Liverpool City Region Spatial Development Strategy

Integrated Impact Assessment

Interim SA Report

October 2023

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Quality information

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1. Introduction

Background

1.1 AECOM is commissioned by Liverpool City Region Combined Authority to undertake an Integrated Impact Assessment (IIA) of the Spatial Development Strategy. The IIA encapsulates the requirements of a strategic environmental assessment (SEA), Health Impact Assessment (HIA), Equality Impact Assessment (EqIA) and an assessment of community safety.

1.2 The IIA is being undertaken alongside the development of the Spatial Development Strategy (SDS), with the intention of aiding the decision-making process.

1.3 The SDS is currently undergoing consultation on a document 'Towards a Spatial Development Strategy for the Liverpool City Region up to 2040, November 2023'.

This Interim SA Report

1.4 This document represents the findings of interim steps in the Integrated Impact Assessment process, setting out an appraisal of the 'Towards a Spatial Development Strategy for the Liverpool City Region up to 2040, November 2023' engagement document. This is not a statutory stage but is intended to support engagement and the development of the SDS. Further assessments will be undertaken as the SDS progresses.

1.5 The structure of the Interim IIA report is as follows:

Section 2: Plan Details

Section 3: What is the Scope of the Integrated Impact Assessment?

Section 4: Identifying Options

Section 5: Appraisal of Spatial Growth Options: Stage 1

Section 6: Appraisal of Spatial Growth Options: Stage 2

Section 7: Options for Employment

Section 8: Appraisal of Draft Policy

Section 9: Next Steps

2. Plan details

Introduction

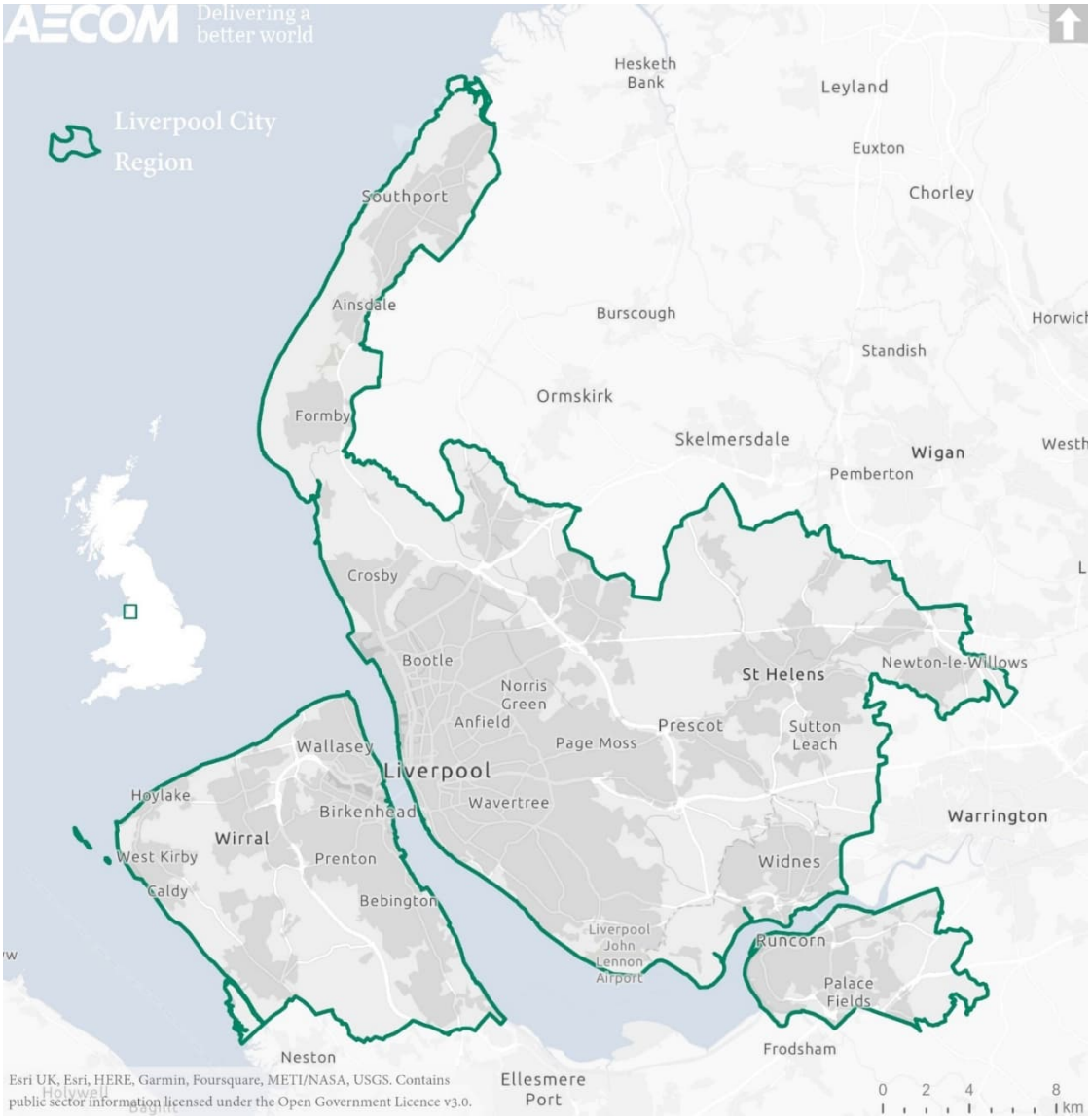
2.1 The Liverpool City Region (mapped below in figure 2.1) is comprised of the following Local Authorities; Halton, Knowsley, Liverpool, Sefton, St Helens, and Wirral .

2.2 As part of a Devolution Deal with the Government, the Liverpool City Region Combined Authority (LCRCA) was created. As part of the deal, the LCRCA has committed to creating a strategic plan called a 'Spatial Development Strategy' or 'SDS' for short.

2.3 The SDS will set out a strategic framework for the development and use of land looking ahead at least 15 years.

2.4 The SDS is a statutory planning document which will form part of the 'development plan' for the six City Region local authorities alongside their own Local Plans and Neighbourhood Plans.

Figure 2.1 The Liverpool City Region



Plan-making so far

2.5 The SDS is a statutory planning document. This means that when it is adopted, it will form part of the 'development plan' for the six City Region local authorities alongside their own Local Plans and Neighbourhood Plans. SDS policies, when finalised, will therefore be considered when determining planning applications across the City Region.

2.6 The Metro Mayor and Combined Authority are committed to ensuring that local people have the opportunity to genuinely influence local decision-making. As such, it has already undertaken several early engagement activities with key stakeholders.

2.7 As a first stage, an initial engagement was undertaken between October 2019 and January 2020 to help understand what the main planning challenges were facing the City Region and what should be done to meet them.

2.8 There was a considerable and positive response from a wide range of people, groups and organisations representing a cross section of the community. This helped to inform initial stages of plan making such as proposing a vision and objectives and the likely content of the SDS.

2.9 Building on the feedback received, a second consultation was undertaken to seek further views on the emerging SDS, which at this stage set out a proposed vision and objectives, along with approaches to several key policy areas. The intention of the consultation was to ensure that the SDS continued to be shaped positively and meaningfully by the people of the Liverpool City Region. Feedback was sought between November 2020 – February 2021.

2.10 At this second engagement stage, the Integrated Impact Assessment (IIA) Scoping Report was prepared and made available for comment.

2.11 Following this second stage of engagement, the LCRCA has developed the evidence relating to a range of key issues, particularly housing and employment growth. This has allowed further work to be undertaken to establish spatial options and draft policies. A third consultation will be undertaken in November 2023 – February 2024 to engage with the people of Liverpool City Region once again. As part of this stage of plan making, the Integrated Impact Assessment has been utilised to explore the sustainability implications of options and draft policy approaches. The outcomes are set out within this Interim IIA Report in the following sections.

2.12 It is acknowledged that the SDS's preparation is taking place in the context of change and uncertainty surrounding Government's wider Planning Reform agenda and introduction of the Levelling-up and Regeneration Act. The Combined Authority intends to keep the outcomes of these changes under review with future stages of SDS preparation reflecting them as relevant.

2.13 Reforms are also underway with regards to the environmental assessment regimes in England, with an intention to introduce Environmental Outcomes Reports (EORs). The Combined Authority will keep abreast of any changes and reflect them in future IA work as appropriate. However, it is important to remember that there will be a transitional period and the current regimes remain valid. The integrated impact assessment also covers a wider breadth of issues than SEA alone, and the intention is to continue with this approach.

3. What is the scope of the IIA?

Introduction

3.1 The aim here is to summarise the scope of the IIA i.e., the sustainability themes and objectives that should be a focus of the IIA. Full details of the process and outputs can be found in the IIA Scoping Report.

3.2 An integrated impact assessment covers the requirements of Sustainability Appraisal, Health Impact Assessment, Equalities Impact Assessment, and an assessment of Community Safety. IIA therefore helps to reduce duplication of efforts (and the number of separate reports); whilst taking advantage of the strengths of each impact assessment tool. In turn, this aids in undertaking effective consultation with interested parties.

Summary of the scoping process

3.3 Scoping is undertaken as part of the integrated impact assessment process to present information about environmental, social, and economic conditions and trends in the plan area. It also identifies key objectives and aims in relevant plans, policies, and programmes. This information is used to identify what the IIA should focus upon (i.e., the 'scope').

Consultation

3.4 The SEA Regulations require that "*when deciding on the scope and level of detail of the information that must be included in the report, the responsible authority shall consult the consultation bodies*". In England, the consultation bodies are the Environment Agency, Historic England, and Natural England. As such, these authorities were consulted on a Scoping Report in July 2020. Wider involvement was achieved by making the scoping report available on the LCRCA website.

3.5 Given that IIA is an iterative process, the scope of the IIA will be updated as considered necessary at subsequent stages of the IIA process.

The IIA framework

3.6 Table 3.1 presents a list of objectives and supporting criteria that form the backbone of the IIA scope. Together they comprise a 'framework' under which to undertake assessment. Health and equalities are key themes throughout the framework and are also reflected in specific IIA Objectives, ensuring effective integration of EqIA and HIA with the SA/SEA process.

Table 3.1: The IIA Framework

IIA objectives	Appraisal Criteria
1. Ensure places are designed to allow public health and safety measures to be employed effectively.	- Ensure that development does not increase flood risk on site or elsewhere? - Ensure places are designed to allow public health and safety measures to be employed effectively? - Ensure that critical infrastructure is resilient to the effects of climate change? - Locate development in appropriate locations?
2. Facilitate and contribute to the move towards a zero carbon Liverpool City Region; whilst improving social equity of access to energy.	- Avoid the sterilisation of renewable energy opportunities by locating incompatible development in areas with greatest suitability for generation? - Support the continued growth in renewable energy generation across the Liverpool City Region? - Continue to drive down greenhouse gas emissions associated with transport, housing, and business? - Reduce energy consumption? - Decouple energy consumption and affluence? - Ensure affordable access to energy for all members of the community? - Lead to greater self-sufficiency in energy provision?
3. Support healthy lifestyles for all community groups, whilst seeking to close 'inequality gaps' and improve resilience to health issues.	- Ensure that places are designed to support improved access to recreation opportunities and natural greenspace? - Ensure that places are designed that allow social distancing measures to be employed effectively? - Improve access to suitable housing and employment opportunities? - Reduce inequalities in health between the most and least affluent communities? - Support active travel? - Will there be a change in demand for or access to health and social care services?
4. Improve mental health and wellbeing, particularly in areas of greatest need.	- Strengthen protective factors for mental health such as socio-economic and environmental conditions and community support networks? - Ensure access to good quality, affordable food? - Provide opportunities for people to pursue meaningful activities?
5. Ensure that everyone has access to suitable, safe, and secure housing accommodation in sustainable locations.	- Secure the delivery of affordable housing? - Ensure that those in greatest need can benefit from access to affordable housing? - Improve housing condition for existing poor quality stock? - Ensure that new development is of a high basic standard and seeks to deliver exceptional design? - Meet the specific needs of different community groups? - Be designed to meet the changing needs of householders?

IIA objectives	Appraisal Criteria
6. Achieve a sustainable and inclusive economy in the city region that builds upon current strengths and the opportunities offered by investment and innovation.	- Respond to the challenges and opportunities as outlined in the LCR Plan for Prosperity? - Build upon the City Region's strong tourism sector? - Facilitate growth in attractive locations with excellent accessibility via sustainable modes of transport? - Make the most of the opportunities offered by the Northern Powerhouse? - Provide high quality, sustainable jobs whilst ensuring education and skills are improved through demand-led approaches? - Support businesses to grow by enabling the development of the right economic infrastructure and of innovation assets? - Create a paradigm shift in economic growth that eradicates inequalities and decouples economic activity from environmental degradation? - Creates resilience to future economic shocks?
7. Improve accessibility and transport networks, whilst reducing the negative impacts of vehicular travel and supporting a greater shift to active and sustainable modes of travel.	- Reduce the impact of increased freight traffic on the road networks? - Reduce emissions of greenhouse gases and pollutants associated with vehicular travel? - Consider cross boundary implications of long distance travel? - Encourage and enable greater amounts of walking and cycling? - Support greater patronage of public transport? - Manage congestion at peak times and pressured locations?
8. Ensure that everybody has equity and justice and that diversity is embraced; allowing all people to fulfil their potential in life.	- Tackle inequalities between different communities? - Ensure that those with 'protected characteristics' are not disproportionately affected negatively by development? - Retain community identities whilst encouraging diversity and strengthening relationships between different groups?
9. Avoid unacceptable impacts upon species and habitats; whilst ensuring the strengthening of ecological networks and an overall net gain in biodiversity value.	- Avoid unacceptable harm to key habitats? - Avoid severing ecological corridors? - Improve the resilience of ecosystems to climate change and other pressures? - Achieve net gain in biodiversity value? - Ensure new development and growth in the Ports / along waterside environments does not have a detrimental impact upon habitats and wildlife? - Recognise the multiple ecosystem services that biodiversity provides?

IIA objectives	Appraisal Criteria
10. Achieve cleaner air across the City region, whilst protecting the environment and people from the effects of poor air quality.	- Achieve a reduction in emissions from vehicular travel? - Avoid and mitigate the effects of poor air quality on human health? - Improve air quality through enhancements to green infrastructure in urban areas? - Target air quality measures towards the most vulnerable receptors?
11. Ensure the sustainable management of water resources, helping to protect and enhance value with regards to the environment, human health, and economic growth.	- Support improvements to the ecological quality of waterbodies in line with WFD requirements? - Maintain areas with excellent / good water quality and make improvements where necessary? - Promote the role of water resources for their recreational and economic benefits without compromising environmental quality? - Promote the integration of blue infrastructure into new developments? - Ensure the timely phasing of wastewater and drainage infrastructure improvements to support new development?
12. Promote the effective use of land and soil; ensuring that the best and most versatile agricultural land resources are preserved and used effectively by prioritising brownfield development and the remediation of contaminated land.	- Promote the use of previously developed land where this exists as a viable alternative to greenfield development? - Avoid the loss of the highest quality agricultural land (particularly, where there are poorer quality alternatives)? - Promote the effective use of agricultural land for temporary uses where soil quality can be retained? - Promote community food growing and greater self-sufficiency? - Promote the timely remediation of contaminated land?

IIA objectives	Appraisal Criteria
13. Protect and enhance the character of landscapes and urban open space; ensuring their multifunctional use and enjoyment by all.	- Preserve and strengthen areas of tranquillity throughout the region? - Protect and enhance access to high quality green and open space in urban areas? - Enhance poor quality landscapes and townscapes? - Protect land that makes a positive contribution to landscape character and provides recreational opportunities? - Maintain the distinctiveness of individual settlements?
14. Protect, maintain, conserve, and enhance the historic environment, heritage assets, and cultural heritage.	- Conserve and enhance historic assets and their settings? - Ensure that growth sustains and enhances local character and distinctiveness across the LCR? - Recognise and promote the role of the historic environment in contributing to community identity and making the City Region a popular and attractive place to visit? - Value and protect the areas formerly identified as a UNESCO World Heritage Site?
15. Minimise waste generation and support the circular economy by implementing the waste hierarchy.	- Reduce waste generation associated with new development? - Promote the use of secondary materials? - Support the management of waste close to sources of generation? - Ensure that negative health impacts associated with waste management are avoided?
16. Ensure a steady and stable supply of minerals whilst promoting their efficient use and sustainable methods of extraction.	- Encourage the use of secondary and recycled materials rather than virgin minerals? - Ensure that mineral workings do not have unacceptable impacts upon human health or the environment? - Safeguard existing infrastructure that contributes to minerals extraction and transportation?

4. Identifying options

Alternative strategies for housing delivery

4.1 A key part of the plan-making and IIA process is to explore different approaches to achieve the objectives of the SDS.

4.2 Greatest value can be achieved during this process by focussing on the issues that run to the heart of the Plan and provide real strategic choices.

4.3 At this stage of plan-making, the LCRCA developed emerging policy approaches for a range of issues. However, not all of these require an appraisal of options. Instead, the focus at this stage is on the strategic issues of housing and employment growth and the different ways this could be delivered across the Liverpool City Region.

4.4 The LCRCA has worked alongside IIA consultants AECOM to explore different options for growth. The first step is to identify which options are 'reasonable' and should therefore be appraised through the IIA process.

4.5 Determining what options are reasonable is a matter of judgement, but there are some key factors that have helped to guide the process. These are discussed in turn below:

LCR priorities

4.6 There are a number of key LCR Mayoral and Combined Authority priorities with spatial development aspects that the SDS will have an important role in realising and delivering, these include:

- LCR Plan for Prosperity (2022)
- LCR Climate Emergency Declaration and Pathway to Net Zero
- LCR Five Year Climate Action Plan (2023-2028)
- LCR Housing Statement
- LCR Local Transport Plan 4 (emerging)

4.7 By contributing to the achievement of these key strategies and plans, the SDS will form part of a co-ordinated, joined-up approach in addressing city regional issues and meeting long term strategic ambitions.

Plan objectives

4.8 Five thematic objectives have been developed through consultation to outline the SDS's policy direction.

- Objective 1: Tackling Climate Change and creating a cleaner, greener City Region
- Objective 2: Reducing health inequalities and creating a healthier City Region
- Objective 3: Increasing the city region's economic prosperity in ways that widen opportunities for all
- Objective 4: Creating sustainable, inclusive communities and high-quality buildings and places The creation of sustainable places and communities with the homes the city region needs
- Objective 5: Maximising Social Value from development

4.9 Any spatial options would therefore be expected to contribute towards meeting these objectives. Conversely, if options clearly detract from these objectives, they can be considered unreasonable.

Constraints

4.10 Any spatial options for the planning of future growth in the city region will need to take full account of important constraints to development in line with national planning policy and in conformity with relevant legislation. These include:

- Green Belt (exceptional circumstances would need to be demonstrated before any review of Green Belt).
- Areas of Flood Risk.
- Habitat designations.
- Heritage designations and assets.
- Green infrastructure/open space.
- Best and most versatile agricultural land.

4.11 The SDS will also need to address climate change and its consequences including the reduction of carbon emissions to meet Climate Change Act national targets and the achievement of the LCR's net zero-carbon by 2040 ambition. Any reasonable spatial options should therefore contribute towards achieving this objective.

'Committed' growth

4.12 A key factor in the determination of the spatial strategy is the distribution of the planned growth already committed through Liverpool City Region's existing local plans, and sites proposed for allocation in draft Local Plans at an advanced stage. The periods covered by existing and emerging local plans ranges from up to 2028 to up until 2037.

4.13 The SDS will therefore be important in guiding the location of future growth beyond the existing 'planned for periods' (i.e., at the earliest 2028) and providing the strategic policy framework for the review of local plans (at least every 5 years from their adoption).

4.14 The six local plans[1] of the Liverpool City Region already make provision for a significant level of growth during the SDS plan period (up to 2040). For the purposes of developing the strategy, this growth is considered to be 'committed' and any spatial options would set out where growth additional to this could be accommodated. This IA draws upon the conclusions of individual Sustainability appraisals that were carried out for each of the constituent Local Plans, as detailed in table 4.1 below.

Table 4.1 Information sources for helping to determine the effects of committed growth

Authority	**Local Plan Status and end date**	**SA Report**
Halton	Adopted (2014-2037)	SA Report (July 2019)
Knowsley	Adopted (2013-2028)	SA Report (October, 2012)
Liverpool	Adopted (2013-2033)	SA Report (January, 2018)
Sefton	Adopted (2015-2030)	SA Report (May, 2016)
St Helens	Adopted (2016-2037)	SA Report (January, 2019)
Wirral	At Examination (2021-2037)	SA Report (June, 2022)

Summary

4.15 In combination, these factors and influences have informed and defined what are considered a reasonable range of spatial options to start establishing where future growth in the Liverpool City Region could be focussed.

4.16 This is important as it sets the parameters for what reasonable growth should entail as a minimum. It allows for wholly unsuitable areas and less sequentially preferable areas (in terms of critical constraints) to be excluded when considering locations for future growth at a strategic level. The focus of the strategic options and appraisal process is then directed towards the various locations where growth is more likely to achieve the plan objectives.

[1] Wirral Local Plan is currently in progress, but at a very advanced stage.

Initial spatial options

4.17 An initial stage in the plan making process involved the identification of high-level, conceptual spatial options that explored how different potential levels of growth could be distributed across the Liverpool City Region.

4.18 The appraisal findings for these initial options were considered when developing refined options for the current engagement draft version of the SDS (see para 4.37).

Growth scenarios

4.19 In line with national planning policy, an important part of the plan-making process is to establish a sustainable and deliverable strategy for housing growth and distribution. At this early stage in plan making, the evidence gathered to identify indicative levels of housing growth for the Liverpool City Region used the Government's standard method for local housing need to calculate a need of 4,515 homes per year (equivalent of around 85,785 homes over a 19-year period 2020-2039). Taking into account indicative levels of 'committed supply' across the LCR (circa 74,582 dwellings), this left a residual need of circa 11,000 dwellings up to 2039 to be planned for.

4.20 Recognising that the standard method establishes the starting point for planning for housing need but does not distinguish the definite housing requirement figure, this is to be evaluated through the plan-making process, it was deemed appropriate to establish two additional levels of growth that could be considered reasonable alternatives at this stage.

4.21 A higher level of growth was deemed reasonable, giving a residual need of circa 22,000 dwellings up to 2039. A third alternative (residual need of 16,000 dwellings up to 2039) was identified to provide a 'midpoint' between the identified lower and higher end of the range. These levels of growth are set out in table 4.2 below and are referred to as Scenarios A, B and C for the purposes of the appraisal.

Table 4.2 Indicative LCR housing need options 2020-2039

Option	Total	Dpa*	Circa residual need (in addition to 'committed' supply of 74,582 dwellings)*
Scenario A	85,785	4,515	11,000
Scenario B	90,582	4,767	16,000
Scenario C	96,582	5,083	22,000

Distribution options

4.22 The initial options for distribution presented at this stage were developed in order to test the sustainability of various high-level, conceptual approaches (guided by the principles discussed above).

4.23 The LCRCA worked with AECOM to identify six conceptual spatial options, which are described below. Each of these initial spatial options have been appraised through the IIA and the findings are summarised in Section 5 of this interim report.

Option 1: Continuation of Current Growth Patterns / Spatial Strategies of Existing Local Plans

4.24 This option would see a continuation of the patterns of growth set through the existing and emerging local plans of the City Region's six constituent authorities extending to 2039. It is considered reasonable to assume that an extension of current strategies could be delivered given that there are omission sites considered through the local plan making processes which may be appropriate to meet future needs (if deemed appropriate and if required).

4.25 Key characteristics would be as follows:

- Continuing to meet needs through a balanced mix of brownfield to support urban regeneration and residual needs being met through selected Green Belt release (if necessary and exceptional circumstances can be demonstrated) such as further sustainable urban extensions (SUEs).
- Accommodating continued growth of the logistics and warehousing sector located around strategic transport connections.
- Residual levels of need unable to be accommodated on previously developed/brownfield land would need to be accommodated on suitable greenfield land.

Option 2: Inclusive Growth and Addressing Inequalities

4.26 The option would seek to focus future growth and investment in areas of high deprivation to drive regeneration/renewal and help achieve a reduction in the levels of inequality within the City Region. It would diverge from existing growth patterns in that less deprived areas would experience lower levels of development with a greater emphasis on urban regeneration and less dispersal of growth. Key characteristics would be:

- Urban and suburban intensification with increased/higher densities in identified areas.
- Potential repurposing of land from other uses for residential use.
- Delivery of improved infrastructure including public transport/active travel and digital connectivity.
- Provision of new/enhanced social infrastructure and green infrastructure.
- Areas of neighbourhood renewal.

4.27 The achievement of an inclusive City Region where 'no-one and no-place is left behind' with the dismantling of inequalities in health, wealth and opportunity is a central strategic priority, as expressed in the LCR Plan for Prosperity. Focussing development and investment in these areas offers potential to positively address these issues, including through improved/higher quality housing provision, increased access to opportunities for employment and facilities and securing environmental improvements.

Option 3: Central Core and Town Centre Focus

4.28 This option would recognise the significance of Liverpool City Centre as the economic driver at the heart of the City Region and contribute towards the ongoing regeneration of Birkenhead and Bootle. Other towns centres in the City Region would be the focus of development proportionate to their size. It would diverge from existing growth patterns in that greater emphasis would be placed on urban regeneration and revitalising town centres with less dispersal of growth.

4.29 Whilst there is some overlap with Option 2, this option differs in that the focus of development would be in or around identified town centres (including those in less deprived areas such as in West Wirral) and excluding some more 'suburban' areas that experience high levels of deprivation (such as Speke/Garston, parts of north-east Liverpool and Kirkby) resulting in a different pattern. Emphasis would be on proximity to the centre so would involve less suburban intensification and greater intensification of urban centres, particularly Liverpool city centre.

4.30 This approach would build on and support various existing local authority led town centre regeneration initiatives. It would also align with national planning policy in supporting the role that town centres play at the heart of local communities, taking a positive approach to their growth, management, and adaptation. This includes the recognition that residential development can have in ensuring the vitality of centres and encouraging this on appropriate sites.

Option 4: Sustainable Transport Focus

4.31 This option would see future growth and investment on focussed on locations with good accessibility to and well served by sustainable/public transport (including planned infrastructure). It would diverge from existing growth patterns in that greater emphasis would be placed on reducing car dependency and increasing usage of sustainable transport.

4.32 Key characteristics would be:

- Levels of urban and suburban intensification in locations in close proximity (800m) to train stations and bus interchanges.
- Increased residential densities proportionate to levels of public transport access, service, and frequency.
- Potential repurposing of land from other uses for residential use.
- Increased provision of, and better connected, walking and cycling infrastructure.

4.33 This option would further support 'modal shift' whereby more journeys are taken by public transport and active travel. This is a key priority nationally and as set out in the LCR Plan for Prosperity and emerging LCR Local Transport Plan, in order to achieve increased reductions in carbon emissions and other benefits including improvements in air quality, road safety and health.

Option 5: Economic focus (green industrial revolution)

4.34 This option would focus for future growth and investment centred around those locations and assets that contribute towards a high value, innovation driven economy promoting of the 'Green Industrial Revolution' as set out LCR Plan for Prosperity. It would diverge from existing growth patterns in that greater emphasis would be placed ensuring accessibility to identified employment opportunities and less dispersal of growth. Key characteristics would be:

- Intensification of economic activities/employment growth at key locations.
- Residential growth in sustainable locations to good levels of access (including through public transport) employment opportunities with supporting infrastructure.

4.35 The LCR Plan for Prosperity sets out the key economic growth priorities for the City Region in the drive to achieve inclusive growth and increased levels of employment opportunity for those in the City Region and ensure 'no-one is left behind'. It would seek to maximise the high quality and sustainable economic growth and employment opportunities created by the 'Green Industrial Revolution' including renewable energy technologies, clean transport, and resource efficiency. This option would strongly align with national planning policy in allowing the City Region to build on its economic strengths, counter any weaknesses, address challenges and drive innovation with regard to local economic strategy.

Option 6: Dispersed approach

4.36 This option would see future growth dispersed in and around settlements across the City Region led by availability of sites and promotion of land. It would diverge from existing growth patterns in that growth would be dispersed more widely across the City Region. Key characteristics would be:

- Levels of growth proportionate to the settlement size
- Provision of new/enhanced infrastructure to support growth

4.37 Dispersal of growth has been a feature of some existing LCR authority's local plans. Subject to the key considerations above, spreading the potential for provision for housing and jobs, and the supporting infrastructure improvements more widely across the LCR would bring potential sustainability benefits. The identification of initial spatial options therefore gave rise to 18 options (A 1-6, B 1-6, and C 1-6). These options are further considered in Chapter 5.

Refined spatial options

4.38 A second stage of options testing was undertaken to reflect updates to evidence and to build upon the initial appraisal of high-level options. In particular, a LCR Strategic Housing and Economic Development Needs Assessment (HEDNA) was prepared in June 2023, setting out a range of housing need scenarios. The housing supply position has also been documented in the LCR Strategic Housing and Employment Land Supply report (October 2023), which informs the residual amount of growth that needs to be planned for under different growth scenarios.

Growth scenarios

4.39 The HEDNA utilises the government standard methodology (2023), to give a total need of 83,505 dwellings over the plan period 2021-2040 (4,395 per annum). This is considered to be a reasonable alternative[2].

4.40 There have already been 4,616 completions (from 1 April 2021 -31st March 2022), and there is a 'committed' supply of 76,269 dwellings up to 2040, representing sites with planning permission, sites with a resolution to grant planning permission and sites which are allocated in Local Plans or are proposed for allocation in draft Local Plans at an advanced stage (a total of 80,885 dwellings).

4.41 Therefore, the residual amount of dwellings required to support the Government's current standard method for local housing need figure up to 2040 when the 'committed' supply is counted is circa 2,620 dwellings, which suggests that much of the growth expected across the City Region is already being planned for. To account for possible changes in future standard method local housing need calculations, and potential site delivery issues over the term of the Plan , it is considered reasonable to test higher indicative growth scenarios that could offer more flexibility in supply. As such, two further reasonable alternatives have been identified:

- A 10% uplift on the standard methodology (4,835 dwellings per annum, 91,855 units from 2021-2040)
- A 20% uplift on the standard methodology, which gives an overall target of 100,206 (5,274 dpa). The residual housing requirement if the 'committed' supply and completions (from 1 April 2021 -31st March 2022) are counted would be circa 19,321 dwellings in this scenario.

[2] The draft SDS proposes a figure of 4,400 dwellings per annum, but the initial figure tested was the starting point of 4,395 dpa. Given the similarity in figures, it is unnecessary to present an appraisal of both scenarios in this section.

Distribution options

4.42 At this stage of Plan making, the options for distribution have been refined, building upon the findings of the initial options appraisal.

4.43 An emerging strategy at this stage involves several key components, with a clear focus on Liverpool City Centre and the Inner Urban Area, Named Towns, and more limited growth in peripheral urban areas. The emerging approach recognises the benefits and opportunities associated with growth in the Inner Urban Area and Named Towns, whilst ensuring that these locations coincide with transport and employment corridors.

4.44 The key question at this stage relating to reasonable alternatives is the extent to which growth could be distributed between these areas. For example, there is potential to further intensify the Inner Urban Area to a greater or lesser extent, with consequential development in the regeneration areas with lower or higher.

4.45 At this stage, 3 reasonable options have been identified in terms of distribution. These are indicative splits to allow for a meaningful appraisal to be undertaken. The options all represent the principles of the emerging spatial strategy, but there are differences in focus, which are the subject of exploration at this stage.

Table 4.2 Assumed proportion of growth distributed to Liverpool City Centre, the Inner Urban Area, and the Wider Urban Area for each distribution option

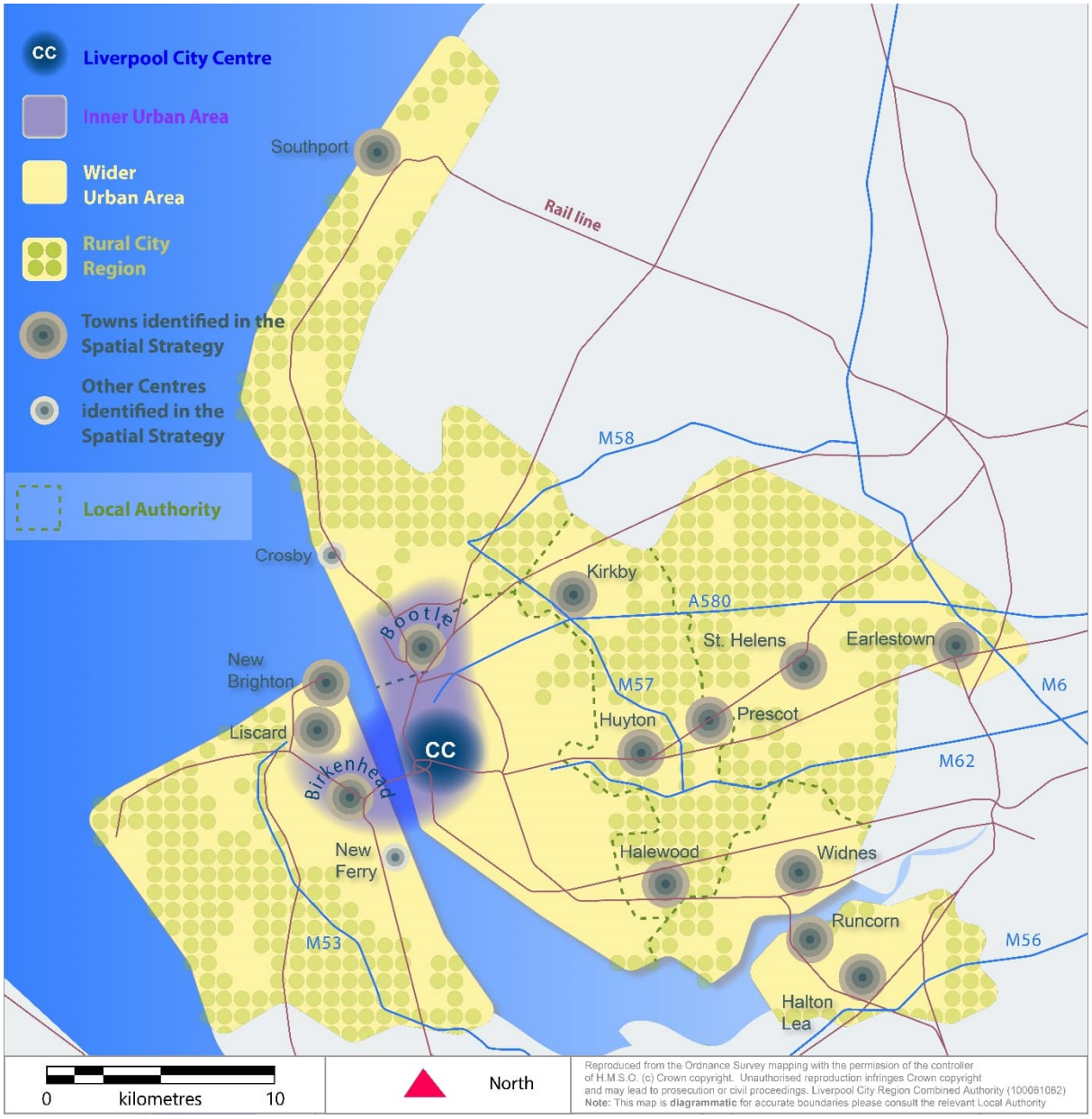
Spatial Component	**Option 1** Baseline continued	**Option 2** Urban Regeneration / Intensification	**Option 3** More in the Wider Urban Area
Liverpool City Centre and Inner Urban Area (including Bootle and Birkenhead)	42.6%	60%	35%
Wider Urban Area (inc. Named Towns)	57.4%	40%	65%

Table 4.3 The refined spatial options

	1. Adjusted Baseline continued	**2. Urban regeneration / intensification**	**3. More in wider Urban Area**
Scenario D 83,505	D1	D2	D3
Scenario E 91,855	E1	E2	E3
Scenario F 100,206	F1	F2	F3

4.46 This refinement of options generated nine options (D1-3, E1-3, F1-3) which are further considered in Chapter 6.

Figure 4.1 Emerging spatial strategy / distribution of growth across the Liverpool City Region



Unreasonable alternatives

Planning for a lower level of growth

4.47 The HEDNA (2023) also includes alternative scenarios that suggest there is a lower level of housing need than the standard method figure. For example, a 'baseline economic' scenario would give rise to a need of 3,332 dwellings per annum (63,308 dwellings 2021-2040), and 'Growth Economic' scenario giving rise to 4,036 dwellings per annum (76,684 dwellings 2021-2040). Both of these scenarios would result in a residual housing target that is notably lower than the already committed growth across the region. In practice, this could mean planning to de-allocate sites in existing and emerging plans or presuming that different types and densities of development would come forward than expected. It is considered that these scenarios are unrealistic and would not allow for proactive planning that helps to meet the objectives of the SDS. As such, these are considered to be unreasonable alternatives.

