from 26,300 homes to 17,700. The actual residual figure to find will therefore be informed by the delivery rates that are ultimately identified as reasonable for the new Local Plan.

4.3.2 The Greater Cambridge Employment Land Review & Economic Evidence Base Study (reference document 2) identifies that there is 459,319m2 (net) of planned business floorspace in Greater Cambridge from existing commitments (adopted allocations and sites with planning permission). Adding the anticipated increase in business floorspace of 150,000m^2 from the outline planning application (with a planning committee resolution to grant planning permission) at the Wellcome Genome Campus results in an

employment commitments baseline of 609,319m^2 (net) of business floorspace for 2020-41. This is a strong level of supply to meet future needs. It also reflects the nature of the area where large strategic sites are identified but can take many years to deliver. The Employment Land Review provides commentary on this supply, and makes recommendations for the plan regarding issues related to individual land types regarding quantitative and qualitative issues. Whilst less space may be needed to accommodate the jobs anticipated from lower growth level options, it is important to maintain a flexible employment land supply, that can respond to change and the future needs of firms. Current circumstances related to the Covid-19 pandemic and the UK's decision to leave the European Union create greater than usual economic uncertainty. We will continue to update our economic evidence as the plan is developed.

4.3.3 For the purposes of testing spatial options, particularly in terms of transport modelling, the minimum, medium and maximum jobs levels identified in the table at paragraph 3.2.10 were used, and distributed drawing on the existing commitments identified in the Employment Land Review and additional supply related to the location of additional housing in each spatial option.

4.3.4 The Greater Cambridge Local Plan: strategic spatial options for testing – methodology document (reference document 1) sets out in detail the approach to establishing sources of new supply to inform an understanding of how the different spatial options might be delivered. The detailed evidence considered relates to broad locations and their capacity, availability, deliverability and what further evidence is likely to be needed.

4.3.5 Whilst the purpose of an option may be to test maximising development at a certain type of location, it will not always be possible to meet the level of development being considered in that single location type. It will therefore be necessary to add growth in other locations to that option.

4.3.6 For each growth level and spatial option, the development required in addition to the focus of the option is distributed across the sources of supply as informed by the spatial principles referred to above. It is important to emphasise that the way the remainder of provision beyond the focus of the option is provided can be flexible if the findings of assessment identify issues with the assumptions made for the purposes of this initial assessment. Therefore, findings relating to the balance of supply should be treated with some caution and issues identified may be capable of being addressed through alternative sources of supply.

4.3.7 Similarly, while these options comprising the various sources of supply are presented as distinct and standalone, it is possible that the optimum approach could potentially involve some growth in a number or all of these locations, but in different proportions depending upon the prioritisation of the themes in the plan. Therefore, the final preferred approach may represent a hybrid of the different standalone options. These matters will be considered further through the next stages of the plan-making process.

4.3.8 The paragraphs and tables below sets out for each of the strategic spatial options the broad locations that would comprise sources of supply to meet each of the three levels of growth. This includes both the primary source associated with that option and any additional sources that might be needed to make up the total amount of growth for that option. Medium and maximum growth level options comprising similar sources of supply, will differ due to assumed faster build rates under the higher growth level option. Details of the numbers involved are provided in The Greater Cambridge Local Plan: strategic spatial options for testing – methodology document (reference document 1).

4.3.9 This provides the basis for testing the options in a consistent and directly comparable way. The initial findings and analysis of this testing process are addressed in the following sections of this report.

Spatial and Growth Level Options: sources of land supply

Spatial Option 1: Focus on Densification of existing urban areas
This approach would focus new homes and jobs within Cambridge, because it is the main urban area and centre for services and facilities. The primary location for development within the urban area is at North East Cambridge: the last major brownfield site within Cambridge urban area is at North East Cambridge which is being taken forward separately via an Area Action Plan.

Minimum Growth Level Option	**Medium Growth Level Option**	**Maximum Growth Level Option**
○ North East Cambridge ○ Cambridge Urban Area (low density)	○ North East Cambridge ○ Cambridge Urban Area (medium density) **Additional sources** ○ Cambridge Airport	○ North East Cambridge ○ Cambridge Urban Area (high density) **Additional sources** ○ Cambridge Airport

	○ Edge of Cambridge in Green Belt (one site/broad location)	

Strategic Spatial Option 2: Focus on Edge of Cambridge - outside Green Belt
This approach would create new homes and jobs in extensions on the edge of Cambridge, using land not in the green belt. The only large site on the edge of Cambridge not in the Green Belt is Cambridge Airport.

Minimum Growth Level Option	**Medium Growth Level Option**	**Maximum Growth Option**
○ Cambridge Airport **Additional sources** ○ North East Cambridge ○ One Village site	○ Cambridge Airport **Additional sources** ○ North East Cambridge ○ Two smaller new settlements of 4,500 dwellings on public transport corridors ○ Balance spread across the Rural Centre (30%) and Minor Rural Centres (70%) outside of the Green Belt	○ Cambridge Airport **Additional sources** ○ North East Cambridge (faster buildout) ○ One larger new settlement of 9,000 dwellings on a public transport corridor ○ One smaller new settlement of 4,500 dwellings on a public transport corridor

Strategic Spatial Option 3: Focus on Edge of Cambridge - Green Belt
This approach would create new homes and jobs in extensions on the edge of Cambridge, involving release of land from the Green Belt.

Minimum Growth Level Option	**Medium Growth Level Option**	**Maximum Growth Level Option**
○ Edge of Cambridge – Green Belt (equivalent to three sites/broad locations)	○ Edge of Cambridge – Green Belt (equivalent to five sites/broad locations) **Additional sources** ○ Minimal balance within Cambridge urban area	○ Edge of Cambridge – Green Belt (equivalent to five sites/broad locations using higher delivery rates)

Strategic Spatial Option 4: Focus on New settlements

New settlements would establish a whole new town or village, providing homes, jobs and supporting infrastructure in a new location, and would need to be supported by strategic transport infrastructure connecting to Cambridge.

Minimum Level Growth Option	Medium Growth Level Option	Maximum Growth Level Option
○ Two smaller new settlements of 4,500 dwellings on a public transport corridor	○ Three new settlements on public transport corridors (two larger new settlements of 9,000 dwellings and one smaller new settlement of 4,500 dwellings) ○ One smaller new settlement of 4,500 dwellings on the road network	○ Three new settlements on public transport corridors (two larger new settlements of 9,000 dwellings and one smaller new settlement of 4,500 dwellings) ○ One smaller new settlement of 4,500 dwellings on the road network ○ Built at a higher delivery rate than the medium growth level option

Strategic Spatial Option 5: Focus on Dispersal – villages

This approach would spread new homes and jobs out to the villages.

Minimum, Medium and Maximum Growth Level Options
○ 40% of balance at Rural Centres ○ 40% of balance at Minor Rural Centres ○ 17% of balance at Group villages ○ 3% of balance to find at Infill villages

Strategic Spatial Option 6: Focus on Public transport corridors

This approach would focus homes and jobs along key public transport corridors and around transport hubs, extending out from Cambridge. This could be by expanding or intensifying existing settlements, or with more new settlements.

Minimum Growth Level Option	**Medium Growth Level Option**	**Maximum Growth Level Option**
○ North East Cambridge ○ One smaller new settlement of 4,500 dwellings on a public transport corridor ○ Minimal balance spread across 18 villages sited along existing or proposed public transport corridors	○ North East Cambridge ○ One larger new settlement of 9,000 dwellings on a public transport corridor ○ Balance spread across 18 villages sited along existing or proposed public transport corridors	○ North East Cambridge ○ One larger new settlement of 9,000 dwellings on a public transport corridor ○ Balance spread across 18 villages sited along existing or proposed public transport corridors ○ Built at a higher delivery rate than the medium growth level option

Strategic Spatial Option 7: Supporting a high-tech corridor by integrating homes and jobs (southern cluster)

This approach would focus new homes close to existing and committed jobs within the life sciences cluster area around the south of Cambridge, including homes at existing villages and at new settlements.

Minimum Growth Level Option	**Medium Growth Level Option**	**Maximum Growth Level Option**
○ One smaller new settlement of 4,500 dwellings on a public transport corridor within the southern cluster area ○ Balance distributed equally across the five villages located within the core southern cluster	○ One smaller new settlement of 4,500 dwellings on a public transport corridor within the southern cluster area ○ Balance spread equally across five villages sited along existing/proposed public transport	○ One larger new settlement of 9,000 dwellings on a public transport corridor within the southern cluster ○ Balance spread equally across the five villages sited at existing/proposed public transport nodes

area that are on public transport corridors	corridors within the core southern cluster area (70%), and further villages within the southern cluster core area not on public transport corridors (including 20 % at Group villages and 10% at Infill villages)	within the southern cluster **Additional sources** ○ Cambridge Airport ○ North East Cambridge

Strategic Spatial Option 8: Expanding a growth area around transport nodes (western cluster)

This approach would focus new homes at Cambourne and along the A428 public transport corridor, on the basis that Cambourne is due to be served by a new East West Rail station and that Cambourne and the villages along the corridor are due to be served by the Cambridgeshire Autonomous Metro.

Minimum Growth Level Option	**Medium Growth Level Option**	**Maximum Growth Level Option**
○ Expansion of Cambourne by the equivalent of one smaller new settlement (completions and commitments + 4,500 dwellings = 11,300 dwellings) ○ Balance spread across three villages sited along the A428 public transport corridor	○ Expansion of Cambourne by the equivalent of one smaller new settlement (completions and commitments + 4,500 dwellings = 11,300 dwellings) ○ Balance spread across three villages sited along the A428 public transport corridor (60%) and four further Minor Rural Centre/Group villages within 5km of Cambourne (40%)	○ Expansion of Cambourne by the equivalent of one larger new settlement (completions and commitments + 9,000 dwellings = 15,800 dwellings) ○ Balance spread across three villages sited along the A428 public transport corridor (60%) and one Minor Rural Centre and three Group villages within 5km of Cambourne (40%) **Additional sources** ○ Cambridge Airport ○ North East Cambridge

5. Emerging Evidence Findings

5.1 Introduction

5.1.1 This section provides an overview of the emerging initial findings from the various topic-based reports commissioned by the Councils to assess the potential effects of the growth and spatial options. For a number of the topics covered it is not possible at this stage to draw firm conclusions that differentiate substantively between the various options, particularly as some topics rely on more site-specific information. In addition, some reports provide interim findings as further assessment is required and is ongoing.

5.1.2 Nonetheless, the information provided is valuable to help understand the broad issues and implications that are likely to arise, particularly for example with regard to the different levels of growth. These reports have been produced alongside Sustainability Appraisal of the options, which is required to assess comprehensively the effects of the various options to inform the choice of the preferred development strategy.

5.1.3 An overview of the topic-based reports are presented in this section under the 'Big Themes' that guided the 'First Conversation'. Details of the various studies and reports referred to in this section are provided in the reference list at the end of this document.

5.2 Climate Change

Zero Carbon Study

5.2.1 **Study aims** – This study will assess the potential for the new local plan to respond to climate emergency by supporting a transition to net zero carbon, including the setting of robust evidence-based carbon reduction targets. It will include defining what 'net zero' should mean in terms of sources and types of emissions, explore planning powers, explore targets, policies, the feasibility and cost implications of building to net zero carbon standards, and the possible role of offsetting in net zero carbon new developments.

5.2.2 The 'Greater Cambridge Local Plan - Strategic spatial options appraisal: implications for carbon emissions' study (reference document 4) set out to compare the carbon emissions implications of the various strategic spatial options and growth level options and how these might be affected by applying a combination of carbon reduction policies.

5.2.3 **Study status** – The study is an interim draft, which is yet to be finalised. It sits within wider net zero carbon study work for the Local Plan.

5.2.4 **High level methodology** – For the spatial options appraisal a bespoke carbon model has been created to help assess the carbon implications of the spatial strategy, covering the following sources of carbon emissions from new buildings in Greater Cambridge:

- Building construction materials and processes (embodied carbon).
- Building heating and electricity usage (operational carbon).
- Occupant and visitor transport (transport carbon).

The model also offers a range of options for policies to reduce carbon emissions. At this stage of the plan-making process, the following two policy approaches have been modelled:

- Business As Usual - based on current typical practice.
- Zero Carbon Policy - making drastic but achievable improvements to new buildings' energy efficiency, embodied carbon, renewable energy generation, sustainable transport and 10% of private vehicles to be electric (reflecting the consultants' assumptions regarding the transition to electric vehicles during the plan period).

5.2.5 **Key findings** – Transport carbon is the greatest source of carbon and shows by far the most significant variation across the spatial options. The primary determinant of how each option compares in terms of its carbon emissions is the quality of access to public, active, and low carbon travel modes, and the degree of need to travel regularly.

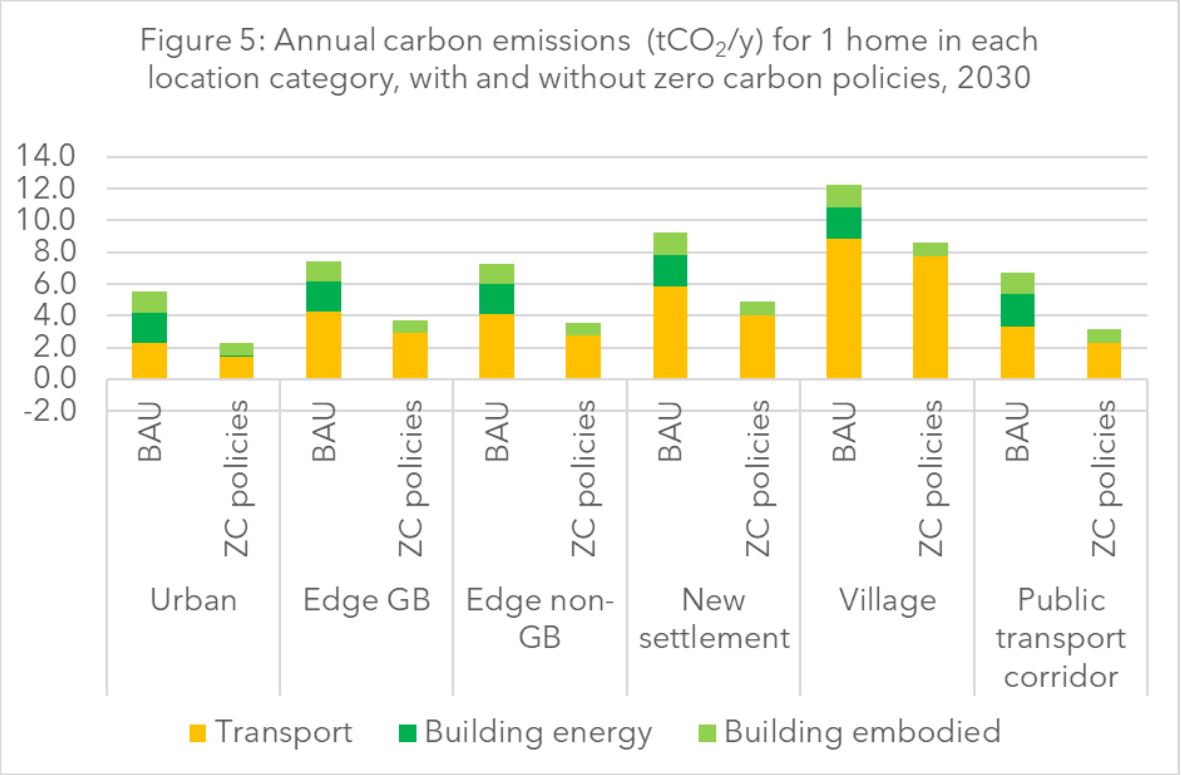
5.2.6 Carbon emissions from building energy use is less variable. Since it is assumed that best-practice energy efficiency policies are already in place, it is most affected by the ability of development to provide enough PV panels to offset the electricity demand on site. Lower-rise schemes, which would be more typical in villages and new settlements have a greater ratio of roof space to internal area, and therefore a greater capacity to meet their own electricity demand from an on-site renewable (and therefore zero carbon) source.

5.2.7 Embodied carbon is almost consistent across the spatial options. The minor change is dependent on the modelled development mix between flats and houses and number of bedrooms. This affects the amount of materials used for construction per dwelling created, as higher rise flats use less material per dwelling than low density detached housing. There is also a difference in the level of required new infrastructure (schools, libraries, health facilities etc) depending on the location of the housing, which in turn has its own embodied carbon associated with its construction.

5.2.8 **Testing outcomes for growth level options** – The results show that all of the growth level options will result in a very small increase on existing overall emissions from Greater Cambridge. The exception will be if maximum growth takes place entirely within the villages option and with business as usual construction and transport, which generates significant additional carbon emissions. The results of the analysis make a strong case for applying zero carbon policy to growth and focusing on minimising the need for private cars. More detail can be found in reference document 4.

