Liverpool City Region Combined Authority

LTP INTEGRATED IMPACT ASSESSMENT

Appendix H – Health Impact Assessment

Liverpool City Region Combined Authority

LTP INTEGRATED IMPACT ASSESSMENT

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WSP

1st Floor Station House
Tithebarn Street, Exchange Station
Liverpool
L2 2QP

Phone: +44 151 331 8100

WSP.com

QUALITY CONTROL

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1 INTRODUCTION

1.1 OVERVIEW

Liverpool City Region Combined Authority (herein referred to as LCRCA) is currently preparing its Fourth Local Transport Plan (LTP) which will cover the period 2024-2040.

The LTP is being developed to allow LCRCA to address new and emerging transport needs to help the city region '*To plan and deliver a future-facing, clean, safe and accessible transport system built to last. It will focus on moving people, goods and freight around the region in a way that delivers our local ambitions. Particular focus will be on a net zero carbon emitting city region by 2035*'.

Through the new LTP, the LCRCA hopes to bring together its multi-faceted transport systems into a more established and sustainable integrated network.

The Liverpool City Region includes the City of Liverpool local authority area plus the Metropolitan Boroughs of Knowsley, St Helens, Sefton, Wirral and the Borough of Halton in North West England.

1.2 LOCAL TRANSPORT PLANS

1.2.1 The UK Government's 1998 White Paper on transport, 'A New Deal for Transport: Better for Everyone'[1] introduced the concept of Local Transport Plans to steer the development of national transport policies at the local level. The Transport Act 2000[2] (now amended by the Local Transport Act 2008[3]) then made it a statutory requirement for local transport authorities outside of London to produce LTPs having regard to UK Government policies and guidance on the environment.

1.2.2 The Local Transport Act 2008 give local authorities the freedom to decide for themselves how many years future LTPs should cover, including the option of setting different timespans for strategy and implementation. The Act requires local authorities to consider UK Government policies and guidance 'with respect to mitigation of, or adaptation to, climate change or otherwise with respect to the protection or improvement of the environment; and therefore, how their strategies and implementation plans relate to all relevant environmental issues, including air quality, noise, landscape and biodiversity.

1.3 INTEGRATED IMPACT ASSESSMENT

1.3.1 The IIA combines the following assessment processes:

- Sustainability Appraisal (SA) / Strategic Environmental Assessment (SEA);
- Equalities Impact Assessment (EqIA);

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[1] Department for Transport, A new deal for transport: better for everyone - White Paper, 1998. Available online at: https://webarchive.nationalarchives.gov.uk/+/http://www.dft.gov.uk/about/strategy/whitepapers/previous/anewdealfortransportbetterfo5695

[2] Transport Act 2000. Available online at: https://www.legislation.gov.uk/ukpga/2000/38/introduction

[3] HM Government (2008) Local Transport Act Available online at: Local Transport Act 2008 (legislation.gov.uk)

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- Health Impact Assessment (HIA); and
- Habitats Regulations Assessment (HRA).

1.3.2   An integrated assessment approach enables synergies and cross-cutting impacts to be identified and avoids the need to undertake and report on separate assessments and seeks to reduce any duplication of assessment work. A single process can improve efficiencies in the assessment itself, as many of the issues covered in the different forms of assessment overlap.

1.3.3   This process also helps to simplify outcomes and recommendations for policymakers. This is demonstrated in **Figure 1-1** below. More detail on each of the components of the IIA have been described below.
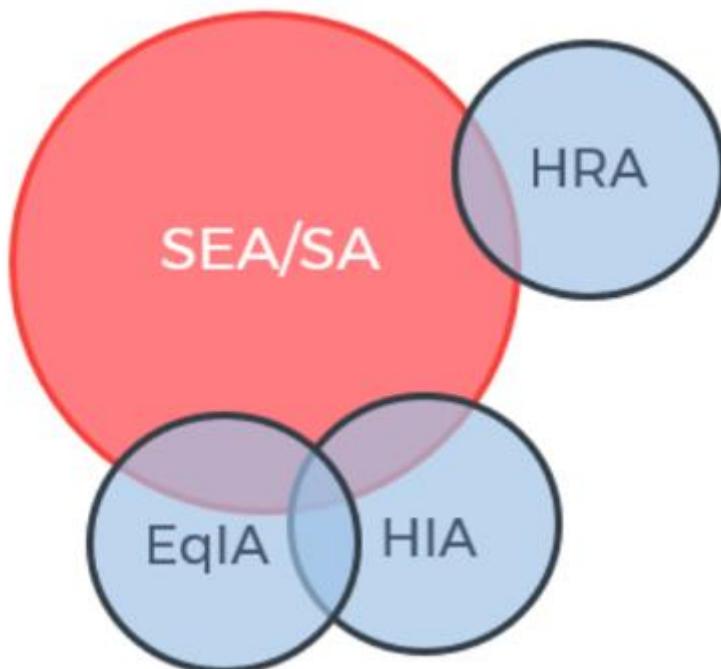