Planning for a higher level of growth

4.48 The LCRCA consider it unreasonable to plan for a higher level of growth / land supply than the three growth / land supply scenarios (D-F) identified as reasonable.

4.49 As set out and tested in the HEDNA there is currently no evidence to suggest that the LCR housing need is greater than the current standard methodology calculation, and Scenario F already provides a significant uplift of 20% above the current standard method figure (4,395 dpa). The range of growth scenarios is therefore considered to be appropriate.

5. Appraisal of spatial growth options (Stage 1)

Introduction

5.1 This section summarises the appraisal findings for the initial spatial growth options (i.e., the different distribution options for each of scenarios A, B and C).

5.2 For each option, an appraisal has been undertaken against the IIA Framework.

5.3 In determining the significance of effects, professional judgement has been applied, being mindful of key effect characteristics including: *magnitude, likelihood, duration, timeframe and cumulative effects.* A range of information sources have been utilised to inform judgements:

- Geographical Information Systems data.
- Inputs from technical studies.
- Reference to the IIA Scoping Report.

5.4 Whilst every effort is taken to predict effects accurately, there is a degree of uncertainty that must be acknowledged given the strategic nature of the options, and the subsequent appraisal. In particular, the level of detail is less granular with regards to specific on-site characteristics, so there is a reliance on higher level datasets (for example, the presence of designated environmental assets).

5.5 It is important to ensure a consistent comparison between the options. For this reason, the same high-level assumptions are made with regards to mitigation and enhancement and how plan policies would come into play. Where possible, account is taken of likely features of locations, but a balance needs to be achieved to allow for a consistent comparison.

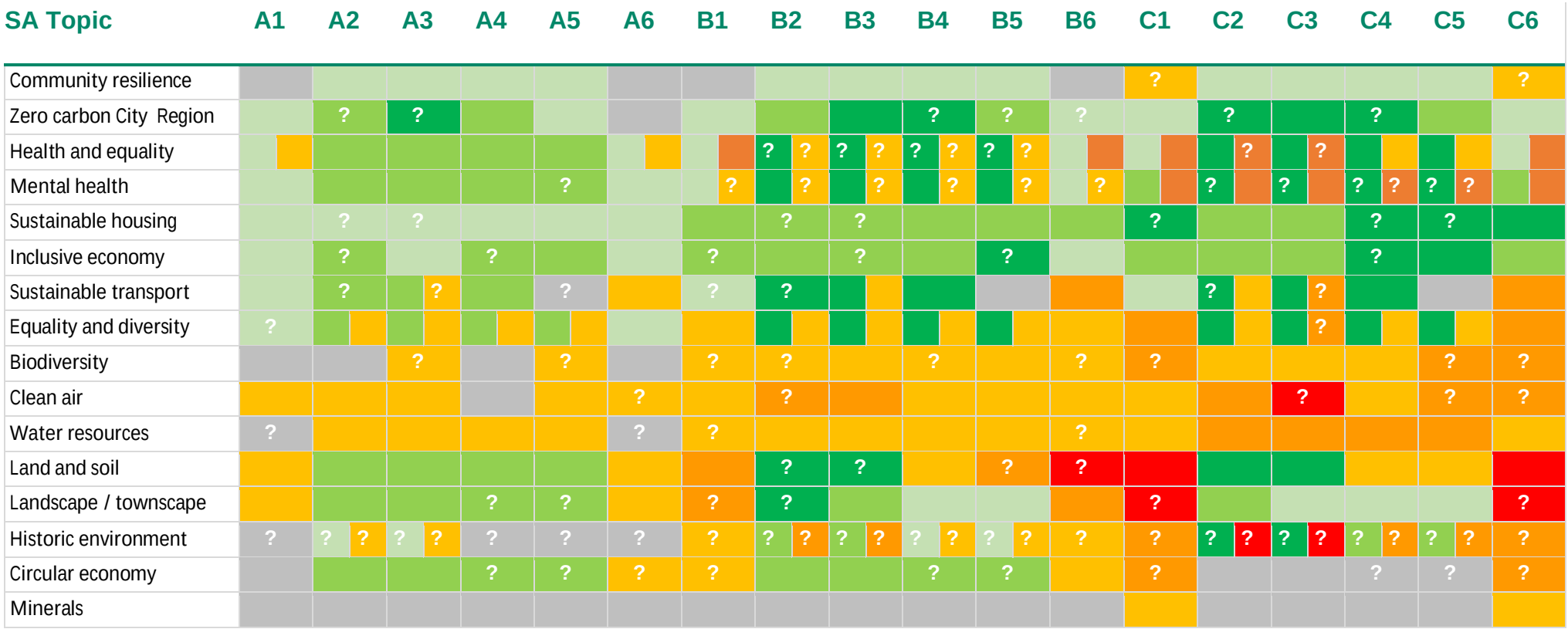
5.6 This is not to say that such effects could not be different when mitigation and enhancement considerations are fully appreciated. In this respect, all the options have been considered equally. Recommendations are made for each option too, reflecting the potential for additional policy measures to be introduced to deal with any issues or opportunities that are identified.

Summary of effects

5.7 Table 5.1 below presents a visual summary of the appraisal findings for each of the options. Following this is a discussion of the effects of each option and a brief comparison of how the options perform with one another.

5.8 The full appraisal of each the options is provided in **Appendix A**.

Table 5.1: Summary of appraisal findings (Stage 1 spatial options)



Interpreting the significance of effects

Major positive		Minor negative	
Moderate positive		Moderate negative	
Minor positive		Major negative	
Neutral		Uncertainty	?

Summary of effects by level of growth

Scenario A:

5.9 At this scale of growth, the negative effects associated with growth are relatively limited, and are not more than minor in significance for any of the sustainability objectives. This being said, the positive effects are minor or at most moderate in significance.

5.10 In terms of distribution, the options that take a more dispersed approach (A1 and A6) are more likely to bring about negative effects in terms of a loss of soil and land, and landscape character. These options are also likely to bring about positive effects of a lesser significance with regards to socio economic factors compared to those options that focus on urban intensification (A2-A4). The benefits relating to urban intensification are more pronounced with regards to health and wellbeing and mental health as they should bring investment into areas that will benefit from new housing and social infrastructure. These locations are also suffering from deprivation and therefore growth ought to better address inequalities. It will be important to ensure that growth does not exacerbate inequalities though (for example, increased growth could potentially lead to congestion and air quality issues and pressure on public services in the short term).

5.11 In terms of carbon emissions and natural resources, the options that focus development into urban locations are more likely to lead to development that generates fewer emissions per capita. This relates to smaller homes, greater potential for sustainable travel and increased potential for district energy schemes. In this respect, Option A3 performs most preferable.

5.12 Whilst Options A1 and A6 generate less pronounced positive effects in relation to socio economic factors, they are more beneficial with regards to water resources.

5.13 These options are also less likely to have a significant affect in terms of the historic environment compared to the urban intensification options. This applies to both positive and negative effects.

Scenario B:

5.14 At an increased level of growth, the positive effects in relation to social and economic factors increase for all of the options. In particular, benefits are more likely to arise in relation to housing provision, health and wellbeing and mental health. The extent of negative effects also rises though, with greater potential for effects on biodiversity, air quality and the historic environment for all options. The potential for inequalities to widen increases at this scale of growth, as focused development could have positive or negative effects depending upon how it is delivered. For the options that focus on urban intensification, the potential for major positive effects on health and in terms of addressing inequalities is greatest.

5.15 With regards to distribution, the effects become more pronounced, with Options B1 and B6 seeing a notable increase in negative effects across the range of sustainability objectives. In particular, the requirement for increased greenfield release is likely to lead to moderate to major negative effects in terms of soil, land, and townscape. The dispersed nature of development is also less likely to support efforts to tackle climate change, natural resource management and sustainable travel.

5.16 Options B2, B3, B4 and B5 perform similarly in terms of housing, economy, and social factors, as each involve urban intensification that overlaps with deprived locations. There are also similarities with regards to biodiversity, minerals, and water, with limited effects identified for each option. The key differences between the options are as follows:

- Options B2 and B3 are the only options that retain positive effects on land and soil, as they focus entirely on urban intensification. In this respect, greater positive effects are also likely with regards to townscape and landscape.

- Options B3 and B4 are most likely to support the move towards zero carbon living as they focus on accessible locations and / or denser developments.

- Whilst Option B5 could bring good access to employment for new development, it might not translate into good overall accessibility. However, this option is likely to have the most pronounced positive effects upon economy.

- Options B2 and B3 which focus all growth into urban areas could potentially put more people in areas of poor air quality, as well as contributing more car usage in areas that are already suffering from congestion.

- Options B2 and B3 are most likely to have significant effects on the historic environment, from both a positive and negative perspective.

Scenario C

5.17 As the level of growth increases further, so too does the potential for effects of greater significance (both positive and negative) for certain objectives. Broadly speaking, the significance of negative effects become greater for a range of objectives regardless of the distribution. Whilst positive effects increase in certainty for a range of topics, the significance of effects is similar to those predicted for the same options under Scenario B.

5.18 Options C1 and C6 have the potential to generate negative effects across many of the IIA Objectives, with these outweighing the positive effects, that are limited mainly to housing, economy, and health. In particular, the requirement for Green Belt release could lead to major negative effects for land and soil, and landscape and townscape.

5.19 These two options are also least likely to support regeneration initiatives across the region, which is reflected by limited positive effects on the built environment, and the more limited positive effects with regards to health and equalities.

5.20 As the level of growth increases further, the options with a significant focus on urban intensification will continue to have major positive effects with regards to social and economic factors. There would also be greater certainty of these positive effects arising. However, the significance of negative effects could also increase for a range of IIA Objectives, reflecting potential pressures on existing infrastructure and communities from intensified growth. This is likely to be an issue for Option C3 in particular, which would involve high levels of urban concentration to the extent that some communities could experience negative implications in terms of health (at least in the short term). A highly focused approach seen under B2/B3 could also put significant pressures on the road networks in central areas, leading to air quality issues. With a higher degree of change to townscapes, it is also more likely that some heritage assets could see their setting significantly affected (in some cases for the better, but in others for worse).

Summary of effects by SA Topic

Community resilience

5.21 The effects are considered likely to be neutral or minor regardless of distribution. The options that promote urban intensification could potentially bring about some minor positive effects due to urban greening opportunities. The options that involve greater loss of greenfield land and less urban intensification (Options 1 and 6) are predicted to have neutral effects, though these rise to potential minor negative effects at higher scales of growth.

Zero carbon City Region

5.22 One might expect that higher levels of growth would lead to an increase in carbon emissions. However, new development brings the potential to secure enhancements to infrastructure that reduce travel, introduce renewable energy schemes, and build developments to a higher standard. Therefore, regardless of distribution, positive effects are predicted. The effects range from minor positives for dispersed approaches, rising to major positives for urban intensification options at higher scales of growth (due to economies of scale and high density development).

Health and wellbeing / Mental Health

5.23 At a lower level of growth, the effects on health are predicted to be mostly positive regardless of where urban intensification occurs. This is due to improved access to housing and employment, and enhancements to public services, infrastructure, and the public realm. As the level of growth increases under Scenario B, so too does the significance of effects, with major positives predicted for options involving substantial urban intensification. However, negative effects arise as growth increases, reflecting the potential loss of open space in the urban areas, and increases in traffic, noise, and pollution.

5.24 The positive effects remain major positive under growth scenario C, but the negative effects become more prominent for the urban intensification options.

5.25 For the dispersal options, there are some minor positive effects associated with growth in urban areas, but as the amount of dispersed greenfield release increases, the ability to tackle health issues in areas of deprivation are lowered, and investment could be drawn to more affluent locations.

Sustainable housing

5.26 Positive effects are predicted for all of the options, with the significance increasing with the level of growth, particularly for those options that involve an element of greenfield release and / or a wider range of potential locations. This is because he choice of housing would likely be higher and this would help in terms of delivery and attractiveness of market. At a lower level of growth, the effects between distribution are not too dissimilar, but the extent of effects widens at the higher scales of growth, with options C2 and C3 performing less well, and option C6 performing best.

Inclusive economy

5.27 All of the options are likely to have positive effects on the economy. These are minor positive effects for Scenario A, rising to moderate positive effects for Scenario B. The overall effects do not vary much with regards to distribution at these levels of growth. For Scenario C, the significance of effects rises to major for options C1 and C6 as they allow for a wider spread of growth and the use of greenfield sites, which could be attractive for certain employment and housing uses. Options C4 and C5 could also have major positive effects as they allow for a degree of greenfield release as well as focusing on economic and/or transport hubs. The extent of positive effects is limited for the options that focus entirely on urban intensification.

Sustainable transport

5.28 The options perform differently with regards to sustainable transport and accessibility. All of the options involve an element of growth in the urban areas, which are broadly accessible to services, jobs and sustainable modes of transport. In this respect, there are positive effects involved for each option. However, additional growth is directed to different locations, which leads to varied effects. Options which intensify growth in urban areas, are considered to bring about additional benefits by enhancing accessibility in these locations. However, where there are high concentrations of development in centres, this could exacerbate congestion. A focus on sustainable transport nodes brings about similar positive effects but is less likely to lead to congestion issues in central areas. Option A6, which delivers a greater amount of dispersal to smaller settlements is more likely to bring about negative effects in terms of placing new development in locations that are less accessible and likely to encourage car usage. As the level of growth increases overall, the effects (positive and negative) are likely to be exacerbated for each option, with a focus on sustainable transport hubs remaining the most beneficial, and the dispersed approaches being less desirable.

Equality and diversity

5.29 The options that focus on urban intensification are most likely to have positive effects with regards to addressing inequalities. This would be achieved through improved access to homes, jobs, services, and facilities for communities most in need. Given that many of the deprived locations across the City Region overlap with urban centres, several of the options perform similarly in this respect. Alongside positive effects in the urban areas, the potential for negative effects exist, as increased growth may deepen inequalities if it is not inclusive and leads to increased traffic, congestion and pressures on services that are not enhanced. As the scale of growth increases, the significance of the positive effects rises to potential major, but the negative effects remain minor. For the dispersed options, lower levels of growth could have some minor positive effects as they would still involve urban intensification to an extent. However, as the scale of growth and dispersal increase, the positive effects would likely be replaced with negative effects (given that investment could be drawn away from deprived areas).

Biodiversity

5.30 At the lower levels of growth, the effects on biodiversity are predicted to be limited. It ought to be possible to avoid the most sensitive locations, the level of greenfield release would be low and cumulative effects are unlikely to be significant given the dispersal of development. The exceptions are options A3 and A5 which direct the majority of development in locations close to coastal environments, and this could potentially lead to minor negative effects given the proximity to designated wildlife sites. As the level of growth increases, the potential for negative effects rises, particularly for those options that involve higher levels of greenfield release. However, the nature of effects will be very dependent upon specific sites and the biodiversity net gain measures implemented. Nevertheless, it should still be possible to avoid major negative effects under any of the options.

Clean air

5.31 At lower levels of growth, the effects on air quality are likely to be minor. For urban intensification options (particularly a town centre focus), the effects on air quality relate to the potential for increased car usage in these locations, many of which are already suffering from poor air quality. Similarly, these options are more likely to locate new development in areas of poorer air quality. For the approaches that allow a greater degree of dispersal, the likelihood of air quality worsening in urban centres is lower, but they are more likely to lead to an increase in overall car trips. As levels of growth increase, the potential for negative effects in urban centres increases, particularly for Option C3, which could give rise to major negative effects in the short term. The negative effects associated with dispersal options do not increase to the same extent as the urban intensification options, particularly option 4, which focuses on sustainable transport nodes.

Water resources

5.32 The options that focus growth predominantly in urban locations could lead to greater pressures on water quality infrastructure as well as increasing pollutant run-off from urban surfaces (for example transport related pollutants). In this respect, the options involving urban intensification are predicted to have minor negative effects under scenarios A and B. At a higher level of growth, the effects are predicted to be moderately negative for these options. The distribution Options 1 and 6 which involve greenfield release and a dispersed pattern of growth are considered less likely to put pressure on water infrastructure in specific locations. As such, the negative effects are considered to be less significant (but nonetheless still negative at a higher scale of growth).

Land and soil

5.33 The options that encourage urban regeneration are predicted to have positive effects with regards to land resources. There would also be positive effects with regards to soil as pressures to release agricultural land for development would be decreased. In this respect, Options A2, A3, A4 and A5 are predicted to have minor positive effects. Though Options A1 and A6 also involve an element of urban intensification, the positive effects are outweighed by the need for greenfield development, with potential loss of best and most versatile agricultural land. As the scale of growth increases, the positive effects associated with urban intensification are heightened, as there ought to be very efficient use of land. The effects are most prominent for Options B2/B3 and C2/C3, which would also avoid the loss of agricultural land. The options that involve higher amounts of greenfield growth are predicted to have major negative effects under Scenario C, due to the loss of soil and potentially drawing investment away from urban regeneration opportunities.

Landscape / townscape

5.34 The options that involve dispersed greenbelt release and more limited urban intensification are predicted to have negative effects on landscape, with the level of significance increasing at higher levels of growth. These options are less likely to support comprehensive regeneration, and thus the positive effects on townscape are lower and there is greater potential for negative effects on settlement and landscape character. The options that support urban intensification are more likely to have positive effects on townscape, particularly those that overlap with deprived locations. However, at higher levels of growth the positive effects in the urban areas could be offset slightly by a loss of urban greenspace.

Historic environment

5.35 There is a wide range of heritage assets across the City Region, though there are particular concentrations within key settlements. At lower levels of growth, the potential for effects is limited, but there could be minor effects (positive and negative) where there are concentrations of development within town centres (i.e., distribution Options 2 and 3).

5.36 With greater dispersal, there is greater potential to avoid negative effects in the urban areas, but with increasing growth, it is likely that negative effects on the setting of rural heritage could arise. With higher levels of growth, urban intensification approaches are most likely to bring about significant effects in terms of promoting the productive use of heritage assets and improving the quality of townscapes (thus contributing positively to the setting of historic assets). However, the potential for negative effects also increases, particularly with very concentrated approaches (C2 and C3).

Circular economy

5.37 The options that involve the greatest amount of urban intensification are considered most positive in relation to waste management. The reuse of land and buildings ought to result in a lower amount of waste generation during construction. Denser developments with smaller homes are also less likely to generate as much waste as larger homes. In terms of distribution, the options that focus growth into urban locations are also likely to be well served by waste collection infrastructure and should result in waste being transported shorter distances compared to a more dispersed approach. With a greater level of growth, the overall increase in waste generation could offset the positive effects associated with the reuse of land and buildings.

Minerals

5.38 There are relatively few safeguarded mineral resources across the region that are in locations suitable for housing and employment growth. Therefore, it is unlikely that mineral resources would be affected by growth for any of the options under scenario A and B. At the higher level of growth, options C1 and C6 would require greater incursion onto Green Belt land, and this increases the potential for overlap with mineral resources. It also requires greater use of raw materials for new infrastructure. Therefore, minor negative effects are predicted.

6. Appraisal of spatial growth options (Stage 2)

Introduction

6.1 The refined spatial options (i.e., the distribution options under scenarios D-F) have each been appraised against the IIA Framework, utilising the same methods discussed previously in Section 5. The results of the appraisal are summarised in the matrix below, followed by a summary discussion. Detailed appraisal findings are contained within Appendix C

Summary

6.2 Table 6.1 sets out a visual summary of the IIA findings for each of the reasonable alternatives at this stage. The significance of effects relates to residual growth only, and not those associated with committed and residual growth combined. This distinction has been made to allow an understanding of how each option would lead to differential effects beyond the current local plan periods. The committed growth is presumed to be a part of the 'future baseline', and the effects are largely due to individual Local Plans rather than the SDS itself. However, it should be acknowledged that committed growth will also be influenced by the policies within the SDS, and this is taken into account in Chapter 8, which presents an appraisal of all the draft policies considered together.

6.3 The assessment identifies mostly positive effects and concludes that it ought to be possible to avoid major negative effects. This is to be expected given that the poorer performing options from the initial stage of options assessment were discounted. However, this does not mean that major negative effects will definitely not arise as a result of the SDS or Local Plan decisions. This will depend upon further detail on the location of development. In the absence of further detail being provided in the SDS, a degree of uncertainty will remain about the significance of effects.

6.4 Differences in the significance are fairly limited between distribution options, but there are greater differences noted as the scale of growth increases.

Scenario D

6.5 At this scale of residual growth, the effects are predicted to be either minor or neutral for each of the IIA topics.

6.6 There are minor positive effects for the majority of the IIA topics, and there is little to differentiate the three options. All of the options are likely to bring positive effects on social factors by bringing additional housing and investment, but at a level that is unlikely to overwhelm existing infrastructure. Conversely, the scale of growth is not substantial enough to lead to more significant positive effects.

6.7 Given the focus of each option, it is unlikely that negative effects will arise for most of the IIA topics.

6.8 Potential minor negative effects are only identified for two topics: air quality and biodiversity. Though the magnitude of effects is relatively low, these are important issues and the receptors are relatively sensitive. Air quality issues are more likely to arise where there is a focus of growth into urban areas, but the potential for mitigation and longer term changes in travel behaviours should mean these effects are not permanent. Likewise, with biodiversity, an increase in growth could lead to increased recreational pressure and disturbance to habitats, but in the longer term, net gain ought to ensure the effects turn positive.

6.9 The main differentiator between the options at this scale of growth is housing, with option D2 performing less well compared to D1 and D3. This is because the residual growth is more focused towards Liverpool City and the Inner Urban Area, and this could limit choice somewhat.

Scenario E

6.10 As the scale of residual growth increases, the options are likely to generate effects of greater significance and there is slightly more to differentiate between the distribution options.

6.11 All the options are predicted to have positive effects of greater significance with regards to social factors including health and wellbeing, mental health, sustainable housing and equality and diversity. This mainly relates to an increased delivery of housing and the benefits this is likely to bring for a range of communities (particularly those in greater need). There are some slight differences between the distribution options in terms of where the benefits would be felt the most, but overall, they all constitute moderate positive effects for these sustainability topics.

6.12 The potential for negative effects on health arise at this scale of growth though mainly in relation to the impacts that construction, urbanisation, and increased development could bring in terms of mental health and wellbeing.

6.13 As the scale of growth increases, the likelihood that greenfield land will be required increases. This brings minor negative effects on land and soil for the options that disperse growth more widely, which also has knock-on effects in terms of waste generation /movement, and the use of minerals. In this respect, a focus in Liverpool City Centre and the Inner Urban Area is more preferable (Option E2). However, the positive socio-economic effects are less certain for Option E2 as there is some uncertainty about the deliverability of further housing growth on brownfield land.

6.14 With regards to landscape, townscape and the historic environment, the options focusing more heavily on Liverpool City and the Inner Urban Area (E1 and E2)are considered likely to have better opportunities to support heritage-led regeneration. In this respect, these options could give rise to moderate positive effects on heritage, whilst the more dispersed approach under E3 only gives minor positive effects. Conversely, the potential for negative effects on heritage (alongside positives) is also higher with urban densification. A dispersed approach brings with it greater potential for negative effects on landscape though.

6.15 With a greater amount of growth being dispersed, each of the options bring better potential to support transport infrastructure improvements. However, there is also a greater likelihood of congestion and increased car trips. In this respect Option E3 performs less well compared to options E1 and E2 as the length of trips is likely to be greater and less growth is directed to Liverpool City and the Inner Urban Area (which have excellent accessibility).

Scenario F

6.16 Planning for a higher amount of residual development gives rise to effects of greater significance, whilst also highlighting some of the differences between distribution options more clearly.

6.17 The potential for major positive effects is noted at this higher scale of growth with regards to health, wellbeing, equalities, and an inclusive economy. Each option is likely to generate benefits in this respect, though Option F2 is considered most likely to support a wide range of community groups given the diversity of communities in these locations.

6.18 Alongside these positive effects though, there is a greater possibility that some communities will experience negative effects on mental health and amenity, and there could be increased traffic and air quality concerns. Consequently, inequalities could widen (at least in the short term). It is expected that these effects would not be permanent though if growth comes with infrastructure upgrades and reflects the aims of the SDS.

6.19 At a higher level of residual growth, option F2 is clearly the best option in terms of avoiding negative effects on soil resources and landscape. Option F3 on the other hand is more likely to require consideration of greenfield / Green Belt land release and the loss of agricultural land resources. All three options could also put greater pressure on townscapes that are vulnerable to change such as waterfront environments.

6.20 A key difference between the options at this scale of growth is the significance of effects with regards to housing. Option F1 and F3 provide more flexibility, and thus are more likely to give rise to major positive effects compared to F2.

Table 6.1: Summary of appraisal findings (Refined spatial options)

SA Topic	D1	D2	D3	E1	E2	E3	F1	F2	F3
Community resilience									
Zero carbon City Region	?		?	?			?		
Health and equality					?	?			
Mental health				?		?	?	?	?	?	?	?
Sustainable housing					?				
Inclusive economy					?		?	?	
Sustainable transport									
Equality and diversity						?	?	?	?	?	?
Biodiversity *	?	?	?	?	?	?	?	?	?
Clean air	?	?	?				?	?	?
Water resources									
Land and soil				?			?		
Landscape / townscape								?	
Historic environment							?		?	
Circular economy		?		?			?	?	?
Minerals				?	?				

**not taking account the potential for net gain in the longer term*
The use of the ? Symbol denotes a degree of uncertainty in the prediction of the effect.

Interpreting the significance of effects

Major positive	
Moderate positive	
Minor positive	
Neutral	
Minor negative	
Moderate negative	
Major negative	
Uncertainty	?

7. Options for employment land

Introduction

7.1 In accordance with national planning policy, planning for the right amount and type of employment land is an important part of the plan-making process. It is recognised that the identification of a suitable employment land requirement and strategic employment sites through the SDS will help support the ambitious economic growth agenda across the City Region, providing jobs and seeking to help social progress and environmental improvements.

7.2 Establishing what type and amount of land is required (needs) is an important first step, followed by an understanding of the amount of land that is already being provided or is expected to come forward in the plan period (supply). This then allows the plan makers to determine how much and where further land may be required.

7.3 The key piece of evidence for 'needs' for the SDS is the Housing and Employment Development Needs Assessment (HEDNA, 2023). This identifies objectively assessed need for general industrial land, office and research development, and strategic distribution and warehousing.

7.4 The key pieces of evidence on 'supply' are the Strategic Housing and Employment Land Supply (SHELS, 2023) and the Strategic B8 Land Use Forecasts Paper (2023). These reports identify existing and potential sources of employment land across a range of sectors.

General industrial land

7.5 The HEDNA identifies objectively assessed need for employment land on the basis of historic trends and the need for a 5-year buffer to ensure choice and flexibility. It identifies an employment land objectively assessed need across the LCR for general industrial uses of 521ha, and for office and research and development uses of 281, 600 sqm from 2021 up to 2040.

7.6 The SHELS identifies a total of 801.2 ha of employment land in the pipeline either committed or allocated in the LCR Local Plans. This indicates that there is a surplus of 280.2 ha of general industrial land across the City Region. Only Liverpool City has a lower supply than the identified need, but the HEDNA figure is for a longer time period through to 2040 (compared to 2033 for the Liverpool Local Plan)

7.7 The LCRCA consider that it is therefore reasonable to presume that the existing supply of land identified in Local Plans is sufficient to cater for general employment land needs throughout the SDS Plan period (alongside other sources of supply). Individual Local Plan Reviews would provide an appropriate vehicle for exploring longer-term trends and authority specific site locations / options if necessary, including detailed historical employment land losses and the reasons for them.

Office and research and development

7.8 The HEDNA considers that over the lifetime of the SDS, net changes in floorspace for office and research and development are likely to be negative overall, having regard to the impact of changing working patterns and the loss of older, poorer stock. However, the HEDNA indicates that the quality of stock is weak and there is a strong case for seeking to deliver new office floorspace where it is viable to do so to meet modern business needs.

7.9 The HEDNA suggests that the market is expected to increasingly orientate towards high quality office stock in attractive locations and therefore new office and research and development uses can be expected to be focused in higher quality locations.

7.10 Local authorities' employment land reviews should consider identifying the office and research and development stock that should be protected and options could be tested as appropriate at that stage.

Strategic distribution and warehousing land

7.11 The Strategic B8 Land Use Forecasts Paper identifies a Liverpool City Region need for 293- 343ha of land for strategic B8 use from 2021 to 2040. This includes a five-year buffer to provide for a level of choice and competition in the market.

7.12 Based on the findings of the Strategic B8 Land Use Forecasts Paper, there does not appear to be a need to identify further land at the current time for strategic B8 development across the City Region over and above those sites already in the planning pipeline. There is 419 ha in the pipeline taking into account the potential for non B8 uses to form a part of developments and an allowance for land recycling. There are a range of strategic sites allocated in local plans across the City Region, which will all play an important role in delivering the quantum and quality of land required to meet needs. The LPAs and the LCRCA are confident that these strategic sites are deliverable and are expected to come forward in the Plan period. In this respect, the LCRCA believe that a reasonable approach is to presume that the existing supply of land is sufficient to cater for strategic B8 employment land needs throughout the SDS Plan period. This is articulated as part of the emerging spatial strategy in Policy SP2.

What are the reasonable alternatives?

Planning for a lower level of employment land provision

7.13 The LCRCA consider it to be unreasonable to plan for a level of employment land provision lower than the identified needs (both overall and for specific types) as this would not meet the objectives of the SDS. There are no exceptional circumstances that suggest needs should not be met in full, and such an approach would not align with existing Local Plan strategies and wider Liverpool City Region Combined Authority objectives.

Planning for a higher level of employment land provision or a different distribution

7.14 The LCRCA consider that no reasonable alternatives present themselves at this moment in relation to setting a higher minimum employment land requirement or alternative distributions. As set out in the HEDNA, there is no evidence that supports the need to plan for additional employment land above the minimum needs identified in the HEDNA, and the current surplus in supply is sufficient to allow for a degree of flexibility to achieve objectively identified needs.

7.15 The LCRCA are mindful that future economic and demographic conditions could change, and that there may be a need to plan for additional or alternative employment land. For example, employment land could be lost to alternative uses such as residential, there may be incentives / ambitions to pursue an even higher level of employment growth, or conditions regarding strategic sites may change. Having said this, at the current stage of plan-making, the LCRCA consider that the identified supply is robust and informed by credible evidence. This applies to the general industrial supply and B8 strategic supply.

7.16 It would also be premature to establish and appraise reasonable alternatives until there is greater clarity about the following factors:

- What evidence is there to support higher scales of growth and what would be appropriate figures?
- What other locations for strategic growth should be considered as alternatives IF there is a need to consider higher levels of growth or different distributions? This should for example be informed by a call for strategic sites exercise and examination of further sources of supply.

7.17 In conclusion, the LCRCA consider that there are no reasonable alternatives to test in the IIA at this stage of plan-making with regards to employment growth or distribution. The LCRCA anticipates that this will continue to be the case, given that there is a robust and credible body of evidence supporting pipeline supply. However, the potential to establish and appraise detailed reasonable alternatives (at a later stage) is not being ruled out entirely given then need to respond to external factors as the plan progresses.

7.18 Through the current consultation, the LCRCA encourages stakeholders to provide feedback on what they think constitute reasonable alternatives for employment and provision.

8. Appraisal of draft policy

Introduction

8.1 Following engagement so far on the SDS, the LCRCA has developed and set out a range of proposed policy approaches, categorised as 'Spatial Priorities' and 'Development Principles'.

8.2 These policies are intended to guide development across the Liverpool City Region alongside existing and emerging Local Plans.

8.3 At this stage, policies are in 'draft' form. The purpose of engagement is to gather feedback from stakeholders on whether the policies set the right framework and address issues adequately.

8.4 The IIA has been used to help identify the potential positive and negative effects of the proposed policy approaches at this early stage of plan making; helping to influence the decision-making process as the Plan moves towards finalisation.

8.5 Given that the policies are relatively high level and, in some cases, not locationally specific, the appraisals are necessarily high level at this stage, and rather than seeking to provide a definitive prediction of the significance of effects, the intention is to identify the likelihood of effects being broadly positive or negative. It is also possible to make recommendations to help inform future iterations of policies, with the aim of minimising potential negative effects and maximising the positives.

8.6 For each of the policy approaches, an indication is given as to whether there are likely to be broadly negative, neutral, or positive effects. Where there is considerable uncertainty, this is highlighted. Appendix B sets out a matrix summarising the findings of the policy screening exercise in visual format.

8.7 Following this 'policy screening' approach, broad conclusions have been reached with regards to each of the IIA topics (see below).

Policy Principles: Appraisal findings

Community resilience

8.8 The spatial approach to development should limit the amount of greenfield land release, which is positive in terms of resilience to flood risk and climate change.

8.9 The proposed policies are likely to have only positive effects with regards to community resilience. In particular, this relates to policies that promote improvements with regards to health and wellbeing such as DP4 (Promoting Health and Wellbeing), DP5 (Health Impacts) and DP16 relating to social value.

8.10 There are also a range of other related policies that should help create the framework for healthy communities such as environmental protection and enhancement and infrastructure delivery (SP4).

8.11 Other aspects of resilience which the Plan policies will have positive effects upon relate specifically to climate change adaptation and flood risk. Of particular note are policies SP6 ((Blue and Green Infrastructure) SP8 (River Mersey and the Coast), DP1 (Planning for Climate Change) and DP13 (Water Management and Flood Risk), which should also help to improve natural processes and therefore become more resilient to natural hazards.

8.12 Policies that seek to improve the natural environment such as DP7 (The Natural Environment and Nature Recovery) should also have benefits in terms of health and wellbeing and resilience.

8.13 Overall, **minor positive effects** are predicted.

Zero carbon City Region

8.14 In terms of zero carbon, the majority of proposed policies are predicted to have positive effects, reflecting a strong focus on achieving carbon emissions reductions. This would primarily be achieved by:

- The spatial strategy promotes accessible neighbourhoods and focuses development into locations that are less likely to increase per capita carbon emissions.
- Promoting reuse of land and buildings, which can reduce emissions from extraction and construction activities (SP3, DP8, DP12),
- Seeking to provide the infrastructure to support a shift towards low carbon transport and travel and renewable energy networks (SP4, DP9, DP10, DP11).
- Supporting measures that can lead to carbon sequestration such as preservation and enhancement of natural environmental features (SP6 and DP7 in particular)
- Planning for climate change by seeking to minimise carbon emissions, enable carbon sequestration and considering the whole life cycle of developments and their resource efficiency (DP1, DP7, DP8, DP11)

- Promoting sustainable patterns of growth and a shift to increased walking, cycling and sustainable travel choices (DP10)

8.15 However, there are some question marks relating to policies SP7 and SP9 which have been identified as potentially having negative effects.

8.16 SP7 supports international connectivity, and given current modes of travel, this will inherently lead to an increase in carbon emissions through increased air and water trips. SP9 supports the growth of tourism and visitation, which again is likely to give rise to energy use and consumption of goods and services (all of which have associated carbon emissions).

8.17 Of crucial importance will be to ensure that carbon emissions associated with these activities are minimised, and this is a feature throughout the Plan policies (For example, seeking to deliver sustainable transport, access to facilities and supporting opportunities for 'eco-tourism').

8.18 Overall, the draft policies considered together are predicted to have **minor positive effects** with regards to zero carbon. The strategy focuses growth into accessible locations that ought to reduce the need to travel and make use of public transport, and several policies seek to achieve emissions reductions. However, it is uncertain to conclude that significant changes would be seen in the absence of further policy detail.