5.2.9 **Testing outcomes for spatial options** – The study report ranks the spatial options in order from best to worst with regard to carbon emissions. Some caveats are applied to these findings. In particular, some options were assumed to have better public transport accessibility than others. Option 2 (Edge of Cambridge – outside the Green Belt) includes North-East Cambridge, which is next to a rail station, so homes at that site were treated as being in a 'public transport corridor' location. In contrast, in Option 3 (Edge of Cambridge – Green Belt), no specific locations are mentioned. This option has a small number of homes in the urban centre, with the majority in unspecified Green Belt locations. Therefore, the assessment assumes a suburban density and transport context. However, this could change dramatically if Green Belt sites were for example on direct regular public or active transport links (especially rail stations).

5.2.10 Using the model to explore individual locations, the impact of transport on carbon emissions becomes clear, with urban, edge of urban and new settlements performing better than villages. Transport corridors stand out due to opportunities for low carbon travel.



Source: Greater Cambridge Local Plan strategic spatial options assessment: Implications for carbon emissions (Bioregional and Etude) November 2020 (reference document 4)

Looking at the strategic options, which have development in a number of locations:

5.2.11 **Option 1 – Densification** (ranked first) - This option has the majority of homes in urban and suburban settings. This results in the best public and active transport access of the options and the most efficient materials use for higher rise construction in places with lower requirement for new supporting infrastructure. This is slightly counter balanced by having the least ability of the spatial options to provide enough on-site PV panels for the homes' electricity demand, so net emissions from home energy are actually the highest of the spatial options. Adding offsite renewables matched to their remaining energy demand could alleviate this.

5.2.12 **Option 2 - Edge of Cambridge not in Green Belt** (ranked fourth) - This option allocates homes across four different settings - urban densification, edge non-GB, new settlements on public transport and rural villages. This produces a very even blend, and hence mid-range emissions across the three sources of carbon emissions.

5.2.13 **Option 3 – Edge of Cambridge Green Belt** (ranked fifth) - This option is based on the majority of homes on the urban fringe within the Green Belt with

a few in urban densification. The urban fringe is assumed to have medium public and active travel accessibility and hence transport emissions. It is of medium density, hence medium ability to provide renewables on-site and therefore medium building energy emissions. It is the second lowest for embodied carbon due to having a reasonably high number of flats and smaller houses, but predominantly due to low assumed new supporting infrastructure due to the accessibility of nearby existing facilities.

5.2.14 **Option 4 – New settlements** (ranked third) - This option is all homes in new settlements on a mixture of public transport corridors and on road network. This creates mid-range transport carbon emissions. It is modelled at mid-density; hence the building energy emissions are in the middle. However, embodied carbon is high due to the need for additional supporting infrastructure and the predominance of larger houses rather than more efficient flats.

5.2.15 **Option 5 – Dispersal – villages** (ranked eighth) - This option is based on all homes in village settings. This has the worst transport links by a substantial margin and a slightly higher embodied carbon due to low rise detached housing and necessary supporting infrastructure. In contrast, it has the best net building energy performance, because the lower density makes it the most able to provide substantial renewable energy on-site through PVs. Overall, the carbon cost of the transport far outweighs the smaller benefit from the increased PV, making this the most carbon intensive option.

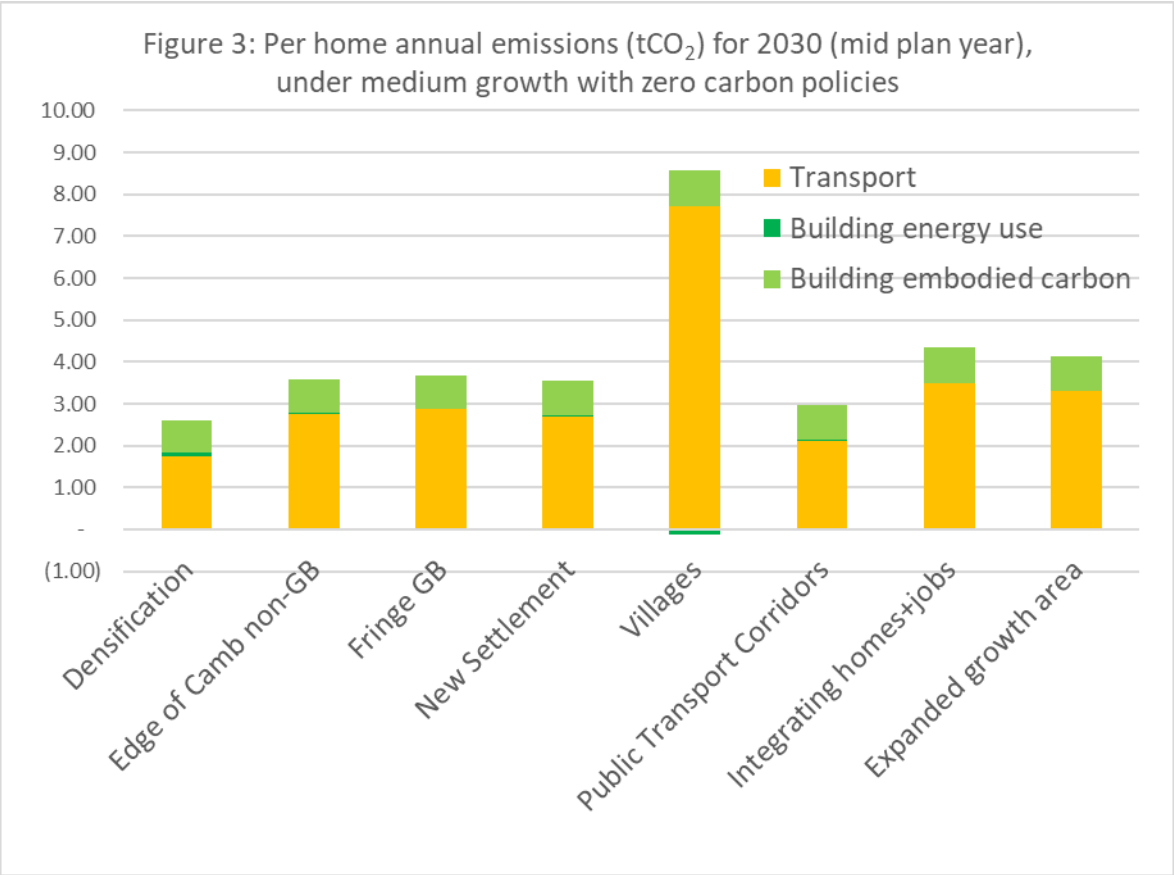
5.2.16 **Option 6 – Public transport corridors** (ranked second) - This option has a mixture of homes in urban settings and settlement on public transport corridors; hence it has good transport links and therefore second lowest transport carbon. This is slightly countered by a medium efficiency of materials used due to the mix of low and higher rise construction, and a mixed ability to provide enough on-site PV panels for the same reason.

5.2.17 **Option 7 - Supporting a high-tech corridor by integrating homes and jobs (southern cluster)** (ranked seventh) - This option has the majority of homes in new settlements on transport nodes, with some homes in dispersed villages. The effect of this is to create the second highest carbon emissions overall, predominantly due to the transport emissions from the dispersed village homes. There is also more embodied carbon due to the lower density housing and significant new supporting infrastructure required for new settlements and villages.

5.2.18 **Option 8 - Expanding a growth area around transport nodes (western cluster)** (ranked sixth) - This option allocates homes across Cambourne, along public transport corridors and dispersed villages; hence, this also

produces mid-range emissions across the range of emissions sources. The transport is slightly higher than average due to the development in dispersed villages.

5.2.19 To help understand the drivers of difference between each option, the following chart shows a breakdown of annual emissions per home in the mid-plan period year, with a medium level of growth, after zero carbon policies have been applied.



Source: Greater Cambridge Local Plan strategic spatial options assessment: Implications for carbon emissions (Bioregional and Etude) November 2020 (reference document 4)

5.2.20 **Summary** -

- Option 1 Densification has the lowest plan carbon emissions, with Option 6 Public Transport Corridors a close second.
- Option 5 Villages is by far the highest carbon option, with more than three times as much carbon emissions as Option 1 Densification, largely due to the greater levels of car use.
- Differences between other spatial options largely relate to the public transport links of the anticipated sites. For example, a key site

considered in option 2 'edge, non-Green Belt' is next to a train station and many of this option's other homes follow a relatively dense urban pattern. In contrast, 'fringe Green Belt' sites are unspecified and therefore treated as suburban and not quite so well connected to public transport.

- The effect of applying zero carbon policies is dramatic and would, for example, allow maximum growth to take place with less gross carbon emitted than in medium growth without zero carbon policy, with the exception of the Villages option.
- With a full shift to electric vehicles still a long way off, from a carbon point of view it is best to focus growth choices on minimising car dependence. The choice of spatial option (and public transport provision, if not in a central urban location) is therefore crucial to reduce carbon emissions from growth.

Integrated Water Management Study

5.2.21 **Study aims** - The 'Greater Cambridge Local Plan strategic spatial options assessment: Integrated Water Management Study (reference document 5) considers the opportunities, constraints and uncertainties for each strategic option relating to water supply, wastewater, water quality and flood risk. The comprehensive nature of the study reflects the importance of water management as an issue within Greater Cambridge. For the same reason, the report has been the subject of an independent expert review.

5.2.22 **Study status** – The options review is now complete, but must be considered as interim as it has been prepared in advance of completing the main Integrated Water Management Study documents (a Level 1 Strategic Flood Risk Assessment, an Outline Water Cycle Study and a Detailed Water Cycle Study). These will be completed later in 2020/2021. The analysis and findings of the interim study report will be revisited in greater depth in the Outline and Detailed Water Cycle Study.

5.2.23 **High level methodology** – The study is based on information received to date from stakeholders. Consultation with stakeholders is ongoing and not all questions can be answered at this stage. Where necessary, the consultants have made assumptions that aim to be conservative, technically achievable and represent a "safe" fall-back position.

5.2.24 **Key findings** – The study concludes that for flood risk, wastewater treatment, and water quality, there are constraints to development due to existing areas of high flood risk, wastewater treatment capacity limitations, and existing diffuse and point source pollution. As a minimum, development will need to

mitigate any further detrimental effects to have a neutral impact. However, there are also opportunities for development to offer betterment to existing conditions, for example by reducing flood risk downstream, reducing point and diffuse pollution, and supporting larger integrated water management schemes including more natural wastewater treatment options.

5.2.25 For water supply, over-abstraction of the chalk aquifer is having a detrimental impact on environmental conditions, particularly during dry years that may become more frequent due to the impacts of climate change. None of the strategic options offer the opportunity to mitigate these existing detrimental impacts. Even without any growth, significant environmental improvements are unlikely to be achievable until major new water supply infrastructure is operational, which is unlikely to occur before the mid-2030s under current structures and normal means by which new strategic scale water infrastructure is delivered. Therefore, the analysis has focused on a "no additional detriment" neutral position. To prevent any increase in abstraction and its associated detrimental environmental impacts, mitigation measures will be necessary.

5.2.26 **Testing outcomes for growth level options** – Although there are constraints to development for flood risk, wastewater treatment and water quality under all three growth options, these could plausibly be addressed with appropriate mitigation measures in compatible timescales to result in either no additional detrimental environmental impacts or betterment where possible.

5.2.27 The **maximum growth level option** has potential "deal-breaker" constraints due to water supply limitations, which will occur without strategic scale interventions such as the provision of new reservoirs. The timing of planning, constructing and commissioning new strategic-scale water supply infrastructure through 'business as usual' is not currently compatible with the Local Plan timescale for the high growth level option.

5.2.28 The **medium growth level option** is plausibly achievable for water supply, but has significant constraints or uncertainties that will be difficult to overcome, technically challenging and/or costly. The proposed growth could be accommodated if regional scale water supply solutions are operational by the mid-2030s, and suitable interim measures are implemented beforehand to mitigate impacts. These will need rapid planning and investment in the early part of the next Asset Management Period (2025 – 2030). There is a high uncertainty associated with the interim measures.

5.2.29 The **minimum growth level option** would be the most sustainable of the three options, in terms of preventing any further detrimental impacts on the water environment. Interim mitigation measures will still be necessary to

prevent detrimental impacts before regional scale water supply solutions are operational, but there is a greater certainty for the planning and implementation of these measures due to their smaller magnitude and later timing, compared to the medium growth level option.

5.2.30 **Testing outcomes for spatial options** – The study assessed the constraints and opportunities of each individual location that make up the eight spatial options in terms of their performance against each of the water-related issues. The scores were then weighted and compiled for each spatial option to give a ranked order of the performance of each spatial option from best to worst.

5.2.31 These findings demonstrate that growth is most preferable concentrated in edge of Cambridge outside Green Belt (Option 2) and new settlements (Option 4). This is because these include areas of known or expected low flood risk and would be large sites with good opportunities for blue-green infrastructure, flood risk reduction and high-quality resilient water recycling systems. Option 3 (edge of Cambridge Green Belt) performs less well because of the weighting given to existing fluvial flood and surface water flood risk, which may make individual sites difficult to deliver, depending on location.

5.2.32 It might be more difficult to identify appropriate sites in the options involving dispersal to existing villages or densification of urban areas (Options 1 and 5), because of the high existing flood risk in these areas. The smaller expected size of developments would offer fewer transformational opportunities for blue-green infrastructure, flood risk reduction, and high quality resilient water recycling systems.

5.2.33 Development in the Cambourne area could have opportunities for water resources with the potential for water to be supplied by bulk transfer from another area. However, these benefits could be offset by the significant capacity constraints for wastewater treatment at Bourn and Uttons Drove. Further work would be necessary to identify technically feasible mitigation measures or alternative provision.

5.2.34 **Summary** -

- The chalk aquifer is already over-abstracted which is having a detrimental impact on the flow in chalk streams.
- To meet current and future demands, potable water supplies will need to be increased in other ways, such as reduced usage (demand management), reduced leakage, licence trading, water imports and major new strategic infrastructure such as reservoirs.
- For growth levels, the **minimum growth level option** is the most environmentally sustainable.

- There are 'deal breaker' constraints on water supply for the **maximum growth level option** without early strategic scale interventions, such as new reservoirs. These are unlikely to be available until after the start of the local plan period under current structures and normal means of provision.
- This is a significant issue for government to consider when exploring growth through the Ox-Cam Arc. Stakeholders such as Water Resources East and Cambridge Water must be engaged in this process.
- **Spatially**, growth should be concentrated in new settlements or urban extensions (Options 2 and 4).
- The least preferable spatial option is Option 5 (dispersal to villages).

5.3 Biodiversity and Green Space

Green Infrastructure Study

5.3.1 **Study aims** – A Green Infrastructure (GI) Opportunity Mapping project is underway to inform the Local Plan. The overall aim of the study is to provide a robust evidence base on the quantity and quality of existing GI assets and networks within Greater Cambridge, and through analysis and consultation, identify specific and deliverable opportunities to enhance and expand the network, supported by appropriate policies. A Greater Cambridge Green Infrastructure Opportunity Mapping Baseline Report (reference document 6) has been published, identifying key GI assets, risks and opportunities, and broad opportunity zones addressing varied GI themes, including for example biodiversity and geodiversity, and recreation. The Greater Cambridge Local Plan strategic spatial options assessment: Green Infrastructure Opportunity Mapping (reference document 7) uses the information from the wider baseline work and is reported separately.

5.3.2 **Study status** – As note above a baseline report has been published alongside the assessment of strategic options. A further final stage of the main study will follow in 2021 once a preferred strategic spatial option has been selected. This will include the refinement of the broad opportunity zones and the identification of a range of projects that could be delivered to enhance the GI network.

5.3.3 **High level methodology** – To inform appraisal of the strategic options, for each broad area of supply making up the spatial options, the baseline evidence from the Greater Cambridge Green Infrastructure Opportunity Mapping Baseline Report (reference document 6) was examined, and a set of

opportunities and risks were identified. The options appraisal report notes that this is a high-level assessment, and in some cases it is not possible to be definitive about the likely impacts without more spatial specificity. In particular, the non-site specific nature of the options make it challenging to make conclusions about their relationship with the broad opportunity zones identified in the GI Mapping project. Identification of a preferred option with sites will support further consideration of these broad opportunity zones and also specific GI project opportunities.

5.3.4 **Key findings** – The overall conclusion reached is that each option offers different opportunities and potential risks in terms of GI; no one single option clearly performs better than the other in terms of GI.

5.3.5 **Testing outcomes for growth level options** – The **minimum growth level option** potentially provides more scope to locate development to minimise impacts on existing assets, or to focus development to where the greatest opportunities can be achieved. The **higher growth level options** reduce flexibility in relation to being able to target the location of development in this way and will result in greater landtake. Where space is constrained, GI provision will need to be more innovative. On the other hand, development can provide opportunities for GI such as new areas of GI for recreation or habitat provision, or enhancement of existing areas which already perform a specific function (such as important habitats); to improve the efficacy of this function.