Figure 1-1: IIA and Component Processes

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2 HEALTH IMPACT ASSESSMENT

2.1 INTRODUCTION

2.1.1 HIA is a systematic approach to identifying the differential health and wellbeing impacts, both positive and negative, of projects, plans or strategies.

2.1.2 HIA uses both qualitative and quantitative evidence, including public and other stakeholders' perceptions and experiences, as well as public health knowledge. It is particularly concerned with the distribution of effects within a population, as different groups are likely to be affected in different ways, and therefore looks at how health and social inequalities might be reduced or increased by a proposed project or plan.

2.1.3 HIA has been defined as:

> *"…a combination of procedures, methods and tools by which a policy, programme or project may bejudged as to its potential effects on the health of a population, and the distribution of those effects within the population"[4].*

2.1.4 In this context, 'health' is defined by the World Health Organisation as:

> *"…a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity"[5].*

2.1.5 Health determinants are the personal, social, cultural, economic and environmental factors that influence the health of individuals or populations. These include a range of factors such as income, employment, education and social support.

2.1.6 Health inequality can be defined as the difference in either health status, or the distribution of health determinants, between different population groups. Some health inequalities are unavoidable, others are not so, and may well be unjust and unfair.

2.2 OBJECTIVE OF A HEALTH IMPACT ASSESSMENT

2.2.1 The aim of a HIA is to support and add value to the decision-making process by providing a systematic analysis of the potential impacts, as well as recommending opportunities, where appropriate, to enhance positive impacts, mitigate negative impacts and reduce health inequalities.

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[4] World Health Organisation, (n/a). Definition of health assessment (HIA). Available online at: http://www.euro.who.int/en/health-topics/environment-and-health/health-impact-assessment/definition-of-health-impact- assessment-hia
[5] World Health Organisation (n/a). Constitution. Available online at: https://www.who.int/about/who-we-are/constitution

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2.3 SOCIO-ENVIRONMENTAL MODEL OF WELLBEING

2.3.1 HIA's apply the below model of health and wellbeing (**Figure 2-1**). The Socio-Environmental Model of Wellbeing considers that health and wellbeing are a result of external influences, where an individual or population experiences a combination of adverse external factors which could result in health inequality.
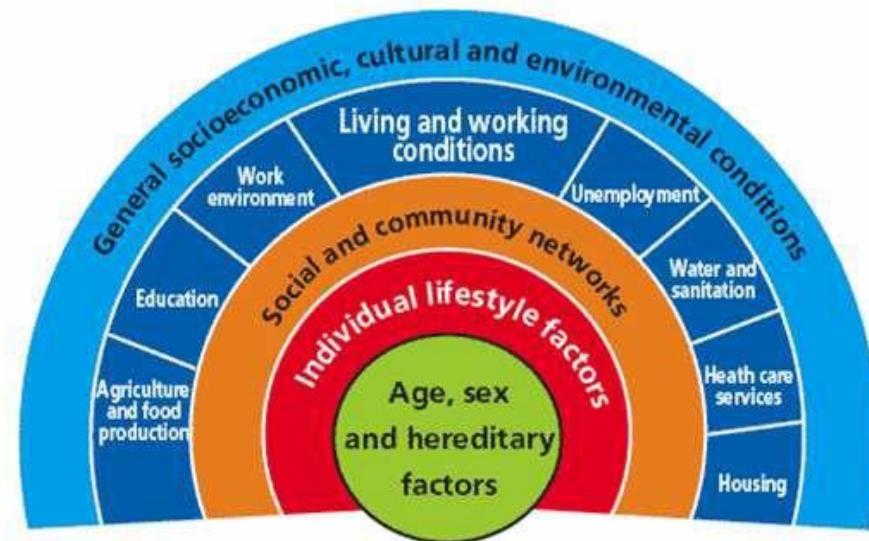
Figure 2-1: The Socio Environmental Model of Health and Wellbeing

2.4 OVERALL AIM OF THIS HIA

2.4.1 The overall aim of this HIA will be to identify the aspects of the LTP which have the potential to affect people's health, both directly and indirectly. Some effects may be positive, others could be negative.