Health and equality

8.19 The majority of proposed policy principles are likely to have positive effects with regards to health.

8.20 There is a focus on regeneration and inclusive economic growth in the strategy and several of the supporting policies. These efforts should help to improve life opportunities and the quality of places in the City Region, which is positive with regards to health and wellbeing.

8.21 There is also a strong focus on social value, and the opportunities that development, tourism, housing, and jobs must bring to enhance opportunities for local communities (particularly those in most need).

8.22 There are several specific policies (DP4 / DP5) that directly seek to manage health impacts and set out a framework for exploring and addressing the health impacts associated with new development. Policy DP16 should lead to positive effects on health by taking a proactive approach to social value, requiring strategic developments to be accompanied by a Social Value Statement.

8.23 Several policies promote / encourage sustainable and active travel networks, which are likely to bring benefits in terms of access to services, jobs, and facilities. They will also help to increase activity levels, with positive long-term effects on health outcomes.

8.24 There is also a focus on environmental improvement, whether this be through high quality design, nature recovery, safe communities and protecting amenity.

8.25 Promoting access to nature has proven benefits for health and wellbeing, as does feeling safe and being free from pollution.

8.26 Addressing matters relating to community resilience are likely to have secondary positive effects in terms of health by talking risks associated with climate change, improving living environments and tackling fuel poverty.

8.27 Housing is directed to the urban areas which in many instances overlap with the most deprived locations. Taking into account the proposed policies discussed above, new development should help to provide an increase in affordable housing and investment in new facilities that can have positive health outcomes. However, the level of residual planned growth is not substantial, and it is unclear the extent to which facilities in urban areas will be enhanced to accommodate new development whist improving services for existing residents. Therefore, overall, whilst **positive effects** are predicted, there is an element of uncertainty regarding significance.

Mental health

8.28 There are likely to be positive effects on mental health and wellbeing as a result of most of the plan policies. Factors which lead to good physical health should also have benefits for mental health for a range of people. Those who directly benefit from affordable housing, better quality housing, job opportunities and better access to services ought to have more protective factors in terms of their mental wellbeing and resilience. A focus on regeneration within deprived locations should also ensure that people more likely to suffer from mental health issues are well targeted.

8.29 Improvements to green and blue infrastructure (SP6 / DP7), access to wildlife, urban greening (SP6) and the public realm, should all help to create better living environments, which help to maintain and improve mental health and wellbeing.

8.30 Seeking to achieve safer environments (DP15) and improving the function and viability of town centres (SP5) should also help to create active places with improved natural surveillance. This is likely to reduce fear of crime and anti-social behaviour (particularly amongst most affected groups such as women) which is positive for mental health and wellbeing. The same can also be said for improving public transport networks (DP10) and encouraging physical activity.

8.31 Increased urbanisation could potentially put pressure on public services, increase traffic and congestion, and lead to disturbances during construction phases, as well as higher levels of noise in the longer term. There is also potential that increased international activity and tourism activities produce similar effects. These factors could possibly have a detrimental effect upon mental health and wellbeing, particularly for nearby communities. However, there are several policy measures in place that should help to ensure that development does not have significant detrimental effects. For example, through the application of health impact assessments (DP4 / DP5), the need to secure high-quality design (DP6), enhancements to the public realm, blue and green infrastructure networks (SP6) and the need to reduce traffic congestion and improve air quality.

8.32 Strategic developments will also be required to demonstrate how social value will be achieved (DP16), which could be a combination of the factors discussed above.

8.33 In combination, the SDS policies are predicted to have **minor positive effects** with regards to mental health and wellbeing.

Sustainable housing

8.34 The SDS plans to meet objectively assessed housing needs, which is positive in terms of overall housing provision. However, much of this housing is already 'committed', and the residual planned growth is fairly modest. The types of homes likely to be developed could also be influenced by the spatial strategy, which focuses a large amount of growth to urban areas where densities are higher. The approach limits growth in rural areas and lower-order settlements, which could mean that housing affordability remains an issue across parts of the City Region.

8.35 None of the draft policy principles are predicted to have negative effects, either individually or when considered together with regards to housing. Though there are several requirements that could add to the cost of housing, these are becoming a necessity rather than a desirable feature of new development. Therefore, it is unlikely that the policies would be overly restrictive or limiting in terms of being able to achieve sustainable housing. Conversely, several positive effects are identified for a range of policies.

8.36 SP3 and DP8 support brownfield regeneration and seeks to catalyse developments where opportunities exist.

8.37 SP4 identifies and supports the development of important strategic infrastructure that will help to unlock opportunities for housing growth. Further requirements relating to infrastructure are set out in DP9.

8.38 SP5 supports appropriate residential uses within town centres.

8.39 DP2 supports a range of different housing developments and the supporting infrastructure required, whilst DP3 supports economic activity that will help to drive housing development and provide jobs for residents.

8.40 DP4, DP5, DP8 and DP6 will all help contribute towards higher quality environments and living conditions, which is positive in terms of achieving sustainable housing.

8.41 Overall, the SDS includes a range of policies that should be positive in terms of supporting sustainable housing delivery. However, the range of locations and the amount of planned growth are fairly limited, and this could prevent more significant positive effects arising. There could also be a reliance on housing delivery in areas that have historically had viability issues. As such, only **minor positive effects** are predicted.

Inclusive economy

8.42 The majority of plan policies are positive with regards to this SA topic, reflecting one of the key aims of the Plan to achieve inclusive economic growth.

8.43 As well as a direct strategy and policies to support inclusive, sustainable growth (DP3 -Economic Prosperity), there are several factors that should help to achieve positive effects with regards to the economy and inclusivity, as listed below.

- SP4 (Strategic Infrastructure) identifies strategic infrastructure improvements that will be required to help support sustainable economic growth and improve business conditions in the City Region as well as strengthening international connections (SP7, International Connectivity). This includes social infrastructure and sustainable public transport (DP10, Sustainable Transport and Travel) which ought to help improve inclusivity.

- SP5 (City and Town Centres) will support investment in City and town centres, which will help to prevent 'deterioration' of urban areas and the communities that are nearby and somewhat dependent upon vibrant environments.

- Several policies that seek to protect and enhance natural environmental features (SP6, Green and Blue Infrastructure and DP7 Planning for the Natural Environment *in particular*) are positive with regards to the economy as they will support tourism and visitor activities and provide ecosystem services (reducing costs for environmental management). This need not be at odds with economic growth aspirations, as development can be directed to suitable locations and designed to incorporate appropriate mitigation and enhancement measures.

- DP11 (Energy), DP12 (Resources) and DP13 (Water) are positive in several ways in terms of a sustainable economy. First, planning for adequate utilities infrastructure will allow business to grow without undue pressure on the environment, communities, and transportation networks. Second, promotion of green industry, 'eco-tourism' and an increase in renewable / low carbon energy and waste management will help to shift the economy towards zero carbon.

- Policies that seek to protect and enhance the cultural / historic environment (SP11 Historic City Region, DP10 Planning for Culture and the Historic Environment) and those that support tourism and international connectivity are likely to have benefits in terms of creating local jobs and boosting GVA.

- The Plan has a strong focus on the need to deliver social value (DP16, Delivering Social Value) and to achieve an improvement in health and wellbeing, which should help to ensure that development contributes positively to inclusive growth, rather than perpetuating negative outcomes for communities as a result of economic growth.

8.44 Overall, **moderate positive effects** are predicted. The SDS supports economic growth in several sectors, and also seeks to create the conditions for investment. Housing growth is promoted in 'sustainable locations' but this may not provide the full range and choice of housing locations and types to support an ambitious economic growth strategy. There are therefore some uncertainties.

Sustainable transport

8.45 In terms of sustainable transport, the proposed policies are predicted to have mostly positive effects, which reflects a focus on achieving modal shift, minimising carbon emissions, and creating sustainable locations for economic and housing growth.

8.46 These principles flow through the Plan in several policies, including those that relate directly to transport and infrastructure, those that relate to the natural environment, those that relate to healthy living and those that relate to culture.

8.47 A key tension lies within Policy SP7, which on one hand promotes sustainable transport and reduced carbon emissions associated with international connectivity. Conversely, actively promoting international movements of goods and people will lead to an increase in greenhouse gas emissions and long-distance travel.

8.48 The same is also true for Policy SP9, which promotes the growth in tourism and visitation (albeit the need for excellent and sustainable transport links is a key element of the proposed policy).

Equality and diversity

8.49 Increased development and intensification of growth in deprived locations has the potential to widen inequalities if it leads to displacement, poorer air quality and no job opportunities for people with lower skills and education. However, a range of policies seek to ensure that positive effects are achieved instead.

8.50 Policy SP3 (and DP8) should bring about positive effects with regards to equality of opportunity as it seeks to boost regeneration in areas of deprivation. However, development can potentially worsen equalities, and therefore there is a degree of uncertainty when looking at this policy in isolation.

8.51 Several policies that seek to improve the natural environment ought to have benefits for communities, particularly where there is a shortfall in provision (quantitatively or qualitatively); this includes SP8 and DP7 in particular.

8.52 There are several policies that directly seek to improve the social benefits associated with development, with SP11 in particular requiring a social value statement to be prepared for strategically important developments. Policy DP4 (Promoting Health and Wellbeing), DP5 (Impacts on Health) and DP2 (Sustainable Places and Inclusive Communities) also seek to achieve positive outcomes for communities, and explicitly mention a need to reduce inequalities, which is positive with regards to this SA topic.

8.53 The Plan policies which seek to achieve sustainable economic growth (DP3) and enhance sustainable transport connections across the City Region are also likely to be positive by providing job opportunities and improved opportunities to access employment and facilities. The need for growth to be inclusive and leave lasting positive outcomes for communities in most need is also a clear message throughout the policies that provides the framework for reducing inequalities.

8.54 Overall, it is considered that the SDS will have positive effects in terms of equality and diversity. Whilst development and growth have the potential to widen inequalities, the policies seek to ensure that new development brings social value and opportunity. Therefore, **moderate positive effects** are predicted.

Biodiversity

8.55 The spatial approach to development is likely to be beneficial with regards to biodiversity as it avoids any significant loss of greenfield land. There are also a range of policies in the plan (discussed below) which seek to achieve enhancements to biodiversity.

8.56 Policies SP7, SP8 and DP7 in particular are likely to bring about positive effects with regards to biodiversity as they focus on the protection and enhancement of green and blue infrastructure, particularly sensitive coastal environments. The policies take a strategic approach in seeking to connect ecological corridors and achieve net gains at a City-Region scale, which sets a positive framework.

8.57 Other policies are identified that have a greater potential to have negative effects. This includes SP7 (International Connectivity) and DP3 (Economic Prosperity) in particular, as both policies are supportive of growth in industry that could have negative effects on water environments, and also through a loss greenfield land for employment space. The negative effects are not a certainty though, and there is an aim within these (and other) policies that economic and international growth is achieved alongside environmental protection and enhancement and a growth in the 'green economy'.

8.58 The provision of strategic infrastructure has the potential to have negative effects upon biodiversity through severance of habitats, disturbance and also indirectly through increased pollutants. However, there is uncertainty as it will depend upon the location and design of developments. Several other policies support biodiversity (albeit to a more focused extent) by seeking to enhance habitats to help address climate change (DP1), to support sustainable connections using green infrastructure (DP2).

8.59 Policies SP4 and DP9 set out a framework that encourages new development to contribute towards enhancements to green and blue infrastructure. There are also other policies that will indirectly benefit biodiversity such as DP12, which supports restoration and aftercare of mineral sites.

8.60 Overall, mixed effects are predicted. **Minor negative effects** could arise as a result of continued recreational pressure on wildlife sites, increased tourism and water based activities. However, plan policies are likely to limit these effects, and promote enhancements in biodiversity. The scale of additional planned growth is relatively limited, and therefore in the longer term, the effects are more likely to be neutral or positive.

Clean air

8.61 Several policies are identified as potentially leading to negative effects with regards to air quality. This relates to a focus on urban intensification and regeneration, which includes locations that currently fall within air quality management areas. There is a focus on achieving inclusive economy growth, which is likely to involve new employment sites and expansion of existing strategic sectors. This is likely to lead to an increase in the movement of goods and people.

8.62 In particular, the movement of goods and people to and from ports, the airport and strategic employment sites could worsen air quality along routes that already suffer in this respect. This is a key tension in the Plan, but it should be acknowledged that there is also a focus on increasing sustainable transport and travel, reducing the need to travel to access jobs and services, supporting enhanced broadband and information technology infrastructure and supporting a move towards low emissions vehicles. Policy DP4 explicitly mentions the need to ensure that new development does not lead to a significant deterioration in air quality, including from cumulative impacts. Policy DP5 furthers the need to minimise air quality impacts and take opportunities for enhancement. Several policies are also likely to have indirect positive effects on air quality through the protection and enhancement of the natural environment (DP7).

8.63 For some policies, the potential for both positive and negative effects are identified. This includes those that focus growth to town centres and other locations in need of regeneration. On one hand, the locations are generally accessible and should encourage shorter trips and sustainable travel. Conversely, these areas are amongst those that are suffering from poor air quality, and concentrated growth could draw further traffic into these areas.

8.64 On one hand, the SDS is proactive in promoting an improvement in air quality through a range of measures (public transport, urban greening, accessibility etc). Conversely, it is likely to lead to an increase in traffic, which in the short term (at least) could lead to poorer air quality / more people being at risk of exposure. In this respect, **minor negative effects** are predicted alongside longer term positive effects.

8.65 The Plan therefore needs to ensure that the necessary infrastructure to support modal shift is in place in tandem with any significant growth in new homes and employment.

Water resources

8.66 The proposed policies have the potential for mixed effects with regards to water resources.

8.67 Several policies could have potentially negative effects as they encourage water-based travel, movement of travel and recreational activities. For example, tourist activity and international connectivity are both likely to involve increased freight movement, boat and ports activity, which have the potential to have negative effects on marine environments.

8.68 Environmental Impact Assessments supporting the Liverpool Cruise Terminal Extension and the Isle of Man Ferry Terminal suggest that impacts would not be significant, but a continued focus on expansion in activity could possibly lead to cumulative effects. In addition to continued residential development being focused into the Liverpool City Centre and Inner Urban Areas, the potential for minor negative effects arises.

8.69 Policy SP8 also supports the ambition for tidal energy, which could contribute further effects on marine environments.

8.70 Other proposed policies are likely to offset / mitigate these possible effects. For example, DP13 explicitly seeks to improve water environments, whilst Policy DP7 seeks a 'marine net gain', and SP8 seeks to ensure that there is no adverse impact upon water quality, including dune aquifers and bathing water.

8.71 Policies which promote enhanced design, consideration of climate change and the use of sustainable drainage systems are also likely to have benefits with regards to water quality and resource protection across the City Region.

8.72 Environmental protection and enhancement are other features of the draft Policies, with Policy SP6 (in particular) seeking to secure enhancements to blue infrastructure, which should be beneficial for water quality and in-turn aquatic life.

8.73 Protecting soil erosion and ground quality (mentioned in policies SP8, SP10) are also positive measures in terms of water quality as they will help to prevent further pollution and / or sedimentation.

8.74 Overall, whilst elements of the SDS could give rise to negative effects, there are policy protection and enhancement measures in place that should ensure that effects are **neutral**.

Land and soil

8.75 Several policies (Particularly SP3 and DP8) seek to promote the use of previously developed land and existing buildings, which will help to reduce pressure on greenfield sites across the City Region. This also applies to the protection and productive use of historic buildings (DP10, Culture and Historic Environment), and higher density development, which can reduce the need for new land release.

8.76 These policies link well to the spatial approach to development, which is likely to avoid development on greenfield land thus protecting soil resources from development pressure.

8.77 Further protection for land resources is offered by SP10, which provides a strategy for rural areas, seeking to preserve soil resources and Green Belt. Other strategic approaches that promote urban locations such as SP5 (City and Town Centres) are also likely to have benefits for this SA topic.

8.78 There are some policies where mixed effects are predicted. Policy DP3 (Economic Prosperity), could lead to the loss of greenfield land to support growth in certain industries that require large floorplates at the urban fringes.

8.79 Conversely, it promotes town centre uses, productive use of infrastructure and the protection of the rural economy (which his likely to involve preservation of land and soil resources). Policy SP10 (Rural City Region) is also flagged as potentially giving rise to some negative effects (alongside positives discussed above), which relate to the possibility for rural diversification activities to negatively affect soil and land. However, the policy also recognises the need to protect land resources, and their importance to the rural economy. As such, negative effects ought to be minimised and positive effects are also anticipated.

8.80 Efforts to address climate change and achieve environmental net gain ought to be beneficial for this SA topic, especially those that seek to protect peat (DP1, Planning for Climate Change) and protect habitats that have positive synergies with soil structure and function (for example SP6, Blue and Green Infrastructure, and DP7 Planning for the Natural Environment).

8.81 Overall, the policies are predicted to have positive effects upon land and soil resources as there is a strong focus on urban regeneration. Where potential effects arise as a result of growth in rural areas or on greenfield land, there are policies in place that seek to protect important land and soil resources. As such, on balance, **moderate positive effects** are predicted.

Landscape and townscape

8.82 The proposed strategy directs most of the growth into urban areas, which is likely to help protect landscape character in rural and edge of centre locations. There is also a focus on brownfield regeneration (DP8, SP3), which will help to improve the townscape by finding uses for vacant land and disused buildings. Further improvements to townscape are likely to arise through a focus on blue and green infrastructure enhancements (SP6), urban greening, high-quality design (DP6) and planning for healthy communities through measures such as open space and leisure provision (DP4).

8.83 Policy SP10 is likely to bring benefits, as it seeks to protect the character of rural locations, specifically refers to landscape character, and will also help to protect and enhance features that allow enjoyment of the countryside such as public rights of way.

8.84 Other measures that could help to maintain rural landscapes are those focusing on the protection of soil resources and agricultural practices (SP10), nature recovery (DP7) and carbon sequestration (DP1).

8.85 Restoration of mineral workings (DP12) and a focus on nature recovery schemes should also have long term positive effects for landscape.

8.86 Several policies could possibly have negative implications for landscape / townscape through the delivery of new transport infrastructure (SP4), new employment land (SP2), and increased international activities (SP7). There are plan policies that ought to minimise negative effects though, including those that seek to protect the waterfront character (SP8), rural landscapes (SP10) and the historic environment (DP14). It will be necessary for such effects to be explored further once detailed schemes and projects are identified.

8.87 Overall, mixed effects are anticipated. There are clear benefits in terms of protection for countryside landscapes, and improvement of townscapes. However, there could potentially be some locations where townscape is negatively affected such as waterfront environments and locations for strategic employment land.

8.88 There are uncertainties around the negative effects as it is unclear the exact location of growth and supporting infrastructure. However, the magnitude of effects ought to be relatively low and there are policies in place that should provide a degree of mitigation. Therefore, only **minor negative effects** would be anticipated alongside **moderate positive effects**.

Historic environment

8.89 Many of the policies that will bring positive effects to landscape and townscape are also likely to be positive with regards to the historic environment. This would primarily be achieved by protecting the setting of heritage assets, especially those that are contributed towards positively by public open space and green infrastructure.

8.90 Supporting and prioritising brownfield regeneration in urban areas could have mixed effects. Urban development could have negative effects on the historic environment if it leads to congestion, unsympathetic development, overcrowding, and loss of buildings and other features of historic interest. Increased use and development of the ports and transport infrastructure could also have negative implications if it leads to changes to the character of the Waterfront.

8.91 On other hand, regeneration will help to achieve productive uses for underused land and buildings. This could directly benefit buildings that are designated as heritage assets, as well as bringing enhancements to townscape that are complementary to cultural heritage more broadly. Several other plan policies should assist in supporting the historic environment and ensuring that regeneration is positive rather than negative.

8.92 Policy DP14 is key, as it directly relates to the historic environment; seeking to maximise the opportunities created by regeneration. The policy seeks to protect and enhance assets, particularly those of strategic importance and also mentions the importance of addressing cumulative effects.

8.93 Other plan policies that ought to help protect heritage include those relating to high quality design (DP5), and those that recognise the importance of the historic environment to the economy (e.g., DP3, SP9, SP8).

8.94 These policies will help to ensure that heritage is an intrinsic part of development and growth aspirations (rather than leading to negative effects).

8.95 Where negative effects could arise, there will be a requirement to minimise these and to record any archaeological features. This will need to be discussed and presented in a heritage impact assessment where appropriate, which is an appropriate framework for implementing the policy principles and aspirations.

Circular economy

8.96 The spatial strategy is unlikely to lead to a significant amount of additional waste generation given that the planned residual growth is not substantial, and the pattern of growth should help to promote efficient waste management practices. Furthermore, there is a focus on regeneration and reuse of materials.

8.97 Several policies are likely to be positive with regards to the circular economy especially those that directly support the reuse of land and buildings such as SP3 (Brownfield Deliverability and Regeneration) and DP8 (Making the Best Use of Land), and Resources (DP12).

8.98 Policy DP12 (Resources) specifically prioritises the use of secondary and recycled materials, whilst also ensuring that the Plan is supportive of national and local waste management principles and targets.

8.99 SP1, DP1 and DP8 could be potentially positive as they each refer to the need to make efficient use of existing buildings. This would help to minimise the need for new materials and the generation of waste.

8.100 Policies that are supportive of growth in 'green industries' (DP1 and DP3) ought to help drive the efficient use of materials and increase capacity to manage waste and other resources more efficiently and sustainably.

8.101 DP6 requires high quality design, which includes a need to create developments that support the sorting, storage and collection of waste and recycling materials, which is a positive principle.

8.102 Considered together the policies are predicted to have a **minor positive effect**.

Minerals

8.103 The spatial approach to development is unlikely to have significant effects given that the residual scale of growth is fairly low and would also be located in areas that are unlikely to contain mineral resources.

8.104 Promoting the reuse of land and buildings (SP4, DP8, DP12) and the efficient use of resources is positive with regards to minerals as it reduces pressure for virgin materials.

8.105 SP11 and DP14 could potentially be beneficial for the minerals industry as there is a need for specific materials associated with historic buildings.

8.106 Policy DP12 is of note, as it seeks to safeguard minerals and associated infrastructure as well as supporting the use of recycled and secondary materials (which reduces pressure for further extraction).

8.107 Overall, **minor positive effects** are predicted as a result of the policies.

Summary of plan appraisal findings

8.108 Table 8.1 below summarises the effects of the draft SDS policies considered 'as a whole'. This is important as the policies within the SDS will all need to be applied and considered together, rather than individually.

8.109 The SDS is predicted to have mostly positive effects across the IIA Framework

8.110 With the exception of water resources (where some potential negatives neutralise the positives), positive effects are predicted for every IIA topic.

8.111 Most of the effects are predicted to be minor in significance, which reflects the relatively low amount of residual growth being planned for beyond the 'committed growth'. However, the addition of policies that guide all development (including committed growth to an extent) helps to enhance these effects, particularly for factors relating to inclusivity, reducing inequalities and communities. Of particular importance is the need to prepare social value statements, health impact assessments, and the need for high quality design.

8.112 In addition to social factors, moderate positive effects are recorded in relation to land and soil, landscape, and the historic environment. This relates mainly to a spatial focus on regeneration / brownfield development, which ought to protect landscapes, soil and agricultural land, whilst promoting active uses for historic buildings.

8.113 Some minor negative effects are possible in relation to townscape and the historic environment, as continued growth in urban areas could lead to inappropriate densities and a change in character (for example of historic waterfront environments). These effects could likely be avoided, as the overall scale of residual growth is relatively low and the supporting policies recognise the importance of the historic environment. However, negative effects cannot be ruled out at this stage.

8.114 Minor negative effects are also identified as possible in relation to air quality, as a continued focus on growth in the Inner Urban Area / Liverpool and surrounding Named Towns is likely to increase congestion, particularly in the short term as a result of construction, and especially infrastructure upgrades and behavioural trends do not stimulate greater uptake in sustainable travel modes before the development is completed.

8.115 Increased growth could also potentially have negative effects on biodiversity in terms of recreational pressure, and disturbance to water-based environments. These are likely to be shorter term issues, as it is expected that biodiversity net gain will be sought and achieved, and specific schemes will be identified in nature recovery strategies and local plan updates.

Table 8.1 Summary of Plan Effects

IIA Topic	Summary of Plan effects
Community resilience	Minor positive effects
Zero carbon City	Minor positive effects
Health and equality	Minor positive effects ?
Mental health	Minor positive effects
Sustainable housing	Minor positive effects
Inclusive economy	Moderate positive effects ?
Sustainable transport	Minor positive effects
Equality and diversity	Moderate positive effects ?
Biodiversity	Minor negative effects?
Clean air	Minor negative effects
Water resources	Neutral effects
Land and soil	Moderate positive effects
Landscape/townscape	Moderate positive effects / Minor negative effects?
Historic environment	Moderate positive effects / Minor negative effects?
Circular economy	Minor positive effects
Minerals	Minor positive effects

The use of the ? Symbol denotes a degree of uncertainty in the prediction of the effect.

Limitations and assumptions

8.1 It is important to acknowledge the limitations of the integrated appraisal and to make any assumptions clear.

8.2 The effects in this interim report have been predicted in the context of the SDS being in draft form and not allocating specific sites for development and other forms of land use. For this reason, a degree of uncertainty exists as effects can only be predicted based on broad geographical areas (i.e., Liverpool City Centre, Inner Urban Area, Wider Urban Area etc). There are opportunities and constraints within these broad areas, and different ways in which development could be brought forward to meet the policy principles in the draft SDS. These issues will be explored in more detail through the next round of Local Plans.

8.3 At this stage, the significance of effects is 'indicative', based on the broad opportunities and constraints across the City Region, and the content of the SDS policies. Whilst it is possible to say with some confidence that the nature of effects would be (i.e. positive , neutral or negative) the ultimate significance of effects will depend upon further details. Without this detail, it is difficult to conclude that effects would be of major significance (hence many effects being identified as minor at this stage – and reflecting the role and influence of the SDS)

Recommendations

8.4 Table 8.2 below presents recommendations in response to the draft policies. Given that the number and significance of negative effects identified is fairly limited, the focus is on how positive effects can be enhanced rather than mitigation.

8.5 For several objectives, no recommendations have been made, as it is considered that the plan policies already provide a sufficient framework to avoid negative effects and promote positives. Without further detail (or firmer requirements) it is not possible to conclude that effects would be more significantly positive. However, it is important to remember that the SDS is a strategic document that needs to provide flexibility. Detailed measures and locational policies are more appropriate for individual Local Authorities to consider when preparing Local Plan updates.

Table 8.2 Recommendations

IIA Topic	Recommendations
Community resilience	Consider the requirement for all brownfield development to result in a net decrease in surface water run-off.
Zero Carbon City Region	Encourage and support the development of onshore power facilities for the shipping industry. This will help to reduce emissions and improve air quality in port environment.
Health and equality	It will be important that regeneration led developments in deprived and minority communities are inclusive, accessible to all communities and do not lead to displacement.
Mental health	None identified. Though there is potential for negative effects, it is difficult to mitigate these without understanding locations / sites for growth in further detail.
Sustainable housing	None identified. Though only minor positive effects are identified at this stage, these could be enhanced through the allocation of further specific housing sites across the LCR to provide flexibility and greater certainty that housing needs will be met throughout the plan period. This would be achieved through the next round of Local Plan's rather than the SDS.
Inclusive economy	None identified.
Sustainable transport	The Plan needs to ensure that the necessary infrastructure to support modal shift is in place in tandem with /before any significant growth in new homes and employment.

IIA Topic	Recommendations
Equality and diversity	Ensure that regeneration and renewal schemes do not lead to displacement and that 'planning gain' benefits communities of need.
Biodiversity	Consider mapping strategic biodiversity opportunity areas where biodiversity net gain could be targeted at a strategic level.
Clean air	None identified. It is considered unlikely that the minor negative effects can be fully avoided, despite there being policies in place that seek to manage development.
Water resources	None identified
Land and soil	None identified. The SDS has only positive effects on land and soil and without further detail, it is not possible to identify specific enhancement opportunities.
Landscape and townscape	None identified. Where potential negative effects are identified, the policy framework in the SDS is considered adequate. However, there may be a need for site / location specific mitigation through new local plans.
Historic environment	None identified. Where potential negative effects are identified, the policy framework in the SDS is considered adequate. However, there may be a need for site / location specific mitigation through new local plans.
Circular economy	None identified.
Minerals	None identified

9. Next steps

9.1 This report presents the outcomes of an interim step in the IIA and plan-making process. The focus has been on identifying and appraising strategic spatial options to help influence the proposed strategic approach to development across the City Region. A high-level appraisal has also been undertaken to consider the likely implications of the draft policy principles.

9.2 This Interim Report is available for comment alongside the 'Towards a Spatial Strategy' document from the 24th November 2023, to the 16th February 2024.

9.3 The LCRCA will consider feedback received through consultation, the findings and recommendations within the IIA and further evidence before developing the SDS further and presenting a 'draft Plan' for further consultation.

Environmental Outcomes Reports (EORs)

9.4 The LCRCA is keeping abreast of potential changes to the SA/SEA and HRA regimes. There are still uncertainties with respect to the changes that might be implemented, and so it is important to be led by the current legislation. However, in anticipation of changes, we see the merit in being proactive in some respects.

9.5 Environmental focus - EORs do not refer to the socio-economic pillars of sustainability, but the LCRCA is committed to undertaking health, equalities, and community safety impact assessments. This makes an integrated approach to appraisal even more essential and effective.

9.6 Outcomes – Whilst there is no clarity, it is envisaged that there will be a new emphasis on quantifying impacts and referring to those quantified impacts as outcomes. This approach can be factored into future appraisal methods if deemed appropriate. However, it should be acknowledged that the high-level nature of the Plan could make it difficult to quantify effects / impacts and this approach may not always be appropriate.

Appendix A: Appraisal of strategic options (Stage 1)

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Table A1 Initial Spatial Options - Indicative Distribution of LCR Residual Need

	1. Continuation			2.Deprivation			3.Town centres			4. Transport			5. Economic			6. Dispersal		
Supply component	*Low (A)*	*Med (B)*	*High (C)*	*Low (A)*	*Med (B)*	*High (C)*	*Low (A)*	*Med (B)*	*High (C)*	*Low (A)*	*Med (B)*	*High (C)*	*Low (A)*	*Med (B)*	*High (C)*	*Low (A)*	*Med (B)*	*High (C)*
Indicative further brownfield churn	3000 (27%)	3000 (19%)	3000 (14%)	3000 (27%)	3000 (19%)	3000 (14%)	3000 (27%)	3000 (19%)	3000 (14%)	3000 (27%)	3000 (19%)	3000 (14%)	3000 (27%)	3000 (19%)	3000 (14%)	3000 (27%)	3000 (19%)	3000 (14%)
Indicative brownfield intensification	2500 (23%)	3000 (19%)	4000 (18%)	7500 (68%)	12200 (76%)	17900 (81%)	7500 (68%)	12200 (76%)	17900 (81%)	7500 (68%)	10600 (66%)	14600 (66%)	7000 (64%)	9000 (56%)	14000 (63%)	2000 (18%)	2500 (15%)	3000 (14%)
Indicative greenfield / Green Belt	5500 (50%)	10,000 (62%)	15000 (51%)	500 (5%)	800 (5%)	1100 (5%)	500 (5%)	800 (5%)	1100 (5%)	500 (5%)	2400 (15%)	4400 (20%)	1000 (9%)	4000 (25%)	5000 (23%)	6000 (55%)	10500 (68%)	16000 (72%)
Total	11,000	16,000	22,000	11,000	16,000	22,000	11,000	16,000	22,000	11,000	16,000	22,000	11,000	16000	22000	11000	16000	22000

This table presents a hypothetical distribution of LCR residual housing need resulting from initial conceptual spatial options at the early plan-making stage.

Community Resilience

Scenario A (11,000 dwellings)

1. A challenge for community resilience will be ensuring that people, businesses, and property are responsive to a changing climate, and of particular concern is the current and future extent of flood risk areas affecting future growth.

2. There is considerable uncertainty at this strategic level of assessment, as factors such as specific sites, design and planning gain would all have a very important role to play in determining whether communities become more or less at risk in terms of climate change and other risks to health and wellbeing. However, it is assumed that plan policies guiding development will ensure that development contributes positively to resilience rather than negatively.

3. Options A1 and A6 would deliver the growth as set out in adopted Local Plans covering the area, supplementing this with a balance of urban brownfield intensification, and additional greenfield development/ Green Belt release (with slightly higher levels of greenfield development/ Green Belt release anticipated under Option 6).

4. Broadly speaking, the most densely populated areas of the LCR are less affected by fluvial flood risk, so adverse effects are considered likely to be avoided in brownfield intensification. Greenfield development/ Green Belt release has also been found sound in principle through the planning process to date (factoring in the need for sequential testing through the Local Plan process), and similarly it is anticipated that this element of the growth strategy could avoid adverse effects arising. Additional greenfield development/ Green Belt release presents the key challenge in relation to fluvial flood risk, though the levels proposed under this scenario should ensure that (in line with sequential testing) high fluvial flood risk areas would be avoided as a priority.

5. Options A2, A3, A4, and A5 place much greater emphasis on urban brownfield intensification, minimising the need for further greenfield development/ Green Belt release. As a result, these options have good opportunity to avoid areas of high fluvial flood risk but would need to consider impacts in relation to surface water flood risk which is more prevalent through the urban areas. It is considered that appropriate site-level mitigation (such as sustainable drainage systems) would ensure no significant adverse effects arise.

6. Overall, it is anticipated that broadly **neutral effects** in relation to flood risk could be achieved under any of the proposed options and under this scenario.

7. Further of note, Options A2, A3, A4, and A5, provide a greater emphasis on urban regeneration and high densities, which can support resource efficiency measures that bolster community resilience (such as combined heat and power and decarbonization measures), and high levels of accessibility supporting more sustainable local journeys and self-containment. However, a balance needs to be struck to ensure that key community infrastructure supporting resilience (such as good access to local open spaces) are not compromised because of intensification, and that consideration is given to potential urban heat island effects (which can be mitigated at the site level). With the right balance, **minor positive effects** could be anticipated for these options.

Scenario B (16,000 dwellings)

8. Under this scenario, Options B1 and B6 propose much greater levels of greenfield development/ Green Belt release, and slightly higher levels of urban brownfield intensification. It is assumed that in line with sequential testing, vulnerable development would be avoided within areas of high fluvial flood risk and the main implications are likely to predominantly relate to a greater potential to extend development closer to flood risk areas (including areas that may be subject to future flood risk). Taking into account the need for plan policies to be taken into consideration, and potential for green infrastructure enhancement on sites, it is considered that negative effects could be avoided and dealt with, even at this higher scale of growth. However, benefits in the urban areas are likely to be limited, so the overall effects are predicted to be **neutral**.

9. Options B2, B3, B4, and B5 on the other hand, propose to accommodate the additional growth through higher levels of urban intensification. Some additional greenfield development/ Green Belt release is also proposed for this scenario under Options 4 and 5 (to a greater extent under Option 5). The main implications for these options under this scenario are the relatively high levels of urban brownfield intensification (exceeding 10,000 homes under all but Option 5 (at 9,000 homes)) and potential conflict with other aspects of community resilience, such as access to high-quality open space, improving urban drainage systems, and reducing any urban heat island effects. Otherwise, the increased scale of intensification could improve the viability of measures to improve resilience, such as resource efficiency measures, or the delivery of new social infrastructure and through urban greening. Assuming access to open space can be maintained or improved, and appropriate drainage systems can be implemented at the site level, the options have good potential to deliver positive effects. However, there is a risk at higher levels of intensification that open space could be affected, or development could overlap with areas at risk of flooding. This could offset benefits in terms of resilience to the urban heat island and flooding. As such only **minor positive effects** are predicted for each of these options.

Scenario C (22,000 dwellings)

10. Under this scenario, the effects discussed under Scenario B are exacerbated. Options C1 and C6 propose higher levels again of greenfield development/ Green Belt release and the extent of settlement expansion towards the floodplains is considered for potential **minor negative effects**. Benefits in the urban areas would also be relatively limited in terms of supporting urban greening and social infrastructure improvements (which can strengthen community resilience). Conversely, urban heat island effects in the densest locations would be less likely to be exacerbated.