5.3.6 Testing outcomes for spatial options – The following broad conclusions are drawn with regard to the locations and development types included in the spatial options:

- **Existing urban area** (Option 1 + 2, 3, 6, 7, 8) - There is greater potential for piece-meal delivery of GI associated with multiple smaller developments and the added challenge of significant 'space' constraints. On the other hand, there are opportunities to deliver new GI where there may be existing deficiencies or challenges. Focusing growth at North East Cambridge may provide opportunities to integrate a more diverse range of GI opportunities through innovative measures; although this presents risks to the existing GI network, particularly relating to increased recreational pressure on nearby sites and potential impacts on wetland assets to the east and north east.

- **Edge of Cambridge outside Green Belt** (Option 2 + 1, 7, 8) - Focusing growth at Cambridge Airport will provide opportunities to integrate a wider range of GI interventions associated with larger development. However, growth here presents risks to the existing GI

network, particularly relating to increased recreational pressure on sites, and potential impacts on wetland assets to the east and north east.

- **Edge of Cambridge in Green Belt** (Option 3 + 1) - Provides an opportunity for urban extensions to cater for GI deficits in neighbouring urban areas. There are also opportunities associated with the requirement of the NPPF for the release of Green Belt sites to positively enhance the remaining Green Belt. There is some sensitivity within Green Belt corridors that protrude into urban areas where assets are at greatest risk of fragmentation or severance.

- **New settlements** (Option 4 + 2, 6, 7) - Provide an opportunity to integrate a wider range of GI opportunities associated with larger scale development. Landscape-led masterplanning could accommodate generous GI provision to avoid risk of impact on nearby wetland habitats and water resources. Depending on the location of new settlements and supporting infrastructure, there is an increased risk of impact on international designation and/or functionally linked habitat. Any delivery focused at a new settlement in the life sciences cluster area around the south of Cambridge would provide opportunities for habitat enhancement. These could collectively serve to support flood management, biodiversity and carbon capacity.

- **Villages** (Option 5 + 2, 6, 7, 8) - This increases the likelihood of piece-meal GI interventions associated with multiple smaller developments, as opposed to delivering strategic GI opportunities. This may lead to greater challenges in delivering integrated ecological networks unless an overarching vision is established and supported in planning policy and land-use decision making. The higher concentrations within individual villages under the medium and maximum options may present opportunities to deliver GI that can address existing deficiencies in access to open space.

- **Transport nodes** (Option 8) - There is a risk of development (dwellings or supporting infrastructure) which may extend or exacerbate existing north-south severance; but also an opportunity to introduce GI connectivity across the A428 corridor. There is potential to further develop active transport connections linking GI assets with managed capacity for recreational access to alleviate demand / potential demand on those with sensitive hydrological or ecological feature.

5.3.7 **Summary** –

- The non-site specific nature of the options make it challenging to make conclusions about their relationship with opportunity zones identified through the wider GI Mapping project.
- Each spatial option offers different opportunities and potential risks in terms of GI; no one single option clearly performs better than the other.
- The **minimum growth level option** potentially provides more scope to locate development to minimise impacts on existing assets, or to focus development to where the greatest opportunities can be achieved.
- The **higher growth level options** reduce flexibility in relation to being able to target the location of development in this way and will result in greater landtake. On the other hand, development can provide opportunities such as new areas of GI for recreation or habitat provision.

Habitat Regulations Assessment (HRA)

5.3.8 **Study aims** – The purpose of the Greater Cambridge Local Plan strategic spatial options assessment: Habitats Regulations Assessment (reference document 8) is to undertake a high-level review of the likely impacts of the strategic spatial options. HRA refers to the assessment of the potential effects of a development plan on one or more European sites, including Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and Ramsar sites. It is a requirement under the Conservation of Habitats and Species Regulations 2017 for the Council undertake an HRA to ensure that the development plan does not adversely affect the integrity of any European site.

5.3.9 **Study status** – The study report is not a formal HRA, but has used the principles of the HRA process to assess the spatial options. It forms part of a wider HRA process which began in 2019 with the production of the HRA Scoping Report of the Greater Cambridge Local Plan Issues and Options 2020, which identified European sites with potential to be affected by the Local Plan. Subsequent stages of plan making will be subject to HRA.

5.3.10 **High level methodology** – For all spatial options, the following potential effects on designated sites were assessed: physical damage and loss (offsite); non-physical disturbance; non-toxic contamination; air pollution; water quantity and quality. The report notes that due to the high-level nature of the options presented at this stage, there are no site-specific boundaries provided. Therefore, in line with a precautionary approach, where there is any uncertainty in relation to potential impacts to a European site an adverse

impact was assumed at this stage. This report draws on the findings of the HRA Scoping Report to determine the impacts of each strategic spatial option.

5.3.11 **Key findings** – The review identifies a range of potential impacts for each option with regard to individual protected sites. Although, there are a greater number of potential impacts identified in relation to some options compared to others, it cannot be assumed that these options will result in a greater level impact overall. This will be dependent on the level of risk and severity of impact to each European site, which will be assessed in more detail as part of the HRA.

5.3.12 This should not, however, be seen as negative with regard to particular options highlighted in the report. It is to be expected that as options are worked up further, potential impacts identified for the strategic options identified at this stage will be refined and, where feasible, mitigation identified. The HRA assessment will be informed by relevant evidence base documents, including traffic modelling data, air quality modelling and water cycle study where required.

5.4 Wellbeing and Social Inclusion

Equalities Impact Assessment

5.4.1 **Study aims** – An Equalities Impact Assessment (EqIA) is a statutory requirement for the Local Plan. It provides an important opportunity to draw out the potential effects of the spatial options on different parts of the community, particularly those with 'protected characteristics' (age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex, and sexual orientation). The Sustainability Appraisal also consider equalities issues.

5.4.2 **Study status** – An EqIA has been and will be carried out for each Local Plan stage, and has been completed for this stage: Greater Cambridge Local Plan strategic spatial options assessment: Equality Impact Assessment (EqIA) (reference document 9).

5.4.3 **High level methodology** – EqIAs provide a methodical approach to the assessment of impacts across the nine protected characteristics. It is undertaken by way of a structured, standardised questionnaire that seeks to assess the implications of the particular policy, strategy, procedure, project or function.

5.4.4 **Key findings** – Additional growth, regardless of the quantum, should bring with it a wider variety of jobs and houses. The Local Plan can include policies

to ensure a mix of jobs as well as house types, sizes and affordability, including a proportion of adaptable (lifetime) houses, tailored to the identified local housing needs. Growth would also bring additional infrastructure as well as services and facilities, including education, health, open space, recreation, and other community uses with the intention of creating balanced communities.

5.4.5 Future development will need to address its own impacts to be acceptable in planning terms. Dependent upon the scale of growth and the potential demand it would generate, this could mean providing additional capacity within existing facilities and services, or provision of additional new facilities. A larger scale development is more likely to include new on-site facilities, whereas smaller developments may expand existing facilities, where it is possible to do so.

5.4.6 **Testing outcomes for growth level options** – There is no specific testing of different growth levels undertaken in the EqIA.

5.4.7 **Testing outcomes for spatial options** – The following overview is provided of the effects of the spatial options:

5.4.8 **Options 1, 2 and 3 (Densification of urban area and edge of Cambridge options)** - Growth focussed in or around urban areas, particularly Cambridge as the largest settlement, has the greatest potential to provide more people with access by a range of sustainable modes of travel. These options could be more inclusive to more people as Cambridge has the broadest range of services and facilities, and the focus for many jobs. However, reliance on public transport may not be an affordable choice for people on low incomes, particularly young and old.

5.4.9 **Option 4 (New settlements)** - New settlements, depending on their size, can be planned to be insular by co-locating and providing a broad range of jobs, houses and facilities and services (including healthcare). If designed around the principles of walkable neighbourhoods with these can be readily accessible within a short distance by walking and cycling, the cheapest and most inclusive modes of travel. However, reliance on public transport may not be an affordable choice for people on low incomes, particularly young and old. New settlements could act as a local hub for surrounding smaller communities, to avoid the need to travel longer distances to market towns or Cambridge for all their needs, provided access issues could be overcome.

5.4.10 **Option 5 (Dispersal to villages)** - Villages are, by their nature, smaller settlements with less services and facilities available, residents in smaller villages need to travel elsewhere to meet their day to day needs. Unless

villages are located close to, or on one of the radial routes into, Cambridge the choice of travel options may be limited and/or costly. This could negatively impact younger and older people who are unable to drive or own a car.

5.4.11 **Options 6 and 8 (Public transport corridors and expanding a growth area around transport nodes (western cluster))** - Radial routes into Cambridge are the main transport corridors and the focus for future infrastructure improvements, including public transport (and transport nodes), which should improve the non-car mode options for people living on or close to these corridors. However, reliance on public transport may not be an affordable choice for people on low incomes, particularly young and old.

5.4.12 **Option 7 (Supporting a high-tech corridor by integrating homes and jobs (southern cluster)** - Supporting homes in the technology corridor would help to integrate homes with jobs to redress the imbalance and significantly reduce the need and distances travelled by employees. This option would need to be considered in conjunction with other options as it would only address some aspects of the local housing need. This option would largely benefit people of working age, although it would benefit people who have mobility issues to live closer to their place of work and avoid having to overcome transport issues.

5.4.13 **Summary** -

- Additional growth, regardless of the quantum, should bring with it a wider variety of jobs and houses.
- Growth would also bring additional infrastructure as well as services and facilities, including education, health, open space, recreation, and other community uses with the intention of creating balanced communities.
- A larger scale development is more likely to include new on-site facilities, whereas smaller developments may expand existing facilities, where it is possible to do so.
- Access to jobs, services and facilities by sustainable, accessible transport is a key consideration with regard to spatial options and choices.

5.5 Great Places

Landscape and Townscape Character Assessment

5.5.1 **Study aims** – The appraisal of the strategic options set out in the 'Greater Cambridge Local Plan strategic spatial options assessment: Landscape and Townscape' report (reference document 10) is based on the interim draft

findings of the Landscape Character Assessment, which is a work in progress.

5.5.2 **Study status** – The conclusions of the options appraisal study are preliminary and will need to be verified once the Landscape Character Assessment is complete (expected December 2020).

5.5.3 It should be noted that the Councils have also commissioned a Strategic Heritage Impact Assessment. This will investigate further the potential impact of spatial options on historic environment in terms of conserving and enhancing the distinctiveness of the historic city, its approaches and its landscape context, including its heritage assets. It will also consider the impact of taller buildings. This study has yet to be completed.

5.5.4 **High level methodology** – Taking into account the interim draft findings of the emerging Landscape Character Assessment study where appropriate, the consultants have undertaken a high level comparative review of the potential landscape and townscape character considerations of the strategic spatial options and growth level options that are being tested as part of the Greater Cambridge Local Plan process. Where appropriate, the analysis identifies the draft Landscape Character Types that provide the landscape setting and context for each of the strategic spatial options and summarises the key sensitivities of the landscape from the interim draft Landscape Character Assessment.

5.5.5 **Key findings** –

- Overall, all of the strategic spatial options and growth level options would result in changes, both negative and positive, in terms of conserving and enhancing the character of Greater Cambridge's landscapes and townscapes, maintaining local distinctiveness and strengthening sense of place.
- The Fens, Chalk Hills and River Valleys have sensitive landscape characteristics that are likely to be particularly vulnerable/susceptible to urban development. This may present constraints for higher growth levels associated with spatial options in these landscapes.
- The smaller historic villages and their landscape settings have sensitive townscape/landscape characteristics that are likely to be particularly vulnerable to change. This may present constraints for higher growth levels associated with spatial options focused on the dispersal of growth to existing villages.
- The historic townscape character and landscape setting of Cambridge is particularly vulnerable to change. This may present constraints for higher growth levels associated with spatial options focused on densification of the city and the edge of Cambridge.

5.5.6 **Testing outcomes for growth level options** – The particular differences between different levels of growth are set out in relation to each of the spatial options in the report. To avoid repetition these are set out in the following section of this report under each of the spatial options.

5.5.7 **Testing outcomes for spatial options** – The following are broad summaries of the potential effects of each of the eight spatial options:

5.5.8 **Option 1 (Densification of existing urban areas)** - By focusing on the use of brownfield land to accommodate growth, this spatial option would have more limited impacts on the wider Greater Cambridge landscape considered as a whole, compared to other spatial options involving supply focussing on greenfield land. A key consideration of this option is the capacity of existing urban areas to accommodate growth on previously developed brownfield land without weakening distinctive local townscape characteristics/features, and potential changes to key views and the landscape setting of the city experienced in approaches to and from Cambridge, particularly where tall buildings are proposed associated with densification. The study notes that a Strategic Heritage Impact Assessment study has been commissioned by the Councils that will look further at impacts on historic townscape character and views.

5.5.9 **Option 2 (Focus on Edge of Cambridge - outside Green Belt)** -
Due to the open character of the Fen Edge Chalklands landscape context for Cambridge Airport, it is likely that the new urban edge would be a prominent feature in the landscape and require provision of appropriate strategic landscape mitigation and enhancement measures. By focusing predominantly on the use of brownfield land to accommodate growth, this option is likely to result in more limited changes that may harm distinctive local landscape characteristics/features that are particularly vulnerable to changes from built development compared to the medium and maximum growth levels, which involve additional supply focussing on greenfield land.

5.5.10 **Option 3 (Focus on Edge of Cambridge - Green Belt)** - Use of greenfield land on the edge of the Cambridge Urban Area could result in landscape changes that would alter the setting of the city, particularly in relation to the historic core.

5.5.11 In general terms, the Fens (to the north-east and east), the Cam River Valley to the north-east and south-west), the eastern part of the Western Claylands and Lowland Claylands (to the west) and the Gog Magog Chalk Hills (to the south) have sensitive landscape characteristics that are likely to be particularly vulnerable/susceptible to changes from major urban extensions

than other landscape types around the edge of Cambridge. As they include additional sources of supply on greenfield land, the medium and maximum growth opions are likely to have greater impacts on the wider landscape setting of Cambridge – including potentially on key views of the City (such as from the Gog Magog Hills and Wimpole Ridge) and from an increased sense of coalescence with the necklace of rural villages surrounding Cambridge.

5.5.12 **Option 4 (New settlements)** - In general terms, the Fens, River Valley and Chalk Hills have sensitive landscape characteristics that are likely to be more vulnerable/susceptible to changes from new settlements than other landscape types within Greater Cambridge. By focussing on new settlements to accommodate growth, this spatial option provides opportunities for high quality and distinctive housing design that is responsive to local character and creates a strong sense of place through a comprehensive masterplanning process based on 21st century settlement planning principles (including sustainable building and urban design, landscaping and green infrastructure provision).

5.5.13 **Option 5 (Dispersal – villages)** - In general terms, the smaller villages dominated by historic cores with distinctive landscape settings have sensitive townscape/landscape characteristics that are likely to be more vulnerable/susceptible to changes from growth than, typically, the larger villages within Greater Cambridge where their character is dominated by 20th/21st Century peripheral estate development.

5.5.14 **Option 6 (Public transport corridors)** - Focusing new settlement along existing public transport corridors would be likely to concentrate the urbanising impact upon the rural character of the Greater Cambridge landscape. Expansion of existing villages could result in the coalescence of settlements along the public transport corridors. The provision of appropriate strategic landscape mitigation and enhancement measures for integrating new settlements and growth on greenfield land around the edges of villages into the surrounding countryside would be a key policy consideration for the new Local Plan.

5.5.15 **Option 7: Supporting a High-tech corridor by integrating homes and jobs (southern cluster)** - In general terms, the River Valley and Chalk Hills have sensitive landscape characteristics that are likely to be more vulnerable/susceptible to changes from development focussed on the southern cluster than the Lowland Claylands landscape type within this part of Greater Cambridge. Focusing growth in a single location would reduce landscape changes across the wider Greater Cambridge landscape. However, it could lead to adverse impacts upon distinctive, local landscape characteristics and features.

5.5.16 **Option 8: Expanding a growth area around transport nodes (western cluster)** - In general terms, the Wooded Claylands landscape type is considered to offer potential opportunities to accommodate growth focussing on the expansion of Cambourne along the A428 public transport to the west of Cambridge.

5.5.17 **Summary** –

- The strategic spatial options and growth level options would result in changes, both negative and positive, in terms of conserving and enhancing the character of Greater Cambridge's landscapes and townscapes.
- The Fens, Chalk Hills and River Valleys have sensitive landscape characteristics that are likely to be particularly vulnerable/susceptible to urban development.
- The city of Cambridge and the smaller historic villages and their landscape settings have sensitive townscape/landscape characteristics that are likely to be particularly vulnerable to change.
- These facts may present constraints for higher growth level options associated with spatial options in these landscapes.