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3 SCOPE AND METHODOLOGY

3.1 INTRODUCTION

3.1.1 A rapid desktop HIA was undertaken in March 2024. The key tasks for this HIA were as follows:

- Develop a summary health and wellbeing baseline and profile of the LCRCA area;
- Identify relevant evidence from literature; and
- Assess the potential health and wellbeing impacts of the LTP, and the nature and likelihood of such impacts.

3.2 SCOPE

3.2.1 STUDY AREA

3.2.2 This is a rapid, desk-based assessment of the direct and indirect health effects on local communities anticipated to result from the implementation of the ten themes and 22 proposed policies of the LTP. The geographic study area of this HIA is therefore the LCRCA area.

3.2.3 STUDY POPULATION

3.2.4 The population scope of this HIA includes the LCRCA region's resident population.

3.2.5 The main vulnerable groups within the population that have been considered are:

- Children and young people;
- Older people;
- People with disabilities and mobility impairment;
- People with existing health conditions;
- Unemployed and low-income groups; and
- Socially excluded or isolated groups.

3.2.6 DETERMINANTS OF HEALTH

3.2.7 The key determinants of health and wellbeing that have been considered are:

- Air Quality,
- Noise,
- Housing and Homelessness,
- Economy and employment,
- Skills and education,
- Social cohesion and community safety,
- Access to services,
- Physical activity,
- Green Infrastructure, and
- Climate change resilience.

3.2.8 BASELINE HEALTH PROFILE

3.2.9 The baseline and health profile of the LCRCA area have been compiled using existing, publicly available data, including:

- Office for Health Improvement & Disparities (OHID) Local Authority Health Profiles;

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- Office for National Statistics Labour Market Profiles (Nomis);
- Greater London Authority data; and
- PHE "Local Health" datasets.

3.2.10 APPRAISAL

3.2.11 The proposed five key goals were considered and assessed against each of the identified determinants of health, looking first at the baseline conditions of the study area population, evidence of how each determinant impacts human health, and the effect that the general principles and policies are likely to have on the health of the study area population, as presented in **Section 5**.

3.3 ASSUMPTIONS AND LIMITATIONS

3.3.1 At this stage it is difficult to assess the specific localised populations (e.g. at Ward level) who are more or less likely to be impacted by the proposed transport objectives. It has been assumed that specific projects that arise as a result of this LTP will be appropriately assessed to identify project-specific impacts on local populations.

Census 2021 data has been reported where available, otherwise the best available data has been used to inform the baseline. No significant changes or limitations in these datasets have been identified that would affect the robustness of the HIA.

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4 COMMUNITY AND PROFILE BASELINE

4.1 INTRODUCTION

4.1.1 Amongst the communities living in, and directly affected by, any changes brought about by the key themes or policies of the LTP, the proportion and profile of vulnerable groups, identified previously in **Section 3.2**, have been outlined below using publicly available data.

4.1.2 Community profile data has been used to express the status of vulnerable groups with respect to their vulnerable health status and/or deprivation. In some cases, Health Profile Indicators are implicit rather than explicit, where direct Health Profile Indicators were not available.

4.2 BASELINE

POPULATION

4.2.1 The total population of LCR in 2021 was 485,000. Of this figure, 236,400 or 48.7%% were female and 248,600 or 51.3%% were male[6].

4.2.2 The 2021 Census data indicates that the predominant ethnicity of LCR is White (84.0%), in broad keeping with regional and national trends. The proportion of the population that are Asian/British is notably lower in LCR (5.7%) than the North West (8.4%) and England (9.6%) respectively. The proportion of LCR's population which is composed of non-white ethnic groups is higher than the regional average (by 2%), but lower than the national average (by 3%)[7].