11. Urban brownfield intensification is proposed at much higher levels under Options C2 and C3 and to a lesser extent under Options C4 and C5. Options C4 and C5 further propose utilising moderate levels of further greenfield development/ Green Belt release. The higher levels of intensification may affect suitable provision of, and access to open spaces, and community infrastructure which supports resilience (particularly for options C2). However, residual **minor positive effects** are considered likely overall given the potential for improvements in the urban areas in relation to community facilities, social infrastructure and urban greening.

Zero Carbon City Region

12. All options would assume approximately 3,000 dwellings would come forward on brownfield sites through windfall developments. These sites are likely to be within the urban area, and hence in locations which would be expected to be broadly accessible to sustainable transport options, shops, services, and employment. This might go some way towards ensuring that the future growth in these locations permits a degree of avoiding car dependencies; hence helping to reduce transport related emissions. In terms of energy generation and efficiencies, the costs of remediating brownfield land may impact the viability of schemes which would help to generate low carbon energy or ensure energy efficiencies for building; therefore, somewhat limiting the potential for lowering the carbon emissions associated with household energy usage and generation. However, the brownfield nature of these sites might permit some recycling of materials in the construction process, helping to reduce the embodied carbon within the developments.

13. Across all options it would be expected that some tree planting would help to sequester carbon; this would be expected to occur in a denser pattern, across a larger scale on large greenfield sites. As such, those options which propose greater growth on greenfield (including Green Belt) land, ought to see increased potential to sequester carbon.

Scenario A (11,000 dwellings)

14. Option A1 would offer a continuation of current growth patterns, according to the spatial strategies employed by the relevant constituent Local Plans. This would direct growth in a fairly dispersed manner across the City Region. There could be a need for some greenfield / Green Belt release; with these locations being generally less accessible and on the periphery of built-up areas, though the potential for a concentration of growth could increase the viability of newly delivered sustainable transport related infrastructure and services; potentially improving accessibility and consequentially reducing transport related emissions in the longer term (related to the scale of growth, the degree to which this might be realised is uncertain). The greenfield opportunities should support the viability of energy efficiency and generation schemes, especially where growth is concentrated in larger developments. Conversely, greenfield development offers a reduced potential for reuse of building materials, and will require entirely new infrastructure, driving up the embodied carbon associated with construction.

15. The brownfield intensification under this approach would seek to deliver a somewhat increased rate of delivery across brownfield sites, which would be assumed to be within the urban area. This would be expected to mimic those effects associated with the windfall delivery of brownfield growth, though the intensified nature of the development could help to support improved viability. Increased densities may also better help to support district energy schemes. Overall, **minor positive effects** are predicted.

16. Option A2 would seek to align growth with inclusivity and efforts to alleviate deprivation across the City Region. A small amount of this growth would be delivered on Greenfield / Green Belt land; this growth could possibly lead to some car dependency and embedding of unsustainable transport options, alongside some potential for energy generation and efficiency schemes. These mixed effects would be small in their magnitude due to the small scale of related growth.

17. The option would place a focus on delivering growth via brownfield intensification within built-up areas of Liverpool City, Inner Urban Area and suburban locations which are more deprived. These effects ought to exaggerate those relating to the brownfield windfall sites. Development would be expected to be in broadly accessible locations, with the scale of growth likely to see some improved accessibility of these locations, owing to improved sustainable transport access as well as new shops and services linked to the growth. Where this growth would focus on deprived areas which are in some cases suburban, some more pronounced effects might be seen, depending on the potential for growth to be clustered and strategically located. Whilst the costs of brownfield remediation might reduce the viability of energy generation and efficiency schemes, the expected increased densities of developments might offset this, and potentially increase these carbon emission reduction measures (though some uncertainty relates to the scale of development sites). The focus on reuse of brownfield land and buildings above greenfield should have particular benefits in regard to embodied carbon emissions. Overall, uncertain, **moderate positive effects** are predicted.

18. Option A3 would take an approach which focuses growth into urban centres across the City Region; the split of growth in terms of supply elements (brownfield, greenfield and Green Belt land) would align with Option A2, but there would be a reduction in suburban delivery. This would see the brownfield intensification strategy be more focused in areas which are already considered to be accessible, thereby increasing this accessibility and the potential for residents to travel by sustainable means. The approach would be expected to concentrate developments in a more clustered manner, which would serve to increase the viability of energy efficiency and renewable energy generation schemes being delivered in association with the housing growth. Overall, this approach ought to deliver **major positive effects**, though with a degree of uncertainty relating to the clustering of growth not being guaranteed and potential delivery /viability issues related to urban intensification.

19. Option A4 would adopt a strategy which aims to deliver growth around sustainable transport access nodes. At this scale of growth, sites would be comprised of the aforementioned brownfield windfall sites, an intensification of brownfield delivery alongside a small amount of growth on greenfield land, where it is considered to be accessible. Across all sites under this approach, accessibility and proximity to sustainable transport infrastructure and services would be a key factor; as such, transport related emissions would be expected to be reduced, due to potential reduction in car dependencies. The approach would be expected to somewhat diminish the viability of highly energy efficient homes with associated renewable energy generation schemes, due to the higher costs associated with brownfield remediation. On balance and considering the likelihood of a meaningful reduction in car dependencies related to this approach, **moderate positive effects** are predicted.

20. Option A5 would focus housing delivery in locations which offer positive accessibility to employment areas, with a focus on supporting a green industrial revolution. The majority of growth on top of the brownfield windfall developments, would be delivered through urban intensification, with some small amounts of growth on greenfield land. This approach ought to promote sustainable means of commuting, helping to drive down commuting related transport emissions.

21. That said, being accessible to employment land may be at odds with being accessible to shops and services, and hence a degree of car dependency might be seen, counterbalancing the benefits of being accessible to employment to an extent; though this is uncertain and depends upon the exact locations for growth.

22. The brownfield intensification at this scale supports dense developments, which tend to be less energy intensive per capita, and reduce further emissions associated with construction. However, it might make renewable energy generation and efficiency schemes less likely to be adopted, due to land remediation related costs. The focus on providing access to employment, with a view to promoting 'green growth' should, in theory, benefit innovation and green industry in the City Region. Some positive effects are expected in this regard, though planning policy alone would not be able to significantly influence the precise nature of industry on the nearby employment sites. Overall, **minor positive effects** are predicted.

23. Option A6 would deliver housing in a dispersed approach across the City Region, offering a greater share of housing on greenfield and Green Belt land. In terms of energy generation and efficiency, this type of land could give potential to achieve higher standards of sustainability in new developments (through improved viability). Conversely, a less dense approach with larger homes tends to promote higher amounts of energy use per capita. Furthermore, broadly speaking, these locations tend to be less accessible by sustainable transport and hence could promote a degree of car dependency. The dispersed nature of this approach would be expected to reduce the potential for new sustainable transport infrastructure and services to be delivered in a focused location. On balance, **neutral effects** are predicted. The delivery of higher standards of sustainability in new development is possible, but this is likely to be offset by increased emissions from transport, less dense forms of development and the embodied energy associated with new settlements.

Scenario B (16,000 dwellings)

24. Option B1 would deliver growth and effects which broadly align with Option A1, though with a small degree of increased brownfield intensification and some more substantial greenfield/Green Belt release. The key difference in effects would be expected to be related to the increase in greenfield/Green Belt. This should increase the potential for developments with higher levels of sustainability but would also increase embodied emissions associated with construction. Furthermore, an increased amount of development could be in areas with poor existing accessibility levels and lead to less dense developments. The increased scale of growth and potential to concentrate development at greenfield sites could potentially deliver improved access to jobs and services alongside new and improved sustainable transport infrastructure and services. That said, the behavioural norms associated with mobility patterns would be likely to lead to a degree of car dependency from this type of growth and its associated increase in emissions. On balance, **minor positive effects** are predicted.

25. Option B2 would see growth distribution and associated effects aligned with that seen under Option A2. There would be a small increase in delivery on greenfield land, which would be unlikely to lead to a significant alteration of anticipated effects related to this development type. More substantial changes would be seen through the increased brownfield intensification. This ought to increase the magnitude of effects and hence improved accessibility of areas within and surrounding developments should be seen, especially in some more deprived suburban locations across the City Region.

26. An increased likelihood of energy generation and efficiency schemes might be seen, especially where developments might be able to be clustered and hence take advantage of schemes such as heat networks. On balance, **moderate positive effects** are predicted.

27. Option B3 would see growth distribution and associated effects aligned with that seen under Option A3. There would be a small increase in delivery on greenfield land, which would be unlikely to lead to a significant alteration of anticipated effects related to this development type. The increase in brownfield intensification in urban centres would be expected to further improve accessibility, beyond that seen under Option A3. The approach would also be likely to increase the viability for energy efficiency and renewable energy generation schemes to be delivered alongside developments by increasing densities. Overall, this approach is predicted to have **major positive effects**.

28. Option B4 would see a continuation of the pattern outlined under Option A4, though additional growth would be seen on greenfield and Green Belt land. Brownfield land would also be further intensified as part of this strategy. Effects relating to development being placed in accessible locations ought to help to reduce transport related emissions, as previously discussed. The brownfield growth might promote an increased likelihood of energy generation and efficiency, especially where developments might be able to be clustered and hence take advantage of schemes such as heat networks, though this is uncertain. The growth on greenfield land could promote increased viability for higher levels of sustainability in new developments, and there is an assumption that these would be located in areas with good access to transport hubs. However, there would also be greater embodied carbon associated with greenfield development. Overall, this approach is predicted to deliver *uncertain* **major positive effects,** mainly related to a reduction in emissions from transportation.

29. Option B5 would be expected to exacerbate those effects seen under Option A5. The increased brownfield intensification might give rise to some potential to cluster developments, potentially increasing the viability of energy generation and efficiency schemes, as well as promoting denser patterns of development. The increase in development on greenfield (including Green Belt) land could also increase the viability of such schemes but would increase embodied carbon. In relation to transport related emissions, the increase in peripheral growth on greenfield and Green Belt land would be expected to be less accessible to shops and services, despite its accessibility to employment. This scale of growth in these locations may go some way towards helping to boost the provision of sustainable transport services and infrastructure in these areas, though this is uncertain and would be better realised should growth be clustered. As described under Option A5, some support to green economic growth would be expected under this approach, providing some potential for slight effects on emission reductions from industry. Overall, *uncertain* **moderate positive effects** are predicted.

30. Option B6 would deliver the majority of the increased growth on greenfield and Green Belt land, dispersed around the City Region. This will be likely to exaggerate those effects outlined under Option A6 (i.e., increased car dependencies and consequential transport related emissions, alongside the expectation that schemes would be able to deliver some improvements in relation to levels of sustainability).

31. On balance, this approach would be expected to have potential **minor positive effects** (the improvement compared to option A6 relates to the potential for larger schemes to come forward in the Green Belt that would be more likely to be well serviced and supported by transport infrastructure – thus helping to reduce per capita emissions).

Scenario C (22,000 dwellings)

32. Option C1 would deliver growth and effects which broadly align with Option B1, though with a degree of increased brownfield intensification and some more substantial greenfield / Green Belt release. Following an existing pattern of growth, it is possible that some land would be released in locations that are not well serviced by existing infrastructure and services, leading to increased emissions relating to transportation. However, a higher scale of growth may allow for developments that are more self-sufficient and are capable of supporting new sustainable transport and local facilities. The effect of growth in terms of emissions could therefore be offset to an extent. There may also be good opportunities to secure sequestration activities on greenfield sites, as well as achieving high levels of sustainability in new developments. On balance, **minor positive effects** are predicted.

33. Option C2 would further the increase in growth and its distribution pattern seen under Options A2 and B2, where alleviating deprivation would be the driver of the strategy and brownfield / urban intensification would be the mechanism. The high level of housing delivery on brownfield land ought to lead to improved accessibility of the areas which receive growth by potentially contributing to improved and / or new, nearby shops and services alongside sustainable transport related infrastructure and service improvements. These factors ought to reduce car dependencies. The potential for renewable energy generation and energy efficiency schemes to be incorporated into development should also be increased under this approach, especially where developments are large or clustered in close proximity. Denser development with smaller properties is also more likely to lead to reduced per capita emissions compared to dispersed, low density housing. There should also be knock on benefits for deprived communities in terms of housing standards in relation to energy efficiency. Therefore, on balance potential **major positive effects** are predicted overall despite this being a higher growth scenario than A2 and B2.

34. Option C3 would further the increased in growth and its distribution pattern seen under Options A3 and B3, with town and urban centres playing host to the increased growth under this approach, the focus would remain on brownfield / urban intensification. Effects would be expected to mimic those seen under lower growth scenarios of the same distribution, but with an anticipated higher magnitude and reduction in uncertainties. It would be likely that this option would need to make use of all available brownfield site options within urban centres; as such, some locations may be less preferable in terms of delivering renewable energy generation or energy efficiency schemes. This could be due to high remediation costs or a more isolated nature of a development, making critical mass harder to achieve. Nonetheless, **major positive effects** are predicted as the option would help to minimise transport emissions, minimise further embodied carbon emissions and reduce per capita emissions in the built environment.

35. Option C4 would further the additional growth seen under Option B4. Maximising the potential to locate housing within accessible locations ought to promote sustainable travel, thereby cutting transport related emissions. The higher density and potential to cluster brownfield sites might also give rise to the possibility of energy efficiency and generation schemes, whilst further greenfield development would remain limited. Potential **major positive effects** are predicted in this respect.

36. Option C5 would see the uplift in growth delivered through a mix of brownfield intensification and on greenfield. Transport related emissions would be expected to be reduced as a result of this growth, due to the accessible nature of employment sites from new housing developments. However, this might be to the detriment of access to shops and services. Though this remains uncertain, the fact that there would be less opportunity to choose between sites means that some less accessible locations would be likely to be developed. In relation to the potential for energy generation and efficiency schemes, those effects outlined under Option B5 would be exaggerated. Further support to green economic growth would be expected under this approach, providing some potential for slight effects on emission reductions from industry. On balance, **moderate positive effects** are predicted.

37. Option C6 would further exaggerate those effects described under Option B6, due to the majority of increased growth being directed to dispersed Greenfield and Green Belt release. That said, the high level of Green Belt and greenfield release might give rise to locations which see more concentrated growth. This could give rise to an increased viability of new and improved sustainable transport services and infrastructures as well as the potential for more efficient energy generation or efficiency schemes. Nonetheless, a dispersed lower density approach is less preferable to densification in terms of per capita emission reductions from transport, built environment and embodied energy with infrastructure. Therefore, overall, only **minor positive effects** are predicted.

Health and Equality

Scenario A

38. Integrating health considerations into development planning can assist in addressing indicators of concern and encourage lifestyle choices which support long-term health and wellbeing. Key health indicators which are of concern for the LCR include unemployment rates, long-term illness or disability, fuel poverty, child development and education, and children living in low-income families. All these indicators are influenced by planning and development. Furthermore, access to healthcare and recreational opportunities are a key consideration, alongside healthy lifestyle choices such as active travel locally.

39. Options A1 and A6 seek to deliver most growth at identified greenfield / Green Belt sites across the LCR, alongside a balanced mix of urban brownfield intensification and further greenfield development/ Green Belt release. The options both disperse development, relying predominantly on settlement expansion. Dispersed settlement expansion is considered less likely to co-locate business and employment uses, compared to Options A2, A3, A4, and A5, which provide a much greater emphasis on existing urban areas either focusing on highly deprived areas (Option A2), town centres (Option A3), transport corridors (Option A4) or economic hubs (Option A5). Dispersed settlement expansion (under Options A1 and A6) is also likely to locate development in areas with longer travel times to access healthcare, transport hubs, employment opportunities, education, and designated green spaces, and in areas typically producing higher per capita energy usage. Options A1 and A6 conflict to some degree with the objectives to improve health indicators and support healthy lifestyles in this respect. Though these options will involve some overlap with areas that are deprived, it could also be more likely to invest in areas that are more affluent, and therefore potentially widen inequality gaps. Therefore, the potential for **minor negative effects** is identified (alongside **minor positive effects** related to continued development / regeneration in the urban areas).

40. Option A2 seeks to focus growth at the most deprived areas through brownfield intensification and avoids any further greenfield development/ Green Belt release. Targeting these areas with regeneration and development could provide support in reducing gaps in health equalities in these areas, potentially unlocking additional infrastructure development in the more accessible locations of the LCR. It will be crucial to ensure that intensification does not undermine key health principles to provide high-quality housing, access to healthcare, and recreational opportunities and ensure sufficient healthcare capacity. Intensification could also support high energy efficiency schemes which reduce fuel poverty and deliver mixed use development schemes which provide local employment opportunities. **Moderate positive effects** are therefore anticipated under Option A2 in this scenario. Similar effects are also anticipated for Options A3 and A4, by way of the focus of development at town centres (largely coinciding with the most deprived areas) or key transport corridors, as the most accessible locations in the LCR. This is however on the assumption that traffic impacts can be managed to ensure that air quality objectives can be met.

41. Alongside the positive effects, each of the options that involve intensification may also bring the potential for negative effects on health and wellbeing as they are likely to place development in air quality management areas and could also lead to an increase in traffic.

42. An increase in concentrated growth could also put pressure on existing services, but there is an assumption that contributions would be made towards increased / improved capacities.

43. At the scale of growth involved under scenario A, the effects in this respect are predicted to be **neutral** for options A2, A3, A4 and A5 as measures to promote sustainable travel and secure accessible developments should help to offset any negative effects in terms of air quality. The increase in growth is also unlikely to lead to significant pressures on existing facilities.

44. Option A5 seeks to locate most growth around economic hubs which would provide residents with good access to strategic economic growth areas. The option could support further inward investment in this respect, and health indicators such as unemployment rates and skills/ educational attainment. These areas are also connected to the rail network to enhance accessibility, and some overlap with deprived locations. **Moderate positive effects** are therefore anticipated. In terms of negative effects (increased traffic / loss of greenspace / pressure on facilities), the scale of growth involved and the spread of development ought to mean that significant negative effects are avoidable at this scale of growth.

45. It is assumed that all options could seek high-quality design in development, which considers more vulnerable users and disabled members of society in an adaptable environment.

Scenario B

46. Under this Scenario, the minor negative effects associated with Options B1 and B6 are considered likely to be exacerbated with a much greater focus on further greenfield development/ Green Belt release. Whilst more significant greenfield development could unlock new infrastructure and development benefits for communities, it is not considered likely that the focus of greenfield development would be sites of a scale to unlock such benefits. It could also lead to some negative effects with regards to amenity concerns and loss of open space / greenfield at the urban fringes. As such, **moderate negative effects** are concluded at this stage. The **minor positive effects** associated with urban regeneration would still arise for options B1 and B6 but would remain minor given that the majority of additional growth would be on greenfield land.

47. Alternatively, Options B2, B3, B4, and B5 are considered for potential **major positive effects**, with regeneration of a scale to maximise development benefits, targeting the most densely populated and most accessible areas of the LCR. However, this is under the assumption that access to suitable healthcare and open space could be maintained and enhanced to avoid adverse effects arising, and traffic impacts could be managed to ensure air quality objectives are met. Potential **minor negative effects** are predicted to reflect these issues.

Scenario C

48. Under this scenario, the effects discussed under Scenario B are likely to be exacerbated again under Options C1 and C6, and similarly, **moderate negative effects** are anticipated alongside **minor positive effects**.

49. **Major positive effects** are also similarly anticipated under Options C2, C3, C4, and C5, though it is noted that the scale of growth under this scenario (particularly under Options C2 and C3) may lead to constraints in terms of providing sufficient space for wider uses which support positive health outcomes, such as open spaces, recreational facilities, new employment opportunities, and infrastructure development. Appropriate road capacity investigation would also be required to avoid adverse effects in relation to air quality. At this scale, intensification may also compromise the quality of housing or lead to overcrowding and it would be important to identify sufficient brownfield/ regeneration space to achieve such ambitious targets.

50. For options C2 and C3 the scale of growth would be significant in concentrated urban areas, such that it would be more likely that intensification could involve the repurposing of open space. In this respect, potential **moderate negative effects** on health and wellbeing could arise for some communities (alongside the benefits discussed above).

Mental health and wellbeing

Scenario A

51. Mental health is influenced by a wide variety of factors, including our environment, our access to nature, healthy food, employment opportunities, and recreational opportunities, and our ability to build strong relationships with people and as part of society. Planning can support mental health and wellbeing by identifying a supply of land in areas which maximise benefits in terms of living environment and accessibility, as well as by fostering high-quality design that bolsters social inclusion and community cohesion. Evidence for the LCR shows that higher levels of mental health issues can be found in the north-west of Liverpool reaching into Sefton, in Wirral, and in St Helens. The IMD (2019) reports similar findings under the 'health deprivation and disability' domain, but far more extensively, with many areas in all authorities falling within the 10% most deprived deciles. Sefton has the most extensive areas of less deprivation in relation to this domain, particularly in and around Formby.

52. Options A1 and A6 seek to deliver most growth at identified greenfield / Green Belt sites across the LCR, alongside a balanced mix of urban brownfield intensification and further greenfield development/ Green Belt release (with slightly higher levels of greenfield development/ Green Belt release anticipated under Option A6). A large proportion of greenfield development/ Green Belt release areas will avoid development in areas with a high prevalence of mental health issues and develop areas with a medium to low prevalence. These areas are relatively accessible (largely as settlement expansion options) and connect well with the surrounding Green Belt (likely to support good access to nature and a high-quality living environment). On this basis, **minor positive effects** are considered likely with regards to mental health.

53. Option A2 seeks to focus growth at highly deprived areas through urban intensification and avoids any further greenfield development/ Green Belt release at the urban fringes. Within Liverpool and Wirral in particular this overlaps with the areas with the highest prevalence of mental health issues in the LCR, and some of the most densely populated areas of the region. Targeting these areas with regeneration and development could provide support in reducing gaps in health equalities in these areas, potentially unlocking additional infrastructure development in the more accessible locations of the LCR.

54. The delivery of accessible and affordable housing, high energy efficiency regeneration schemes, and mixed-use development could support mental health in relation to socio-economic conditions.

55. However, increased densities could also potentially reduce space for alternative uses that support mental well-being, including in relation to the living environment and access to nature and recreational opportunities. Under this scenario a careful balance could be sought, which seeks to maximise the benefits of regeneration in relation to mental health outcomes and **moderate positive effects** could be achieved. However, it would be crucial to ensure that intensification does not impact upon the provision of open spaces, access to nature and levels of noise within the more built-up areas of the LCR. The effects under Option A3 are thought to be broadly similar as those for Option A2, given that the areas of highest deprivation largely coincide with town centres, except for at West Kirby, Heswall, and parts of Southport town centre.

56. Option A4 seeks to focus on brownfield intensification along key transport corridors, which will ensure development is well connected to sustainable transport, and within key settlement areas. This largely overlaps with town centres, and areas of higher deprivation, but could also include more development within areas with lower prevalence of mental health issues and lower deprivation. Therefore, potential moderate **positive effects** are predicted.

57. Option A5 would focus development at key economic growth areas and includes additional housing at greenfield/ Green Belt sites. This is likely to focus most growth in the central and south of the LCR, with potential to focus development in a mix of areas in relation to the prevalence of mental health issues. Brownfield intensification remains the predominant housing supply and housing would be in areas with good access to a range of employment opportunities in key economic growth sectors. Targeting these areas with regeneration and development could provide support in reducing gaps in health equalities, supporting residents' socio-economic status, if sustainable transport links to employment areas from deprived communities are strengthened. Avoiding an over concentration of growth in deprived communities would also be less likely to lead to increased noise, traffic and other urbanizing effects that can contribute to poor mental health. Potential **moderate positive effects** are predicted.

Scenario B

58. Under this scenario, the effects under Options B1 and B6 are considered likely to be **minor positive** in relation to mental health, however, it will be important to ensure that settlement expansion areas provide good access to services and facilities, sustainable transport modes, and employment opportunities, and support active travel opportunities. It will also be important that existing communities can benefit from suburban growth, otherwise the potential for inequality gaps to increase would be higher (given that green belt growth could draw investment away from urban areas), which is a potential **minor negative** effect.

59. Under Options B2 to B5, the focus on brownfield intensification, delivering at a larger scale, has the potential to undermine efforts to address the existing prevalence of mental health issues in these areas – by way of a potential for overcrowding, noise, and reduced access to open spaces, nature, and recreational opportunities.

60. In this respect, potential **minor negative effects** are predicted in some locations, particularly where growth is heavily focused in / overlaps with mostly deprived areas as per Option B2. Conversely, further investment in these locations should help to improve townscape, reduce areas of dereliction, provide access to affordable housing, and attract investment into new social infrastructure, all of which could contribute towards a general improvement in mental health and potentially **major positive effects** in the longer term.

Scenario C

61. As indicated under Scenario B, the effects under Scenario C and Options C1 and C6 are also still considered likely to be positive in relation to mental health and wellbeing. However, at this scale of development, settlement expansion may require the delivery of additional infrastructure and services to support significant growth. Whilst this would be **moderately positive** for new communities, the locations involved may not help to address inequalities across the LCR, and if it draws investment away from regeneration, then **moderate negative effects** could arise through widening gaps in health.

62. Under Options C2 to C5, there are uncertainties relating to the form of development and whether it leads to increased pressures in urban locations, or helps to improve investment, quality of living and environments. Potentially **major positive effects** are predicted in this respect for each option. Potential **moderate negative effects** are also identified for these options, with more certainty that these could arise where the concentration of growth is directed into the urban locations that already suffer from poor mental health and in some locations may not have good access to open space. In this respect, options C2 and C3 are more problematic than C4 and C5.

Sustainable housing

63. The LCRCA's housing priorities[3] focus on delivering more and better-quality homes, seeking to improve housing choice, support an ageing population, regenerate neighbourhoods, improve the quality of the rented stock and tackle homelessness. Access to adequate housing is key to achieving improved health, educational and economic outcomes. It is also an important enabler for the region's future economic growth and prosperity.

Scenario A (11,000 dwellings)

64. The distribution of growth under option A1 represents a continuation of the approach followed in the adopted and emerging LPs using a mix of brownfield regeneration and greenfield sites to accommodate residual growth requirement. Once the supply of brownfield land is exhausted some greenfield / Green Belt land would be required to accommodate the growth proposed. The brownfield (windfall and intensification sites) sites are mostly within urban areas that are generally well located with respect to community infrastructure and transport where this approach is likely to yield new well-designed homes including affordable ones with positive effects, particularly in more deprived areas where regeneration schemes are likely to produce substantial improvements to local amenities and services.

[3] LCR Combined Authority – Our Housing Ambitions for the Liverpool City Region 2019-2024

65. Overall **minor positive effects** are envisaged as the approach will contribute towards meeting residual housing need in the LCR, address the lack of quality housing stock and facilitate improved affordable housing provision.

66. Both options A2 and A3 involve more brownfield intensification through regeneration schemes in mostly urban and suburban locations in deprived areas (Option A2) and town / city centres (Option A3). The intensification would likely be achieved through higher density developments and utilisation of poorer quality open space for development. This approach is likely to result in improved housing land supply as it makes more efficient use of the existing brownfield land and utilises fewer greenfield/ Green Belt sites helping improve future housing land supply. The brownfield intensification focussed on deprived areas (Option A2) and City centres (Option A3) is expected to yield more affordable housing due to improved viability and also help address the lack of high-quality housing stock. However, the higher density approach is likely to limit the provision of larger family homes and also limits growth in the rural areas and smaller settlements. Overall **minor positive effects** are anticipated for Option A2 as will spread growth across deprived areas in the LCR helping provide improved housing (in terms of quality and affordability) to those most in need. Option A3 would lead to higher densities in city centres potentially limiting choice of dwelling sizes produced. Additionally, some of the centres which do not overlap deprived areas. Therefore, uncertain **minor positive effects** are predicted for Option A3.

67. Option A4 focuses growth in locations well served by sustainable/ public transport infrastructure (existing and planned). Like the previous two options this would involve intensification of development on brownfield sites with a smaller proportion of greenfield land (compared to Options A1,A5 & a6). Therefore, this option is expected to produce similar effects as those envisaged under Options A2 and A3 with beneficial effects on affordable housing provision including in some deprived areas. The resulting developments would benefit from existing sustainable modes of transport and facilitate enhanced/ new infrastructure. That said, the high brownfield intensification approach may limit the provision of larger family homes producing **minor positive effects** on housing overall.

68. Option A5 would involve focussing housing growth around key economic/ employment and innovation centres. In common with options A2, A3 and A4, this option would also involve brownfield intensification with a higher utilisation of greenfield land. Most of the employment areas would benefit from the additional housing growth in generally sustainable locations. Some of the most deprived neighbourhoods in the LCR are within, or in close proximity to, the identified key economic/ employment centres and therefore positive effects are anticipated through the increased housing provision and improved access to high value employment opportunities. Therefore, **minor positive effects** are predicted.

69. The dispersal approach under Option A6 would also utilise brownfield with some intensification of brownfield sites but to a lower extent than the previous options. It includes more greenfield / Green Belt land which may offer more scope for exceptionally designed development and larger affordable dwellings suited to growing families. It also gives better scope to address housing needs across a wider range of settlements. That said, such dwellings are less likely to be affordable and the dispersion approach would divert some of the benefits away from areas where it is most needed (e.g., deprived areas and denser urban locations) to suburban/ rural greenfield/ Green Belt locations. Therefore, on balance, **minor positive effects** are predicted.

Scenario B (16,000 dwellings)

70. All of the options at this increased scale of growth ought to bring about greater magnitude of positive effects, given that planning for increased delivery should better help to support the step change in housing required to meet needs. However, the way this is distributed could result in differential effects.

71. Option B1 would involve the same level of development on brownfield land and utilise a similar proportion of greenfield land as Option A1, but in order to accommodate the additional growth a substantially greater proportion of greenfield/ Green Belt land would be required. The same positive effects discussed under A1 would be anticipated but these would be amplified due to the higher rates of housing delivery. The larger scale of growth in greenfield/ Green Belt areas would facilitate the provision sustainable urban extension (SUEs) developments with scope for exceptional design and a varied mix of dwellings in terms of location, tenure, size, and affordability serving to improve housing choice. Therefore, **moderate positive effects** are anticipated overall due to the greater housing delivery including in deprived locations and the potential for sustainable larger developments in the form of SUEs on Greenfield/ Green Belt locations offering scope for higher quality development and greater mix of dwelling sizes, tenures, and types across the LCR.

72. The majority of growth under Options B2 and B3 would be generated through brownfield intensification with moderate utilisation of greenfield land. Positive effects are anticipated due to the larger scale of growth in deprived areas (B2) which will generate substantial affordable housing helping improve choice and quality of housing stock in areas where there is need. However, this will be partly offset by the high degree of intensification which is less likely to deliver exceptional design and would necessarily lead to a larger proportion of smaller dwellings. This may benefit younger residents and older residents looking for smaller more manageable/ adaptable homes but less likely to suit growing families for example. Therefore, although a greater overall number of homes would be planned for compared to scenario A, an overconcentration in urban areas could mean that delivery of the homes that are needed is more restricted, limiting the positive effects somewhat. On balance, potential **moderate positive effects** are predicted for both options.

73. For Options B4 and B5 similar positive effects to those discussed under A4 and A5 would be expected. The positive effects associated with housing growth around centres of employment/ innovation including within (or adjacent to) some of the most deprived neighbourhoods in the LCR are expected to improve affordable housing provision and the quality of housing stock. The amount of additional greenfield land involved could also help to improve wider choice in locations and types of homes, resulting in **moderate positive effects** overall.

74. For Option B6, the lower degree brownfield intensification (compared to the high intensification options) and greater utilisation of greenfield/ Green Belt provides more scope for attractive developments on the edge of urban areas including deprived areas and within greenfield/ Green Belt sites. This provides potential to address housing needs in a range of settlements across the LCR and is likely to support arrange of site sizes and locations. This could help to boost housing growth across the LCR.

75. However, the dispersion approach could divert some of the benefits of the additional growth away from the most deprived areas, which limits the magnitude of positive effects to **moderate positives**.

Scenario C (22,000 dwellings)

76. For Option C1, the larger scale of growth would increase choice and better address affordability issues and improve the quality of housing stock. The larger scale of growth is expected to produce substantial new infrastructure and services including in greenfield/ Green Belt areas where the larger proportion of growth could facilitate new mixed use SUE developments. The lower degree of brownfield intensification affords more scope for high quality design and a varied mix of dwellings in the urban areas. However, directing growth to greenfield / urban extensions could possibly divert investment away from housing delivery in the most deprived areas. As such, whilst **major positive effects** are possible, there is some uncertainty.

77. Options C2 and C3 would see the highest rate of brownfield intensification. Whilst this is positive in terms of improving housing land supply it is likely to produce less attractive, more homogenous development dominated by smaller dwellings. Therefore, the extent of positive effects arising across the LCR would be limited to specific locations and demographics. It may also be more difficult to achieve high rates of delivery if the types and locations of development are focused into urban areas only. As such, **moderate positive effects** are predicted overall.

78. Options C4 and C5 would direct most growth to urban areas and could face similar difficulties as Options C2 and C3 in terms of delivering a range of housing types. However, each option involves a greater element of greenfield land, which should help to boost housing in edge of centre locations (provided they are well located in relation to transportation (for C4) or employment (for C5). As such, potential **major positive effects** are predicted overall.

79. For Option C6, a high level of growth would be dispersed across brownfield and greenfield/ Green Best land. The latter could involve sustainable urban extensions with potential to provide exceptional design and of sufficient scale to support the delivery of new transport infrastructure, services, and community facilities. Overall, **major positive effects** are envisaged due to the higher housing growth proposed, the facilitation of new infrastructure within greenfield/ greenbelt locations and the lower intensification in brownfield locations (this widening choice). This option is more likely to facilitate exceptional design in both urban (due to the lower intensification approach) and suburban/ rural locations due to potential SUE scale developments. However, growth may not benefit some of the most deprived areas in the LCR.

Inclusive economy

80. The LCR Combined Authority (draft) Local Industrial Strategy (2020), highlights the region's importance in meeting the national grand challenges of clean growth, Data and AI, highlighting the region's particular strengths in these fields. The strategy aims to make the LCR '*home to the most inclusive economy in the UK' through* sustained strong economic growth and the ending of polarisation of opportunity. The latter will be achieved by seeking inclusivity, addressing systemic disadvantage, and unlocking the potential of all people and places. In this context new growth has the potential to reduce inequality and socio-economic segregation through well designed attractive developments and neighbourhoods to support residents' wellbeing, quality of life and to help attract the best talent.

81. Another important element to achieve the strategy would be connecting all communities to quality employment and education opportunities through good strategic infrastructure and supportive education and training programmes.

Scenario A

82. Option A1 is expected to be generally positive as it continues the approach in the adopted LPs. The brownfield regeneration and intensification will help provide new, better-quality homes essential to improving existing social inequalities and deprivation and to attract workforce and talent required to support economic growth. The regeneration approach is also likely to attract employers and new investment to affected areas which include some of the most deprived neighbourhood in the LCR. The approach is also expected to provide more affordable housing in these locations and an overall increase in stock should help to support local businesses. The release of greenfield should also offer opportunities to deliver mixed-use developments, and / or to provide new homes in locations that are close to some employment areas at the edge of urban areas. Overall, **minor positive effects** are anticipated.

83. Option A2 is considered to be particularly positive with the respect to addressing inequalities across the LCR as it targets growth to the 10% most deprived neighbourhoods in the region (around 1 in 3 of LCR neighbourhoods). This would help provide new, better-quality affordable homes where they are needed with associated improvements to transport and services infrastructure. This could have positive impacts on accessibility to employment, services, and education opportunities. Most of the affected areas currently have a net outflow commuting pattern and this option may help attract new employers into the regenerated locations producing more local employment opportunities thus reducing the need to travel further afield for work and serving to improve accessibility to quality employment and education opportunities through enhanced and new strategic infrastructure. That said, the intensification approach may lead to less attractive development due to the high density approach a possible loss of open space and repurposing of employment land. Overall, potential **moderate positive effects** are predicted.

84. For Option A3, positive effects are expected from the focus of growth on town centre locations which are well-connected to employment and education opportunities. Although this option involves a similar distribution of growth to the previous option, the brownfield intensification is focused on town centre locations leading to higher densities there compared to other options. Whilst this would include many of the deprived areas, it is less likely to benefit suburban deprived neighbourhoods. Additionally, the higher intensification in town centres could reduce the number of homes being built in ‘outer areas’ that are perceived as attractive to families and executive workers. A focus in the town centre may also mean a greater repurposing of land and buildings that might otherwise be used for employment uses. As a result, overall, **minor positive effects** are predicted.