5.6 Homes

Housing Delivery Study

5.6.1 **Study aims** – Consultants are undertaking research on housing delivery to provide evidence to support the emerging Greater Cambridge Local Plan, and to feed in to the Housing and Economic Land Availability Assessment (HELAA) process and updates to the Greater Cambridge housing trajectory. The Greater Cambridge Local Plan strategic spatial options assessment: Housing Delivery Study – Interim Findings report (reference document 11) provides the preliminary views of the consultant team drawing on research to date and providing professional judgements on the emerging three growth level options for homes and jobs and eight strategic spatial options.

5.6.2 **Study status** – The study presents interim findings and a commentary on the strategic options, which will be developed further in a final report.

5.6.3 **High level methodology** – The Housing Delivery Study commenced in August 2020; to date a literature review of relevant secondary sources and initial analysis of data has been conducted, alongside the distribution of a questionnaire sent to local and national stakeholders involved in the housing and development industry and drawn from the private, public and third sectors (550 consultees). A series of workshops and one to one interviews are

scheduled to take place in November 2020 with key stakeholders (individuals or organisations with an in-depth knowledge of the housing market and development industry).

5.6.4 The Interim Findings report uses the Councils' existing assumptions of build out rates and lead-in times for estimating housing trajectories and calculating five-year housing land supply positions at plan adoption (assumed to be 1st April 2025 for the purposes of the report). Housing trajectories have been prepared to assess housing deliverability over the plan period of each of the spatial options at the different growth levels. The final report will revisit the spatial options using updated lead-in times and build-out rate assumptions based on desktop research of comparator locations and engagement with developers and agents in the local market.

5.6.5 The Interim Findings Report assumes that annual housing delivery needs to be phased such that it matches the annual housing requirement throughout the plan period – this will be given further consideration as both the study and plan making are progressed. The interim findings report also calculates five year housing land supply based on delivery from existing supply as well as the additional locations for growth as set out for each option.

5.6.6 **Key findings** – These are set out below with regard to the growth and spatial options.

5.6.7 **Testing outcomes for growth level options** – The conclusions at this stage on the housing growth options (across all eight spatial options) are:

5.6.8 **The minimum growth level option (1,743 dwellings per annum, or dpa)** is largely met by existing commitments and the windfall allowance; however the supply is front-loaded before 2031, the end date of the existing 2018 Local Plans. As a result, additional supply is needed after 2031 to sustain delivery and to ensure a sufficient buffer to enable the delivery of the housing requirement (additional sites are needed post 2031 to deliver approximately 400-500 dpa).

5.6.9 **The medium growth level option (1,996 dpa)** requires a relatively small amount of additional supply from around 2028/29 onwards to provide a five-year housing land supply at plan adoption, and significantly more supply is needed from 2033/34 onwards (additional sites are needed post 2033/34 to deliver around 750 dpa).

5.6.10 **The maximum growth level option (2,711 dpa)** requires significant additional supply, alongside the existing commitments and windfall allowance. In this option the Councils would begin the plan period (from 2020/21) with a

shortfall in housing supply due to the significant increase in annual housing requirement compared to the annual requirement of 1,675 dwellings in the adopted 2018 Local Plans, an increase of 62%. When compared with the historical average delivery rate observed in Greater Cambridge between 2002/03 and 2018/19 of 1,439 dpa, the increase is higher at 88%. The preparation of a new local plan that involves an significant uplift in the annual housing figure inevitably results in a delay to delivering at that higher rate while the plan is being prepared and examined, incorporating additional allocations that will enable delivery of the higher figure, inherently creating a shortfall at the time of adoption. The scale of the shortfall created by the significantly higher annual housing requirement results in a challenging five-year housing land supply requirement. The Councils would therefore need to pursue either a stepped annual housing requirement over the plan period or the use of the Liverpool method for calculating their five year supply for the majority of the spatial options to be able to demonstrate a five year housing land supply at plan adoption. However, the use of a stepped annual housing requirement figure for a maximum growth level, that is significantly higher than historic delivery levels, brings into play market absorption issues and a risk that the local market is unable to absorb such a number of new dwellings.

5.6.11 The assumption used by the Councils under all of the **maximum spatial options** is that the historic build out rate in Greater Cambridge would need to be increased at strategic sites (500dpa, rather than the 250dpa agreed during the last Examination in Public) to enable sustainable choices for the distribution of growth to be made. The report concludes that based on initial research average build out rates in excess of 300 dwellings per annum (dpa) will only be possible with significant interventions and/or alternative delivery models.

5.6.12 Based on the interim findings to date, the conclusion is that none of **the eight spatial options at maximum growth levels** are likely to be deliverable in practice based on current market conditions and the UK housing market's traditional routes to delivery. However, a higher annual housing requirement than the **medium option** may be achievable, but it is not possible to advise on what level of growth may be deliverable at this stage in advance of more detailed testing and engagement with the development industry.

5.6.13 The relationship between jobs growth and housing has a significant bearing on delivery rates. The rate of jobs growth and the locations where the jobs growth is taking place will significantly affect the demand for housing in terms of timing and location. The **medium and maximum options** are jobs-led options and the housing supply would be significantly higher than household growth, and therefore the additional housing would be filled by in-migrants moving to the area, the majority of which would be for employment reasons.

In order to expand housing supply beyond current delivery levels, the Councils need to consider what range of homes would be attractive to in-migrants to Greater Cambridge, and try to match the new housing supply with the demand.

5.6.14 **Testing outcomes for spatial options** – The interim findings of the pros and cons of each of the spatial options are set out below.

5.6.15 **Option 1 (Densification of existing urban areas)** – Housing would be provided close to employment and the established Cambridge housing market may allow high build out rates. Option 1 would provide a mix of home ownership, affordable housing, private rented supply and specialist housing; and deliver sufficient small sites and a five year housing land supply at plan adoption. However, there is already a high percentage of new builds within the Cambridge housing market, which may limit the ability to expand the market, and the likely number of smaller units would not meet market demand for a housing mix. There may be a risk to relying on delivery from North East Cambridge during the middle part of the plan period subject to progress in the process to relocate the Cambridge Wastewater Treatment Plant.

5.6.16 **Option 2 (Focus on Edge of Cambridge - outside Green Belt)** – Close proximity between employment locations and homes and will provide a mix of home ownership, affordable housing, self/custom build housing and specialist housing. But unlikely to be able to deliver sufficient small sites and there may be a risk to relying on delivery from Cambridge East during the middle part of the plan period, notwithstanding that Marshall recently confirmed to the Councils its commitment to relocate and advises that it has a signed option agreement at Cranfield Airport, Bedford.

5.6.17 **Option 3 (Focus on Edge of Cambridge - Green Belt)** – Close proximity between employment locations and homes and will provide a mix of home ownership, affordable housing, self/custom build housing and specialist housing. However, the sites are likely to be delivering concurrently, competing with one another and reducing market absorption. This option is unlikely to be able to deliver sufficient small sites.

5.6.18 **Option 4 (New settlements)** – Provides opportunities to deliver new housing at scale in the mid to latter parts of the plan period. Ability to provide a mix of home ownership, affordable housing, self/custom build housing and specialist housing. There could be competition with existing committed new settlements, and this may result in a reduction in the build out rates. Unlikely to be able to deliver sufficient small sites.

5.6.19 **Option 5 (Dispersal – villages)** – Would provide a wider choice of housing in the market in terms of both size and location, and therefore would maximise the market absorption rate. Greater potential to deliver sufficient small sites and able to demonstrate a five year housing land supply at adoption of the plan. However, likely to result in short-medium term supply, therefore not adding to supply later in the plan period. Less likely to deliver affordable housing. Fewer smaller dwellings and apartments are likely to be delivered, limiting overall delivery rates. Smaller sites are unlikely to deliver private rented supply, including build to rent.

5.6.20 **Option 6 (Public transport corridors)** – Good commuting relationship between jobs and homes provides opportunities for higher density, build to rent and affordable housing. Likely to deliver sufficient small sites at villages in the medium and maximum growth levels. There may be a risk to relying on delivery from North East Cambridge during the middle part of the plan period subject to progress in the process to relocate the Cambridge Wastewater Treatment Plant.

5.6.21 **Option 7: Supporting a High-tech corridor by integrating homes and jobs (southern cluster)** – Good commuting relationship between jobs and homes provides opportunities for higher density, build to rent and affordable housing. Focus on the south of Cambridge will reduce competition with the committed new settlements to the north and west of the city. Will deliver small sites in villages. However, relies on the performance of high-tech sectors of the economy in this location and demand for homes tied to this.

5.6.22 **Option 8: Expanding a growth area around transport nodes (western cluster)** – Good commuting relationship between jobs and homes provides opportunities for higher density, build to rent and affordable housing. Will deliver small sites in villages. The lead-in times for strategic transport infrastructure such as East-West Rail and the Cambridge Autonomous Metro may delay housing delivery until after the infrastructure is operational. Expanding Cambourne and focussing development along the A428 could result in competition between sites, affecting market absorption and build out rates.

5.6.23 **Summary** –

- Average build out rates in excess of 300 dwellings per annum will only be possible with significant interventions and/or alternative delivery models.
- None of the **eight maximum spatial options** are deliverable in practice based on current market conditions and approaches to delivery.

- The relationship between jobs growth and housing has a significant bearing on delivery rates, particularly for the **medium and maximum growth level options**.
- **All spatial options** have pros and cons associated with them.
- Options that mix short-medium term sources of supply (smaller sites in urban areas and villages) with longer-term sources (new settlements, urban extensions and Green Belt release) are better-able to deliver across the plan period.

5.7 Jobs

Employment Land Review – consideration of options

5.7.1 **Study aims** – The 'Greater Cambridge Employment Land Review and Economic Evidence Base Study' (the ELR) (reference document 2) provides the background to the options assessment. This study reviewed the economic development and employment land needs of the Greater Cambridge area. It provides the evidence for future employment floorspace needs in terms of type, amount and some of the locational implications.

5.7.2 The 'Greater Cambridge Local Plan Strategic Spatial Options Appraisal: Employment' (reference document 12) considers the implications of the growth and spatial options arising from the amount and type of employment land that would be needed in different locations, taking account of the substantial committed employment land supply.

5.7.2 **Study status** – The ELR is published alongside this report. However, it may need to be revisited during plan making, particular to monitor the impacts of Covid19.

5.7.3 **High level methodology** – In assessing the levels of employment growth, the report draws on the wider ELR which takes into account the demand supply balance of various floorspace types as well as qualitative findings relating to business clusters.

5.7.4 In assessing spatial options from an employment perspective the following have been considered:

- Labour force accessibility, availability and proximity
- Suitability for future economic growth sector land uses
- Proximity to existing clusters
- Deliverability / market response

5.7.5 **Key findings** – The Employment Land Review explores the supply and demand for employment space in the Greater Cambridge area. It applies a range of methods, including the forecasts referenced earlier in this report, to consider the amount and type of floorspace needed in the area during the plan period. It reviews in detail the existing supply commitments, and considers whether they will meet the demand identified.

5.7.6 It makes quantitative and qualitative recommendations, to provide a flexible supply, which encourages business growth and inward investment, and aligns with market feedback and past completions trends.

5.7.7 Taking account of the amount and type of the committed land supply, it identifies an expected shortfall in B1a/b provision (offices and R&D) in the region of 50,000 to 100,000m^2 when compared to its recommendations. Given the commonalities between offices and dry labs, the market feedback is that further accommodation of this type is lacking in the city and around North East Cambridge. It is recommended, therefore, that further allocations are made to accommodate both office and wet/dry lab needs in Greater Cambridge. For B8 light industrial and warehouse uses, there is an assessed under supply of leading to a recommendation that suitable locations should be identified for small and mid-sized light industrial and distribution units.

5.7.8 **Testing outcomes for growth level options** – The ELR makes specific recommendations regarding quantitative and qualitative employment land and floorspace provision for the new Local Plan in order to provide a flexible supply, responding to the range of issues discussed above. However, looking directly at the modelled amount and type of employment land needed to support the number of jobs in each growth level option:

- **Minimum growth** – the current level of employment commitments in the Greater Cambridge land supply would provide enough B1 employment land (offices, research & development (R&D) and industrial). However, there would be a shortfall in industrial and warehousing needs.
- **Medium growth** – the current level of employment commitments would provide enough B1ab employment land (offices and R&D), if the mixed B1 components include a sufficient amount of R&D floorspace in particular. There would, however, be a shortfall in industrial and warehousing needs.
- **Maximum growth** - the current level of employment commitments are not considered to provide a sufficient amount of B1b land (R&D). Based on market feedback, additional B1a premises (offices) are also required. There would be a shortfall in industrial and warehousing needs.

5.7.9 **Testing outcomes for spatial options** – There are different implications for each level of growth across the spatial options; these are summarised below. Detailed findings with regard to employment issues (labour force, suitability for future economic growth sector land uses, proximity to existing clusters and deliverability/market response) are included against each spatial option in section 6 of this report.

5.7.10 Under the **minimum growth level option** the office and laboratory requirements are largely met through existing supply. For industrial and warehousing needs, spatial options 3 (edge of Cambridge Green Belt), 4 (new settlements), 6 public transport corridors), 7 (supporting a high-tech corridor by integrating homes and jobs) and 8 (expanding a growth area around transport nodes) are likely to be suitable as larger areas of land will be available to meet floorspace requirements.

5.7.11 Under the **medium growth level option** again the office and lab requirements are largely met through existing supply. However, for offices the supply would only just exceed forecast needs. Options 1 (densification of urban area) or 2 (edge of Cambridge outside Green Belt) would best serve some further provision of B1a/b space (offices and R&D) given proximity to the city's existing professional services cluster concentration; although any option (except 5, village dispersal) could reasonably deliver additional floorspace. Under the medium growth option, B1b lower density labs would also largely have its floorspace requirements fulfilled by current supply although further allocations could be considered under spatial options 3 (edge of Cambridge Green Belt), 4 (new settlements), 6 public transport corridors), 7 (supporting a high-tech corridor by integrating homes and jobs) and 8 (expanding a growth area around transport nodes) where space is available. For industrial and warehousing needs, these same spatial options are likely to be suitable as larger areas of land will be available to meet floorspace requirements.

5.7.12 Under the **maximum growth level option** options 1 (densification of urban area) or 2 (edge of Cambridge outside Green Belt) would best serve a more substantial provision of further B1a office space meeting demand, given proximity to the city's existing professional services cluster concentration. It is possible that other options (except 5, village dispersal) could also reasonably deliver additional floorspace. B1b lower density labs need further supply which could be considered under spatial options 3 (edge of Cambridge Green Belt), 4 (new settlements), 6 public transport corridors), 7 (supporting a high-tech corridor by integrating homes and jobs) and 8 (expanding a growth area around transport nodes)where space is available. For industrial and

warehousing needs, these same spatial options are likely to be suitable as larger areas of land will be available to meet floorspace requirements.

5.7.13 The report also notes the general requirement to identify suitable locations for small and mid-sized light industrial and distribution units. Also, there is a challenge involved in spreading employment growth away from Cambridge without an institutional investor (this is noted as one of the success factors for the various research parks to the south of Cambridge). This challenge would impact on the more dispersed options, including 4 (new settlements), 5 (villages) and potentially 6 (public transport corridors).

5.7.14 **Summary** –

- Although there is a good stock of existing commitments, in order to provide a flexible supply of employment land which encourages business growth and inward investment, and aligns with market feedback and past completions trends, further supply is needed in relation to B1a/b (offices and R&D) and industrial and warehousing.
- Under the minimum and medium growth level options the office and laboratory requirements are largely met through existing supply. Greater flexibility would be required across employment uses under the maximum growth level option.
- The spatial options present a range of opportunities and challenges with regard to various employment criteria, which are reported in section 6 of this report.

5.8 Infrastructure

Transport evidence

5.8.1 **Study aims** – Cambridgeshire County Council Transport Policy Infrastructure and Funding Team has produced a 'Greater Cambridge Local Plan Existing Transport Conditions Report' (reference document 13) that provides evidence of current transport conditions as a basis for modelling the effects of future growth on transport outcomes, the results of which are set out in a separate 'Greater Cambridge Local Plan Transport Evidence Report' (reference document 14). This report provides an assessment of the transport effects of the growth and spatial options.

5.8.2 **Study status** – Further iterations of the Transport Evidence Report will be completed to inform selection of a preferred option including allocations.

5.8.3 **High level methodology** – The tests undertaken in the initial phase of the modelling assume that the level of additional development is that included in

the **maximum growth level option**. This provides an understanding of the greatest impacts on the network by the end of the plan period and in terms of how people will travel and gives a comparison of the impacts of each spatial option on the transport networks within the Greater Cambridge area.