Table 4-1: Ethnicity of LCR Population 2021[7]

Ethnicity	Liverpool (%)	North West (%)	England (%)
White	84.0	85.6	81.0
Mixed/multiple ethnic groups	3.5	2.2	3.0
Asian/Asian British	5.7	8.4	9.6
Black/African/Caribbean/Black British	3.5	2.3	4.2
Other Ethnic Group	3.3	1.5	2.2

4.2.3 The 2021 Census data outlines the principle religious affiliations reflected in the population of LCR and how their proportions compare to national figures. The population of LCR is predominantly

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[6] Labour Market Profile - Labour Market Profile - Nomis - Official Census and Labour Market Statistics (nomisweb.co.uk)
[7] Nomis Labour Market Statistics - https://www.nomisweb.co.uk/query/select/getdatasetbytheme.asp?theme=93

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Christian (57.3%) with the second largest group identifying as having no religion (29.4%). These proportions broadly align with regional and national trends as demonstrated in **Table 4-2** below. Notably, LCR has a smaller Muslim Population (5.3%) than both the North West (7.6%) and England (6.7%) respectively[7].

Table 4-2: Religion of LCR Population 2021[7]

Religion	LCR (%)	North West (%)	England (%)
Christian	57.3	52.5	46.3
Buddhist	0.4	0.3	0.5
Hindu	0.8	0.7	1.8
Jewish	0.4	0.4	0.5
Muslim	5.3	7.6	6.7
Sikh	0.1	0.2	0.9
Other Religion	0.4	0.4	0.6
No Religion	29.4	32.6	36.7
Religion not stated	5.9	5.3	6.0

AGE

4.2.4   The age profile within LCR indicates that the population is composed of predominantly adults, with 67.4% of the population aged between 16-64. This is 4.9% higher than the regional figure, and 4.5% higher than the national figure[6]. Within this age band, the largest proportion of the population at 10.1% are aged between 20-24 years. This is approximately 4% higher than regional and national figures. Notably, LCR has a smaller proportion of those aged 65 and over than the North West and England, at only 15.3% compared to 18.4% and 18.7% respectively[7].

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Population age profile
Resident population 2020

Legend:
- ● Liverpool (Male)
- ● Liverpool (Female)
- — England
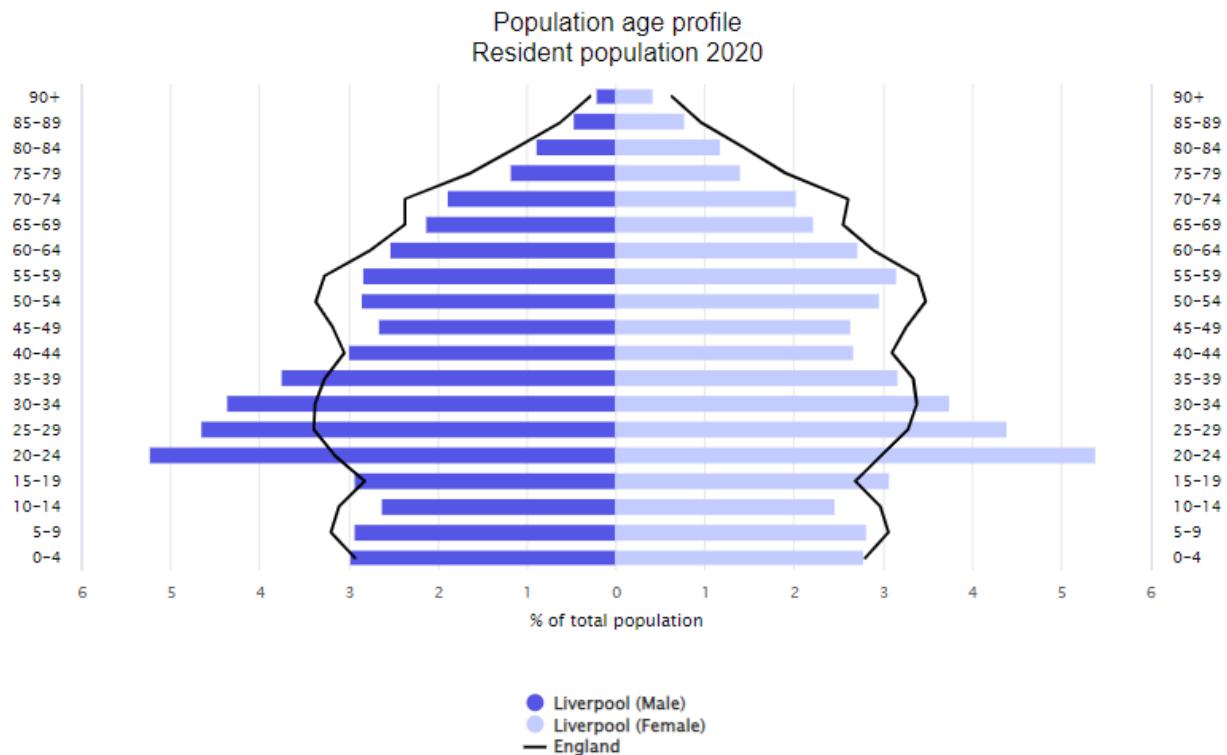
Figure 4-1: Population Age Profile of LCR 2020[8]

LIFE EXPECTANCY

4.2.5   Life Expectancy is the measure of the average number of years a person would expect to live in good health based on contemporary mortality rates and prevalence of self-reported good health. The prevalence of good health is derived from responses to a survey question on general health.