85. For Option A4, the focus of growth around areas well served by sustainable/ public transport will help support the objective of connecting all communities to quality employment and education opportunities. This will improve accessibility to all parts of the community and should also in many locations benefit the most deprived. The option should further support modal shift ensuring more journeys are made via public transport and active travel (walking/ cycling) as the growth is likely to enhance existing, and support new, sustainable travel infrastructure and services.

86. The approach will involve brownfield intensification, but also allow for some limited release of greenfield land, which could potentially involve mixed use development. Overall, potential moderate **positive effects** are predicted as this option will help improve accessibility to jobs, education and services and improve connectivity via sustainable transport.

87. The transition to a low carbon economy provides substantial economic opportunities in low carbon technologies worth billions of pounds to the UK economy over the coming decades. Therefore, investment in green jobs, training and skills will be required to ensure LCR benefits from the green industrial revolution. In this context option A5 is anticipated to have particularly beneficial effects as it focuses growth on innovation centres that contribute to high value employment/ economic opportunities.

88. Several of these locations are within, or adjacent to, deprived areas (e.g., locations in Birkenhead and Liverpool) and therefore likely to help improve access to higher quality/ higher earning employment opportunities thus reducing socio-economic polarisation. This approach is also likely to help attract talent to locations of employment/ innovation centres in the LCR. Therefore, **moderate positive effects** are anticipated overall.

89. For Option A6 the focus of growth in proportion to existing settlements is positive in that it would provide new housing in locations already benefitting from infrastructure and therefore relatively sustainable. The new growth is also likely to bring about enhanced infrastructure and service provision to these locations. There are also benefits with regard to a release of greenfield land which may be attractive with regards to housing types and supporting employment land. However, spreading growth across the LCR may divert economic opportunities away from the most deprived areas such as the City, Inner Urban Area and to the generally less deprived suburban/ rural areas making this option less effective in tackling socio-economic inequality therefore the **positive effects** are likely to be **minor** in comparison with options focussing more growth to the most deprived locations, around transport hubs and economic growth areas.

Scenario B

90. Similar positive effects to those described for Option A1 are expected, due to the housing growth allocated on brownfield sites and brownfield intensification. However, under this option, the additional growth would be mainly focussed on greenfield / greenbelt land where there is relatively less deprivation than inner urban / town centre areas. In one respect, the release of greenfield land could be positive in terms of economic growth by supporting a wider range of housing developments, and also potentially through mixed uses in these locations. However, this is less likely to help address inequalities, and could place some housing in locations that are not accessible to employment through sustainable modes of travel. As such, potential **moderate positive effects** are predicted overall for Option B1.

91. Option B2 would involve a higher degree of intensification on brownfield land compared to Option A2 and would utilise a slightly greater amount of greenfield land. The approach is considered particularly positive within terms of addressing inequalities across the LCR as it targets growth to the 10% most deprived neighbourhoods. The increased scale of growth ought to increase the certainty of positive effects arising, as it should bring greater investment and associated improvements in infrastructure. Therefore, **moderate positive effects** are predicted overall.

92. For Option B3, similar effects to option A3 are expected but increased growth ought to raise the magnitude of effects; potential **moderate positive effects** are predicted due to a focus of growth on town centre locations which include areas of high deprivation and are well-connected to employment and education opportunities. However, the approach would lead to higher densities in town centre locations whilst potentially limiting the delivery of development in a wider range of locations across the LCR. The need for increased intensification could also mean that buildings and land otherwise suitable for retail, office and employment uses could be lost to residential pressures.

93. For Option B4, additional benefits are likely due to the increased suburban intensification in areas served by the public transport network. There is also some increase in the use of greenfield land, which could be located in attractive locations and provide a wider range of housing developments. This increases the certainty of **moderate positive effects** arising.

94. Option B5 is anticipated to share the beneficial effects predicted for option A5 as it includes several locations within, or adjacent to deprived areas and will help improve access to higher quality/ higher earning employment.

95. Focusing on employment locations could also help attract talent to locations of employment/ innovation centres in the LCR. Therefore, potential **major positive effects** are anticipated overall.

96. For Option B6, similar effects to Option A6 are anticipated. Growth would provide new housing in some well-connected locations facilitating enhanced infrastructure and service. However, this option would involve greater dispersal of growth resulting in greater development in greenfield/ greenbelt areas which is likely to divert regeneration opportunities away from the most deprived areas and those with the strongest transport links. Therefore, minor **positive effects** are predicted overall.

Scenario C

97. Option C1 would involve substantially more greenfield / greenbelt development with similar levels of brownfield development and greenfield land (compared to options A1 and B1). Therefore, the same **moderate positive effects** are anticipated due to the higher housing growth (including affordable housing) and the resulting improvement in choice in terms of housing type, size, and tenure. However, the substantial additional growth on greenfield / greenbelt land is likely to have mixed effects, positive ones due to attractive suburban / countryside developments which will help attract talent to the LCR, but this is offset by potential negative effects as growth may serve to exacerbate the existing socio-economic inequalities across the LCR.

98. Options C2 and C3 would involve a very high degree of intensification compared to other options considered. Whilst the approaches would include the most deprived neighbourhoods in the LCR, the high intensification approach may not provide the housing types required to attract certain demographics into the workforce. This is particularly the case for Option C3, which directs growth into town centre locations. Therefore**, moderate positive effects** remain.

99. For Option C4, the effects are expected to be similar to those envisaged for B4 but amplified due to the larger scale of growth, giving rise to major positive effects**.** This is associated with the focus of growth around sustainable locations, helping connect communities to quality employment and education opportunities as well as opening up

some greenfield locations for growth to support a wider range of housing for a diverse workforce. Overall, potential **major positive effects** are predicted.

100. For Option C5, the effects associated would be similar to B5, but of a greater magnitude. This approach should help attract talent to locations of employment/ innovation centres in the LCR, which in some instances overlaps with deprived locations. This approach could bring a good mix of housing locations and types that are suitable to support regeneration activities as well as attracting higher quality jobs and accommodation. Therefore, a **major positive effect** is predicted.

101. For Option C6, positive effects are anticipated due to the proportionate growth in locations that already benefit from infrastructure and therefore ought to be relatively sustainable. The substantial growth in greenfield/ Green Belt areas is likely to facilitate substantial investment in new infrastructure and create attractive new developments which would help attract investment and talent to the LCR. That said, the dispersal approach may divert economic opportunities away from the most deprived urban areas to the generally less deprived suburban/ rural areas making this option less effective in tackling socio-economic inequality. This reduces the magnitude of **positive effects** to **moderate**.

Sustainable transport

102. All options would assume approximately 3,000 dwellings would come forward on brownfield sites through windfall developments. These sites are likely to be within the urban area, and hence in locations which would be expected to be broadly accessible to sustainable transport options, shops, services, and employment. This might go some way towards ensuring that the future growth in these locations permits a degree of avoiding car dependencies; hence helping to reduce congestion and improve uptake of sustainable modes of travel, such as public or active modes of transport. That said, whilst sustainable transport options would be accessible, behavioural norms mean that car use would be anticipated, potentially creating new, or exacerbating existing congestion related issues.

Scenario A (11,000 dwellings)

103. Option A1 would offer a continuation of current growth patterns, according to the spatial strategies employed by the relevant constituent Local Plans. This would direct growth in a fairly dispersed manor across the City Region. There would be a need for some greenfield release; these locations are generally less accessible and on the periphery of built-up areas, though the potential for a concentration of growth could increase the viability of newly delivered sustainable transport related infrastructure and services; potentially improving accessibility and consequentially reducing congestion and improving active and public transport travel rates (related to the scale of growth, the degree to which this might be realised is uncertain).

104. The brownfield intensification under this approach would seek to deliver a somewhat increased rate of delivery across brownfield sites, which would be assumed to be within the urban area. This would be expected to mimic those effects associated with the windfall delivery of brownfield growth, though the intensified nature of the development might partially increase the potential for some increased viability of delivering increased levels of accessibility through new shops, services and

sustainable transport infrastructure and services. Overall, **minor positive effects** are predicted given the relatively low level of growth involved across the City Region.

105. Option A2 would seek to align growth with inclusivity and efforts to alleviate deprivation across the City Region. A small amount of this growth would be delivered on greenfield land; this growth could possibly lead to some car dependency and embedding of unsustainable transport options. These mixed effects would be small in their magnitude due to the small scale of related growth. The option would place a focus on delivering growth via brownfield intensification, largely within built-up areas of Liverpool City, Inner Urban Area, Named Towns, and suburban locations which are more deprived. These effects ought to exaggerate those relating to the brownfield windfall sites. Development would be expected to be in broadly accessible locations, with the scale of growth likely to see some improved accessibility of these locations, owing to improved sustainable transport access as well as new shops and services linked to the growth. Where this growth would focus on deprived areas which are in some cases suburban, some more pronounced effects might be seen, depending on the potential for growth to be clustered and strategically located in areas which currently offer poor access to public or active travel options. In relation to deprivation, this option might help to provide more affordable transport options for deprived communities who benefit from increased levels of local accessibility. Overall, uncertain, **moderate positive effects** are predicted.

106. Option A3 would take an approach which focuses growth into urban centres across the City Region; the split of growth in terms of supply elements (brownfield, greenfield and Green Belt land) would align with Option A2, but there would be a reduction in suburban delivery. This would see the brownfield intensification strategy be more focused in areas which are already considered to be accessible, thereby increasing this accessibility and the potential for residents to travel by sustainable means. This ought to reduce car dependencies, although behavioural norms relating to car usage alongside such a large focus of growth in areas which already see high congestion may exacerbate traffic issues. On balance, this approach ought to deliver **moderate positive effects** alongside uncertain minor **negative effects**.

107. Option A4 would adopt a strategy which aims to deliver growth around sustainable transport access nodes. At this scale of growth, sites would be comprised of the aforementioned brownfield windfall sites, an intensification of brownfield delivery alongside a small amount of growth on greenfield land, where it is considered to be accessible. Across all sites under this approach, accessibility and proximity to sustainable transport infrastructure, shops and services would be a key factor; as such, a potential reduction in car dependencies could be seen. In relation to congestion, whilst the increase in population would be likely to increase congestion to some extent, the ability for growth to be more spread out across the City Region may partially offset this. Considering the likelihood of a meaningful reduction in car dependencies related to this approach, **moderate positive effects** are predicted.

108. Option A5 would focus housing delivery in locations which offer positive accessibility to employment areas, with a focus on supporting a green industrial revolution. The majority of growth on top of the brownfield windfall developments, would be delivered through urban intensification, with some small amounts of growth on greenfield land. This approach ought to promote sustainable means of commuting, helping to drive down commuting related transport emissions.

109. That said, being accessible to employment land may be at odds with being accessible to shops and services, and hence a degree of car dependency might be seen, counterbalancing the benefits of being accessible to employment to an extent; though this is uncertain and depends upon the exact locations for growth. The benefits associated with positive access to employment land would be expected to be offset by the likelihood that this could be at the expense of access to other vital services, though this is dependent upon the exact locations of growth. Overall, **neutral effects** are likely, but this is uncertain.

110. Option A6 would deliver housing in a dispersed approach across the City Region, offering a greater share of housing on greenfield and Green Belt land. Broadly speaking, these locations tend to be less accessible by sustainable transport and hence could promote a greater degree of car dependency. The dispersed nature of this approach would be expected to reduce the potential for new sustainable transport infrastructure and services to be delivered in a focused location. Conversely, the approach's distribution of growth would help to reduce impacts related to congestion in any particular location. Whilst the approach might lessen the potential for congestion related issues, the likely increased rates of car dependency as a result of the dispersal of growth is likely to lead to **minor negative effects**.

Scenario B (16,000 dwellings)

111. Option B1 would deliver growth and effects which broadly align with Option 1A, though with a small degree of increased brownfield intensification and some more significant greenfield/Green Belt release. The key difference in effects would be expected to be related to the increase in greenfield/Green Belt. These developments would be likely to be in areas with generally poorer existing accessibility levels, however the scale of growth and potential to cluster development could deliver improved access to jobs and services alongside new and improved sustainable transport infrastructure and services. That said, the behavioural norms associated with mobility patterns would be likely to lead to a degree of car dependency from this type of growth and as such, some associated increases in congestion. Overall, uncertain **minor positive effects** are predicted.

112. Option B2 would see growth distribution and associated effects aligned with that seen under Option A2. There would be a small increase in delivery on greenfield land, which would be unlikely to lead to a significant alteration of anticipated effects related to this development type. More substantial changes would be seen through the increased brownfield intensification. This ought to increase the magnitude of effects and hence improved accessibility of areas within and surrounding developments should be seen, especially in some more deprived suburban locations across the City Region. Overall, potential **major positive effects** are predicted.

113. Option B3 would see growth distribution and associated effects aligned with that seen under Option A3. There would be a small increase in delivery on greenfield land, which would be unlikely to lead to a significant alteration of anticipated effects related to this development type. The increase in brownfield intensification in urban centres would be expected to further improve accessibility, beyond that seen under Option 3A. However, this higher growth would be expected to increase the aforementioned potential congestion related issues in urban centres. Overall, this approach ought to deliver **major positive effects** alongside **minor negative effects.**

114. Option B4 would see a continuation of the pattern outlined under Option A4, though additional growth would be seen on greenfield and Green Belt land. Brownfield land would also be further intensified as part of this strategy. Effects relating to development being placed in accessible locations ought to help to reduce car dependencies related to the new growth, as previously discussed. Whilst growth would be directed to accessible locations, dominant behavioural norms are likely to mean that the growth would lead to some increase in car journeys, which could worsen congestion issues. That said, this approach gives the option of dispersing housing delivery, so this could be mitigated somewhat through a dispersed approach. Overall, **major positive effects** are predicted.

115. Option B5 would be expected to largely exaggerate those effects seen under Option A5. Positive access to employment land should lead to consequential benefits for commuting patterns being more likely to adopt sustainable means of transport. On the flip side, these locations might be more poorly accessible to shops and services, thereby potentially increasing car dependencies in this respect. Whilst the effects would be likely to be of a greater magnitude (both positive and negative when compared to Option A5), they would still be expected to cancel each other out, resulting in **neutral effects**.

116. Option B6 would deliver the majority of the increased growth on greenfield and Green Belt land, dispersed around the City Region. This will be likely to exaggerate those effects outlined under Option A6 relating to increased car dependencies, whilst simultaneously increasing the potential for congestion due to the higher growth (though at this scale and dispersal, these effects would not be expected to be major).

117. The approach might deliver some larger Green Belt release around larger settlements, which might serve to improve sustainable transport provisions in these areas. Overall, this approach would be expected to have **moderate negative effects**.

Scenario C (22,000 dwellings)

118. Option C1 would deliver growth and effects which broadly align with Option B1, though with a degree of increased brownfield intensification and some significant greenfield/Green Belt release. The increase in brownfield intensification is relatively small, and so positive effects would be expected to be of a similar significance (minor).

119. Whilst there would be the potential to cluster greenfield/Green Belt growth in order to increase the viability of new transport infrastructures and services, this high level of growth might reduce the potential to strategically allocate land according to these intentions, and as such, some uncertainties are expected. On balance, **minor positive effects** are predicted.

120. Option C2 would further the increased in growth and its distribution pattern seen under Options A2 and B2, where alleviating deprivation would be the driver of the strategy and brownfield intensification would be the key mechanism. The high level of housing delivery on brownfield land ought to lead to improved accessibility of the areas which receive growth by delivering new, nearby shops and services alongside sustainable transport related infrastructure and service improvements. These factors ought to reduce car dependencies but providing viable modal alternatives. Potential **Major positive effects** are predicted in this respect. However, some deprived communities are in suburban locations that are less accessible.

121. Growth here might not necessarily lead to improvements to infrastructure and facilities, so there could be a degree of increased car usage in some areas, which is a **minor negative effect**.

122. Option C3 would further the increase in growth and its distribution pattern seen under Options A3 and B3, with town and urban centres playing host to the increased growth, the focus would remain on brownfield intensification. Effects would be expected to mimic those seen under lower growth scenarios of the same distribution, but with an anticipated higher magnitude. It would be likely that this option would need to make use of all available brownfield site options within urban centres; as such, some locations may be less accessible, or located nearby to routes which might make active travel less appealing. Congestion related issues would be likely to be more prominent, due to the focus of a high amount of growth into more concentrated areas. **Major positive effects** alongside potential **moderate negative effects** are predicted.

123. Option C4 would further the additional growth seen under Option B4. Maximising the potential to locate housing within accessible locations ought to maximise the potential for future growth to be supported by sustainable travel options, thereby reducing car dependencies and the potential for congestion. Congestion would, however, still be expected as a result of new development and whilst this strategy would permit growth to be distributed in order to lessen the impact, this higher growth scenario may make it more difficult to do this in every instance. As such, there might be some areas with congestion related issues, linked to new development. Nevertheless, **major positive effects** are predicted given that the focus is on sustainable transportation.

124. Option C5 would see the uplift in growth delivered through a mix of brownfield intensification and on some greenfield land. Sustainable travel commuting rates would be expected to increase due to the accessible nature of employment sites from new housing developments. However, this might be to the detriment of access to shops and services. This approach would have a reduced degree of uncertainty, as the larger growth would increase the likelihood for sites with poor accessibility to be allocated. On balance, **neutral effects** are predicted.

125. Option C6 would further exaggerate those effects described under Option B6, due to the majority of increased growth being directed to dispersed Greenfield and Green Belt release. That said, the high level of Green Belt and greenfield release might give rise to locations which see more concentrated growth. This could give rise to an increased viability of new and improved sustainable transport services and infrastructures. Nonetheless, a dispersed lower density approach is less preferable to densification in terms of per capita emission reductions from transport. Regardless of improved infrastructures and services, the increase in growth might give rise to some congestion related issues, especially nearby to areas which have seen larger levels of housing growth. Therefore, overall **moderate negative effects** are predicted.

Equality and diversity

Scenario A

126. Planning for development provides an opportunity to tackle inequalities between different communities, encourage diversity, and ensure that groups with protected characteristics are not disproportionately affected by development. Conversely, poorly planned development could lead to a widening of inequalities if it negatively affects some communities more so than others. The strong policy direction of the draft SDS suggests that development will be required to bring about benefits for communities, rather than leading to negative effects though.

127. In this respect, Option A2 (focusing on brownfield intensification in the most deprived areas of the LCR) could be a notably well performing option, should regeneration occur that improves living environments and enhances access to services, facilities, employment opportunities, and high-quality affordable homes. Notably the option would see some of the most accessible areas of the LCR intensified (as is the case under Option A4 which focuses development along key transport corridors). The most deprived areas also largely overlap with key town centres (the focus for brownfield intensification under Option A3).

128. Options A2, A3, and A4 are therefore considered likely to lead to **moderate positive effects** through a focused strategy that confirms and realises the benefits of regeneration, including infrastructure development such as new schools, healthcare facilities, and active travel opportunities. Some groups with protected characteristics could benefit from such approaches, including young people in the urban areas and ethnic minorities (more so for options A2 and A3). However, such focused brownfield strategies may disproportionately affect groups with protected characteristics (such as the elderly) in the suburbs or settlement edge locations, particularly in areas which perform poorly in relation to the 'access to housing and services' deprivation domain (by way of a lack of new housing and development benefits being directed to these areas). **Minor negative effects** could be anticipated in this respect for option A2 in particular.

129. Whilst many of the areas discussed under the options above also coincide with key economic growth areas, Option A5 more notably would involve less development in the north of the region. Whilst **moderate positive effects** could be anticipated from the brownfield intensification proposed, groups with protected characteristics, and areas of deprivation in the north of the region (for example Southport) are less likely to see focused development benefits over the plan period and may be disproportionately affected as a result. **Minor negative effects** could be anticipated in this respect.

130. Options A1 and A6 propose a more dispersed approach to development, which is likely to benefit more communities across the LCR (through the benefits associated with development). Settlement edge locations (likely to be a focus for development under both options) can deliver accessibility improvements, such as new local primary schools and healthcare services (reducing deprivation in relation to certain domains) and provide future residents with great connections to the surrounding Green Belt land (enhancing the living environment). However, the strategies are less likely to significantly benefit areas experiencing the highest deprivation levels in the LCR, which largely coincide with urban (brownfield) central locations.

131. Growth would still occur in brownfield locations under these strategies, but at a more limited level, and therefore overall, uncertain **minor positive effects** are anticipated. The benefits of greenfield growth could potentially help some areas of need, but this is much less likely under a dispersed approach, hence effects being limited to minor.

Scenario B

132. Under this scenario, the moderate positive effects predicted in relation to Options A2, A3, A4, and A5 are considered likely to be enhanced by a greater level of development increasing the viability of new infrastructure delivery and increasing affordable housing. **Major positive effects** could be considered more likely, particularly for options B2 and B3, which would be more likely to involve deprived communities, concentrations of ethnic minorities and younger people. Similar **minor negative effects** could also be anticipated, with groups outside of the focused development areas less likely to benefit from future growth. In the urban areas, there may also be negative effects felt disproportionately by those groups residing here from increased noise, pressures on services, traffic, and other amenity issues in the short term.

133. **Minor negative effects** are predicted for Options B1 and B6, which again, could restrict growth and regeneration in the most deprived areas of the LCR, potentially exacerbating existing inequalities. Though some greenfield locations could overlap / be related to deprived areas, the higher scale of growth in greenfield locations could potentially divert investment away from areas of greatest need, whilst improving areas that are already affluent. Therefore, limited positive effects are anticipated in terms of reducing inequalities and strengthening existing communities.

Scenario C

134. The effects under this scenario are considered to be similar to those described above under Scenario B. Again, the greater level of development could increase the viability of new infrastructure delivery, and with the right regeneration strategy under Options C2, C3, C4, or C5 could realise **major positive effects**.

135. Notwithstanding this, protected groups outside of the focused development areas are still less likely to benefit from future growth. There is also a greater possibility that areas of concentrated growth could experience short term negative effects in terms of noise, traffic, construction, and pressure on services. For C3, which focuses growth into inner town centre areas, this could have potential **moderate negative effects** for particular communities should careful phasing and mitigation measures not be implemented. Similar effects are noted for options C2, C4 and C5, but given the wider spread of locations involved, only **minor negative effects** would be anticipated in this respect.

136. **Moderate negative effects** are identified in relation to Options C1 and C6, which again, would limit growth and regeneration in the most deprived areas of the LCR, whilst promoting growth in affluent areas. This could potentially exacerbate existing inequalities, especially if it draws investment away from urban areas in need of regeneration and renewal. The high level of Green Belt development required for these two options would make this a greater possibility. Whilst some development could potentially help address inequalities, this is tempered by the effects discussed above, leaving moderate negative effects overall.

Biodiversity

Scenario A

137. Option A1 is unlikely to put significant pressure on biodiversity resources as it could involve a spread of growth across the region, mostly within urban locations, where the potential for effects is lower from a strategic perspective. Though an amount of greenfield land would be required through further allocations, much of this would not be located in close proximity to designated sites, and the spread of development would be less likely to lead to severance to ecological corridors. Therefore, overall, **neutral effects** are predicted.

138. Option A2 involves intensification of the urban areas, particularly where this overlaps with deprived communities. This could have mixed effects. In one respect, it directs growth away from greenfield areas and avoids severance. However, some of the urban locations along the coast are more sensitive to pressures and are already earmarked for substantial urban intensification. Increased growth in these locations could possibly lead to an increase in recreational pressures and pollution caused by human activities and water / drainage management. At the scale of growth involved, it is still considered likely that effects could be managed, and thus **neutral effects** are recorded.

139. Option A3 directs growth to centres, with a particular focus on the inner areas of towns. For locations such as Liverpool, Wirral, Southport, Widnes and Runcorn, urban intensification would occur in locations that are close to protected international sites. There would therefore be potential for cumulative negative effects upon these locations through an increase in construction and disturbance, recreational pressures on coastal environments. At the scale of growth involved, the effects should be possible to manage, and so only uncertain **minor negative effects** are predicted.

140. Option A4 is likely to have similar effects to Option A2, as growth would mostly be within existing urban areas and spread across the City Region. There could be some growth in more sensitive locations along the coast, but to a lesser extent compared to option A3. Therefore, **neutral effects** are predicted.

141. Option A5 would likely involve growth along the urban locations linked to employment hubs, which includes the Mersey / Atlantic gateway. Though the majority of development at this scale of growth would be within the urban locations, there would also be some limited release of greenfield land (with varied degrees of sensitivity in terms of biodiversity). The potential for negative effects is considered relatively low, but nonetheless potential **minor negative effects** are predicted to reflect the strategic issues identified, and also given that growth is directed along an important ecological corridor.

142. Option A6 disperses growth across a greater range of locations but involves less urban intensification. The effects of additional brownfield development at this scale of growth are likely to be minimal, but there could potentially be some negative effects associated with the release of greenfield land. As per option 1, the dispersed nature of growth means that **neutral effects** would be anticipated at this scale of growth from a strategic perspective. The nature of greenfield sites should also mean that (at this scale of growth) development can be directed away from areas of national and international significance, and on-site biodiversity gain could be easier to achieve.

Scenario B

143. At this scale of growth, for option B1 a higher amount of greenfield / Green Belt release would be necessary alongside some urban intensification. Presuming that this would be accommodated across the City Region by each authority, the sensitivity of land varies.

144. However, the level of release required ought to mean that in each local authority, there is an ability to avoid the most sensitive locations. However, a loss of wildlife habitat of local importance is probable. Green Belt land in Sefton and Wirral in particular may also have play a role in supporting species associated with internationally important wildlife sites. Therefore, at this strategic level, negative effects cannot be ruled out. Given the distributed nature of development, only potential **minor negative effects** would be predicted overall though.

145. For option B2, there would be much greater urban intensification in deprived areas, which could involve some locations close to water courses / the coast (i.e., Liverpool, Wirral, Halton). However, the extent of development in the urban areas would still be relatively dispersed across a range of deprived areas (some of which are less likely to be sensitive with regards to biodiversity). The amount of greenfield release across the region would still be limited but could potentially mean that some urban greenfield locations are lost to support higher levels of growth in the urban areas. Overall, potential **minor negative effects** are predicted.

146. Option B3 increases the amount of urban intensification focused in centres, which increases the potential for negative effects arising due to pressures along the Mersey Estuary. There would still be limited effects in terms of greenfield release, but some green space in the central areas of towns could possibly be lost. Overall, **minor negative effects** are predicted at this stage.

147. Option B4 involves urban intensification at transport hubs, some of which align with ecologically sensitive locations. There would also be some release of greenfield / Green Belt land, which could also be along these corridors (amongst other locations). However, even at a greater scale of growth, the focus of development would not all be in these locations, or necessarily at a level that would lead to major effects. As such, potential **minor negative effects** are predicted at this stage.

148. At this scale of growth, Option B5 would necessitate further release of greenfield land as well as increased urban intensification. A key corridor of growth could be in locations along the Mersey Estuary, which is a sensitive ecological location. Given the increased scale of growth involved, the potential for effects is more certain, but still considered to be **minor**.

149. It is possible that growth would also be within areas that have good access to employment opportunities, thus allowing for a dispersal of potential pressures on the more sensitive wildlife corridors.

150. Option B6 would involve limited urban intensification, and therefore increased pressures and disturbances to the sensitive coastal and estuarine environments would be limited in this respect. However, there would be a need for substantial release of Green Belt land at this scale of growth.

151. Each authority would need to explore potential land options, with a mix of very sensitive and less sensitive locations in each authority. Regardless of location, it is likely that some local disturbance to biodiversity would arise in each local authority, and in some instances, there could be knock on effects with regards to designated habitats. Though there would be some flexibility in avoiding the most sensitive areas (and requirements to achieve net gain), the potential for **minor negative effects** exists at this strategic level of assessment.

Scenario C

152. At this scale of growth, pressure from within the urban areas would still be likely be limited for Options C1 and C6. However, both options would involve greater amounts of greenfield / Green Belt release, to the extent that it may be more difficult to avoid the sensitive locations. As such, potential **moderate negative effects** are predicted.

153. Options C2 and C3 would put further pressures on habitats close to urban centres and potentially on greenspace within these areas. However, both would still avoid Green Belt release and so only **minor negative effects** are predicted.

154. Option C4 involves increased urban intensity, but this could still be dispersed to avoid focused / cumulative effects, and there would be limited Green Belt release. As such, **minor negative effects** are predicted.

155. Option C5 is predicted to have potentially **moderate negative effects** as growth along the Mersey Estuary could increase further.

Net gain

156. With regards to enhancements, an increased amount of growth across the City Region could possibly increase investment in net gain activities. Which areas would benefit would depend on the spatial strategy, as well as decisions about where net gain ought to occur. Broadly speaking, increased urban intensification could make it more difficult to achieve urban greening measures, particularly if it involves maximising the use of sites for built development, and using open space in the urban areas. Conversely, it could help achieve enhancements on sites across the urban areas if measures such as green roofs and street trees are incorporated into higher density developments. The alternative would be contributions to offsite enhancements. The release of Green Belt could possibly help to achieve enhancements on sites, especially if they are starting from a low baseline in terms of ecological value, however, it raises the potential for loss of habitats and a need to compensate for this as well achieving net gain.

Clean air

157. All options would involve approximately 3,000 dwellings on brownfield sites through windfall developments. These sites are likely to be within the urban area, and hence in locations which might be more prone to congestion and air quality related issues. These issues are expected to be more pronounced in areas which already suffer from poor air quality, especially where an Air Quality Management Area (AQMA) has been designated. These areas include Liverpool in its entirety, as well as some smaller areas and roads in Crosby, Bootle, St Helens, Widnes and to the east of Newton-le-Willows. Conversely, where these locations are more likely to be within somewhat more accessible locations, active travel and public transport might be a viable choice, helping to drive down car dependencies to some extent. The mitigating effects of this would be limited, due to car use being the dominant modal choice for travel.

158. The expansion of electric vehicles and their share within traffic volumes is increasing and is anticipated to continue to increase over time. As such, it can be assumed that in the longer term, air quality issues related to motor vehicles will be significantly reduced (though air quality issues will not be irradicated). Considering this, the effects related to air quality issues from motor vehicles discussed here are expected to prevail in the short to medium term predominantly.

Scenario A (11,000 dwellings)

159. Option A1 would offer a continuation of current growth patterns, according to the spatial strategies employed by the relevant constituent Local Plans. This would direct growth in a fairly dispersed manor across the City Region. Some limited greenfield land release would be necessary. These locations are generally less accessible and on the periphery of built-up areas and so may promote a degree of car dependency and consequential impacts on air quality. The suburban / urban edge locations involved might mean that additional car trips generated in AQMAs are lower (compared to an urban focus). However, it could lead to increased commuting along the strategic road network, which would have its own air quality implications.

160. The brownfield intensification under this approach would seek to deliver a somewhat increased rate of delivery across brownfield sites, which would be assumed to be within the urban area. This would exaggerate effects associated with windfall delivery of brownfield growth and could lead to a slight increase in congestion in built-up areas (with implications for air quality). However, the scale of intensification is relatively low, and much of the growth would be in locations where a car is not a necessity.

161. Overall, **minor negative effects** are predicted, reflecting potential increases in traffic in urban areas and levels of commuting increasing from greenfield growth. The magnitude of effects is low though and not concentrated into any particular locations.

162. Option A2 would seek to align growth with inclusivity and efforts to alleviate deprivation across the City Region. A small amount of this growth would be delivered on greenfield land, which could possibly lead to some car dependencies and consequential air quality effects. The option would place a focus on delivering growth via brownfield intensification, largely within built-up areas of the City, Inner Urban Area, Named Towns and suburban locations which are more deprived. These effects ought to exaggerate those relating to the brownfield windfall sites.

163. Whilst this development would be expected to be in broadly accessible locations, with the scale of growth likely to see some limited improvements to accessibility, the overall effect of growth could see increased car use and associated air quality issues in these areas.

164. Many of the City Region's AQMAs overlap with the most deprived areas and as such existing issues may be exaggerated and more deprived communities disproportionately affected by worsening air quality. **minor negative effects** are predicted, reflecting the potential for accessible growth that discourages car usage, but also recognising that much of the growth may overlap with AQMAs and could potentially lead to temporary worsening of air quality.

165. Option A3 would take an approach which focuses growth into urban centres across the City Region; the split of growth in terms of supply elements (brownfield, greenfield and Green Belt land) would align with Option A2, but there would be a reduction in suburban delivery. This would see the brownfield intensification strategy be more focused in areas which are already considered to be accessible, thereby increasing this accessibility and the potential for residents to travel by sustainable means. This ought to reduce car use to an extent, although behavioural norms relating to car usage alongside such a large focus of growth in areas which already see high congestion may exacerbate traffic issues (and thus air quality problems). This concentration of growth within areas which are more likely to have existing air quality issues could have negative effects in these areas, especially around traffic pinch points and at peak times. Placing more development in such locations also exposes more people to the negative effects of air quality on health. In the short term, negative effects would be anticipated, but in the longer term, creating locations where car usage is more limited and people can walk, cycle, and use alternative modes of travel should mean that air quality issues are less pronounced. On balance, **minor negative effects** are predicted.

166. Option A4 would adopt a strategy which aims to deliver growth around sustainable transport access nodes. At this scale of growth, sites would be comprised of the aforementioned brownfield windfall sites, an intensification of brownfield delivery alongside a small amount of growth on greenfield land, where it is considered to be accessible. Across all sites under this approach, accessibility and proximity to sustainable transport infrastructure, shops and services would be a key factor; as such, a potential reduction in car dependencies could be seen. In relation to traffic levels and consequential air quality issues, whilst the increase in population would be likely to increase congestion, the ability for growth to be more spread out across the City Region may partially offset this and areas with existing air quality issues could be avoided. Considering the likelihood of a meaningful reduction in car dependencies and the ability to spread growth across the City Region alongside the expected increase in car journeys **neutral effects** are predicted.

167. Option A5 would focus housing delivery in locations which offer positive accessibility to employment areas, with a focus on supporting a green industrial revolution. The majority of growth on top of the brownfield windfall developments, would be delivered through urban intensification, with some small amounts of growth on greenfield land. This approach ought to promote sustainable means of commuting, helping to drive down commuting related air quality issues. That said, being accessible to employment land may be at odds with being accessible to shops and services, and hence a degree of car dependency might be seen, counterbalancing the positive effects on air quality to an extent; though this is uncertain and depends upon the exact locations for growth.

Car use would be expected to remain the dominant mode of transport for new residents and so air quality issues would be likely at traffic pinch points and at peak journey times. This approach and scale of growth would be expected to mean that those areas with existing air quality issues could be avoided to an extent. Overall, **minor negative effects** are predicted.

168. Option A6 would deliver housing in a dispersed approach across the City Region, offering a greater share of housing on greenfield and Green Belt land. Broadly speaking, these locations tend to be less accessible by sustainable transport and hence could increase traffic volumes and consequentially air quality issues. The dispersed nature of this approach could reduce the potential for new sustainable transport infrastructure and services to be delivered in a focused location. Conversely, the approach's wide distribution of growth would help to spread and lessen the air quality impacts related to increased traffic volumes. Existing AQMAs would also be likely to be able to be avoided in the most part. Whilst the approach might lessen the potential for congestion related issues, the likely increased rates of car dependency as a result of the dispersal of growth in some less accessible locations is likely to cancel out benefits. There is a degree of uncertainty relating to where growth would be placed, but on balance, **minor negative effects** are predicted.

Scenario B (16,000 dwellings)

169. Option B1 would deliver growth and effects which broadly align with Option A1, though with a small degree of increased brownfield intensification and some more significant greenfield/Green Belt release. The key difference in effects would be expected to be related to the increase in greenfield/Green Belt. These developments would be likely to be in areas with generally poorer existing accessibility levels, thereby driving up car dependencies and consequential air quality related issues. Whilst these locations are largely outside of more core areas of concern in relation to air quality, traffic pinch points nearby to new development might see deteriorating air quality, especially at peak journey times. This might also occur in nearby built-up centres at peak journey times. Whilst the Green Belt growth might offer the potential to cluster development which could deliver improved access to sustainable transport infrastructure and services, the overall mitigating effects of this would be expected to be minor. Overall, **minor negative effects** are predicted.