5.8.4 The baseline of current transport conditions include a range of committed transport infrastructure schemes for which completion can be assumed by 2041. A range of sensitivity tests are being carried out, but are not included in this report. Sensitivity tests include testing of minimum and medium growth level options, as well as the overall impacts of major new developments once complete, in cases where they would build out well beyond the end of the plan period. There will also be sensitivity runs including the Cambridgeshire Autonomous Metro and East West Rail, which are not included in the baseline given their current status, but if delivered would be expected to bring significant benefits. Beyond the committed transport schemes referred to above, at this point no option-specific mitigation measures are included in the modelling.

5.8.5 The report considers the model outputs for the total number of trips and the mode shares seen in the model for each of the spatial options. The mode shares relate to the change in active travel (walking and cycling), in public transport use and car journeys. The model also enables the scale of impact on the road network to be assessed. This includes travel distance - how far is being driven in total; travel time - the time spent driving; and the changes in travel delays.

5.8.6 **Key findings** – The tests undertaken to date indicate that all of the spatial options see changes in the mode shares of trips with the majority of the spatial options seeing an increase in the use of active modes for journeys in all the time periods modelled, when compared with the 2041 Baseline (which reflects committed development in permissions and allocations; this is despite the fact that there is no additional mitigation included in these tests over that included in the Baseline.

5.8.7 The highway model results indicate increases in the numbers of vehicle trips as indicated by the increase in the number of vehicle kilometres travelled, as well as increases in the time taken and the level of delays recorded. All of the spatial options show an increase in the number of trips, the time taken and the delays, but as previously stated none of these tests include any specific mitigation over that in the Baseline. The results indicate that all of the spatial options will require additional mitigation to be introduced over that already assumed in the model, but the testing done to date does not indicate that any of the spatial options is likely to be undeliverable. However, it is possible that

the required level of mitigation for option 5 villages might make mean that this option would not be viable.

5.8.8 Going forward there will need to be further assessment of the spatial options to assess the range of mitigation that might be required for each of the options, and the differences that occur depending on the location of the sites within any spatial option.

5.8.9 **Testing outcomes for growth level options** – As already noted, the testing of the eight spatial options assumes the maximum growth level option. The other two growth level options will, however, be the subject of sensitivity tests to assess the transport impacts.

5.8.10 **Testing outcomes for spatial options** – The Strategic Spatial Options are assessed against a consistent set of transport tests, concerning mode share and time, distance and delays for all journeys. The results have been combined to give an overall assessment of each option.

Best performing Options

5.8.11 Overall, the Best Performing options were Options 1 - Densification and 7 - Integrating homes and jobs.

5.8.12 Option 1 - Densification performs best consistently over all transport metrics, with the highest non- car mode share together with the lowest distance travelled, time travelled and delay. The projected mode share of 57.6% by non-car modes suggests that the level of additional mitigation for this option will be reasonable and in keeping with the scale of development assumed and therefore is likely to be deliverable.

5.8.13 Option 7 Integrating homes and jobs was shown to have a non-car mode share of just 45.9% and therefore this option was in the medium performing category for mode share. However, the highway metrics of travel distance, time and delay indicate that this option performs very well with low levels of additional travel distance, time and delay, meaning that the co-location of homes and jobs leads to reduced impacts on the highway network compared to many of the other options tested. The results indicate that this option would require more mitigation than option 1. The focus of this mitigation should be on increasing the share of trips made by non-car modes if this option were taken forward.

5.8.14 In conclusion, it is possible to say that both of these options could be made to work if the right package of mitigation were brought forward and the level of mitigation likely to be required would be in keeping with the scale of the development proposed.

Medium Performing Options

5.8.15 Of the remaining options all but one indicated that they would generate lower non-car mode shares than Option 1 - Densification. However, when looking at the proportion of this mode share that utilises active modes, the mode share of the following Options 2 Edge - non-GB, Option 3 Edge – GB, Option 4 New Settlements, Option 6 PT Corridors, Option 8 Expanded Growth Areas were all shown to be higher than the 2041 Baseline. All of these options were shown to generate more distance travelled, travel time and delay than the best performing options above, but it is still considered possible to mitigate the impact of these spatial options on the transport networks. The level of mitigation required for these options, whilst being greater than for either of the best performing options, is still considered to be in keeping with the scale of development within these options and therefore, should be deliverable.

Poorly Performing Options

5.8.16 The only option shown to generate a lower active travel mode share than the 2041 Baseline is Option 5 Villages. This option was shown to have the largest car mode share of all the options tested, and was also shown to lead to the largest increase in vehicle kilometres, travel time and delay. Having said this, it would be possible to mitigate the impact seen but it is possible that the scale of mitigation required might render the development sites within this option unviable.

5.8.17 **Summary** -

- The transport tests, concerning mode share and time, distance and delays for all journeys indicate that Options 1 and 7 (Densification and Integrating homes and jobs) are the best performing options
- All the spatial options could be mitigated, if the right package of measures were put in place. However, for Option 5 (Villages) required might render the development sites within this option unviable.

Infrastructure Study

5.8.18 **Study aims** – The ‘Infrastructure Delivery Plan - Greater Cambridge Local Plan strategic spatial options assessment’ (reference document 15) provides analysis of the strategic infrastructure required to support growth at the broad locations included in the spatial options.

5.8.19 **Study status** –The study report is draft final, but may be subject to further scrutiny and feedback.

5.8.20 **High level methodology** – The significant potential infrastructure constraints and opportunities are identified, and a conclusion is reached about the risks associated with them and whether some of the strategic options may be more able to support infrastructure delivery than others. The report addresses the following infrastructure requirements: transport, social and community infrastructure, green infrastructure, sports and leisure, and utilities.

5.8.21 **Key findings** – Higher levels of growth are likely to place greater demands on existing and new infrastructure. The eight spatial options have different implications for infrastructure use and provision. The Infrastructure Delivery Plan will ultimately identify the additional infrastructure that will be required to support the planned level of growth and the chosen spatial strategy, and that work will need to consider the existing 'baseline' position and all infrastructure already in the pipeline, effectively 'netting' existing and committed capacity off from the 'balance to find'.

5.8.22 **Testing outcomes for growth level options** – The infrastructure study concludes that **minimum growth levels** in most of the spatial options can be supported through existing and planned transport infrastructure. However, it is likely that additional transport infrastructure will be required specific to the sites eventually identified. The **maximum growth levels** to 2041 and beyond, together with the associated higher delivery rates, will require big-ticket infrastructure items, such as the CAM, as well as other projects related to the potential Green Belt sites and new settlements.

5.8.23 There is currently uncertainty about the delivery of these items, and this will need to be achieved if these **growth levels and spatial options** are pursued. For both the **maximum and medium options**, capacity enhancements to existing transport infrastructure are likely to be required to realise the growth around Cambourne.

5.8.24 Social and community infrastructure requirements are directly related to population growth and consequently the higher growth level options generate the need for a considerable number of new educational, primary health care, community and library facilities to be provided.

5.8.25 The **maximum growth level option** generates significant requirements for open space and sports provision, which in terms of the outdoor provision, will be very challenging to deliver the full 'space requirement' in compliance with standards. As such, to achieve the maximum options, a radically different way of delivering and using open space is likely to be required. Provision of green infrastructure, open space and sports provision in this manner is likely to result in proportionately greater costs than the traditional methods, which may affect viability.

5.8.26 **Testing outcomes for spatial options** – The following overarching conclusions are drawn with regard to the spatial options. More detailed findings for each spatial option are included in section 6 of this report, below.

5.8.27 **Option 1 - Focus on densification of existing urban areas** - this option offers opportunity through the existing network of infrastructure in place, and the much greater opportunities for economies of scale. However, we think much of Cambridge's infrastructure is at or close to capacity and therefore given general space limitations across the City the challenge is in terms of providing the necessary incremental infrastructure improvements. Less of a concern are the standalone brown development sites at the NE Cambridge (all growth levels) and Cambridge Airport (medium and maximum growth) as it is expected that master-planning can ensure that appropriate facilities are provided. Although there are likely to be additional issues associated with brownfield sites, such as decontamination, existing traffic levels and congestion, and removal of the wastewater treatment works at NE Cambridge.

5.8.28 **Option 2 - Focus on edge of Cambridge: outside Green Belt** - this is likely to require new infrastructure to support growth, including decontamination of brownfield land; this may mean that the cost profile of development is weighted to the early part of the plan period and could present financing issues and also that completions remain low in early years.

5.8.29 **Option 3 - Focus on edge of Cambridge: within the Green Belt** - as with Option 2, we anticipate similar cost profiling and slow delivery issues. However, in addition to Option 2, we expect that the transport costs associated with delivering public transport improvements will be greater given the reduced connection with existing urban areas.

5.8.30 **Option 4 - Focus on new settlements** - all levels of growth focus development on enhanced public transport corridors; this has benefits in terms of ensuring more sustainable development, particularly in the higher growth level options which come with greater critical mass. Depending on the distribution of growth adopted, this could provide the necessary critical mass around new transport nodes required to fund those improvements. However, as identified above, there are high upfront costs as much of the infrastructure will be needed in advance or very early in the build-out. All of these issues add substantially to costs.

5.8.31 **Option 5 - Focus on dispersal: villages** - this option will place burdens on existing infrastructure; combined with a dispersed pattern of development, this means that the proportionate cost of infrastructure is likely to be greater as it

is used less intensively or generates the need to travel to remote infrastructure.

5.8.32 **Option 6 - Focus on public transport corridors** - the distribution of growth along public transport corridors which may mean that development can contribute to paying for new public transport infrastructure. However, the distribution of the balance of growth beyond the one new settlement risks giving rise to the inefficiencies identified in Option 5, particularly in relation to social, green and sport and leisure infrastructure.

5.8.33 **Option 7 - Supporting a high-tech corridor by integrating homes and jobs (southern cluster)** - apart from under the minimum level of growth, this option results in dispersed growth across the area, including outside main public transport corridors which might result in a greater infrastructure cost burden. The maximum growth level would mitigate this risk to some extent due to the large scale of the new settlement proposed which provides scope for critical mass and efficiencies.

5.8.34 **Option 8 - Expanding a growth area around transport nodes: focusing growth at Cambourne (western cluster)** - is likely to tie development to the delivery of large-scale transport infrastructure; delays to the delivery of that infrastructure which may be outside the control of the constituent authorities could act as a brake on development

5.8.35 **Summary** –

- Higher levels of growth are likely to place greater demands on existing and new infrastructure.
- The eight spatial options have different implications for infrastructure use and provision.
- The Infrastructure Delivery Plan will ultimately identify the additional infrastructure that will be required to support the planned level of growth and the chosen spatial strategy.

Viability Study

5.8.36 **Study aims** – The 'Greater Cambridge Local Plan strategic spatial options assessment: Viability Assessment' (reference document 16) provides a high-level assessment to give an early indication of whether the strategic spatial options are viable and any differences between them.

5.8.37 **Study status** – The study is draft, subject to further scrutiny and feedback. Further work will be undertaken to assess viability as the plan making process progresses.

5.8.38 **High level methodology** – The study report includes the caveat that as the assessment is not based on site-specific options, the report can only provide a broad analysis of viability. This is done through making assumptions about potential infrastructure and abnormal works required to bring the type and amounts of development identified forward. The viability appraisals include affordable housing (assumed delivered on site) and the costs for biodiversity net gain, water efficiency and infrastructure (which is variable depending on the option). Any surplus value generated could, in principle, fund additional policy costs.

5.8.39 **Key findings** – The residential viability results show that development is viable across **all options** tested, with 40% affordable housing, and there are viability surpluses to fund additional planning policies and/or infrastructure. **All options** produce a significant surplus above the benchmarked land value. However, given the Councils' priorities with regard to climate change and a range of other policy initiatives there are likely to be potentially significant demands on individual developments at site level. Therefore, additional policy costs are likely to be deduced from the surplus.

5.8.40 All employment uses tested are viable, apart from rural office parks, with differing levels of surplus. Rural office parks are only marginally unviable, small changes to rents or investment yield would render this option (Option 5) viable.

5.8.41 As these appraisals are strategic, it has not been possible to include information about site specific constraints (e.g. contamination, flood risk, more complex land values etc.). Also, it has not been possible to customise the development timings; therefore, for those potential sites that require significant upfront infrastructure to unlock the development, viability is likely to decrease than what is shown in this assessment. This is especially true for strategic developments such as new settlements. Once there is a better understanding of these costs and the associated timings viability may decrease in later iterations of the testing, as the preferred approach to the plan emerges.

5.9 Sustainability Appraisal

5.9.1 The Greater Cambridge Local Plan strategic spatial options assessment: Sustainability Appraisal (reference document 17) presents the findings of the assessment of growth and spatial options. Sustainability Appraisal is an iterative process and the report is based on the earlier Sustainability Appraisal scoping work and will be taken forward into the preferred options stage.

5.9.2 It is noted that all options are expected to result in a mix of positive and negative effects, and these will vary according to the growth level option and whether potential effects are considered within the plan period or beyond as well.

5.9.3 With regards to levels of growth, the **minimum growth level option** tends to have the least negative effects, as a lower level of growth is likely to put less pressure on local services and environmental resources. However, the **maximum growth level option** tends to include larger developments, which are likely to have greater scope for providing new services and facilities and for being designed in a way that encourages healthy lifestyles and environmental enhancements.

5.9.4 Options 1 'Densification of existing urban areas', Option 2 'Edge of Cambridge – outside the Green Belt' and Option 3 ‘Edge of Cambridge – Green Belt’ are the best performing options within the plan period. These options will provide growth in and around Cambridge, meaning they are likely to have good access to services, facilities and jobs, as well as supporting the city's economy. In addition, larger developments, such as North East Cambridge, Cambridge Airport and urban extensions are likely to provide new services, facilities and green infrastructure.

5.9.5 Option 5 'Dispersal – villages' performs least well as it is likely to lead to scattered development that is likely to have poorer access to services, facilities and jobs and is unlikely to provide the critical mass of development at any particular location to provide new services and facilities or environmental enhancements.

5.9.6 The majority of remaining options perform less well within the plan period, because larger developments such as new settlements would be only partially complete, but very well when fully built out.

5.9.7 Further consideration of the Sustainability Appraisal implications for each option is provided in the following section.

6. Testing of Strategic Options

6.1 Introduction

6.1.1 This section of the report brings together the main findings from the various topic-based studies and the Sustainability Appraisal for each of the spatial options and growth level options in relation to each. For each spatial option we set out the overall issues, opportunities and challenges and whether there are any particular issues or implications arising with regard to the different growth levels as they apply to that particular option. This provides the basis for the final section of the report, which draws out some of the key findings and issues emerging from the testing of the strategic options overall.

6.1.2 For each spatial option, the findings from the Sustainability Appraisal are reported first, followed by 'opportunities', 'challenges' and 'issues arising from different growth levels', which draw on evidence from the topic-based studies.

6.2 Option 1 - Densification of existing urban areas

6.2.1 This approach would focus new homes and jobs within Cambridge, because it is the main urban area and centre for services and facilities. The primary location for development within the urban area in Option 1 is at North East Cambridge, with other locations focusing on the urban area added as necessary to different growth level options.

6.2.2 The Sustainability Appraisal finds that Option 1 performs well, particularly for the minimum growth level option, as the option for testing includes regeneration of a large brownfield site at North East Cambridge and would result in development very well located to access local services, facilities and jobs and would likely minimise the need to travel by car. Concentrating development in the urban area would also prevent or reduce the need to develop greenfield land, which may be more sensitive in terms of biodiversity and would reduce the need to sterilise mineral resources or high quality agricultural land.

6.2.3 However, this option poses a risk of demand for local services and facilities, including health services and green space, becoming greater than supply. It could also result in development of green space, which would have negative implications for human and environmental health. In addition, it may provide a more limited range of housing types and it would also fail to support rural settlements.

6.2.4 Concerns about pressure on existing infrastructure and facilities, and the ability to meet market demand for a mix of housing types from smaller sites, are offset to some extent by the inclusion of North East Cambridge as a strategic site that can address some of these concerns through a more comprehensive masterplanned approach.

Option 1 - Densification of existing urban areas - Opportunities

6.2.5 This is the best of all the spatial options with regard to **carbon emissions**.

6.2.6 Concerns about pressure on existing **infrastructure**, including **green infrastructure**, under this option are less relevant for the standalone North East Cambridge site as it is expected that masterplanning can ensure that appropriate facilities are provided. More dispersed development, of varying scales in the urban area may be more challenging to address.

6.2.7 This option would promote **equality and inclusivity** by providing more people with access to a range of sustainable modes of travel. Option 1 (together with Options 2 and 3) would be more inclusive to more people as Cambridge has the broadest range of services and facilities and is the focus for many jobs; including the potential to invest and spread benefits of growth in areas of Cambridge which includes some of most deprived wards in Cambridgeshire.