170. Option B2 would see growth distribution and associated effects aligned with that seen under Option A2. There would be a small increase in delivery on greenfield land, which would be unlikely to lead to a significant alteration of anticipated effects related to this development type. More substantial changes would be seen through the increased brownfield intensification. This ought to increase the magnitude of effects and hence whilst more deprived areas of the City Region might see some minor improvements to sustainable transport provisions, they would also see deteriorating air quality, especially at peak journey times and at traffic pinch points. These effects might also be realised within, or nearby to, existing air quality management areas, worsening the effects and potentially disproportionately affecting deprived communities. Overall, potential **moderate negative effects** are predicted.

171. Option B3 would see growth distribution and associated effects aligned with that seen under Option A3. There would be a small increase in delivery on greenfield land, which would be unlikely to lead to a significant alteration of anticipated effects related to this development type. The increase in brownfield intensification in urban centres would be expected to exacerbate the air quality issues linked to traffic level increases.

172. Any increased levels of accessibility due to the growth would be minor, though it should be noted that the focus of growth within central areas should reduce car dependencies longer term. Overall, this approach is predicted to deliver **moderate negative effects.**

173. Option B4 would see a continuation of the pattern outlined under Option A4, though additional growth would be seen on greenfield and Green Belt land, as well as some brownfield intensification. Effects would be expected to be broadly aligned with those seen under A4. The growth and effects would be likely to be more distributed, whilst retaining the ability to avoid existing AQMAs. Considering the likelihood of a meaningful reduction in car dependencies and the ability to spread growth across the City Region alongside the expected increase in car journeys **minor negative effects** are predicted.

174. Option B5 would be expected to exaggerate those effects seen under Option A5, though seen across a greater number of areas, in line with the increased growth. This higher level of growth might reduce the possibility of avoiding areas with existing AQMAs, though conversely, the larger growth might help to improve the accessibility of larger concentrations of housing through infrastructure delivery. Overall, **minor negative effects** are predicted.

175. Option B6 would deliver the majority of the increased growth on greenfield and Green Belt land, dispersed around the City Region. This will be likely to exaggerate those effects outlined under Option A6 relating to increased car journeys and associated air quality declines (though at this scale and dispersal, these effects would not be expected to be major). The approach might deliver some larger Green Belt release around larger settlements, which might serve to improve sustainable transport provisions in these areas which could partially mitigate some local air quality declines. This scale of growth would be expected to, for the most part, avoid existing areas with air quality concerns, but could increase the overall usage of cars. Some uncertainty remains with these effects due to the lack of clarity on exactly where growth would be located. On balance, **minor negative effects** are predicted.

Scenario C (22,000 dwellings)

176. Option C1 would deliver growth and effects which broadly align with Option B1, though with a degree of increased brownfield intensification and some significant greenfield/Green Belt release. The effects described under Option B1 would be expected to be further inflated for Option C1, in line with the increased growth. The increased greenfield / Green Belt release ought to be possible to accommodate in areas that are not within current AQMAs. However, the more suburban nature of growth may lead to an increase in overall car usage, which could contribute towards trips towards urban centres and along the strategic route network. These are **minor negative effects**.

177. Option C2 would further increase growth and its distribution pattern seen under Options A2 and B2, where alleviating deprivation would be the driver of the strategy and brownfield intensification would be the key mechanism. This could contribute further towards more communities being developed in or near to AQMAs, as well as an increase in car trips in such locations. As such **moderate negative effects** are predicted.

178. Option C3 would further the increases in growth and its distribution pattern seen under Options A3 and B3, with town and urban centres playing host to the increased growth under this approach, the focus would remain on brownfield intensification. Effects are likely to exaggerate those seen under the lower growth options, with potential increases in congestion in urban centres (particularly in and around existing AQMAs) as well as more people being exposed to poor air quality. These are potential **major negative effects** in the short to medium term. In the longer term such an approach could facilitate improved air quality within urban centres, but this would require new development that discourages car use and facilitates increased walking, cycling and public transport usage (both within the urban areas, and also for trips to and from the urban centres).

179. Option C4 would further the additional growth seen under Option B4. Maximising the potential to locate housing within accessible locations ought to maximise the potential for future growth to be supported by sustainable travel options, thereby reducing car dependencies and the potential for air quality issues. Congestion would, however, still be expected as a result of the new development and whilst this strategy would permit growth to be distributed in order to lessen the impact, this higher growth scenario may omit the potential to do this in every instance as well as meaning that some growth may have to be delivered nearby to, or within an AQMA. Overall, **minor negative effects** are predicted.

180. Option C5 would see the uplift in growth delivered through a mix of brownfield intensification and on greenfield land. Air quality issues relating to commuting might be expected to drop to some extent, though it might increase from trips relating to access to shops and services, though this is uncertain. The higher growth might make avoiding site allocations nearby to existing AQMAs or areas with poorer air quality more challenging. Overall, potential **moderate negative effects** are predicted.

181. Option C6 would further exaggerate those effects described under Option B6, due to the majority of increased growth being directed to dispersed Greenfield and Green Belt release. The high level of Green Belt and greenfield release might give rise to locations which see more concentrated growth. This could see an increased viability of new and improved sustainable transport services and infrastructures; although this would be unlikely to fully mitigate the increase in air quality issues from higher traffic volumes. The higher amount of growth would lessen the potential for new development to be strategically placed away from AQMAs and other areas with poorer existing levels of air quality. It would also be likely to lead to an increase in car usage more generally, contributing to poor air quality along strategic road networks. Overall, potential, **moderate negative effects** are predicted.

Water resources

Scenario A

182. In relation to water resources, all options consider the same level of growth under this scenario, ultimately placing similar demands upon water resources, and water infrastructure. All options are also likely to connect well with existing infrastructure.

183. Despite this, it is recognised that Options A2 and A3, which would concentrate development within town centres (overlapping with the most deprived areas), are more likely to put greater pressure on existing infrastructure and drainage in these concentrated locations. Whilst Options A4 and A5 would also seek brownfield intensification, these options are more likely to disperse development more widely around key transport corridors, or key economic growth areas, thus reducing pressures in focused areas to some extent. The spatial strategies proposed under Options A1 and A6 represent a greater focus on settlement expansion as opposed to intensification, where new infrastructure connections will need to be provided.
Under any given scenario no significant effects are anticipated, as it is considered likely that suitable connections will be made, and broadly **neutral effects** are predicted on this basis given the relatively small scale of additional growth involved across the city region.

184. In relation to water quality, whilst agriculture and rural land management are identified as one of the key reasons for not achieving good quality status in some of the waterbodies in the region, urban transport is also a recognised contributor within the Mersey Lower Management Catchment Area (MCA) (covering much of Wirral, Liverpool, and St Helens); a sector that is far more likely to be affected by the spatial distribution of development across this catchment.

185. In this respect, Options A1 and A6 would provide a greater focus on settlement expansion (greenfield development/ Green Belt release). This may reduce the pressures of development (and increased urban transport) within this catchment area by dispersing development more widely into some of the surrounding catchment areas. However, whilst these areas are relatively accessible, as extensions at large towns, they would not provide the ease of access to more sustainable transport forms that the intensification options would. Particularly those options that concentrate development in the most accessible areas of the region, such as town centres (Option A2, and Option A3 as it predominantly overlaps with town centres) and along key transport corridors (Option A4).

186. The intensification options (A2, A3, A4, and A5) look to regenerate some of the most accessible areas, where there is likely to be a strong focus for development in Liverpool, Wirral, St Helens, and Widnes; all of which fall within the Mersey Lower MCA but offer good potential to link people with more sustainable transport forms that reduce urban transport impacts on water quality. Despite this, **minor negative effects** are considered more likely under Options A2, A3, A4, and A5, whilst there is greater **uncertainty** in relation to Options A1 and A6 reflecting the potential to reduce concentrated impacts and disperse development more widely under these options; notwithstanding that these options are less connected and could result in higher levels of car reliance.

187. With regards to water quality from dispersed sources such as agricultural land, options A1 and A6 are more likely to lead to a change in land use from agriculture. Provided that built development is serviced by appropriate drainage and water treatment, it is possible that the level of pollutants being washed into watercourses would be lower than from certain agricultural practices. This contributes to the overall effects for A1 and A6 being neutral.

Scenario's B and C

188. As the level of growth increases, so too do the demands placed upon water resources, and water infrastructure. On this basis, higher growth scenarios are considered to have greater potential for negative effects. Despite this, it is recognised that water companies have a duty to provide new development with access to clean and safe water, and the key to ensuring timely provision of these resources is through early and effective communication. Consultation with water companies should allow them to respond to forecasted water supply needs and wastewater treatment needs. It will most likely be the case that infrastructure upgrades are required in certain areas of the region, and the provision of these upgrades should be factored into delivery timetables and housing supply needs over the plan period to ensure their timey supply. This will ultimately reduce the potential for significant negative effects arising.

189. In relation to water quality from dispersed sources, higher growth levels are ultimately forecasted to increase levels of traffic, even in the most accessible areas of the region. **Minor negative effects** are still predicted as likely in relation to Options B2, B3, B4, and B5, but there is uncertainty around the significant increase in growth under Scenario C (doubling the supply experienced under Scenario A). It is recognised that under this scenario (Options C2, C3, C4, and C5), there is much greater potential for more **moderate negative effects** to emerge. Similarly, under Options B1, C1, B6, and C6, the higher levels of private car usage anticipated under these scenarios are considered for a greater potential for **minor negative effects** (offset to some extent by a potential reduction in diffuse pollution from agricultural practices).

Land and soil

Scenario A

190. Each option presumes that additional brownfield land will come forward through windfall development, and in this respect, each option performs the same with regards to the re-use of land. The differences lie in the amount and location of brownfield intensification and release of further greenfield / Green Belt land.

191. Option A1 presumes that greenfield land release would come into play, which could lead to a loss of Grade 2 and 3 agricultural land. There would also be a need for some small additional Green Belt release. This could likely be limited to Grade 3 land, avoiding the higher quality resources across the City Region. However, overall, this option would lead to a permanent loss of best and most versatile agricultural land, some of which could be Grade 2. Therefore, **minor negative effects** are predicted overall.

192. Options A2, A3, A4 and A5 all involve greater intensification of land use in the urban areas, which would have benefits in terms of an efficient use of land, increased focus on remediation of troublesome brownfield sites, and avoidance of further Green Belt release.

193. There is an assumption that some small amounts of greenfield land could be involved, but there would be sufficient choice to avoid the more sensitive locations. As such, **moderate positive effects** are predicted overall for each of these options.

194. Option A6 performs similarly to option A1 but involves slightly higher amounts of Green Belt release. The areas involved in dispersal could also potentially lead to a loss of Grade 1 and 2 agricultural land, though this is not uncertain, as there would be flexibility in choice given the relatively low amount of Green Belt land involved at this scale of growth. Therefore, **minor negative effects** are predicted.

Scenario B

195. At a higher scale of growth, Option B1 would likely involve increased greenfield / Green Belt release, which would likely lead to a loss of best and most versatile agricultural land. Though there would be some benefits from regeneration efforts, on balance, **moderate negative effects** are predicted.

196. Options B2 and B3 would only involve a slight increase in the need to release greenfield land, whilst further supporting brownfield intensification efforts. This would be more likely to support remediation, efficient use of land and protection of soil resources, whilst delivering a higher amount of growth. Therefore, potential **major positive effects** are predicted.

197. Option B4 would involve increased intensification, which would have benefits in terms of land use, contamination, and soil protection. However, it could also necessitate greater release of greenfield/Green Belt land. The locations likely to be affected would most likely be Grade 3 and in some instances Grade 2 land. On balance, **minor negative effects** are predicted. The benefits of regeneration efforts would be offset by the loss of soil resources, but this would be at a lesser extent compared to option 1.

198. Option B5 would have similar benefits to option B4 with regards to brownfield intensification, but to a slightly lower magnitude. It would also involve a greater use of greenfield / Green Belt land that would most likely be a mix of Grade 3 and Grade 2 land having regard to the characteristics of land along transport corridors. A potential **moderate negative effect** is predicted overall.

199. Option B6 involves similar apportionments of growth to brownfield and greenfield land compared to Option B1. However, it is more likely to bring settlements in consideration that are surrounded by Grade 1 agricultural land. Therefore, potential **major negative effects** are predicted overall.

Scenario C

200. At the highest growth scenario, Option C1 involves substantial release of greenfield and Green Belt land. This outweighs the benefits that some urban intensification would bring and increases the possibility of higher grades of agricultural land being involved. Therefore, **major negative effects** are predicted overall.

201. Options C2 and C3 involve a slight increase in greenfield use at this scale of growth, but it is vastly outweighed by the focus on brownfield intensification. At such a high scale of intensification, regardless of the spatial distribution, there would be significant benefits in terms of land use, remediation, and protection of soil resources. As such **major positive effects** are predicted for both options.

202. The increased growth for Options C4 and C5 under this scenario would have mixed effects. On one hand, there would be increased support for regeneration and opportunities for remediation of brownfield land. However, there would be an increased loss of agricultural land. On balance, **minor negative effects** are predicted overall.

203. Option C6 is the worst performing option across all three growth scenarios. Not only would it lead to the greatest amount of greenfield / greenbelt loss, this could be in locations with higher quality Grade 1 resources, and the benefits of urban intensification would be relatively limited. Therefore, **major negative effects** are predicted.

Landscape and townscape

Scenario A

205. Options A1 and A6 are predicted to have some minor positive effects in terms of supporting a degree of urban intensification. This should help to improve the quality of townscapes where they require investment and redevelopment. However, negative effects are likely to arise as a result of the release of greenfield land. On balance, the negative effects outside the urban areas outweigh the positive effects within the urban areas, such that overall **minor negative effects** are predicted.

206. Option A2 involves limited release of greenfield land, and therefore effects are neutral in this respect. The focus on intensification in areas of deprivation ought to have particular positive effects in terms of improving the quality of townscapes that are poor quality. It also relieves pressure from the more sensitive locations in edge of urban and rural locations. Overall, **moderate positive effects** are predicted.

207. A3 is likely to have similar effects to Option A2, but the benefits would be focused more towards town centres rather than including suburban locations as well. The town centre areas could be improved through redevelopment, and at this scale of growth it ought to be possible to achieve intensification without utilising urban greenfield. Many of the town centre areas also overlap with deprived communities with poor quality townscape, and therefore development ought to be positive in such areas. Overall, **moderate positive effects** are predicted.

208. Similar to Options A2 and A3, Options A4 and A5 involve urban intensification, which ought to help improve the quality of some townscapes, as well as relieving development pressure in the urban areas. The locations could overlap with some deprived locations and those most in need of investment, but in other locations this may not be the case given that there are a wide range of areas that present sustainable nodes of travel or are close to economic growth hubs. Therefore, uncertain **moderate positive effects** are predicted overall.

Scenario B

209. Option B1 has similar minor positive effects as a result of brownfield intensification, but the increase in green field / Green Belt growth could encroach upon some sensitive locations in terms of landscape and settlement character. This raises the potential for **moderate negative effects** overall. The picture is similar for Option B6, with dispersed growth likely to have effects on smaller settlements that could be involved. Therese are **moderate negative effects** overall.

210. Option B2 increases the range of positive effects that are likely to be experienced across deprived urban and suburban locations. This could lead to comprehensive redevelopment in areas with poor townscape quality, as well as reducing pressure for growth in rural / edge of urban locations. Whilst this could lead to major positive effects, an increase in urban intensification could require the use of greenfield land in the urban areas, with some minor negative effects. This tempers the positive effects somewhat, but overall potential **major positive effects** are predicted.

211. Option B3 could have similar effects to Option B2, but the greater focus into the town centre areas could lead to less flexibility in terms of avoiding the use of urban greenfield locations. As such, only **moderate positive effects** are predicted overall.

212. Option B4 is predicted to have **minor positive effects** overall. On one hand, there are benefits associated with urban intensification, but on the other, there may be a requirement of urban greenspace to be utilised. There would also be some minor negative effects associated with greenfield land release. However, the focus on urban intensification is mostly positive and reduces pressure for development in sensitive countryside locations.

213. Option B5 is predicted to have **minor positive effects** overall. Benefits are likely in relation to urban intensification, but there would also be negative effects associated with a loss of additional greenfield land.

Scenario C

214. Options C1 and C6 increase the amount of growth in Green Belt locations significantly, and it would be much harder to avoid some of the more sensitive rural landscapes and settlements. There is also likely to be negative effects associated with the release of greenfield land. Together, these outweigh any minor benefits that limited brownfield release would have. Therefore, overall potential **major negative effects** are predicted for both options.

215. Option C2 would have positive effects in terms of urban intensification, but these would be reduced by a greater need to utilise urban greenfield and / or higher density developments that may be less attractive in the townscape. As such, overall, only **moderate positive effects** are predicted.

216. Option C3 would have similar effects to Option C2 in terms of urban intensification, but a narrower focus on central locations could make it more difficult to avoid urban greenspace, and therefore overall **minor positive effects** are predicted overall.

217. Option C4 should bring about some positive effects in terms of urban intensification, though this may not necessarily be in areas that are all of a poor townscape quality. Furthermore, there would be likely minor negative effects in terms of the loss of some urban greenfield and also additional greenfield land on the edge of the Wider Urban Areas. As such, only **minor positive effects** are predicted overall.

218. Option C5 is similar to option C4, but the effects would be felt in different locations. Overall, **minor positive effects** are predicted.

Historic environment

Scenario A

219. For all options there is notable **uncertainty** at this stage as the precise location of development remains unknown. This reflects the wide distribution of designated and non-designated heritage assets across the LCR, and the potential for development of any scale and form (either as greenfield development/ Green Belt release, or as urban brownfield intensification) to affect the significance of assets and the wider historic landscape. It is also recognised that many development impacts can also be managed at the site scale, through high-quality design which considers density, layout, scale, materials, and massing, to benefit any heritage settings.

220. Despite this, is it recognised that the highest concentrations of designated heritage assets are contained within the built-up areas, particularly within Liverpool, Birkenhead, and Southport. On this basis, the focus on urban brownfield intensification schemes under Options A2, A3, A4, and A5 could be considered as more likely to lead to significant effects (either positive or negative) at this stage of assessment. However, it is recognised that this is dependent upon the significance of the heritage assets being affected.

221. Whilst no longer a World Heritage Site, central Liverpool contains a highly sensitive historic townscape that is highly likely to be targeted for intensification under these options (as a highly deprived area in the LCR, a town centre, a key transport hub, and an economic growth area). Option A3 notably targets town centres where there is a higher prevalence of designated assets. This is more likely to mean that densities are higher, and potentially not in keeping with existing characteristics.

222. By focusing on transport corridors, Option A4 could disperse development more widely, thus reducing the pressure on town centre locations and heritage settings. Similarly, a focus on economic growth areas (Option A5) could reduce pressures on designated heritage assets and their settings, as these locations tend to be more remote and already characterised by employment uses. Therefore, at this scale of growth **neutral effects** are predicted.

223. It is recognised that brownfield intensification under all options also has the potential to deliver positive effects in relation to the historic environment, particularly by securing long-term uses for historic buildings, delivering improvements to the public realm, and by better revealing the significance of assets or enhancing access to them. In this respect, Option A2 (and A3 to a lesser extent) has greater potential to repurpose town centre areas, which could help to improve areas in need of regeneration and investment. The same is also true for some deprived locations outside of town centres (though these are less likely to contain heritage assets broadly speaking). Options A2 and A3 are predicted to have **minor positive** / **minor negative** effects at this stage.

224. With a mix of both brownfield intensification and greenfield development / Green Belt release under Options A1 and A6, it is recognised that whilst uncertainty exists, there are a wider range of sites/ locations for consideration, which provides greater potential to avoid or reduce negative impacts of development in relation to the historic environment. However, the potential for enhancements is also lower / more dispersed. In this respect, **neutral effects** are predicted.

Scenario B and Scenario C

225. As the scale of growth increases under Scenario's B and C, so too do the likelihood and magnitude of the potential negative impacts of development in relation to the historic environment, with Scenario C most likely to result in effects of greater significance (both positive and negative). Whilst there remains uncertainty in relation to Option 1 and 6, significant effects are considered more likely under Options 2 and 3, followed by 4, and 5.

226. For Options B1 and B6, the increase in growth is mainly in Greenfield locations, rather than through urban intensification. It is therefore considered unlikely that positive effects would arise in relation to regeneration and heritage. There is an increased chance that heritage assets in rural / edge of urban areas could be negatively affected by growth though, and hence potential minor negative effects are predicted.

227. For options B2 and B3, the potential for positive and negative effects is likely to be of a greater level of significance, and thus potential moderate positive and moderate negative effects are predicted.

228. For options B4 and B5, potential **minor positive** and **minor negative** effects are predicted.

229. Under scenario C, the effects are predicted to be more prominent under each option, corresponding to an increase in growth in either the urban areas (C2 and C3) or greenfield (C1 and C6) or both (C4 and C5).

Circular economy

230. All options would assume approximately 3,000 dwellings would come forward on brownfield sites through windfall developments. The use of brownfield land would be likely to increase the potential for development to make use of existing buildings as well as recycling old materials from previous site uses. This ought to be beneficial in terms of reducing waste and promoting the use of secondary materials.

- Materials recovery facilities in Wirral and Liverpool
- Energy from waste transfer by rail from Kirkby

Scenario A

231. Option A1 is predicted to have **neutral effects** as it will most likely lead to a continuation of existing trends. Though there will be some reuse of materials and buildings on brownfield land, there will also be requirement for new resources to support growth on greenfield land. New development will also lead to waste collection requirements, with similar patterns of movement likely to arise compared to the existing baseline position.

232. Options A2 and A3 place concentrations of growth in urban areas, with both likely to include large parts of Liverpool, Wirral, and other connected urban areas. These locations are relatively close to the main materials sorting facilities in the City Region (Wirral and Liverpool), as well as the rail transfer station in Kirkby which takes non-recyclable waste to an energy from waste facility in Teeside. Placing much of the growth in these urban areas is therefore likely to reduce the length of trips from kerbside collection through transfer stations and to the sorting facilities. Both options also promote the reuse of land and buildings, which should help to reduce waste generation from construction. Therefore, these options are predicted to have **minor positive effects**.

233. Options A4 and A5 involve a mix of locations, with the majority being brownfield intensification. In this respect, land and buildings ought to be recycled, and this should help to reduce waste generated through construction. The distribution of growth is not prescribed in detail at this stage, so effects are uncertain, but it is probable that for Option A4 new development would be in locations that facilitate shorter / more effective transportation of waste. These are potential **minor positive effects**.

234. Option A6 disperses growth, with a greater reliance on greenfield land. This is less likely to make best use of existing resources and could lead to greater waste generation. In addition, the more peripheral nature of some locations could lead to waste being transported longer distances overall toward the more centralised waste processing facilities in Liverpool, Wirral, and Kirkby. As such, potential **minor negative effects** are predicted.

Scenario B

235. At a higher scale of growth, Option B1 will involve increased greenfield use, which is likely to increase the amount of waste generated from construction and new development (especially if new development involves larger detached homes).

236. The distribution of some development may also be in locations that require longer trips to centralised waste transfer and treatment facilities. In this respect, **minor negative effects** are predicted. Similar effects are likely for Option B6 which also increases the level of development in dispersed locations on greenfield land.

237. Option B2 and B3 will involve higher levels of growth in urban locations that are relatively close to central waste facilities. There will also be more intense use of buildings and land, which should help to reduce the need for new resources and waste generated through construction. In this respect, despite an increase in overall growth, **minor positive effects** are still predicted.

238. For options B4 and B5, there is a slight increase in the use of greenfield land, and a further increase in brownfield land, which should also have positive effects with regards to reducing construction waste. It is uncertain whether the locations for growth would contribute towards longer or shorter waste transfer trips overall. Therefore, uncertain **minor positive effects** are predicted overall.

Scenario C

239. With a doubling in growth compared to Scenario A, there would likely be an increase in the overall amount of waste generated during construction, and from domestic and commercial sources. The locations involved would help to reuse land in some respects, but would also involve greenfield development, including in some more peripheral locations. As such, potential **moderate negative effects** are predicted for option C1 and C6.

240. For options C2 and C3, the bulk of growth would still be on land that would encourage the reuse of existing materials and reduce waste generation. However, the overall increase in growth will lead to increased waste generation from all sources. This offsets the positive effects somewhat, and therefore **neutral effects** are predicted overall.

241. Options C4 and C5 will also involve mostly brownfield development, and this should help reduce construction waste, the use of new materials. However, there will also be an element of greenfield land development and an overall increase in growth, which offsets these positive effects somewhat. As such, uncertain **neutral effects** are predicted.

Minerals

Scenario A

242. Mineral resources are vital to the production of energy, buildings, infrastructure, and technology and form a key part of the economy and the UK's industrial heritage. Given they are finite and only found in certain locations, identifying, safeguarding, and sustainably abstracting minerals are vital components of a successful economy.

243. There is only one quarry with active planning consent in the LCR which produces crushed rock (sandstone) aggregate. It assumed that development under any option could avoid significant impacts in relation to existing quarrying activities, particularly by avoiding development within or near to Bold Heath Quarry.

244. With a large proportion of the LCR being densely developed urban areas (e.g., Liverpool, Wirral, and St Helens) there is limited scope for mineral extraction. Option 3 which focuses development in town centres (and Option 2 which largely overlaps with town centres) is therefore highly likely to avoid negative impacts arising, as is likely to be the case with urban brownfield intensification along transport corridors (Option 4) and at key economic growth areas (Option 5). However, there may be some increased demand for specific building materials if sensitive designed developments are to be supported in urban areas where historic buildings are prevalent. Overall, **neutral effects** are predicted or each option.

245. Whilst Options 1 and 6 have a greater potential to restrict access to mineral resources by way of settlement expansion, it is considered that there is a wide choice of sites for consideration which could ensure negative impacts are avoided or minimised. These options are more likely to result in a greater use of raw minerals though given that they involve entirely new infrastructure requirements, rather than building upon existing urbanised areas. Nevertheless, the scale of greenfield release is relatively low, and therefore **neutral effects** are predicted for both options.

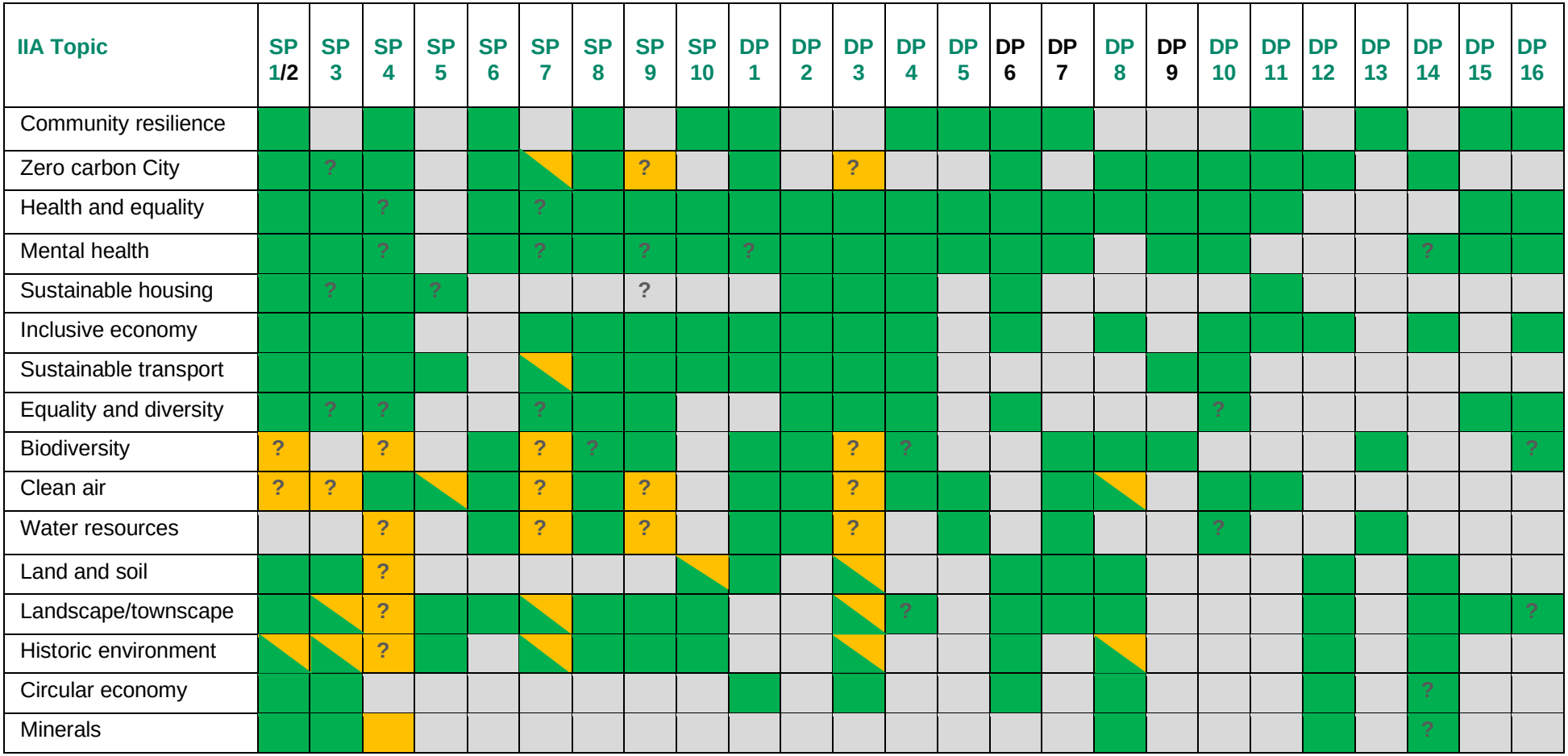
Scenario B

246. Similar assumptions are made for all options under this scenario. Urban brownfield development is not considered likely to affect mineral resources, and **neutral effects** are predicted likely in relation to Options B2, B3, B4, and B5. Whilst greenfield development/ Green Belt release at a greater scale has an increased chance of intersecting mineral resource areas, it is still considered likely that given the choice of available sites, negative impacts could be avoided or minimized in terms of important resources. **Neutral effects** are also thus considered likely for Options B1 and B6.

Scenario C

247. As above, similar assumptions are also made for all options under this scenario, with **neutral effects** still anticipated in relation to Options C2, C3, C4, and C5. Further greenfield development/ Green Belt release would increase the chances again of development intersecting mineral resource areas, and also demanding a greater amount of natural resources to support a higher amount of growth in non-urban locations. Whilst this scale of growth introduces an element of greater uncertainty, broadly neutral effects could likely still be achieved (in terms of managing mineral resources) through a carefully planned spatial strategy. However, **minor negative effects** are predicted to account for the increased demand for natural resources that a greenfield-focused approach would bring at this scale of growth.

Appendix B: Proposed Policies: IIA Screening Matrix



Appendix C: Appraisal of refined spatial options (Stage 2)

LCR Housing Need 2021-2040	1. Adjusted Baseline continued	2. Urban regeneration / intensification	3. More in Wider Urban Area
Scenario D 83,505	D1	D2	D3
Scenario E 91,855	E1	E2	E3
Scenario F 100,206	F1	F2	F3

Spatial Component	**Baseline continued**				**Urban Regeneration / Intensification**				**More in the Wider Urban Area**			
		Indicative Residual (after committed supply and completions 2021-2022 have been counted)				**Indicative Residual (after committed supply and completions 2021-2022 have been counted)**				**Indicative Residual (after committed supply and completions 2021-2022 have been counted)**		
		D1 *2,620*	**E1** *10,970*	**F1** *19,321*		**D2** *2,620*	**E2** *10,970*	**F2** *19,321*		**D3** *2,620*	**E3** *10,970*	**F3** *19,321*
Liverpool City Centre and Inner Urban Area	**42.6 %**	*1,210*	*4,673*	*8,231*	**60%**	*1,572*	*6,582*	*11,593*	**35%**	*917*	*3,840*	*6,762*
Wider Urban Area (inc. named towns)	**57.4 %**	*1,410*	*6,297*	*11,090*	**40%**	*1,048*	*4,388*	*7,728*	**65%**	*1,703*	*7,130*	*12,599*

Community Resilience

Implications of committed growth

1. The SA findings for adopted and emerging local plans in the City Region all conclude with similar findings in relation to community resilience, with neutral or mixed effects predicted across the majority of plans. The spatial strategies largely seek to deliver growth in areas of low flood risk, although it is recognised that the availability of sites limits this to some degree. Nevertheless, where sites are at risk of flooding, appropriate mitigation measures will be put in place, such as the use of sustainable drainage systems (SuDS) and green infrastructure. In addition, policies are in place which consider the design of development to ensure that it responds to the challenges of climate change, including flooding and extreme heat events. Strengthening this, other policies seek to reduce the risk of flooding and protect and enhance green spaces and green infrastructure, which will have a range of benefits for community resilience in terms of adapting to the likely effects of climate change. Overall, there are likely to be minor to moderate positive effects as a result of the committed growth.

Scenario D

2. All three options under this scenario deliver a relatively low level of residual growth and therefore it is likely that areas at higher risk of flooding can be avoided. In addition, as all three options have a focus on urban regeneration (albeit to varying degrees), the development of previously developed land (PDL) / brownfield sites has the potential to reduce flood risk by reducing non-permeable surfaces; utilising SuDS; and increased green spaces and green infrastructure across the City Region.

3. Option D1 delivers a balanced mix of brownfield development to support urban regeneration. It is unlikely that much if any greenfield / Green Belt release would be necessary to meet residual needs. In this respect, a range of sites with a low risk of flooding will likely be available to choose from across the City Region. In this respect, and in reflecting the low level of growth delivered through this scenario, minor positive effects are anticipated.

4. Option D2 places emphasis on urban regeneration, delivering a higher level of growth in Liverpool City Centre and the Inner Urban Area (60%), with the remainder of growth occurring in the Wider Urban Area (including Named Towns) (40%). In doing so, this option is likely to contribute towards reducing flood risk at brownfield sites in the urban area and minimizes the loss of greenfield land at the edges of towns in the Wider Urban Area. Due to this, minor positive effects are also anticipated.

5. Option D3 disperses growth more evenly across the City Region, with 65% of growth delivered to the Wider Urban Area (including Named Towns) and the remaining 35% delivered in Liverpool City Centre and the Inner Urban Area. This could result in a slightly higher level of greenfield / Green Belt development being required, which could increase flood risk by reducing the cover of greenspace across the City Region. However, considering the low level of growth under this option, neutral effects are predicted.

Scenario E

6. A 10% uplift would be applied for all three options under Scenario E, relative to Scenario D. This could mean that the number of suitable sites with regards to flood risk is reduced when compared to Scenario D, and therefore the significance of effects will likely be higher.

7. Option E1 delivers a mix of brownfield development to support urban regeneration and selected greenfield / Green Belt release to meet residual needs. In this respect, a range of sites with a low risk of flooding should be available to choose from across the City Region. Whilst the level of residual growth is higher under this scenario, minor positive effects are still anticipated.

8. Option E2 places a greatest emphasis on urban regeneration, delivering a higher level of growth in Liverpool City Centre and the Inner Urban Area (60%), with the remainder of growth occurring in the Wider Urban Area (including Named Towns) (40%). In doing so, this option is likely to contribute towards reducing flood risk at brownfield sites in the urban areas. Whilst it may be more difficult to deliver growth entirely on sites with a low flood risk, due to the increased level of growth under this scenario, mitigation measures such as the use of SuDS will likely address risk of flooding on sites. Therefore, minor positive effects are still anticipated.

9. Finally, Option E3 disperses growth more widely across the City Region, with 65% of growth delivered to the Wider Urban Area (including Named Towns) and the remaining 35% delivered in Liverpool City Centre and the Inner Urban Area. This could result in a higher level of greenfield / Green Belt development, which could increase flood risk by reducing the cover of greenspace across the City Region. However, as this option places less pressure on finding suitable sites in Liverpool City Centre and Inner Urban Area, it means that sites at risk of flooding could be better avoided. Therefore, minor positive effects are predicted.

Scenario F

10. A 20% uplift would be applied for all three options under Scenario F, relative to Scenario D. This is likely to make it difficult to only include suitable sites with regards to flood risk, when compared to Scenarios D and E, and therefore the significance of effects will likely be higher broadly speaking.

11. Option F1 delivers a mix of brownfield development to support urban regeneration and selected greenfield / Green Belt release to meet residual needs. In this respect, a range of sites with a low risk of flooding will likely be available to choose from across the City Region. However, at this level of growth this is likely to be slightly more challenging, and therefore **neutral effects** are anticipated.

12. Option F2 places a greatest emphasis on urban regeneration, delivering a higher level of growth in Liverpool City Centre and the Inner Urban Area (60%), with the remainder of growth occurring in the Wider Urban Area (including Named Towns) (40%). In doing so, this option is likely to contribute towards reducing flood risk at brownfield sites in the urban areas. However, at this level of growth there may need to be development on sites where flood risk is present. However, it is assumed that SuDS and other mitigation measures will be utilized to ensure new development is not at risk of flooding. Due to this, **minor positive effects** are still anticipated, but with a degree of uncertainty recognised.

13. Finally, Option F3 disperses growth more widely across the City Region, with 65% of growth delivered to the Wider Urban Area (including Named Towns). This could result in a higher level of greenfield / Green Belt development, which is likely to increase flood risk. However, it is noted that this option places less pressure on finding suitable sites in the City Centre and Inner Urban Area (and thus avoiding sites already at risk of flooding. It should also be possible to implement mitigation on greenfield sites to limit the potential increase in flood risk across the catchment. Overall, given as this option is associated with a greater loss of greenfield / Green Belt land, **minor negative effects** are predicted.

Zero Carbon City

Implications of committed growth

14. The sustainability appraisal findings for adopted and emerging local plans in the City Region all conclude with similar findings in relation to climate change mitigation. The increase in growth being planned for will inevitably lead to an increase in emissions from construction, more homes and business activity. However, the spatial strategies all focus on efficient use of land, which should help reduce embodied carbon in new developments. There is also a focus on higher density developments, particularly in the larger towns, the City of Liverpool and Inner urban area. This is more likely to support growth that is less energy intensive and is well connected (helping to reduce emissions from transport) and supports district energy schemes.

15. Addressing climate change is a key thread in all the constituent authority Local Plan's and there are policies seeking to improve the efficiency of developments and increase the use of renewable energy. Over the periods covered by each local plan, it is therefore expected that the net effects with regards to climate change mitigation will be positive (given that per capita emissions are likely to reduce, and development could support infrastructure for low carbon energy and infrastructure improvements).

16. In several authorities there is a focus on supporting employment opportunities in locations that could encourage greater car dependency and heavy goods vehicle movements (for example strategic warehouse and distribution opportunities at motorway junctions). There are also some peripheral housing growth locations that are more likely to see higher per capita emissions. Cumulatively, this could have negative effects in relation to carbon emissions and climate change mitigation across the City Region. However, there is also a clear emphasis on the need for sustainable transport to be prioritised in new development across the region. The net effect is therefore expected to be **positive**.

Scenario D

17. All three options involve relatively low levels of residual growth, and so additional emissions associated with the construction of new developments are predicted to be minor when considered alongside the committed growth.

18. With regards to transport related emissions, all three options will support development in accessible locations in Liverpool City Centre and the Inner Urban Area, other Named Towns, and the Wider Urban Area (much like the Adopted and emerging Local Plans.

19. This should help to reduce transport related emissions associated with new development by encouraging walking, cycling and the use of public transport.

20. Growth in Liverpool City Centre, Inner Urban Area and other dense locations has potential to be connected to district heating schemes, which are more viable in areas with multiple land / building uses. It is also more likely that smaller homes / more dense development will be less carbon intensive compared to developments consisting mostly of larger homes. In this respect, Option D2 is preferable from an emissions reduction perspective compared to the more dispersed options of D1 and D3. With this in mind, Option D2 is predicted to have **minor positive effects**, whilst there is a greater degree of uncertainty in terms of positive effects arising for D1 and D3 (albeit still minor positives)

21. When considered alongside committed growth (which is expected to come forward anyway), the effects are not significantly different for all three options. This is not unexpected given that the bulk of planned development is already established. Nevertheless, the net situation is likely to be positive in the longer term with regards to climate change mitigation as the strategy is positive and will guide development beyond currently adopted Local Plans.

Scenario E

22. At a higher scale of growth, all three options will lead to increased development, with associated greenhouse gas emissions during construction and operation. However, the pattern of growth proposed under each option prioritises accessible locations for growth. This should help to ensure that per capita transport emissions are lowered, whilst providing an opportunity to enhance infrastructure provision (for example through new / improved public transport routes, facilities at stations and so on). Likewise, with an increase in new development, there is further potential to support district energy schemes, particularly in denser urban centres. When considered alongside the already committed growth in Local Plans, a higher planned level of growth has the potential for more significant effects.

23. Option E2 is considered most likely to help reduce per capita greenhouse gas emissions as it focuses the most growth into dense urban developments, which have excellent access to facilities, jobs, and services. This would also lead to a greater proportion of new homes being smaller and thus likely to have lower per capita emissions compared to larger homes in peripheral locations. Overall, these positive patterns and trends are considered to offset the increase in growth and prevent future growth being located in less sustainable locations. As such, positive effects are predicted overall. When considered alongside the already committed supply, the cumulative impacts of this strategy could be more significantly positive as there may be economies of scale to take advantage of with regards to energy schemes (therefore **moderate positive effects** are recorded).

24. Options E1 involves a similar pattern of growth compared to Option E2, which should result in reduced per capita emissions for the majority of new development. This helps to offset the overall increase in new development, and so overall a residual **moderate positive effect** is predicted (with a degree of uncertainty given that the degree of intensification in the City and Inner Urban Area is lower).

25. Option E3 still focuses the majority of growth into accessible locations but allows for greater dispersal to the Wider Urban Areas (meaning that a proportion of development is more likely to have higher per capita emissions compared to Options E1 and E2). As such, **minor positive effects** are predicted overall when taking into account the higher scale of growth being planned for. In the context of committed growth, the overall implications across the plan period are considered to be positive, but the additional growth is less likely to support further reductions in carbon emissions compared to options E1 and E2.

Scenario F

26. At an even higher scale of growth, all three options will lead to increased development, with associated greenhouse gas emissions during construction and operation. However, the pattern of growth proposed under each option prioritises accessible locations for growth. This should help to ensure that per capita transport emissions are lowered, whilst providing an opportunity to enhance infrastructure provision (for example through new / improved public transport routes, facilities at stations and so on). Likewise, with an increase in new development, there is further potential to support district energy schemes, particularly in denser urban centres. When considered alongside the already committed growth in Local Plans, a higher planned level of growth has the potential for more significant effects.

27. Option F2 is considered most likely to help reduce per capita greenhouse gas emissions as it focuses the most growth into dense urban developments, which have excellent access to facilities, jobs, and services. This would also lead to a greater proportion of new homes being smaller and thus likely to have lower per capita emissions compared to larger homes in peripheral locations. Overall, these positive patterns and trends are considered to offset the increase in growth and prevent future growth being located in less sustainable locations. As such, **moderate positive effects** are predicted overall. When considered alongside the already committed supply, the cumulative impacts of this strategy could be more significantly positive as there may be economies of scale to take advantage of with regards to energy schemes.

28. Option F1 involves a similar pattern of growth compared to Option F2, which should result in reduced per capita emissions for the majority of new development. This helps to offset the overall increase in new development, and so overall a residual **moderate positive effect** is predicted with an element of uncertainty.

29. Option F3 still focuses the majority of growth into accessible locations but allows for greater dispersal to the Wider Urban Area (meaning that a proportion of development is more likely to have higher per capita emissions compared to Options F1 and F2). As such, a **minor positive effect** is predicted overall when taking into account the higher scale of growth being planned for. In the context of committed growth, the overall implications across the Plan period are considered to be positive, but the additional growth is less likely to support further reductions in carbon emissions compared to F1 and F2.

Health and Equality

Implications of committed growth

30. The sustainability appraisal findings for adopted and emerging local plans in the City Region conclude with similar findings in relation to health and equality. Overall, the policies across the local authorities' local plans are considered likely to lead to positive impacts for health and equality by delivering housing (including affordable homes, which will contribute towards social inclusion when properly integrated with market housing); improving access to employment opportunities and educational facilities; and protecting and enhancing local centres, the public realm, and public green spaces.

31. Importantly, no disproportional negative impacts were identified for any of the protected characteristics across the sustainability appraisal findings. Rather, positive effects were identified with regards to a number of protected characteristics, most notably age, race, gender, and disability. In addition, specific significant positive effects were identified for Gypsies and Travelling Showpeople.

32. Across the board, it is noted that development should be located in areas that have good access to services, facilities and amenities, as well as sustainable transport networks, including active travel corridors. This will improve access to employment opportunities and educational facilities; public green spaces; and health facilities, supporting equality, through improved access to jobs and education, and the health of residents. Designing-out crime through public realm improvements is also highlighted through several adopted and emerging local plans.

33. However, some of the sustainability appraisal findings suggest that congestion could negatively impact the health of residents. This is because the road infrastructure may be at capacity, or congestion may increase before infrastructure can be delivered, thus causing strain on existing services. However, these are only considered to be temporary effects. In addition, whilst urban regeneration is likely to improve access to healthcare facilities, it also has the potential to increase strain on existing facilities without suitable planning.

Scenario D

34. All three options under Scenario D involve only a small amount of residual growth across the City Region. Hence, the magnitude of additional effects on health and equality are anticipated to be relatively low. The focus of any additional unplanned growth would be towards Liverpool City, the Inner Urban Area, and the Wider Urban Area (including Named Towns) to varying degrees. In doing so, all options under Scenario D support regeneration in areas that have relatively high levels of deprivation and social inequality. Regeneration should help tackle these issues by delivering affordable housing and attracting new investment, which will likely lead to improved employment opportunities and educational facilities. As health is linked to deprivation, tackling this issue should simultaneously help to improve aspects of health and wellbeing. This will be strengthened through improvements to public green spaces, recreational facilities, and active travel networks.

35. Option D1 provides a similar distribution to the current local plans but seeks to ensure all new growth is in very accessible locations. Option D2 directs a higher proportion of growth to Liverpool City and the Inner Urban Area, whilst Option D3 directs a higher proportion of growth to the Wider Urban Area (including Named Towns).

36. Notably, Liverpool City Centre and the Inner Urban Area have the highest concentration of deprived areas. Therefore, Option D2 performs well by directing a higher proportion of growth in these locations. However, it could be argued that Options D1 and D2 provide benefits to a wider range of communities. Nevertheless, at this scale of growth the differences between the options are considered to be negligible. Due to this, all three options are considered likely to lead to **minor positive effects**.

Scenario E

37. A 10% uplift would be applied for all three options under Scenario E, relative to Scenario D. This is likely to give a boost to urban regeneration compared to Scenario D, and therefore the significance of effects will likely be higher regardless of distribution.

38. By directing a higher level of growth to Liverpool City Centre and the Inner Urban Area, Option E2 could be associated with deliverability issues given that local plans are already taking a brownfield-led approach and maximizing opportunities. In this respect, there is a question mark over housing delivery, and this might limit the additional benefits that can be achieved. This approach also creates greater pressure for facilities and services in the urban centres and could put a greater amount of new homes in areas with currently poor air quality. Nevertheless, **moderate positive effects** are still anticipated to arise given the benefits that new housing on deliverable sites would bring. There is a degree of uncertainty though.

39. Option E3 directs a higher level of growth to the Wider Urban Area (including Named Towns), and therefore provides more flexibility and choice in meeting housing needs and may relieve pressure on health facilities in the City Centre and Inner Urban Area. The benefits may not necessarily be targeted in all instances towards communities of greatest need under this approach, but nonetheless, **moderate positive effects** are still anticipated with a degree of uncertainty.

40. It could be argued that Option E1 provides a balanced approach by distributing growth more evenly, thereby delivering the benefits of growth to a wider area / number of residents (with less pressure on services in Liverpool City Centre and the Inner Urban Area). Whilst this could still present some deliverability concerns in the City Centre and Inner Urban Area, this is to a lesser degree than Option E2. Nevertheless, **moderate positive effects** are predicted across all three options.

Scenario F

41. A 20% uplift would be applied for all three options under Scenario F, relative to Scenario D. This is likely to give a boost to urban regeneration compared to Scenarios D and E, and therefore the significance of effects will likely be higher.

42. Under Scenario F, a higher level of residual planned growth is presumed under all three options. In this respect, there is a more certain prospect of increased urban regeneration across the City Region. This in itself is positive with regards to health and equality, as it is considered that as the quantum of growth increases, as do the associated benefits. All three options deliver urban regeneration in Liverpool City Centre, the Inner Urban Area, and the Wider Urban Area (including Named Towns), and therefore growth will help to tackle social inequalities across these areas.

43. By directing a higher level of growth to Liverpool City Centre and the Inner Urban Area, Option F2 supports improved access to housing, and brings 'planning gain'. Provided that this benefits those in need, there are likely to be significant positive effects on health. However, should there be a need to release greenfield land to accommodate growth in the urban areas, this could have some negative effects in terms of amenity and access to green space.

44. A greater amount of construction activity is also likely to result in temporary disturbances to amenity, air quality and accessibility. Whilst this could lead to some localised negative effects, the longer-term changes ought to lead to **major positive effects** in terms of health.

45. Option F3 directs a higher level of growth to the Wider Urban Area (including Named Towns), and therefore provides more flexibility and choice in meeting housing needs and may relieve pressure on health facilities in the City Centre and Inner Urban Area. This is likely to give rise to **major positive effects**.

46. Option F1 provides a more even split, thereby delivering the benefits of growth to a wider area / number of residents whilst still directing substantial growth to areas of particular need. As such, potential **major positive effects** are predicted.

Mental Health

Implications of committed growth

47. The sustainability appraisal findings for adopted and emerging local plans in the City Region conclude with similar findings in relation to health (mental health is not explicitly covered by all of the SA frameworks). Overall, the policies across the local authorities' local plans are considered likely to lead to positive impacts for health by delivering housing (including affordable homes, which will contribute towards social inclusion when properly integrated with market housing); improving access to employment opportunities and educational facilities; and protecting and enhancing local centres, the public realm, and public green spaces. All these factors contribute towards good mental health.

48. Across the board, it is noted that development should be located in areas that have good access to services, facilities and amenities, as well as sustainable transport networks, including active travel corridors. This will improve access to employment opportunities and educational facilities; public green spaces; and health facilities, supporting equality, through improved access to jobs and education, and the health of residents. Designing-out crime through public realm improvements is also highlighted through several adopted and emerging local plans. However, it is recognised that whilst urban regeneration is likely to improve access to healthcare facilities, it also has the potential to increase strain on existing facilities. Mental health waiting lists and services are problematic and addressing wider determinants of health will therefore be crucially important to help alongside healthcare improvements.

Scenario D

49. All three options under Scenario D involve only a small amount of residual growth across the City Region. Hence, the magnitude of effects on mental health are anticipated to be relatively low. The focus of any additional unplanned growth would be towards Liverpool City, the Inner Urban Area, and the Wider Urban Area (including Named Towns) to varying degrees.

50. In doing so, all options under Scenario D support regeneration in areas that have a high prevalence of mental health issues as well as having poorer access to greenspace, higher noise levels and other factors that are known to exacerbate mental health conditions and wellbeing more generally.

51. Regeneration should help tackle deprivation and social inequality by delivering affordable housing and attracting new investment, which will likely lead to improved employment opportunities and educational facilities. As mental health can be linked to deprivation, social inequality and isolation tackling these issues should simultaneously help to improve mental health. This will be strengthened through improvements to public green spaces, recreational facilities, and active travel networks.

52. Notably, home ownership; access to public green space; and short commutes are all associated with better mental health, so improvements in these areas will help improve mental health.

53. Liverpool City Centre and the Inner Urban Area have high concentrations of mental health issues and deprivation, and therefore Option D2 performs well by directing a larger proportion of growth here. Whilst greater urbanisation could potentially have negative influences on mental health, the scale of growth is relatively low, and thus minor positive effects are predicted for D2.

54. Options D1 and D3 distributes growth more evenly, thereby delivering the benefits of growth to a wider area / number of residents. This also reduces the potential for negative effects of increased urbanisation on mental health. However, at this scale the differences between the options are considered to be negligible. Due to this, all three options are considered likely to lead to **minor positive effects**.

Scenario E

55. A 10% uplift would be applied for all three options under Scenario E, relative to Scenario D. This is likely to give a boost to urban regeneration compared to Scenario D, and therefore the significance of positive effects will likely be higher.

56. By directing a higher level of growth to Liverpool City Centre and the Inner Urban Area, Option E2 is likely to bring further benefits in terms of improving social infrastructure, the public realm, and the opportunity for affordable housing. These are all factors that contribute to good mental health. These areas are also multicultural, and providing for a range of communities ought to help ensure that the wellbeing needs of different people are being considered. At the scale of growth involved, it is predicted that **moderate positive effects** would arise. Conversely, an increase in urbanisation in these areas also presents the potential to worsen mental health by increasing noise, traffic, crowding, disturbances during construction and creating a greater number of homes that are without a private garden / access to green space. In this respect, **minor negative effects** are identified alongside the positives.

57. Option E3 and E1 (to a lesser extent) direct a higher level of growth to the Wider Urban Area (including Named Towns), and therefore provides more flexibility and choice in meeting housing needs and may relieve pressure on health facilities in the City Centre and Inner Urban Area. There should also be good opportunities to create developments that have good access to greenspace in some of the more dispersed locations, and thus **moderate positive effects** are predicted overall.

58. This approach is also less likely to lead to very dense areas of development, and so the potential for **minor negative effects** are thought to be lower compared to option E2.

Scenario F

59. Under Scenario F, a higher level of residual planned growth is presumed under all three options. In this respect, there is a more certain prospect of increased urban regeneration across the City Region. This in itself is positive with regards to mental health, as it is considered that as the quantum of growth increases, as do the associated benefits. All three options deliver urban regeneration in Liverpool City Centre, the Inner Urban Area, and the Wider Urban Area (including Named Towns), and therefore growth will help to tackle mental health issues across these areas.

60. Option F2 focuses the greatest amount of development into the most urbanised parts of the City Region, and for the reasons discussed above, this brings with it the potential for **moderate negative effects** (whether temporary or permanent). Alongside this though, the potential for **major positive effects** exists given the higher level of investment in housing, infrastructure, and facilities in areas of greatest need.

61. The potential for negative effects is considered to be lower for options F1 and F3, but there would still be increased densities and urbanisation, which give rise to potential negative effects. Though these options do not direct as much growth to the most deprived areas, they are still likely to support regeneration in areas of need. They also provide the opportunity to support improvements to a wider range of communities that have barriers to services. In this respect, **major positive effects** are predicted, with some level of uncertainty as it is dependent upon the exact location of growth.

Sustainable housing

Implications of committed growth

62. The sustainability appraisals for adopted Local Plans conclude that there will be significant positive effects associated with housing delivery. Each of the authorities are planning to deliver enough housing to meet objectively assessed housing needs and provide a buffer to account for lapses in delivery. A range of locations are involved, but there is a common thread in terms of focusing on accessible brownfield locations in the first instance; before considering urban extensions. In some instances, a reliance on brownfield land has raised some concerns in terms of deliverability, but these issues have been explored / are being explored through the examination of the Local Plans.

63. Applying a 35% uplift in housing need for Liverpool City means that there are likely to be some unmet needs in Liverpool City itself. However, across the region, there is a substantial supply of homes identified in Local Plan's and through strategic housing land availability assessments. This 'committed' growth should provide a large amount of housing at the start and middle periods of the SDS, but there will be a need to review delivery and find additional sources of supply for latter periods of the SDS.

Scenario D

64. The amount of growth being planned for under this scenario is sufficient to meet identified housing needs for the City Region up to 2040, but the amount of residual growth required is relatively limited. Most of the planned growth is already in place through Local Plan's and so the likelihood of this strategy leading to additional positive effects is relatively limited regardless of distribution.

65. The distribution of development under D1 and D2 involve a continued or greater focus on Liverpool City Centre and the Inner Urban Area, but there are question marks over the extent to which these locations can continue to support growth in the types of homes required (given that existing and emerging local plans covering this area already seek to maximise regeneration opportunities). Therefore, these approaches could have a negative effect on the types of homes being made available in the longer term (albeit the scale of residual growth is low). This is less of an issue for Option D3, which disperses growth amongst a wider range of settlements, and would therefore allow for greater flexibility and choice in housing locations and types. As such, Option D1 and D3 are predicted to have **neutral effects** and D2 is predicted to have **minor positive effects**.

Scenario E

66. A 10% uplift to housing would be applied for all three options under this scenario, meaning an additional 10,970 dwellings in addition to committed / planned for growth. Regardless of distribution this is likely to give a boost to housing delivery compared to scenario D, and thus the significance of effects would be higher.

67. In terms of distribution, Option E2 directs more growth to the City Centre and Inner Urban Area, which could perhaps have more deliverability issues given that local plans are already taking a brownfield-led approach and maximizing opportunities. As such, though **moderate positive effects** are predicted, there is a degree of uncertainty.

68. Option E3 directs a greater amount of growth to the Wider Urban Area, and thus provides more flexibility and choice in meeting housing needs, which is a moderate positive effect. Option E1 still focuses growth in the city centre and Inner Urban Area, and could present some deliverability concerns, but to a lesser extent than E2. It also provides a greater degree of growth in the Wider Urban Areas and thus **moderate positive effects** are predicted.

Scenario F

69. Under this scenario, there would be a presumption that a greater amount of housing would be planned for under future local Plans. Specifically, a 20% uplift to allow for a greater degree of flexibility. This would provide a steer to local authorities that further additional growth is required to service the latter parts of the SDS plan period (and in case of any delivery issues). In this respect, all three options perform better than those under Scenarios D and E, as there is a greater commitment to housing provision at a city-region level. There are common elements of the distribution options that would lead to housing growth in areas of need, and therefore, positive effects would arise in terms of sustainable provision to different communities. However, the differences in approach would likely lead to improved outcomes for Option F3 and F1 compared to F2.

70. This relates mainly to a reduced focus on the City and Inner Urban Area, where opportunities are more likely to be high density, and may not cater for the needs of all communities in a given authority or across the City Region as a whole. For this, **moderate positive effects** are predicted for option E2, whilst **major positive effects** are predicted for options E1 and E3, which are more flexible.

Inclusive Economy

Implications of committed growth

71. The sustainability appraisal findings for adopted and emerging local plans in the City Region all conclude with similar findings in relation to the economy. Overall, the policies across the local authorities' local plans are considered likely to lead to positive impacts for the economy by delivering housing in sustainable locations (and thereby increasing the local workforce); providing new employment opportunities (including in the most deprived areas); protecting existing employment areas; supporting the visitor economy (including the expansion of ports and other strategic opportunities across the City Region); strengthening the role of local centres; providing training opportunities (including apprenticeships); and improving accessibility to employment areas through better transport infrastructure. However, in Liverpool, minor negative effects have been identified to reflect potential viability impacts due to infrastructure requirements for new developments. Overall, this element of the growth strategy is likely to have moderate to major positive effects for the City Region.

Scenario D

72. All three options involve a small amount of residual growth across the City Region. In this respect, the magnitude of additional effects on the economy are anticipated to be relatively low. However, the focus of any additional unplanned growth would be towards Liverpool City, the Inner Urban Area, Named Towns, and wider urban area (to varying degrees). This will further help to support regeneration in areas that are linked to deprivation and social inequality. It should also help to support local businesses, provide accommodation for workers, and attract new investment.

73. Option D1 provides a similar distribution to the current local plans but seeks to ensure all new growth is in very accessible locations. It could possibly involve some release of greenfield sites on the urban fringes, but this would be of small magnitude and would only be sought in the absence of opportunities in the urban areas. This could mean that some growth opportunities for employment and housing are not pursued. On balance, **minor positive effects** are predicted given that growth beyond existing local plans could be relatively limited.

74. Option D2 directs more growth to Liverpool City, the Inner Urban Area and nearby Named Towns, which also corresponds to areas of significant economic activity. This will help to maintain the importance and vitality of the City Centre and surrounding urban areas. These areas also correspond to areas in need of regeneration and areas suffering from social inequality, which should bring opportunities to achieve improvements in social outcomes. However, the magnitude of effects is unlikely to be significant given the relatively low level of residual growth involved. Overall, **minor positive effects** are predicted.

75. Option D3 involves greater dispersal, which could allow for more flexibility in terms of locating new homes near to employment growth areas that are outside of City Centre, Inner Urban Area, and Named Towns. There would also still be a degree of continued regeneration being supported with associated benefits for communities and the town centres. With this in mind, **minor positive effects** are predicted overall given that the magnitude of effects associated with residual growth is relatively small.

Scenario E

76. A 10% uplift would be applied for all three options under Scenario E, relative to Scenario D. This results in an additional 10,970 dwellings on top of the committed / planned for growth. This is likely to give a boost to the local economy compared to Scenario D by supporting the development industry; providing more accommodation for the growing workforce; and generating spending in the City Region. As a result, the significance of effects will likely be higher.

77. By directing a higher level of planned growth to Liverpool City Centre and the Inner Urban Area, Option E2 could be associated with deliverability issues given that local plans are already taking a brownfield-led approach and maximizing opportunities. Meanwhile, Option E3 directs a higher level of growth to the Wider Urban Area (including Named Towns), and therefore provides more flexibility and choice in meeting housing and employment needs. It could be argued that Option E1 provides a happy medium by distributing growth more evenly, thereby delivering the benefits of growth to a wider area / number of residents. Whilst this could still present some deliverability concerns in the City Centre and Inner Urban Area, this is to a lesser degree than Option E2. Nevertheless, **moderate positive effects** are predicted across all three options, but with more uncertainty for Option E2.

Scenario F

78. Under this scenario, a higher level of residual planned growth is presumed for all three distribution options. In this respect, there is a more certain prospect of increased housing across the City Region. This in itself is positive with regards to the economy in several ways. Generally speaking, this will support the development industry, provide more accommodation for a growing workforce, and generate spending in the City Region. Each option involves regeneration in Liverpool City, the Inner Urban Area, and Named Towns, so it is likely that residual growth would help to tackle social inequalities with correspond with these locations in the main. It would also help to support the vitality of centres through support for residential in these areas. The key differences between each option are discussed below.

79. Option F1 supports growth across the City Region in a similar continuation of existing trends. At the scale of growth involved, it may be necessary to re-purpose land in the urban areas / centres that is currently used for employment (albeit this would need to be surplus to requirements and / or poor quality to be supported). This could have some localised negative effects in terms of the provision of employment land. However, strategic employment locations could potentially come forward that are of a higher quality, and this distribution ought to allow for suitable locations on the edge of Named Towns for example.

80. Overall, a potential **major positive effect** is predicted, but the potential for the loss of employment land brings an element of uncertainty around the degree of significance).

81. Option F2 directs a greater proportion of growth toward Liverpool City, the Inner Urban Area and nearby named towns. This is more likely to have benefits for some of the most deprived communities and will drive further investment in the economies in these areas. However, with a more limited choice of sites in built up urban locations, this could lead to a greater need to re-purpose employment land, office space / retail.

82. This approach is also less likely to support opportunities that are more dispersed, which might not be helpful to sectors requiring strategic sites that are along strategic transport routes. With the above factors in mind, potential **major positive effects** are predicted.

83. Option F3 is predicted to have similar positive effects to F1 and F2 given that it also involves urban regeneration as a key focus. However, the benefits would be likely to be spread more widely across the City Region due to a greater amount of dispersal under this option. This approach could also be supportive of residential development in locations that have good access to employment opportunities and transport hubs (which lie outside of the Named Towns, Inner Urban Area, and City Centre). Overall **major positive effects** are predicted.

Sustainable Transport

Implications of committed growth

84. The sustainability appraisal findings for adopted and emerging local plans in the City Region conclude mixed findings in relation to transport. Some of the findings conclude positive impacts as housing is located near sustainable transport networks; housing and employment areas are linked via sustainable transport networks; the use of public transport and active travel is encouraged; the City Region's ports are enhanced; and sustainable freight logistics are supported. However, other findings point out that growth has the potential to lead to increased pressure on existing sustainable transport networks if capacity is not increased, which could lead to an increase in private car usage. Congestion is also likely to occur in the short and medium term during the construction phase of development. In addition, locating growth along key road networks, and within the Green Belt, is likely to increase private car usage, with negative implications for traffic and air quality. On balance, both positive and negative effects are identified.

Scenario D

85. All three options under Scenario D involve only a small amount of residual growth across the City Region. Hence, the magnitude of effects on transport are anticipated to be relatively low. The focus of any additional unplanned growth would be towards Liverpool City, the Inner Urban Area, and the Wider Urban Area (including Named Towns) to varying degrees. In doing so, all options under Scenario D support regeneration in areas that have the best access to services, facilities, amenities, and sustainable transport networks. Regeneration should deliver transport improvements in these areas by attracting new investment.

86. Option D1 provides a similar distribution to the current local plans but seeks to ensure all new growth is in very accessible locations. In this respect, it performs well from a transport perspective.

87. Option D2 directs a higher proportion of growth to Liverpool City and the Inner Urban Area, whilst Option D3 directs a higher proportion of growth to the Wider Urban Area (including Named Towns). Notably, Liverpool City Centre and the Inner Urban Area have the best access to services, facilities, amenities, and sustainable transport networks. Therefore, Option D2 performs well by directing a higher proportion of growth in these locations. However, it could be argued that Option D1 delivers the benefits of growth – including transport improvements – to a wider area / number of residents. Nevertheless, at this scale the differences between the options are considered relatively negligible. Due to this, all three options are considered likely to lead to **minor positive effects**.

Scenario E

88. A 10% uplift would be applied for all three options under Scenario E, relative to Scenario D. This is likely to result in better transport improvements compared to Scenario D, as this scenario supports a higher level of growth, including an increase in the movement of people around the City Region. As a result, the significance of positive effects will likely be higher. Conversely, planning for a higher amount of growth brings potential for increased vehicular trips.

89. By directing a higher level of growth to Liverpool City Centre and the Inner Urban Area, Option E2 could place pressure on the existing transport network in the short to medium term if transport improvements lag behind house building (which are **minor negative effects**). Nevertheless, it is noted that Liverpool City Centre and the Inner Urban Area currently has the most comprehensive public transport network as well as walking and cycling opportunities. Therefore, there ought to be **moderate positive effects** in terms of increased accessibility.

90. Option E3 directs a higher level of growth to the Wider Urban Area (including Named Towns), and therefore is less likely to place pressure in particular parts of the transport network by delivering growth over a wider area. The focus under all options would be on sustainable locations, and therefore it is considered unlikely that significant growth would be directed to areas that are not able to make use of public transport. Where this option differs however could be the need to travel greater distances to access work and higher-order services. In this respect, **minor negative effects** are identified alongside **moderate positive effects**.

91. Option E1 provides balance between option E2 and E3. Whilst this approach could still place pressure on the existing transport network in the City Centre and Inner Urban Area, this is to a lesser degree than Option E2, and thus the **minor negative effects** are less likely to arise. Likewise, it reduces the amount of residual growth that could be located in locations that encourage longer trips. Similar to Option E2, this approach still focuses all the growth into accessible locations, with substantial amounts being directed to areas that are very well serviced. As such, **moderate positive effects** are predicted.

Scenario F

92. A 20% uplift would be applied for all three options under Scenario F, relative to Scenario D. This is likely to result in better transport improvements compared to Scenarios D and E, as this scenario supports a higher level of growth, including an increase in the movement of people around the City Region. As a result, the significance of effects will likely be higher.

93. Under Scenario F, a higher level of residual planned growth is presumed under all three options. In this respect, there is a more certain prospect of increased urban regeneration across the City Region. This in itself is positive with regards to transport, as it is considered that as the quantum of growth increases, as do the associated transport improvements. All three options deliver urban regeneration in Liverpool City Centre, the Inner Urban Area, and the Wider Urban Area (including Named Towns), and therefore growth will help to tackle mental health issues across these areas.

94. By directing a higher level of growth to Liverpool City Centre and the Inner Urban Area, Option F2 could place pressure on the existing transport network in the short to medium term if transport improvements lag house building. Nevertheless, it is noted that Liverpool City Centre and the Inner Urban Area currently has the most comprehensive public transport network. Whilst this could lead to some localised negative effects, the potential for positive impacts in the long term would likely counteract any short- and medium-term negative effects. Nevertheless, **moderate negative effects** are identified to capture these issues.

95. Option F3 and F1 (to a lesser extent) direct a higher level of growth to the Wider Urban Area (including Named Towns), and therefore are less likely to place as much pressure on the existing transport network by delivering growth over a wider area. However, dispersal of growth could lead to a greater number of and distance of trips (including those made by private car). These are potential **moderate negative effects**. This dispersal of growth would, however, perhaps provide better opportunities to enhance local transport infrastructure as required across a wider area, which ought to improve linkages between settlements in areas that might otherwise not experience improvements. These are potential **major positive effects** for F3 which involves a wider dispersal of growth, but to areas that must have a good baseline level of accessibility.

Equality and Diversity

Implications of committed growth

96. The sustainability appraisal findings for adopted and emerging local plans in the City Region all conclude with similar findings in relation to equality and diversity. Overall, the policies across the local authorities' local plans are considered likely to lead to positive impacts for equality and diversity by delivering housing (including affordable homes, which will contribute towards social inclusion when properly integrated with market housing); improving access to employment opportunities and educational facilities; and protecting and enhancing local centres, the public realm, and public green spaces.

97. Importantly, no disproportional negative impacts were identified for any of the protected characteristics across the sustainability appraisal findings. Rather, positive effects were identified with regards to a number of protected characteristics, most notably age, race, gender, and disability. In addition, specific significant positive effects were identified for Gypsies and Travelling Showpeople in several authorities. Across the board, it is noted that development should be located in areas that have good access to services, facilities and amenities, as well as sustainable transport networks, including active travel corridors. This should improve access to employment opportunities and educational facilities; public green spaces; and health facilities, supporting equality through improved access to these vital facilities and amenities.

98. Designing-out crime through public realm improvements is also highlighted through several adopted and emerging local plans.

99. Spatially, development is considered likely to have positive implications for urban areas suffering from deprivation, but there may be some pockets of 'rural' communities that continue to have poor access to services and affordable housing.

100. Overall, major positive effects are predicted to arise across the City Region as there ought to be improved access to homes, jobs, and sustainable transport within authorities and across borders. It will be important to ensure that areas do not become gentrified though.

Scenario D

101. All three options under Scenario D involve only a small amount of residual growth across the City Region. Hence, the magnitude of additional effects on equality and diversity are anticipated to be relatively low.

102. The focus of any additional unplanned growth would be towards Liverpool City, the Inner Urban Area, and the Wider Urban Area (including Named Towns) to varying degrees. In doing so, all options under Scenario D support regeneration in areas that have high levels of deprivation and social inequality.

103. Regeneration will help tackle these issues by delivering affordable housing and attracting new investment, which will likely lead to improved employment opportunities, social infrastructure, and other facilities. This would also be strengthened through improvements to public green spaces, recreational facilities, and active travel networks.

104. Option D1 provides a similar distribution to the current local plans but seeks to ensure all new growth is in very accessible locations. Option D2 directs a higher proportion of growth to Liverpool City and the Inner Urban Area, whilst Option D3 directs a higher proportion of growth to the Wider Urban Area (including Named Towns). Notably, Liverpool City Centre and the Inner Urban Area have higher concentrations of deprived areas. Therefore, Option D2 performs well by directing a higher proportion of growth in these locations. However, it could be argued that Option D1 provides a more balanced approach by distributing growth more evenly, thereby delivering the benefits of growth to a wider area / number of residents. Nevertheless, at this scale the differences between the options are considered relatively negligible. Due to this, all three options are considered likely to lead to **minor positive effects** with regards to additional / residual growth. In combination with the committed / planned growth, it is likely that significant / major positive effects would remain in relation to equality and diversity.

Scenario E

105. A 10% uplift would be applied for all three options under Scenario E, relative to Scenario D. This is likely to give a further boost to urban regeneration given that all three options involve a degree of focus in accessible urban areas, including Liverpool City and the Inner Urban Area. Planning for increased housing flexibility is likely to deliver a greater number of affordable homes and ought to bring community benefits regardless of the distribution. However, there are some differences that the options could bring.