6.2.8 By focusing on the use of brownfield land to accommodate growth, this spatial option would have more limited impacts on the wider Greater Cambridge **landscape** as a whole, compared to other spatial options involving supply focusing on greenfield land.

6.2.9 For **housing**, proximity to employment and the ability to provide specialist housing because of existing facilities, services and amenities are seen as positives. Option 1 would also deliver sufficient small sites and be able to demonstrate a five-year housing land supply at plan adoption under all growth level options. Market absorption into the established Cambridge housing market may allow high build-out rates.

6.2.10 Option 1 would provide highly accessible **employment** opportunities to a significant labour pool in the city, while the urban focus of this option will be particularly well-suited to higher density offices and ‘dry lab’ research type space. North East Cambridge would have an important role in providing a flexible supply for B1a/b (offices and R&D) requirements.

6.2.11 The highest level of active mode **travel** (walking and cycling) is seen in this option (together with Options 2 and 3); the lowest car mode share is seen in this option.

6.2.12 As for the other options, Option 1 would be viable for residential and employment uses across all growth levels.

Option 1 - Densification of existing urban areas - Challenges

6.2.13 The positive performance on **carbon emissions** is slightly counter-balanced by having the least ability of the spatial options to provide enough on-site PV panels, so net emissions from home energy are actually the highest of the spatial options. Adding offsite renewables matched to their remaining energy demand could alleviate this.

6.2.14 There are some challenges related to **water issues** because of the high existing flood risk in parts of the urban area, and the smaller expected size of developments offering fewer transformational opportunities for blue-green infrastructure, flood risk reduction, and high quality resilient water recycling systems.

6.2.15 Option 1 would place the greatest burden on existing **infrastructure** in the city and presents challenges in terms of providing necessary incremental infrastructure improvements, especially where space is limited. Furthermore, there is greater potential for piece-meal delivery of **green infrastructure** associated with multiple smaller developments and the added challenge of significant 'space' constraints.

6.2.16 Densification options could have impacts on the **townscape** and wider **landscape** setting of Cambridge as they include higher densities that could introduce taller buildings within the city of Cambridge.

6.2.17 With regard to **housing**, densification is likely to deliver a greater proportion of smaller units in urban locations, which is not likely to achieve the required mix of housing to meet full market demand. Furthermore, there may be a risk to relying on delivery from North East Cambridge during the middle part of the plan period subject to progress in the process to relocate the Cambridge Waste Water Treatment Plant. The relocation of the works has secured government funding through the Housing Investment Fund and Anglian Water has started the process of preparing a Development Control Order for an alternative site. The level of confidence in the availability and deliverability of the site will be kept under review during the plan making process.

6.2.18 **Employment** uses such as wet lab research spaces and light industrial or warehousing are unlikely to be suited to city areas due to the high land and rental values and competition for land with housing and other uses. All growth level options may fail to provide sufficient industrial and warehousing floorspace requirements through intensification of the urban sites in the city alone.

Option 1 - Densification of existing urban areas - Issues arising from different growth levels

6.2.19 As with all other spatial options, for **water supply** the **minimum growth level option** is the most environmentally sustainable; and there are 'deal breaker' constraints on water supply for the **maximum growth level option** unless there are strategic interventions to improve water supply on an appropriate timescale.

6.2.19 The **medium and maximum growth options** are likely to have greater impacts on the **heritage, townscape and wider landscape** setting of Cambridge as they include higher densities that could introduce taller buildings within the city of Cambridge and additional sources of supply on greenfield land.

6.2.20 Under the **medium and maximum options**, there is increased risk of pressure on existing **green infrastructure** assets and a greater need to identify sufficient land to accommodate delivery of new green infrastructure close to the development.

6.3 Option 2 - Edge of Cambridge – Outside Green Belt

6.3.1 This approach would create new homes and jobs in extensions on the edge of Cambridge, using land not in the Green Belt. The only large site on the edge of Cambridge not in the Green Belt is Cambridge Airport. The airport was removed from the Green Belt in earlier plans and is safeguarded for development if the current use is relocated. Accordingly, it is tested here on a comparable basis to all other options.

6.3.2 **The Sustainability Appraisal concludes that Option 2 performs well** because it combines the benefits of growth on the edge of Cambridge, i.e. access to services, facilities and jobs in the city, with the benefits of larger developments (such as provision of new services and facilities) and by virtue of the fact that this option would result in a range of sources of supply, all of which bring different benefits.

6.3.3 The topic-based findings, however, make more of a distinction between different levels of growth, for example relying on predominantly large sites in the minimum and maximum options would result in challenges in meeting national requirements for a proportion of development to be on small sites.

Option 2 - Edge of Cambridge Outside Green Belt - Opportunities

6.3.4 For **carbon emissions** this is considered the fourth best option of all the spatial options, although this is influenced by sources of supply related to all levels of growth, which is considered to produce a very even blend, and hence mid-range emissions across the three sources of carbon emissions. The edge of Cambridge location performs well when looking at that location specifically, due to the benefits in terms of transport accessibility relative to other locations.

6.3.5 This is the most preferable spatial option (together with Option 4) with regard to **water**, as it has known or expected low flood risk, and large sites with good opportunities for blue-green infrastructure, flood risk reduction and high-quality resilient water recycling systems. Focusing growth at Cambridge Airport will provide opportunities to integrate a wider range of **green infrastructure** interventions associated with larger development.

6.3.6 Like Option 1, this option has high potential to provide more people with access by a range of sustainable modes of travel. These options could be more **inclusive** to more people as Cambridge has the broadest range of services and facilities, and the focus for many jobs. Development in a large urban extension provides a 'clean slate' whereby new accessible buildings, streets and the public realm can be designed from the outset to promote **equality**, catering for all abilities and needs. Larger scale development may be more likely to include new healthcare services on site.

6.3.7 With regard to **housing**, the proximity between jobs and homes, the ability to provide housing for ownership (including self/custom build), affordable and specialist housing are all positives of this option.

6.3.8 Cambridge Airport is anticipated to provide a good level of accessible **employment** to a significant labour pool in the city. Edge of Cambridge development will be well suited to higher density offices and 'dry lab' research type space. The volume of land available at the airport is anticipated to be able to provide for some of the more land hungry uses such as wet lab research spaces and light industrial or warehousing.

6.3.9 The highest level of active mode **travel** (walking and cycling) is seen in this option (together with Options 1 and 3).

6.3.10 As for the other options, Option 2 would be viable for residential and employment uses across all growth levels.

Option 2 - Edge of Cambridge Outside Green Belt - Challenges

6.3.11 There may be a risk to relying on **housing** delivery from Cambridge Airport during the middle of the plan period, notwithstanding that Marshall recently confirmed to the Councils its commitment to relocate and seeks to demonstrate the availability and deliverability of the site, whilst being keen to stress that no final decisions have yet been made. It advises that it has a signed option agreement at Cranfield Airport, Bedford and that there would be no commercial, planning, technical or regulatory impediment to a move to Cranfield and vacant possession is anticipated by 2030. Deliverability will be an important factor when considering if the site is taken forward and the position will be kept under review during the plan making process as appropriate. This option is unlikely to deliver sufficient small sites to meet national requirements.

6.3.12 For **employment land** all growth options may fail to provide sufficient industrial and warehousing floorspace requirements through provision at Cambridge Airport alone.

6.3.13 Option 2 is likely to require new **infrastructure** to support growth, including decontamination of brownfield land; this may mean that the cost profile of development is weighted to the early part of the plan period and could present financing issues and also that completions remain low in early years.

6.3.14 Due to the open character of the Fen Edge Chalklands landscape context for Cambridge Airport, it is likely that the new urban edge would be a prominent feature in the landscape and require provision of appropriate strategic landscape mitigation and enhancement measures. In terms of heritage impacts, the airport has a control tower that is Grade 2 listed, so development of the airport could remove the historic context of this feature. Growth here also presents risks to the existing **green infrastructure** network; particularly relating to increased recreational pressure on sites, and potential impacts on wetland assets to the east and north east.

Option 2 - Edge of Cambridge Outside Green Belt - Issues arising from different growth levels

6.3.15 As with all other spatial options, for **water supply** the **minimum growth level option** is the most environmentally sustainable; and there are 'deal breaker' constraints on water supply for the **maximum growth level option** unless there are strategic interventions to improve supply on an appropriate timescale.

6.3.16 Under the **medium and maximum options**, there is increased risk of pressure on existing **green infrastructure** assets and a greater need to identify sufficient land to accommodate delivery of new green infrastructure close to the development. Also, these options introduce the need for additional development elsewhere to make up the numbers for the plan period, suggested as being though new settlements on public transport corridors, which may bring opportunities to integrate a wider range of green infrastructure opportunities associated with larger scale development.

6.3.17 The **minimum growth option** would only involve development at the airport and would result therefore in more limited impacts on distinctive local **landscape characteristics/features** and key views that contribute to the distinctive historic character and landscape setting of Cambridge. As they include additional sources of supply on largely undeveloped land, the **medium and maximum growth options** are likely to have greater impacts on the wider **landscape setting** of Cambridge – including potentially on key views of the City and from an increased sense of coalescence with the necklace of rural villages surrounding Cambridge.

6.3.18 The **medium growth option** based on the package of sites set out could deliver sufficient small sites at the villages to meet national requirements, but marginally would not be able to deliver a five-year **housing** land supply at adoption. There would be a marginal five-year housing land supply under the **minimum and maximum growth level options**.

6.4 Option 3 - Edge of Cambridge – Green Belt

6.4.1 This approach would create new homes and jobs in extensions on the edge of Cambridge, involving release of land from the Green Belt.

6.4.2 The Sustainability Appraisal finds that Option 3 performs well within the plan period by virtue of the fact that developments will be built out, and therefore provide new, associated infrastructure, within this timeframe. Whilst Option 3 is somewhat similar to Option 2, it includes less varied sources of supply by

focusing more growth around Cambridge city. This option is expected to include large urban extensions that will provide new services and facilities, as well as being well-located for services, facilities and jobs within Cambridge.

6.4.4 However, there is a risk that substantial growth around the city could put pressure on amenities within the city, would fail to support more rural settlements; and has potential for adverse impacts on the landscape and historic environment by extending the urban influence of the city and affecting views into and out of the historic centre, thereby affecting the setting of the city.

Option 3 - Edge of Cambridge Green Belt - Opportunities

6.4.5 This option's focus on the Green Belt fringe provides an opportunity for urban extensions to cater for **green infrastructure** deficits in neighbouring urban areas. There are also opportunities associated with the requirement of the NPPF for the release of Green Belt sites to positively enhance the remaining Green Belt.

6.4.6 Like Options 1 and 2, this option has high potential to provide more people with access by a range of sustainable modes of travel. These options could be more **inclusive** to more people as Cambridge has the broadest range of services and facilities, and the focus for many jobs. Development in large urban extensions provide a 'clean slate' whereby new accessible buildings, streets and the public realm can be designed from the outset to promote **equality**, catering for all abilities and needs. Larger scale development may be more likely to include new healthcare services on site.

6.4.7 For **housing**, the proximity between jobs and homes, the ability to provide housing for ownership (including self/custom build), affordable and specialist housing are all positives of this option.

6.4.8 This option is anticipated to provide a good level of accessible **employment** to a significant labour pool in the city. Edge of city development will be well-suited to higher density offices and 'dry lab' research type space as well as more land hungry uses such as wet lab research spaces and light industrial or warehousing. This option is likely to be able to provide sufficient industrial and warehousing floorspace requirements if sufficient land is released.

6.4.9 The highest level of active mode **travel** (walking and cycling) is seen in this option (together with Options 1 and 2), but it has some travel challenges (see below). In terms of **carbon**, it is the second lowest for embodied carbon due to having a reasonably high number of flats and smaller houses, but predominantly due to low assumed new supporting infrastructure due to the

accessibility of nearby existing facilities. In the carbon study the urban fringe is assumed to have medium public travel accessibility and hence transport emissions. The edge of Cambridge location performs well when looking at that location specifically, due to the benefits in terms of transport accessibility relative to other locations. It is of medium density, hence medium ability to provide renewables on-site and therefore medium building energy emissions.

6.4.10 As for the other options, Option 3 would be viable for residential and employment uses across all growth levels.

Option 3 - Edge of Cambridge Green Belt - Challenges

6.4.11 In terms of **carbon emissions** this is the fifth best option when considering the mix of sites that were applied. Use of greenfield land on the edge of the Cambridge could result in landscape changes that would alter the **setting of the city**, particularly in relation to the historic core, and could affect views in and out of the city and would also be likely to affect the setting of the historic city.

6.4.12 Option 3 would be unlikely to meet the small **housing** sites requirement under the NPPF. Other challenges on housing delivery under different growth options are set out in the following issues arising section.

6.4.13 For aspects of **transport** – including distance travelled, travel time and delay - this option performs similarly well to Option 2, and is a medium performing option overall in transport terms. In comparison with Option 2 however, development in this option could be located further away from the existing facilities within Cambridge. and as such could require additional public transport improvements and increased associated costs.

Option 3 - Edge of Cambridge Green Belt - Issues arising from different growth levels

6.4.14 As with all other spatial options, for **water supply** the **minimum growth level option** is the most environmentally sustainable; and there are ‘deal breaker’ constraints on water supply for the **maximum growth level option** unless there are strategic interventions to improve supply on an appropriate timescale.

6.4.15 Moving to higher delivery numbers under the **medium and maximum growth options** incurs greater potential for loss of land within Natural England **Habitat** Network mapping opportunity areas which may otherwise be available for habitat enhancement and creation to alleviate existing pressures

and future opportunities. In addition, there is some sensitivity within Green Belt corridors that protrude into urban areas where assets are at greatest risk of fragmentation or severance.

6.4.16 The **minimum growth option** would result in more limited impacts on distinctive local **landscape characteristics/features** and key views that contribute to the distinctive historic character and landscape setting of Cambridge.

6.4.17 As they include additional sources of supply on greenfield land, the **medium and maximum growth options** are likely to have greater impacts on the wider **landscape setting** of Cambridge – including potentially on key views of the City and from an increased sense of coalescence with the necklace of rural villages surrounding Cambridge.

6.4.18 Option 3 would be able to deliver a five-year **housing** land supply at plan adoption under the **minimum growth option**; and marginally unable to deliver a five-year supply at plan adoption under the **medium growth option**. It would not be able to deliver a five-year housing land supply under the **maximum growth option**.

6.4.19 There is the potential for the Green Belt site allocations to compete with each other and reduce delivery rates under the **medium and maximum growth options** as they would be delivering a similar product in a similar location concurrently at scale.

6.5 Option 4 - Dispersal – New Settlements

6.5.1 New settlements would establish a whole new town or village, providing homes, jobs and supporting infrastructure in a new location, and would need to be supported by strategic transport infrastructure connecting to Cambridge.

6.5.2 **The Sustainability Appraisal concludes that Option 4 performs well** in terms of social objectives, particularly when fully built out, as all new settlements are expected to be of a size that provides for the day to day needs of residents. This includes provision of features such as schools, health care, recreation and leisure facilities. In addition, new settlements can be designed in a way that encourages walking and cycling and incorporates good green infrastructure networks.

6.5.3 However, new settlements result in large-scale landscape change and may be of a scale where it is difficult to avoid intersecting with environmental or heritage assets, areas at risk of flooding or source protection zones. In addition, new settlements have a long lead-in time and relying solely on new

settlements to deliver growth may lead to a lack of housing availability earlier in the plan period and a period of disconnect between when housing is delivered and when jobs and supporting infrastructure is delivered. In order to ensure sustainable behaviours are encourages in new settlements, it is important to avoid the need for residents to travel for work and services at the outset, otherwise these may become ingrained travel patterns.

Option 4 - Dispersal New Settlements - Opportunities

6.5.4 With regard to **carbon emissions** this is the third best option as it creates mid-range transport carbon emissions. However, embodied carbon is high due to the need for additional supporting infrastructure and the likely predominance of larger houses rather than more efficient flats.

6.5.5 This is the most preferable spatial option (together with Option 2) with regard to **water**, as site selection can result in known or expected low flood risk, and large sites with good opportunities for blue-green infrastructure, flood risk reduction and high-quality resilient water recycling systems.

6.5.6 Establishing new settlements on public transport corridors provides an opportunity to integrate a wider range of **green infrastructure** opportunities associated with larger scale development. Landscape-led masterplanning could accommodate generous GI provision to avoid risk of impact on nearby wetland habitats and water resources.

6.5.7 New settlements, depending on their size, can be planned to be self-contained by co-locating a broad range of jobs, houses and facilities and services. This provides positive outcomes with regard to **equalities and inclusivity**.