106. By directing a higher level of growth to Liverpool City Centre and the Inner Urban Area, Option E2 provides a longer-term commitment to regeneration in such locations, and this would be more likely to mean that the more difficult sites would need to come into play. In one respect this is positive as it will help to bring planning-gain to areas that may have been neglected for a long time. Increased growth in Liverpool City and the Inner Urban Area might also be more beneficial for a wider range of community groups, as it has a more diverse mix of communities and there are more facilities to serve a range of needs.

107. There is also some uncertainty whether such sites will be delivered and whether there would be a need to develop open space / community facilities (particularly given that a large amount of growth is already planned in these locations on the most deliverable sites). On balance, it is considered that this option would have moderate positive effects, but there is some uncertainty given that potential negative effects could arise.

108. Meanwhile, Option E3 directs a higher level of growth to the Wider Urban Area (including Named Towns), and therefore provides more flexibility and choice in meeting housing needs. This could also be directed to areas of deprivation and other minority communities, with benefits in terms of equality and diversity.

109. However, it could also slightly detract from a longer-term continuation of regeneration efforts if it involved a greater amount of greenfield development in the form of urban extensions. **Moderate positive effects** are identified, but there is a greater degree of uncertainty (compared to E2) that this would benefit communities of need given the greater amount of dispersal.

110. Option E1 delivers the benefits of growth to a wider area / number of residents, but still maintains a strong focus on regeneration, and ought to have similar positive effects compared to E2.

Scenario F

111. Under Scenario F, a higher level of residual planned growth is presumed under all three options. In this respect, there is a more certain prospect of increased urban regeneration across the City Region. This in itself is positive with regards to equality and diversity, as it is considered that as the quantum of growth increases, as do the associated benefits. All three options deliver urban regeneration in Liverpool City Centre, the Inner Urban Area, and the Wider Urban Area (including Named Towns), and therefore growth will help to tackle social inequalities across these areas.

112. By directing a higher level of growth to Liverpool City Centre and the Inner Urban Area, Option F2 could bring sustained benefits to communities of need and could help to maintain and enhance multicultural communities. The level of growth involved would also be more likely to support more significant investment in new or improved services and facilities. Consequently, **major positive effects** are predicted in addition to that already likely to arise from committed growth. The higher scale of growth could possibly lead to some **minor negative effects**, should it lead to gentrification or worsens conditions for some communities in relation to increased traffic / noise / amenity concerns. There may also be a need for the release of some greenfield land in the urban areas if there is insufficient land to deliver this higher scale growth.

113. Option F1 also involves substantially more growth in the Inner Urban Area and Liverpool City, which could bring major positive effects alongside committed growth and growth in other Named Towns in the wider named area as well. The potential for minor negative effects is also highlighted for this option though to a lesser extent that Option F2.

114. Option F3 disperses growth more widely, and therefore, the positive effects in terms of directing growth to the area's most in need are only **moderate positive effects.** The potential for negative effects in denser urban areas is likely to be lower compared to options F1 and F2, but still constitutes potential **minor negative effects**.

Biodiversity

Implications of committed growth

115. The sustainability appraisal findings for adopted and emerging local plans in the City Region conclude mixed findings in relation to biodiversity. Some findings conclude positive effects for biodiversity as the spatial strategies predominantly focus growth in urban areas / on brownfield land. In addition, policies seek to maintain and enhance green infrastructure networks and areas of biodiversity importance, including by delivering biodiversity net gain (BNG). However, other findings conclude that the level of new development proposed, including its location partially on greenfield / Green Belt land, as well as certain schemes, pose a risk to biodiversity. In addition, the construction phase of development is likely to lead to increased disturbance to habitats and species, although it is noted that this will only be in the short to medium term. Nevertheless, policies should help mitigate this risk, and in some cases, provide opportunities for the enhancement of habitats and biodiversity. In addition, as a last resort, following the mitigation hierarchy, compensation will be delivered. It is noted that most of the impacts will be temporary as new habitats and areas of green infrastructure are created. Nevertheless, there may be instances of habitat loss due to new development that will inevitably be permanent. Areas that could be affected in this respect include the Mersey Estuary.

116. With regards to the HRA findings, significant adverse effects are not identified across any of the local authorities within the City Region as a result of the policies and site allocations within the adopted and emerging local plans. Whilst potential impacts pathways are identified within some of the HRA findings, the application of recommended mitigation measures, combined with sufficient protective mechanisms within the policies, significantly reduce the potential for adverse effects on European sites.

117. It is noted that whilst the HRA for Liverpool identified a small number of aspects of the emerging Local Plan with the potential to result in significant adverse effects on European Sites, recommendations have been made in order to mitigate these effects. A key issue is the need for a strategic recreation study and resulting measures to manage recreational access within the coastal European sites around Merseyside.

Scenario D

118. The scale of residual growth for all three options is relatively low across the City Region once the existing 'committed' supply is counted. The effects of development will be dependent upon the precise locations involved. However, it is considered unlikely that the additional growth would lead to significant cumulative effects with regards to pressures on biodiversity. The options all focus a degree of growth into the City centre, Inner Urban Area and nearby Named Towns, which contain a range of sensitive coastal and estuarine environments (several SSSIs, SACs, SPAs). This brings potential for some site-specific effects to arise such as disturbance to species during construction, air quality, noise, and light issues, and possibly reclamation of docklands and ports (with effects on water-based biodiversity). Given that the scale of residual growth is fairly low, and there will be a need to implement measures to achieve biodiversity net gain, the net effect of growth is considered to be **neutral** for all three options.

Scenario E

119. Option E1 would require a further 3,463 dwellings to be planned for in Liverpool City Centre and the Inner Urban Area, when compared to Option D1. This is in addition to a further 4,887 dwellings in the Wider Urban Area (including Named Towns). The scale of growth required in these locations could put increased pressure on coastal / marine environments, though there is an expectation that such effects would be avoided and mitigated in line with planning policy. In this respect, it is considered that negative effects could be minor in the short term, with the potential for positive effects in the longer term with the introduction of BNG requirements. The effects of growth in the Wider Urban Area will depend upon the locations involved, but it is possible that some greenfield locations may be required, or vacant brownfield land that has known biodiversity value. Some locations could also put additional pressure on water-based environments, such as nearby to the towns of Southport, Runcorn, and Widnes.

120. Option E2 involves a greater focus of growth in Liverpool City Centre and the Inner Urban Area, but not at a scale that is likely to bring more significant effects upon biodiversity (compared to option E1). This option also involves a degree of dispersal across the Wider Urban Area, so similar effects to Option E1 are anticipated (i.e., **minor negative effects** in the short term and **moderate positive effects** in the longer term).

121. Option E3 involves a slightly greater amount of dispersal compared to Options E1 and E2. This could permit a greater use of greenfield land, which could potentially have some biodiversity value. There ought to be sufficient choice in sites and flexibility in design to avoid significant effects, and such sites could offer good opportunities for onsite BNG. The reduction in growth in Liverpool City Centre and the Wider Urban Area would also result in less pressure on coastal / estuarine environments. Overall, the effects are likely to be mixed, with some **minor negative effects**, but the potential for **moderate positive effects** in the longer term.

122. For all options, there is an element of uncertainty given that no specific sites or locations are specified at this stage.

Scenario F

123. Option F1 would require further growth to be planned for in Liverpool City Centre and the Inner Urban Area. This is in addition further growth in the Wider Urban Area (including Named Towns). The scale of growth required in these locations could put increased pressure on coastal / marine environments, Whilst there is an expectation that such effects would be avoided and mitigated in line with planning policy, a greater degree of concentration and growth could make this more difficult. In this respect, it is considered that negative effects could **minor to moderately negative**, with the potential for positive effects longer term with the introduction of net gain requirements. The effects of growth in the Wider Urban Area will depend upon the locations involved, but it is possible that some greenfield locations may be required or vacant brownfield land that has biodiversity value. Some locations could also contribute further pressure on water-based environments.

124. The dispersed nature of growth ought to mean that significant effects in any one location can be avoided, and that biodiversity net gain can be secured on sites or contributing to off-site strategic schemes. In this respect, any negative effects are considered likely to be minor, with the potential for longer term **major positive effects** through the provision of a greater amount of net gain schemes.

125. Option F2 involves a greater focus of growth in the City Centre and Inner Urban Area and could be at a level that has greater implications for biodiversity. This option also involves a degree of dispersal across the named towns and Wider Urban Area and brings potential for improvements in biodiversity in the longer term. The effects are predicted to be the same as for Option F1 (i.e., **minor to moderate negatives** and **moderate to major positives** in the longer term).

126. Option F3 involves a slightly greater amount of dispersal compared to Options F1 and F2. This could permit a greater use of greenfield land, which could potentially have some biodiversity value. There ought to be sufficient choice in sites and flexibility in design to avoid significant effects, and such sites could offer good opportunities for on-site net gain in biodiversity. The reduction in growth around the Central Core would also result in less pressure on coastal / estuarine environments. Overall, the effects are likely to be mixed with some **moderate negatives**, but the potential for **major positive effects** longer term.

127. For all options, there is an element of uncertainty given that no specific sites or locations are specified at this stage.

Clean Air

Implications of committed growth

128. There are mixed effects identified across the City Region in terms of air quality. With respect of urban growth in sustainable locations, it is anticipated that there will be an increase in the use of public transport, walking and cycling, which should help to reduce contributions to poor air quality from private travel. There is also an expectation that an expansion of electric vehicles will help to reduce emissions from traffic in the medium to longer term.

129. However, a portion of housing growth will be directed to areas that currently suffer from poor air quality, which could expose more people, whilst also adding to congestion. Increased employment growth could also contribute to air quality issues around strategic transport routes.

130. All of the adopted and emerging local plans seek to enhance air quality and avoid negative effects through the application of sustainable transport measures, green infrastructure enhancements and other measures. This should help to reduce the significance of effects. However, overall, there are likely to be some minor negative effects (at least in the short to medium term), which could be heightened in busier locations as a result of cumulative effects from cross-border travel.

Scenario D

131. All three-options focus growth toward central locations in the urban areas, including Liverpool City Centre, the Inner Urban Area, and the Wider Urban Area (including Named Towns). The whole of Liverpool City is designated as an AQMA, and therefore growth in this location will put new development in areas currently experiencing air quality issues. Likewise, an increase in new homes will add to the number of trips. Counteracting this is the fact that this location has good public transport links and access to services and facilities. There are areas of congestion and air quality concern throughout the rest of the City Region, but the level of residual growth involved is not substantial. Coupled with the need for new developments to be in accessible locations, only minor negative effects on air quality are predicted for all three options and these ought to dissipate in the longer term. A more dispersed approach (D3) could lead to a small proportion of new development being in locations that are more likely to lead to car use, but this would also draw development out of locations that have poorer air quality. In addition to committed growth, this leaves a residual effect of neutral / **minor negative effects**.

Scenario E

132. The greater scale of additional planned development would likely lead to an increase in individual car trips regardless of the distribution option. The scale of additional growth in Liverpool City Centre, the Inner Urban Area, and Wider Urban Area (including Named Towns) would place additional homes in areas with current air quality issues (which is most prominent for Option E2, followed by E1). However, this is counteracted by the good accessibility in these areas. The increased growth is also likely to help assist (and benefit from) the development of public transport improvements; walking and cycling routes; social infrastructure improvements; and urban greening (all of which should help to manage air quality issues).

133. On balance, these benefits ought to help offset the potential for air quality decline as a result of further new development. Nevertheless, some residual **minor negative effects** are likely to remain under Options E1 and E2, particularly in the short to medium term before infrastructure improvements are well established. There would also be potential for increased car trips associated with growth across the Wider Urban Area (including Named Towns). However, accessibility to services and public transport would be a guiding factor for new development in this area. Together with committed growth, the effects are still likely to be minor negatives, rather than giving rise to more significant effects.

134. Allowing greater dispersal across the urban area could necessitate / allow for the strategic growth at the periphery of some urban areas in the form of 'sustainable urban extensions.' It is possible that this could lead to an increase in car trips, contributing to air quality issues in some locations, particularly where development is located in areas close to motorway junctions. However, there ought to be sufficient flexibility to allow for less accessible locations to be avoided, and it also draws a greater amount of growth away from Liverpool City Centre and the Inner Urban Area, which is currently experiencing more notable air quality issues. As such, **minor negative effects** are also predicted for Option E3 (albeit with a greater element of uncertainty compared to E1).

Scenario F

135. Further planned growth has the potential to create increased movement to and from the urban areas, particularly for option F2, which focuses more development to the inner urban area and Liverpool City Centre. However, as previously discussed under scenario D and E, the residual growth is considered unlikely to give rise to more than minor negative effects. In combination with committed growth, the potential for more significant negative effects is likely to be higher, and thus, there is some uncertainty associated with the prediction of **moderate negative effects** for all three distribution options.

Water Resources

Implications of committed growth

136. The SA findings of the adopted and emerging local plans across the City Region vary. For example, the findings for Halton highlight that the scale of development is likely to place pressures on the provision of water and treatment of wastewater. Meanwhile, in Liverpool some site allocations are within a groundwater source protection zone (SPZ) and have the potential to contaminate groundwater sources, which could lead to minor negative effects on water quality. The findings for Sefton recognise that the expansion of the port and maritime zone could lead to increased traffic and industrial activity, with the potential for adverse effects on water quality. Finally, the sustainable findings for both St Helens and Wirral note that the conversion of agricultural land for housing or employment uses on greenfield / Green Belt land could reduce nitrate run-off in the long term, with positive implications. However, other local authorities note that the loss of urban green spaces could have adverse impacts on water quality, particularly within existing urban areas.

137. Policies are in place across the City Region to ensure that green infrastructure, including green spaces, are protected and / or enhanced, and that development does not lead to the deterioration of water quality. The need to implement sustainable drainage systems and to provide appropriate infrastructure upgrades is also a common thread in adopted and emerging plans.

138. Where water environments could potentially be affected by tourism or increased activity (transport / recreation etc) there is acknowledgement that measures need to be in place to manage water quality.

139. Overall, the increase in growth across the region associated with committed growth has the potential to have some minor negative effects with regards to water quality.

Scenario D

140. All three options involve growth predominantly in the existing urban areas, and therefore they should be serviced by existing water management infrastructure. The level of residual planned growth is relatively low and considered unlikely to lead to significant effects upon water quality beyond those of committed growth, regardless of distribution. **Neutral effects** are predicted overall.

Scenario E

141. At a higher scale of growth, there would be additional pressures on wastewater and drainage infrastructure in urban areas, particularly through Options E1 and E2. Increased densification / intensification of land use in Liverpool City Centre and the Inner Urban Area could lead to more pollutants being deposited in waterbodies as a result of surface water run-off; transport emissions; and wastewater / drainage. Such effects ought to be possible to mitigate through the use of sustainable drainage systems (SuDS); urban greening measures; and water efficiency measures. Nevertheless, there is greater potential for **minor negative effects** to arise for all three options in this respect. Option F3 supports greater dispersal of growth across the urban areas, and thus, the potential for negative effects in any particular location are slightly lower. However, this option could also be more likely to involve greenfield land release, which could have more notable effects on water quality (either positive or negative depending on site characteristics and the design of development).

Scenario F

142. At an even higher scale of growth, there would be additional pressures on wastewater and drainage infrastructure in urban areas. Increased densification / intensification of land use in Liverpool City Centre and the Inner Urban Area could lead to more pollutants being deposited in waterbodies through surface water run-off, transport emissions and wastewater / drainage. Alongside other growth activities in coastal environments such as offshore renewable energy, tidal energy, ports and shipping movements, there could potentially be some negative effects on water quality and marine environments. There will be a need to manage such effects, and this is recognised in adopted and emerging local plans. It is also a key principle of the emerging SDS. Therefore, it is considered that the overall effects will remain as potentially **minor negative effects**, despite the higher level of growth under this scenario.

Land and Soil

Implications of committed growth

143. The SA findings for the adopted and emerging plans that cover the City Region largely conclude positive effects with regards to land and soil resources. By primarily focusing development on brownfield sites or poor-quality agricultural land and remediating contaminated land, the spatial strategies across the plans largely perform well. However, it is recognised that in some local authority areas, some growth is directed towards greenfield / Green Belt, which will likely lead to significant negative effects in the long term with regards to soil resources. In addition, several of the existing site allocations will likely result in the loss of best and most versatile (BMV) agricultural land. In this respect, there are likely to be adverse impacts on the rural economy. However, only a small portion of BMV land is proposed for development out of the City Region total, and therefore significant negative effects on the rural economy are not anticipated.

Scenario D

144. All three options involve a relatively low amount of 'additional' unplanned growth. In all three distributions, it is likely that brownfield land would come forward as a priority, though this is more likely to be pushed through option D2, which focuses slightly more on Liverpool City, the Inner Urban Area and nearby named towns. All three options are considered unlikely to involve significant further loss of agricultural land, given that there is a focus on regeneration. However, in the instance that a proportion of planned growth does not come forward, each strategy would still direct growth to urban areas in the first instance. In this respect, all three options are considered likely to have neutral effects with regards to soil and land.

145. Option D3, would perhaps be more likely to involve growth in the periphery of urban areas, which could involve consideration of greenfield land (some of which is categorized as Grade 2 and 3 agricultural land). In this respect, it is a less favourable approach to options D1 and D2 with regards to soil and land (But still predicted to have **neutral effects** given the small magnitude of additional effects).

Scenario E

146. A 10% uplift would be applied for all three options under Scenario E, relative to Scenario D. This results in an additional 10,970 dwellings on top of the committed / planned for growth. This is likely to put more pressure on land and soil resources compared to Scenario D, and therefore the significance of effects will likely be higher.

147. Option E1 directs growth to urban areas but acknowledges the need for some focused greenfield release in accessible locations that can help to support regeneration. This could involve greenfield land which in exceptional circumstances would be further Green Belt release. As such, there is potential for some **minor negative effects** with regards to the loss of agricultural land and soil resources.

148. Option E2 focuses on urban regeneration in Liverpool City Centre and the Inner Urban Area (60%), but it also directs some growth to the Wider Urban Area (including Named Towns) (40%). This is more likely to involve increased densities and the repurposing of land and is therefore considered less likely to involve the need for agricultural land to be developed. As such, **neutral effects** are predicted.

149. In the instance that planned development on sites does not come forward, and is redirected to urban areas, additional positive effects would arise. However, this is considered unlikely to occur to a significant extent and is uncertain.

150. Option E3 would distribute residual growth in a more dispersed way, whilst still focusing on accessible locations and regeneration opportunities. Whilst a degree of regeneration and intensification would be involved, this approach would be most likely to permit the release of greenfield / Green Belt land if exceptional circumstances existed. There are a range of different locations where agricultural land may not be BMV, and therefore it should be possible to avoid development on BMV land. Hence, only **minor negative effects** are predicted.

Scenario F

151. A 20% uplift would be applied for all three options under Scenario F, relative to Scenario D. This is likely to put more pressure on land and soil resources compared to Scenarios D and E, and therefore the significance of effects will likely be higher.

152. Option F1 directs growth to urban areas but acknowledges the need for some focused greenfield release in accessible locations that can help to support regeneration. This could involve greenfield land which in exceptional circumstances would be further Green Belt release. As such, there is potential for some minor negative effects with regards to the loss of agricultural land and soil resources. There ought to still be choice and flexibility to avoid the most sensitive locations. However this would be to a lesser extent compared to option E1, hence the potential for **moderate negative effects**.

153. Option F2 refocuses growth to Liverpool City, as well as urban regeneration in the Inner urban Area and named towns across the City Region. This would be more likely to involve increased densities, repurposing of land and is considered less likely to involve the need for agricultural land to be developed. As such, **neutral effects** are predicted in this respect. In the instance that planned development on sites does not come forward, and is redirected to urban areas, positive effects would arise. However, this is considered unlikely to occur to a significant extent.

154. Option F3 would distribute residual growth in a more dispersed way, whilst still focusing on accessible locations and regeneration opportunities. Whilst a degree of regeneration and intensification would be involved, this approach would be most likely to permit the release of greenfield and Green Belt land if exceptional circumstances existed. There are a range of different locations where agricultural land may not be best and most versatile land, and there should be some ability to avoid the higher grades. However, this would be to a lesser extent compared to option E3, and so **moderate negative effects** are predicted.

Landscape / townscape

Implications of committed growth

155. The SA findings for the adopted and emerging plans for the local authority areas (that make up the City Region) mostly conclude positive or neutral effects, due to the focus on urban regeneration and previously developed land / brownfield sites. This is likely to bring positive effects in terms of townscape by helping to make use of derelict and unused land / buildings. It also helps to protect countryside areas with higher landscape value from development. However, the SA for some authorities conclude that there will be negative effects due to the release of greenfield and Green Belt land. The negative effects are not predicted to be major, as the most sensitive locations have been avoided wherever possible. Therefore, overall, the residual effect across the City Region is broadly positive, with some minor negative effects in a limited number of locations.

Scenario D

156. All three options concentrate most of the additional development into the urban areas. At this scale of growth, it is likely that there will be brownfield land opportunities that can be pursued across the City Region, without the need to utilise greenfield land in the urban areas such as open space. The regeneration of brownfield land should help to improve townscapes where they require investment and redevelopment. This would bring benefits to the named towns, Liverpool City, and the Inner Urban Area to differing extents depending on the focus of growth for each option. For example, there is potential for further regeneration and repurposing of named towns. A focus on these areas could also redirect growth away from potential greenfield / Green Belt land release. .However, at this scale of growth the effects are predicted to be of a low magnitude.

157. For Option D1, the spread of development is likely to be able to be accommodated in a range of locations without the need for greenfield (or Green Belt) release. For Option D2, this should also be possible, though would require higher densities or the reuse of some greenfield land in parts of the City and Inner urban area. For Option D3, some dispersal would arise, which could potentially involve greenfield land. However, the magnitude of effects is low given the level of residual growth required. As a result, all three options are predicted to have **minor positive effects** owing to their continued reliance on committed growth and additional brownfield development.

Scenario E

158. A 10% uplift would be applied for all three options under Scenario E, relative to Scenario D. This is likely to have a greater impact on landscape / townscape character compared to Scenario D, and therefore the significance of effects will likely be higher.

159. Option E1 delivers 42.6% of growth in Liverpool City Centre and the Inner Urban Area and 57.4% in the Wider Urban Area (including Named Towns). At the level of growth proposed, this could require some limited release of greenfield / Green Belt land. In this respect, potential negative effects on landscape and settlement character could arise. At the same time, an increase in growth in the urban areas would help to further support improvements to townscape in these locations. Overall, uncertain **minor positive effects** are predicted.

160. Option E2 directs the majority of growth towards Liverpool City Centre and the Inner Urban Area (60%), with the remainder directly towards the Wider Urban Area (including Named Towns) (40%). Whilst this could still prevent the release of greenfield / Green Belt release, it may require the release of green space in the City Centre and Inner Urban Area. This could have adverse impacts for cityscape and townscape character. However, uncertain **minor positive effects** are predicted overall as the positive effects of regeneration and protection of countryside and urban fringe character would outweigh negative effects attributed to the loss of open space in urban areas.

161. Option E3 would permit a greater amount of dispersal across the City Region, which may involve a greater release of greenfield land on the edge of Named Towns within the Wider Urban Area. Development at some of these locations could lead to negative effects on landscape character and settlements. However, this option would still involve urban regeneration, which offset these negative effects to an extent. Overall, **neutral effects** are predicted.

Scenario F

162. A 20% uplift would be applied for all three options under Scenario F, relative to Scenario D. This is likely to have a greater impact on landscape / townscape character compared to Scenarios D and E.

163. Option F1 could involve release of greenfield / Green Belt land across the City Region and would further support regeneration of townscapes. However, the higher scale of growth required could also lead to the need for greenfield land / open space in the urban areas to be repurposed for homes. This could start to have detrimental effects on townscape. Overall, a **minor negative effect** is predicted, reflecting the potential for negative effects in the urban areas, as well as potential greenfield release.

164. Option F2 involves a greater redirection of growth to Liverpool City Centre, the inner urban area and nearby named towns compared to F1. Whilst this would still help to reduce pressure for the release of greenfield / Green Belt release, some might still be required, and it could potentially require the release of more green space in the aforementioned urban areas. This could have some negative implications for townscape character. On balance, **minor negative effects** are predicted as the negative effects (both in urban areas and urban fringes) of additional growth could start to outweigh the positives.

165. Option F3 would permit a greater amount of dispersal across the main urban areas, which could potentially involve the release of greater amounts of greenfield land on the edge of Named Towns and the Wider Urban Area. Development at some of these locations could lead to negative effects on landscape character and settlements. Whilst urban regeneration is still likely to bring positive effects on townscape, the larger amount of growth could also bring some negative effects if a loss of open space in the urban areas occurs. On balance, **minor negative effects** are predicted as the negative effects (both in urban areas and urban fringes) of additional growth could start to outweigh the positives.

Historic Environment

Implications of committed growth

166. The SA findings for adopted and emerging local plans in the City Region all conclude positive or mixed in relation to the historic environment. For example, some of the findings highlight that policies will help to protect and enhance heritage assets. It is also recognised that by directing growth to previously development land / brownfield sites, there is potential to improve the setting of heritage assets and the historic environment. However, this is largely dependent on the design and layout of development.

167. In Liverpool, concerns are raised with regards to development within the (former) World Heritage Site, with uncertainty noted with regards to design. Meanwhile, in Wirral it is noted that there are important historic buildings and townscapes along the eastern coastline that could be affected by growth. There is also concern around the potential impact Green Belt release could have on the historic environment.

168. Overall, the committed growth is predicted to have more positive effects than negatives, and it is likely that significant positive effects will arise in the longer term. However, minor to moderate negative effects are also highlighted.

Scenario D

169. All three options involve residual growth directed to Liverpool City Centre, the Inner Urban Area, and the Wider Urban Area (including Named Towns). All these locations tend to contain concentrations of designated and non-designated heritage assets and are characterised by areas of cultural and historic significance.

170. At the scale of growth involved, the development could take the form of slightly increased densities, and / or reuse of employment land or open space (as a last resort). It should be possible to achieve the level of housing across a range of smaller sites, or at several larger sites of increased density.

171. The effects are entirely dependent upon the sites involved and the nature of development. However, broadly speaking it is likely that a focus on urban centres will help to continuously reuse land and buildings that may be at risk of falling into disrepair or vacancy. In this respect, positive effects on heritage assets could arise, if design is appropriate and heritage features are respected.

172. At the scale of growth involved for all three options, cumulative effects on the character of urban areas are considered unlikely to be significant as there would not be a need for multiple large-scale schemes, or to rely upon the more sensitive sites. Overall, **minor positive effects** are predicted for all three options.

173. In combination with committed / planned growth, it is considered unlikely that additional significant effects would arise due to the low level of development involved.

Scenario E

174. A 10% uplift would be applied for all three options under Scenario E, relative to Scenario D. This is likely to have a greater impact on the historic environment compared to Scenario D, and therefore the significance of effects will likely be higher.

175. The larger residual growth under this scenario would necessitate additional growth in Liverpool City Centre and the Inner Urban Area, and this could lead to a greater likelihood of less appropriate development occurring (for example, too high density, greater use of open space / effects on industrial heritage through the loss of employment land). Positive effects are still likely to arise, for the reasons discussed above and these would be of a moderate level. However, the potential for negative effects is considered to be slightly greater for all three options at this scale of growth. Option E2 performs least well in this respect as it involves a higher concentration of growth in Liverpool City Centre and the Inner Urban Area, which is the most constrained part of the City Region with regards to heritage. Therefore, potential **minor negative effects** are predicted.

176. Under Option E3, growth is dispersed across the City Region, including in the Wider Urban Area (including Named Towns), where there ought to be greater prospect to avoid negative effects on heritage. However, the positive effects are more likely to be minor rather than moderate.

Scenario F

177. A 20% uplift would be applied for all three options under Scenario F, relative to Scenario D. This is likely to have a greater impact on the historic environment compared to Scenarios D and E, and therefore the significance of effects will likely be higher.

178. The larger residual growth under this scenario would necessitate substantial additional growth in Liverpool City Centre and the Inner Urban Area (particularly for F2), and this could lead to a greater likelihood of less appropriate development occurring (for example, too high density, greater use of open space / effects on industrial heritage through the loss of employment land). Positive effects are still likely to arise, for the reasons discussed above, and these are **moderately positive**. However, the potential for negative effects is considered to be greater for all three options at this scale of growth. Option F2 performs least well in this respect as it involves a higher concentration of growth into Liverpool City Centre and the Inner Urban Area, which is the most constrained part of the City Region with regards to heritage. Therefore, potential **moderate negative effects** are predicted.

179. Under Option F3, growth is dispersed across the City Region, including in the Wider Urban Area (including Named Towns), where there ought to be greater prospect to avoid negative effects on heritage. Therefore, only **minor negative effects** are predicted alongside the **moderate positives**.

Circular Economy

Implications of committed growth

180. The SA Reports for adopted and emerging Local Plans conclude that an increase in development (homes, employment land and infrastructure) will lead to increased waste generation during construction and the lifetime of developments. However, there is an acknowledgment in the conclusions that housing growth and waste generation would still occur in the absence of planned development. Therefore, negative effects associated with the Local Plans are considered to be limited.

181. Each Plan also seeks to achieve efficient use of land and primary resources, encourage waste minimisation, and require sustainable construction. These policies will therefore help to reduce per capita waste emissions in the longer term. As such, the overall picture in relation to committed growth is neutral or minor effects.

Scenario D

182. All three options involve limited additional planned growth, and, in this respect, it is considered that the scale of development would not be significantly different to the predicted future baseline position (at least until the end of current Local Plan periods). In this respect, neutral effects are likely for each option. All three options will also support the reuse of land and buildings. This is positive in helping to reduce inert waste generation from construction.

183. All three options would also direct growth to areas that are well served by existing waste management services. However, Option D2 which directs more growth to the Central Core would be more likely to limit the distances required to transfer waste (given that these are close to the main sorting facilities in the region). However, the magnitude of effects is likely to be limited given the scale of additional growth (beyond that set out in Local Plans) is modest.

184. Overall, **neutral effects** are predicted overall for options D1 and D3, as they are unlikely to significantly change the future baseline position in terms of quantum and distribution of growth. D2 has the potential for **minor positive effects** if a greater proportion of growth is directed to Liverpool City Centre, the Inner Urban Area and nearby Named Towns, but there are uncertainties (i.e. it is unclear the extent of which committed and planned development may not come forward as expected; hence the amount being redirected to these locations is unclear). There is also evidence that smaller homes produce less waste, and it would be expected that higher density development in Liverpool City, the Inner Urban Area and some Named Towns would fall into this category.

185. In terms of recycling and waste generation, there is evidence that smaller homes produce lower amounts of waste, but conversely, the rate of recycling in flats is considerably lower than in homes. This could be more of an issue for Option D2, but such matters could be considered through sustainable design by ensuring adequate space for waste separation inside flats themselves and servicing the entire properties.

Scenario E

186. For this scenario, the presumed scale of planned growth / land supply is 10% higher for all three options compared to the standard methodology figure. This would inevitably lead to greater amounts of overall waste being generated during both construction and once new homes and businesses are established. The differences between distribution would be more apparent at this scale of growth. In particular, increased growth in Liverpool City Centre, the Inner Urban Area and nearby Named Towns brings the potential for mixed effects. On one hand, it should reduce the length of waste related transportation, and would likely involve higher density development that is less wasteful in terms of construction waste. However, it could also lead to a greater proportion of people living in households where waste segregation is more difficult (leading to lower rates of recycling). These issues should be possible to consider and address through sustainable design though. Overall, Option E2 is predicted to have **neutral effects**. This reflects the potential benefits discussed above but acknowledges that the overall scale of growth is higher.

187. Option E1 is predicted to have uncertain **minor negative effects**. On one hand, the approach proposed would be a continuation of the current pattern of growth (albeit with a greater focus on sustainable travel and urban regeneration). In this respect, no significant effects would be anticipated. However, the overall increase in growth would lead to a greater generation of waste across the region, and some locations could lead to longer waste transfer transportation.

188. Option E3 would allow for some growth in a more dispersed manner, but this would still be likely to be well located in terms of waste collection services. The distances required for waste transfer could however be slightly longer if growth is distributed to edge of settlement locations in some local authorities. Conversely, homes in such locations would be less likely to be high density and would likely be well equipped for waste segregation (thus enabling higher rates of recycling across different waste streams). Overall, an increase in development (homes and employment land) would be likely to lead to a greater generation of waste that needs to be processed, as well as involving potential greenfield sites and associated construction waste. These are **minor negative effects**.

Scenario F

189. With a further uplift in planned growth, the potential for effects of greater significance increases. The effects would be of a similar nature to those discussed above for Scenario E but would be more pronounced.

190. Option F1 is predicted to have **minor negative effects**.

191. Option F2 is predicted to have uncertain **neutral effects**. This reflects the potential benefits discussed above but acknowledges that the overall scale of growth is higher.

192. Option F3, has the potential for **moderate negative effects** given the higher scale of growth and dispersal.

Minerals

Implications of committed growth

193. 'Minerals' was scoped out of several local authority sustainability appraisal processes and so the effects are considered fresh in this section.

194. Where purely urban growth is proposed, the effects upon mineral resources is very limited. Though there are surface coal deposits in some authorities, these minerals are not viable and would not contribute positively towards the desire for a zero carbon City Region. In this respect neutral effects are recorded.

195. There are some small overlaps with potential mineral resources such as sand and gravel, but the sites that have been allocated / identified for development are not required to meet identified mineral needs for the region. The amount of mineral resources affected by committed growth is also very low as a percentage of total resources in the City Region.

196. Despite there being some greenfield / Green Belt release in some locations, there is a general encouragement of brownfield regeneration and the reuse of buildings and materials across each of the authorities. Therefore, whilst there is some demand for raw materials, the overall effects are considered to be minor negatives.

Scenario D

197. With a large proportion of the LCR being densely developed urban areas (e.g., Liverpool, Wirral, and St Helens) there is limited scope for mineral extraction.

198. The residual level of growth involved under this growth scenario is under 3,000 homes and under all three distribution options development is to be focused in Liverpool City Centre, the Inner Urban Area, and the Wider Urban Area (including Named Towns), and in accessible urban locations (to differing extents). It is unlikely that any viable mineral resources would be sterilized for any of these options.

199. There may be some increased demand for specific building materials if sensitively designed developments are to be supported in urban areas where historic buildings are prevalent. However, a focus on reuse of land and buildings is also likely to reduce demand for raw minerals for new infrastructure and buildings.

200. As such, overall, **neutral effects** are predicted or each option.

Scenario E

201. With a larger scale of growth, the amount of residual development required to be planned for is higher under this scenario for all three options. This would lead to a greater need for raw materials to support development, particularly where this is on greenfield land. In this respect, the dispersed option (E3) is more likely to involve greenfield development in accessible locations in the urban area. This could lead to some minor overlaps with areas with value for minerals, but more importantly would require a greater amount of raw materials to support construction and infrastructure. These are **minor negative effects**.

202. Growth focused in Liverpool City Centre and the Inner Urban Area is more likely to make efficient use of land and the repurposing of buildings, and this would also be the case if 'committed development' is re-directed away from SUEs development (though this is considered unlikely). However, there would still be greater overall levels of growth and may still be a requirement for greenfield release. Therefore, **minor negative effects** are also predicted for Options E1 and E2, but with some uncertainties (I.e. these options are more likely to be neutral than option E3).

Scenario F

203. With an even larger scale of growth, the amount of residual development required to be planned for is higher under this scenario for all three options. This would lead to a greater need for raw materials to support development, particularly where this is on greenfield land. In this respect, the dispersed option (F3) is more likely to involve greenfield development in accessible locations in the urban area. This could lead to additional overlaps with areas with value for minerals, but more importantly would require a greater amount of raw materials to support construction and infrastructure. Therefore, **minor negative effects** are predicted.

204. Growth focused in Liverpool City Centre and the Inner Urban Area is more likely to make efficient use of land and the repurposing of existing buildings, and this would also be the case if 'committed development' is re-directed away from SUEs development (though this is considered unlikely). Whilst options F1 and F2 perform better in this respect, they still involve higher overall levels of growth, some of which could be on greenfield / Greenbelt. As such, **minor negative effects** are predicted. Despite the higher scale of growth under Scenario F, it should still be possible to avoid the sterilization of mineral reserves, hence the effects remaining minor.

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