6.5.8 Development in new settlements or large urban extensions provide a ‘clean slate’ whereby new accessible buildings, streets and the public realm can be designed from the outset to cater for all abilities and needs. This option may be more likely to include new healthcare services on site. New settlements (larger existing settlements) could act as a local hub for surrounding smaller communities, to avoid the need to travel longer distances to market towns or Cambridge for all their needs, provided access issues could be overcome.

6.5.9 By focusing on new settlements to accommodate growth, this spatial option provides opportunities for high quality and distinctive housing design that is responsive to local **character** and creates a strong sense of place through a comprehensive masterplanning process. There may also be opportunities to avoid heritage impacts, but would depend on location.

6.5.10 Option 4 provides opportunities to deliver new **housing** at scale towards the mid to latter parts of the plan period. The ability to provide a wide range of dwelling types and sizes is likely, supporting higher delivery rates; and provision of housing for ownership (including self/custom build) and affordable housing are all opportunities arising from this option.

6.5.11 New settlement development will be well suited to accommodating the full range of **employment** land uses, including offices, labs and warehousing industrial given opportunities for available land. This suggests that spatial proximity is unlikely to be a key factor in generating new economic development, although professional services offices in particular cluster near to the city. The south/south east of South Cambridgeshire has generally been more successful in developing life science related employment. The location of a new settlement may therefore have a bearing on its level of employment success.

6.5.12 All levels of growth focus development on enhanced public transport corridors. Depending on the distribution of growth adopted, this could provide the necessary critical mass around new transport nodes required to fund the necessary **infrastructure** improvements.

6.5.13 As for the other options, Option 4 would be viable for residential and employment uses across all growth levels.

Option 4 - Dispersal New Settlements - Challenges

6.5.14 Reliance on conventional public **transport** may not be an option for people with some disabilities. Depending on the location of new settlements and supporting infrastructure, there is an increased risk of impact on **international designation** and/or functionally linked habitat.

6.5.15 For **housing**, competition with existing committed new settlement sites in the mid to latter part of the plan period may flood the market with similar products in similar locations, thus reducing build-out rates. It is also unlikely to deliver sufficient small sites to meet NPPF requirements.

6.5.16 Under all growth options the market's preference would be to see new B1a (offices) and some B1b (R&D) **employment** space delivered in close proximity to the city.

6.5.17 For some aspects of **transport** - distance travelled, travel time and delay - this option is the second least well-performing out of the eight.

Option 4 - Dispersal New Settlements - Issues arising from different growth levels

6.5.18 As with all other spatial options, for **water supply** the **minimum growth option** is the most environmentally sustainable; and there are 'deal breaker' constraints on water supply for the **maximum growth option** unless there are strategic interventions to improve supply on an appropriate timescale.

6.5.19 The **minimum growth option** focussing on new settlements would result in more limited impacts on distinctive local **landscape characteristics**/features that contribute to the character of the Greater Cambridge landscape, compared to the other growth levels for this option. The **medium and maximum growth options** are likely to have greater impacts on the Greater Cambridge **landscape** – including potentially on the landscape setting of rural historic villages – as they include additional sources of supply on greenfield land. Also, large numbers of sites would be more likely to result in impact on heritage assets.

6.5.20 Option 4 would be able to deliver a five-year **housing** land supply at plan adoption under the **minimum growth option**. It would be unable to demonstrate a five-year housing land supply at plan adoption under the **medium or maximum growth option**, requiring more short-term allocations or a stepped annual housing requirement.

6.5.21 The **minimum growth option** focussing on new settlements would result in more limited impacts on distinctive local **landscape characteristics**/features that contribute to the character of the Greater Cambridge landscape, compared to the other growth levels for this option.

6.5.22 The **medium and maximum growth options** are likely to have greater impacts on the Greater Cambridge **landscape** – including potentially on the landscape setting of rural historic villages – as they include additional sources of supply on greenfield land.

6.6 Option 5 - Dispersal – Villages

6.6.1 This approach would spread new homes and jobs out to the villages.

6.6.2 **The Sustainability Appraisal finds that Option 5 performs least well** against many sustainability objectives and overall. This is because it is likely to lead to a series of small developments that will not provide the critical mass to provide new services and facilities, resulting in capacity and demand constraints. More dispersed development is more likely to be car-dependent

and, again, may not provide the critical mass required to focus improvements to the public transport network.

6.6.3 Whilst this option is likely to result in development in close proximity to sensitive environmental assets, it may have a lesser effect on these than options likely to result in large-scale development. In addition, this option could help to support the rural economy. Overall, a small level of growth at more rural settlements would likely have positive sustainability implications, but not as the primary focus of growth.

Option 5 – Dispersal Villages - Opportunities

6.6.4 For **housing**, this option would result in multiple smaller sites that are likely to be deliverable in the short to medium term; this would also meet the NPPF requirement to allocate a percentage of small sites. **All growth options** can demonstrate a five-year housing land supply at plan adoption. Deferring a proportion of site allocations to Neighbourhood Plans could spread delivery across the plan period therefore making it less likely to result in the loss of a five-year housing land supply, but it would rely on local communities bringing forward Neighbourhood Plans with sufficient housing allocations.

6.6.5 The availability of land tends to make village locations suitable to all **employment** uses including offices, wet labs and warehousing/industrial. This option could provide sufficient industrial and warehousing floorspace under **all growth options** if the locations have good accessibility, particularly via the strategic road network. There are, however, also shortcomings with regard to employment (see below).

6.6.6 As for the other options, Option 5 would be viable for residential and employment uses across all growth levels.

Option 5 - Dispersal Villages - Challenges

6.6.7 Option 5 is the worst option for **carbon emissions**. It has the worst transport links by a substantial margin and a slightly higher embodied carbon due to low rise detached housing and necessary supporting infrastructure. In contrast, it has the best net building energy performance, because the lower density makes it the most able to provide substantial renewable energy on-site through PVs. Overall, the carbon cost of the transport far outweighs the smaller benefit from the increased PV, making this the most carbon-intensive option.

6.6.8 There are some challenges related to **water issues** because of the high existing flood risk in some villages, and the smaller expected size of

developments offering fewer transformational opportunities for blue-green infrastructure, flood risk reduction, and high quality resilient water recycling systems.

6.6.9 This option increases the likelihood of piecemeal **green infrastructure** interventions associated with multiple smaller developments, as opposed to delivering strategic opportunities. This may lead to greater challenges in delivering integrated ecological networks.

6.6.10 Villages typically have fewer services and facilities and so residents are more likely to rely on car use which could negatively impact on **equalities and inclusivity**, particularly for younger and older people who are unable to drive or own a car. Unless villages are located close to or on one of the radial routes into Cambridge the choice of travel options may be limited and/or costly. Unless jobs are also dispersed in the rural area, it would not redress the jobs/homes balance, impacting on working age people.

6.6.11 Growth of villages could impact on the historic character of villages, which contain large numbers of heritage assets, and conservation areas.

6.6.12 Across all three growth options **housing** delivery is mainly required in the mid to latter part of the plan period. This option mainly delivers medium-term sites, so would not be adding supply at the latter part of the plan period. Market-led sites are less likely to deliver affordable housing because small sites fall below the threshold for contribution and/or registered providers are unable or unwilling to manage small numbers. Also, greater market delivery at villages would likely result in a reduction in the number of exception sites taken forward. Fewer small dwellings are likely to be delivered, especially apartments, limiting delivery rates overall. Furthermore, smaller sites are unlikely to deliver private rented supply, including Build to Rent.

6.6.13 Dispersed **employment** across villages is likely to inhibit the ability of larger employment development to agglomerate. The accessibility of individual locations to only limited labour pools may affect their economic development capability. Spreading employment to villages will be contrary to office market preferences for the city centre and city fringe locations, and so will weaken deliverability.

6.6.14 With regard to **transport**, the car mode share is highest in this option (this is the only spatial option where the biggest increase in mode share is not in active modes – walking and cycling). For distance travelled, travel time and delay, this option is the least well-performing out of the eight.

6.6.15 Option 5 will place burdens on existing **infrastructure**; combined with a dispersed pattern of development, this means that the proportionate cost of infrastructure is likely to be greater as it is used less intensively or generates the need to travel further.

Option 5 – Dispersal Villages - Issues arising from different growth levels

6.6.16 As with all other spatial options, for **water supply** the **minimum growth option** is the most environmentally sustainable; and there are 'deal breaker' constraints on water supply for the **maximum growth option** unless there are strategic interventions to improve supply on an appropriate timescale.

6.6.17 The smaller villages dominated by historic cores with distinctive landscape settings have sensitive **townscape/landscape characteristics** that are likely to be more vulnerable/susceptible to changes from growth than, typically, the larger villages within Greater Cambridge where their character is dominated by 20th/21st Century peripheral estate development. The **minimum growth option** focussing on dispersal of growth to the villages would result in more limited impacts on distinctive local characteristics/features.

6.6.18 Higher dwelling numbers associated with the **medium and maximum options** incurs potential for a wider scale of impacts risk across designated sites and notable habitats. However, the higher concentrations within individual villages under these growth options may present opportunities to deliver **green infrastructure** that can address existing deficiencies in access to open space.

6.6.19 For the **maximum growth option** it is unlikely that **employment** use requirements for B1ab (offices and R&D) can readily be met at dispersed village locations, particularly given that there are higher levels of R&D needs in particular.

6.7 Option 6 - Public Transport Corridors

6.7.1 This approach would focus homes and jobs along key public transport corridors and around transport hubs, extending out from Cambridge. This could be by expanding or intensifying existing settlements, or with more new settlements.

6.7.2 **The Sustainability Appraisal concludes for Option 6** that it provides good accessibility to services and facilities for all and will help minimise traffic-related emissions of greenhouse gases and air pollutants. However, it could result in development in areas with high environmental sensitivity. In addition,

there is a risk that development in more rural areas under this option could be more distant for services, facilities and employment opportunities.

Option 6 - Public Transport Corridors - Opportunities

6.7.3 This is the second best option for **carbon emissions**. This option has a mixture of homes in urban settings and settlements on public transport corridors, hence it has good transport links and therefore second lowest transport carbon. This is slightly countered by a medium efficiency of materials used due to the mix of low and higher rise construction, and a mixed ability to provide enough on-site PV panels for the same reason.

6.7.4 These larger scale developments provide opportunities to integrate a wider range of **green infrastructure** opportunities; including opportunities for landscape-led masterplanning and planning in active travel networks to increase GI connectivity.

6.7.5 With regard to **equalities**, radial routes into Cambridge are the main transport corridors and the focus for future infrastructure improvements, including public transport (and transport nodes), which should improve the non-car mode options for people living on or close to these corridors. Spatial options which connect communities to transport corridors may provide better accessibility to Cambridge or the market towns by public transport and cycling.

6.7.6 This option would provide good commuting relationship between **jobs and homes** to meet demand where it exists. Development in accessible villages, urban extensions and new settlements provides opportunities for higher density, build-to-rent, and affordable housing. The option can also tie in village locations along the corridors where larger family/executive homes may be appropriate, maximising the opportunities for higher build-out rates.

6.7.7 **Employment** located at transport hubs will broadly enable good labour market accessibility and support economic growth. Employment at transport hubs for existing or new settlements is likely to be suitable for a range of employment premises including offices, labs, industrial and warehousing. For all growth options, this option could provide sufficient industrial and warehousing floorspace if the locations have good accessibility, particularly via the strategic road network.

6.7.8 As for the other options, Option 6 would be viable for residential and employment uses across all growth levels.

Option 6 - Public Transport Corridors - Challenges

6.7.9 Development at North East Cambridge may place additional recreational pressure on key **green infrastructure** assets, including the wetland assets to east and north. Furthermore, there may be a risk to relying on delivery from North East Cambridge during the middle part of the plan period subject to progress in the process to relocate the Cambridge Waste Water Treatment Plant. The relocation of the works has secured government funding through the Housing Investment Fund and Anglian Water has started the process of preparing a Development Control Order for an alternative site. The level of confidence in the availability and deliverability of the site will be kept under review during the plan making process.

6.7.10 Public transport might not be an option for some disabled people or an affordable choice for people on low incomes, impacting **equalities and inclusivity**. Rural areas can be remote and involve long distances, so that cycling would not be an option for many people.

6.7.11 The Sustainability Appraisal highlights that there are a number of listed buildings, scheduled monuments and registered parks and gardens across Greater Cambridge, it is possible that development could be located within close proximity to one or more such assets. In particular, the public transport corridors to the west and south west have a number of listed buildings, conservation areas and registered parks and gardens within close proximity that may be affected by development.

6.7.12 Higher density uses would typically locate in closest proximity to public transport accessibility nodes, albeit competition with the city market for prime offices is expected to temper growth. Furthermore, spreading **employment** outside Cambridge will be contrary to prime office market preferences for city centre and city fringe locations. Secondary offices and lab development is more likely to be successful at hubs where land is available and workforce is accessible. For all growth options, the market's preference would be to see new B1a (offices) and some B1b (R&D) space delivered in close proximity to the city.

6.7.13 The distribution of growth along public transport corridors may mean that development can contribute to the cost of new public **transport infrastructure**; however, the distribution of the balance of growth beyond the one new settlement risks giving rise to the inefficiencies identified in Option 5 (villages), particularly in relation to social, green and sport and leisure infrastructure.

Option 6 - Public Transport Corridors - Issues arising from different growth levels

6.7.14 As with all other spatial options, for **water supply** the **minimum growth option** is the most environmentally sustainable; and there are 'deal breaker' constraints on water supply for the **maximum growth option** unless there are strategic interventions to improve supply on an appropriate timescale.

6.7.15 The **minimum growth option** focusing on new settlements on public transport corridors would result in more limited impacts on distinctive local **landscape characteristics/features** that contribute to the character of the Greater Cambridge landscape, compared to the other growth options. The **medium and maximum growth options** are likely to have greater impacts on the Greater Cambridge landscape – including potentially on the landscape setting of rural historic villages along the public transport corridors – as they include additional sources of supply on greenfield land. Where villages are located in close proximity to designated or non-designated sites, there is potential for impacts on these and the wider ecological network.

6.7.16 For **housing**, Option 6 would be able to demonstrate a five-year housing land supply at plan adoption under the **minimum growth option** and marginally under the **maximum option**. It marginally does not demonstrate a five-year housing land supply at plan adoption under the **medium option**, however it would do with a smoother trajectory for village allocations delivering sooner after plan adoption. It should be possible to deliver small sites under the **medium and maximum options** to meet NPPF requirements, but not under the **minimum option**.

6.8 Option 7 - Integrating jobs and homes – southern cluster

6.8.1 This approach would focus new homes close to existing and committed jobs within the life sciences cluster area around the south of Cambridge, including homes at existing villages and at new settlements.

6.8.2 The **Sustainability Appraisal** finds that for many objectives, Option 7 performs similarly to Option 6 as it will locate homes within easy access of employment and also likely within easy access of services and facilities. Together, this will help boost the local economy by attracting workers to the area and minimise emissions of greenhouse gases and air pollutants as many residents will likely find employment near their homes.

6.8.3 However, there are some environmentally sensitive features to the south of Cambridge, which would be the focus for development under this option, such

as historic assets and high quality agricultural land, which could be damaged or lost to development.

Option 7 - Integrating jobs and homes southern cluster – Opportunities

6.8.4 With regard to **equalities**, supporting homes in the technology corridor would help to integrate homes with jobs to redress the current imbalance and significantly reduce the need and distances travelled by employees. Integrating homes and jobs in technology clusters would only benefit people of working age, although it could benefit people who have mobility issues to live closer to their place of work and avoid having to overcome transport issues, subject to appropriate public transport provision.

6.8.5 Focusing growth in one area would reduce **landscape** changes across the wider Greater Cambridge landscape; and provides opportunities for **habitat enhancement**. These could collectively serve to support flood management, biodiversity and carbon capacity.

6.8.6 Under Option 7 there would be a good relationship between **jobs and homes**. The focus on the south of the city will reduce competition with committed new settlements to the north and west of Cambridge, minimising absorption rate issues. There would be opportunities for higher density, build-to-rent, and affordable housing; and village locations along the corridors where larger family/executive homes may be appropriate would maximise the opportunities for higher build-out rates. The option will deliver small sites in villages to help meet the NPPF small sites requirement.

6.8.7 **Employment** provision around the south of Cambridge is anticipated to provide a reasonable level of accessible employment to a significant labour pool in the city. This location will be well-suited to offices and 'dry lab' research type space as well as more land hungry uses such as wet lab research spaces and light industrial or warehousing. For all growth options, Option 7 could deliver sufficient industrial and warehousing floorspace if sufficient land is provided for and has good accessibility via the strategic road network.

6.8.8 As for the other options, Option 7 would be viable for residential and employment uses across all growth levels.

Option 7 - Integrating jobs and homes southern cluster - Challenges

6.8.9 This option has the majority of homes in new settlements on transport nodes, with some homes in dispersed villages. The effect of this is to create the

second highest **carbon emissions** overall, predominantly due to the transport emissions from the dispersed village homes. There is also more embodied carbon due to the lower density housing and significant new supporting infrastructure required for new settlements and villages.

6.8.10 Focusing growth on one area could lead to adverse impacts upon distinctive, local landscape characteristics and features. In general terms, the River Valley and Chalk Hills have sensitive **landscape characteristics** that are likely to be more vulnerable/susceptible to changes from development focused on the southern cluster than the Lowland Claylands landscape type within this part of Greater Cambridge. The Sustainability Appraisal highlights that there are a number of listed buildings, scheduled monuments and registered parks and gardens across Greater Cambridge, it is possible that development could be located within close proximity to one or more such assets. In particular, the public transport corridors to the west and south west have a number of listed buildings, conservation areas and registered parks and gardens within close proximity that may be affected by development.

6.8.11 Distributing additional housing to 14 villages in this area presents potential for impacts on designated or non-designated sites and the **wider ecological network** where these are in close proximity.

6.8.12 Under this option there is a reliance on performance of the high-tech sectors of the economy in this area and demand for homes tied to this, rather than spreading the **jobs and homes** relationship more widely.

6.8.13 With regard to **employment**, the prime office market is concentrated on the centre and north of the city. Establishing the south as an additional location may be challenging. However, wet lab research space will be highly attractive to the market, together with a range of dry lab facilities and ancillary offices.

Option 7 - Integrating jobs and homes southern cluster - Issues arising from different growth levels

6.8.14 As with all other spatial options, for **water supply** the **minimum growth option** is the most environmentally sustainable; and there are ‘deal breaker’ constraints on water supply for the **maximum growth option** unless there are strategic interventions to improve supply on an appropriate timescale.

6.8.15 The **minimum growth option** focusing on the southern cluster would result in more limited impacts on distinctive local **landscape characteristics**/features that contribute to the character of the Greater Cambridge landscape, compared to the other growth options. The **medium and maximum growth**

options are likely to have greater impacts on the Greater Cambridge landscape as they include additional sources of supply on greenfield land.

6.8.16 At the **medium and maximum levels** the greater scale of development may incur greater magnitude of impacts. Greater concentration within fewer villages may increase potential for delivery of more strategic **green infrastructure** opportunities, particularly those related to active transport.

6.8.17 A five-year **housing** land supply can be achieved under the **minimum growth option**, but marginally not under the **medium option**, however it would do with a smoother trajectory for village allocations delivering sooner after plan adoption. It is not possible to demonstrate a five-year housing land supply under the **maximum growth option**.

6.8.18 Under the **maximum option** there is a risk in relying on high delivery rates at North East Cambridge and Cambridge Airport during the middle of the plan period. For North East Cambridge this is subject to progress in the process to relocate the Cambridge Waste Water Treatment Plant. The relocation of the works has secured government funding through the Housing Investment Fund and Anglian Water has started the process of preparing a Development Control Order for an alternative site. The level of confidence in the availability and deliverability of the site will be kept under review during the plan making process. For Cambridge Airport this is notwithstanding that Marshall recently confirmed to the Councils its commitment to relocate and seeks to demonstrate the availability and deliverability of the site, whilst being keen to stress that no final decisions have yet been made. It advises that it has a signed option agreement at Cranfield Airport, Bedford and that there would be no commercial, planning, technical or regulatory impediment to a move to Cranfield and vacant possession is anticipated by 2030. Deliverability will be an important factor when considering if the site is taken forward and the position will be kept under review during the plan making process as appropriate.

6.8.19 Apart from under the **minimum level of growth**, this spatial option results in dispersed growth across the area, including outside main public transport corridors which might result in a greater **infrastructure** cost burden. The maximum growth level would mitigate this risk to some extent due to the large scale of the new settlement proposed which provides scope for critical mass and efficiencies.

6.9 Option 8 - Growth focussed on Public Transport Nodes – Cambourne / A428

6.9.1 This approach would focus new homes at Cambourne and along the A428 public transport corridor, on the basis that Cambourne is due to be served by a new East West Rail station and that Cambourne and the villages along the corridor are due to be served by the Cambridgeshire Autonomous Metro.

6.9.2 **The Sustainability Appraisal finds that** development would be well-located for Cambourne's existing services and facilities whilst providing new and/or expanded facilities too. It is also in a less sensitive area in terms of environmental and historic assets. This option performs relatively poorly within the plan period, as it is unlikely that the full infrastructure to support development will be provided, but it performs well when fully built out. The introduction of a new railway station and the Cambridge Autonomous Metro will greatly improve sustainable transport options at this location in the long term, which are likely to be attractive to residents.

6.9.3 However, there is a substantial amount of uncertainty about when these will be delivered and the ranking of this option is dependent on delivery of those links. It is also noted that growth outside of Cambourne (i.e. in the villages) may put pressure on local services and facilities and have greater car dependency.

Option 8 - Growth focussed on Public Transport Nodes Cambourne / A428 - Opportunities

6.9.4 There is potential to further develop active transport connections linking **green infrastructure** assets with managed capacity for recreational access to alleviate demand/potential demand on those with sensitive hydrological or ecological features.

6.9.5 In general terms, the Wooded Claylands **landscape** type is considered to offer potential opportunities to accommodate growth focussing on the expansion of Cambourne along the A428 public transport to the west of Cambridge. Cambourne has a few listed buildings and does not contain any conservation areas, scheduled monuments or registered parks and gardens. development close to Cambourne is unlikely to affect much in the way of historic assets or features.

6.9.6 Option 8 provides for a good commuting relationship between **jobs and homes** to meet demand where it exists, on the assumption that new jobs would be delivered. There would be opportunities for higher density, build-to-rent, and affordable housing; and village locations along the corridors where

larger family/executive homes may be appropriate would maximise the opportunities for higher build-out rates. The option will deliver small sites in villages to help meet the NPPF requirement.

6.9.7 **Employment** located at transport nodes around Cambourne will broadly enable good labour market accessibility to employment locations and support economic growth. East West Rail and the CAM are likely to significantly improve accessibility, enhancing commutability. Employment at transport hubs for existing or new settlements is likely to be suitable for a range of employment premises including offices, labs, industrial and warehousing. Take-up for office space has historically been slow at Cambourne but has improved in recent years.

6.9.8 As for the other options, Option 8 would be viable for residential and employment uses across all growth levels.

Option 8 - Growth focussed on Public Transport Nodes Cambourne / A428 - Challenges

6.9.9 This is the sixth best option for **carbon emissions** as it produces mid-range emissions across the range of emissions sources but transport is slightly higher than average due to the development in dispersed villages. With regard to **transport**, for distance travelled, travel time and delay this option sees a significant increase for all three in the PM peak.

6.9.10 Although Option 8 has good opportunities for **water resources** with the potential to be supplied by bulk transfer, these are offset by the significant capacity constraints for WRC at Bourn and Uttons Drove. Therefore, if this option were to be selected, further work would be necessary to confirm what mitigation measures are technically feasible at these sites, or what alternative provision could be developed.

6.9.11 There is a risk of development which may extend or exacerbate existing north-south severance; but also an opportunity to introduce **green infrastructure** connectivity across the A428 corridor. This option also distributes development to a number of villages. Where villages are located in close proximity to designated or non-designated sites, there is potential for impacts on these and the wider ecological network.

6.9.12 To the south and north east of Cambourne there are registered parks and gardens. To the south and west there are scheduled monuments. Although development close to Cambourne is unlikely to affect much in the way of historic assets or features, development in surrounding villages or rural locations could have a greater affect.

6.9.13 The lead-in times for strategic transport infrastructure delivery such as East-West Rail, the proposed new station at Cambourne and Cambridgeshire Autonomous Metro may delay additional **housing delivery** until after the infrastructure is operational.

6.9.14 Spreading **employment** outside Cambridge will be contrary to prime office market preferences for the city centre and city fringe locations. Secondary offices and lab development is likely to be successful around Cambourne with improved accessibility.

6.9.15 Focusing growth at Cambourne is likely to tie development to the delivery of large-scale transport **infrastructure**; delays to the delivery of that infrastructure which may be outside the control of the constituent authorities may act as a brake on development.

Option 8 - Growth focussed on Public Transport Nodes Cambourne / A428 - Issues arising from different growth levels

6.9.16 As with all other spatial options, for **water supply** the **minimum growth option** is the most environmentally sustainable; and there are 'deal breaker' constraints on water supply for the **maximum growth option** unless there are strategic interventions to improve supply on an appropriate timescale.

6.9.17 The **minimum growth option** would result in more limited impacts on distinctive local **landscape characteristics**/features that contribute to the character of the Greater Cambridge landscape, compared to the other growth levels for this option. The **medium and maximum growth options** are likely to have greater impacts on the Greater Cambridge landscape as they include additional sources of supply on greenfield land.

6.9.18 Option 8 can demonstrate a five-year housing land supply at plan adoption under the **minimum and medium growth options**; but it cannot demonstrate a supply under the **maximum option**.

6.9.19 The **medium and maximum growth options** focus a significant amount of development concurrently at Cambourne and along the wider A428 corridor, which creates a risk of market saturation and absorption rate issues. Under the **maximum option** there is a risk in relying on high delivery rates at North East Cambridge and Cambridge Airport during the middle of the plan period. For North East Cambridge this is subject to progress in the process to relocate the Cambridge Waste Water Treatment Plant. The relocation of the works has secured government funding through the Housing Investment Fund

and Anglian Water has started the process of preparing a Development Control Order for an alternative site. The level of confidence in the availability and deliverability of the site will be kept under review during the plan making process. For Cambridge Airport this is notwithstanding that Marshall recently confirmed to the Councils its commitment to relocate and seeks to demonstrate the availability and deliverability of the site, whilst being keen to stress that no final decisions have yet been made. It advises that it has a signed option agreement at Cranfield Airport, Bedford and that there would be no commercial, planning, technical or regulatory impediment to a move to Cranfield and vacant possession is anticipated by 2030. Deliverability will be an important factor when considering if the site is taken forward and the position will be kept under review during the plan making process as appropriate.

7. Key Findings and Issues

7.1 Introduction

7.1.1 This final section draws out some overarching findings, issues and themes with regard to the testing and assessment of the spatial and growth level options in the proceeding section. These are presented neutrally, without overlaying any value judgements about the performance of the various options. This will avoid prejudging the outcomes of the stakeholder engagement and subsequent work undertaken by the Councils to determine a preferred development strategy, once the evidence base is finalised.

7.1.2 This section also includes some commentary on broader issues and risks that could have a bearing on the next stage of the plan-making process.

7.2 Findings, Issues and Themes

7.2.1 The introduction to section 5 of this report noted that for some of the topics covered it is not possible at this stage to draw firm conclusions that differentiate substantively between the various options, particularly as some topics rely on more site-specific information.

7.2.2 There are, however, a number of firm, overarching conclusions that can be drawn at this stage. Firstly, most of the topic-based studies find that the minimum growth level option for most spatial options will have more limited effects than the higher two growth level options. This is most obviously seen across all the spatial options with regard to water supply. The minimum option is considered the most environmentally sustainable, but the maximum level of growth would result in significant constraints (referred to as 'deal breaker' constraints). Similarly, for the maximum growth level option across all spatial options the requisite housing numbers would not be deliverable at current optimum market rates and under current structural conditions.

7.2.3 The studies do not conclude, however, that these constraints may not be absolute barriers to achieving the highest growth levels tested, but rather that they cannot be achieved through 'business as usual'. Significant strategic interventions would be needed in both instances to have confidence that these currently unprecedented levels of growth are achievable over the time period of the Local Plan. This is likely to require government support both financially to invest in regional scale infrastructure, or through structural interventions, to drive forward growth at these higher levels.

7.2.4 Other significant findings can be related to the Big Themes that guide the Local Plan strategy. The Zero Carbon study is clear that while it is possible to mitigate carbon from new buildings, the carbon emissions from transport are more significant with regard to the location and distribution of growth.

7.2.5 Unsurprisingly, therefore, there is an explicit relationship between the testing outcomes for transport modes and the extent of carbon emissions. Options 1 (densification of urban areas), 2 (Cambridge edge non-Green Belt), 4 (new settlements) and 6 (public transport corridors) all perform well relative to other options with regard to carbon emissions, largely because they have some of the best relative outcomes for active travel (walking and cycling), low car mode share (Options 1 and 2) or public transport opportunities (Options 4 and 6). Like Options 1 and 2, Option 3 (Cambridge edge Green Belt) performs well with regard to some transport issues. However, the carbon study indicates that this urban fringe option is assumed to have medium public transport accessibility and therefore higher transport emissions.

7.2.6 Conversely, the least well-performing option for carbon emissions, Option 5 (village dispersal), is also the least well-performing with regard to all transport metrics. This has knock-on implications for those spatial options that include development at villages as a substantive part of the assumed land supply – particularly Options 7 (supporting a high-tech corridor by integrating homes and jobs (southern cluster)) and 8 (expanding a growth area around transport nodes (western cluster)). If these options were pursued, it may be possible to focus on the most accessible locations to sustainable transport opportunities.

7.2.7 There are recognised pressures from development on existing green infrastructure in or close to existing settlements; and smaller sites are more likely to have challenges in responding to larger-scale green infrastructure needs. Consequently, Options 1 and 5 perform less well relative to other options.

7.2.8 Options involving larger-scale developments are more likely to provide a greater critical mass to respond effectively to green infrastructure needs. The effect of the spatial options on landscape and townscape character is in large part dependent on the levels of growth involved. This is particularly the case for higher density options.

7.2.9 A range of housing policy and delivery issues are highlighted in the options testing. Some, most notably five year housing land supply issues, have greatest significance for different growth levels. This issue may, therefore, have implications for the phasing of housing delivery across the life of the plan. For some options, there is concern about housing delivery rates from competing sites or risks relating to site dependencies, particularly relocating

existing users or the availability of strategic infrastructure, most notably East-West Rail and the CAM. A stepped trajectory could also be considered, with higher rates in the later part of the plan period responding to the time it could take to increase rates. This could also help to respond to the challenges related to water supply.

7.2.10 For jobs, whether a particular location and/or development type is likely to be able to accommodate some or all of the identified uses (offices, R&D and light industry/warehousing) is largely dependent on the size and type of sites involved; the availability of an appropriate labour pool; and the likely market response (for example, the primary office market is located in Cambridge so establishing secondary markets further out from the city may present some challenges).

7.2.11 For transport, the modelling suggests that some clear conclusions can be drawn with regard to the best performing options with low car mode share (Option 1); or high levels of active travel (Options 1, 2 and 3) because of their proximity to Cambridge.

7.2.12 Turning to the availability and provision of infrastructure, as with other options the scale of development and proximity to Cambridge both have a bearing on the opportunities and challenges. The opportunities focus on those options which would create a sufficient critical mass from development to fund and deliver significant new or enhanced infrastructure (Options 4 and 6).

7.2.13 Taking these findings as a whole, a number of themes and overarching issues emerge. Spatially, proximity to Cambridge has a bearing on a range of issues raised by the options testing: access to sustainable transport, while reducing the need to travel and so reduce carbon emissions; access to primary employment markets and a strong labour pool (both of which promote equalities); implications for protected townscape from higher density development; and pressures on existing infrastructure.

7.2.14 Conversely, for options that might locate development outside the city the importance of sustainable travel options through public transport is significant. Also important is promoting opportunities for a degree of self-containment through, for example, locating homes and jobs together.

7.2.15 Site size with regard to standalone options emerges as an important consideration in terms of meeting national policy requirements for a percentage of small sites; providing sufficient ‘critical mass’ to fund new infrastructure; or to provide space for strategic green infrastructure or land-intensive employment uses.

7.2.16 More focused issues arise with regard to the more locationally-specific options. These include the potential risks created by funding and delivery of strategic infrastructure such as East-West Rail or the CAM based on the level of certainty at this time; and the availability of strategic development locations at North East Cambridge and Cambridge airport with the need to relocate existing users.

7.3 Other Issues

7.3.1 The choice of a preferred option and progress of the Greater Cambridge Local Plan more generally need to be placed in a wider context. Despite the strength of the area's economy, the UK as a whole is facing a period of prolonged economic uncertainty as a result of the Covid-19 pandemic and the UK's decision to leave the European Union. This presents particular challenges and uncertainty in relation to planning for future employment needs and related housing.

7.3.2 The government has recently published proposals for planning reform through a White Paper[3] that, if implemented, would have significant implications for the preparation and content of Local Plans. These issues present potentially significant implications for progress of the Greater Cambridge Local Plan and the Councils will, therefore, need to continue to assess the risks and implications associated with them.

[3] 'Planning for the Future', August 2020.

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