4.2.6   Life expectancy in LCR is, on average, lower than regional and national trends. As of April 2023, males in LCR had a life expectancy (three year range) of 75.3 years, lower than that of the regional life expectancy of 77.3 and the national life expectancy of 78.9 years. The same pattern can be noted for females in LCRCA who have a life expectancy of 79.3 years, which is marginally lower than the regional (81.7) and national (83.2) average[9].

4.2.7   There is significant variation within LCR's wards life expectancy for both males and females. **Table 4-3** details average life expectancy for specific wards in the borough. On average, life expectancy is highest in Church (at 83.4 for males and 85.3 for females) and lowest in Anfield (at 72.5 for males and 77.2 for females). There is some gendered variation in life expectancy within LCR, pointing to

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[8] Population Age Profile - Local Authority Health Profiles - Data - OHID (phe.org.uk)
[9] Life Expectancy - Local Authority Health Profiles - Data - OHID (phe.org.uk)

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significant differences in health and wellbeing between wards (though some variation may be attributable to the small population that these statistics are derived from). The largest intra-ward variation between male and female life expectancy is 6.1 years and comes from Princes Park. The greatest female variation in life expectancy between wards is 9.7 years and the greatest male variation is 10.9 years[9].

Table 4-3: Life Expectancy by Ward in LCR 2021[9]

Ward	Life Expectancy (Males)	Life Expectancy (Females)
Allerton and Hunts Cross	78.6	82.4
Anfield	72.5	77.2
Belle Vale	74.6	79.1
Central	74.4	78.5
Childwall	80.5	85.8
Church	83.4	85.3
Clubmoor	74.9	79.1
County	74.5	79.2
Cressington	78.8	81.5
Croxeth	74.4	78.9
Everton	72.9	77.8
Fazakerley	75.9	79.7
Greenbank	76.3	78.8
Kensington and Fairfield	74.1	77.8
Kirkdale	72.5	76.1
Knotty Ash	76.1	79.2
Mossley Hill	80.5	84.2

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Ward	Life Expectancy (Males)	Life Expectancy (Females)
Norris Green	75.0	78.7
Old Swan	75.3	79.2
Picton	74.6	80.2
Princes Park	73.2	79.3
Riverside	74.8	78.1
St Michael's	77.1	81.6
Speke-Garston	75.0	78.4
Tuebrook and Stoneycroft	75.6	79.3
Warbreck	76.6	80.7
Wavetree	78.0	82.8
West Derby	79.1	82.7
Woolton	80.5	83.3
Yew Tree	74.3	78.7

WEIGHT AND PHYSICAL ACTIVITY

4.2.8   In 2021/22 the proportion of adults (aged 18+) in LCR who were categorised as overweight or obese was 65.3%. This is lower than the regional figure of 66.7%, but slightly higher than the national figure of 63.8%[10].

The proportion of the adult population describing themselves as physically active within LCR is 64.9%. This is marginally lower than the proportion of the adult population describing themselves as physically active across the North West as a whole (65.2%), and notably lower than the England average of 67.3%[11]. The percentage of physically active adults varies across the LCR. Similar levels

[10] Adult Obesity Prevalence - Obesity Profile - Data - OHID (phe.org.uk)
[11] Physical Activity - Physical Activity - Data - OHID (phe.org.uk)

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to the national average of 66.3% are recorded in Liverpool (66.4%), however physical activity in Halton (62.8%), St. Helens (61.7%), Sefton (63.7%), Wirral (62.1%), and Knowsley (63.3%) are all significantly worse than the national average.

4.2.9   Obesity amongst children is measured through the National Child Measurement Programme (NCMP), which measures the weight and obesity level of both reception children (aged 4-5 years) and year 6 children (aged 10-11 years).

4.2.10   The prevalence of obesity among year 6 children in LCR was 26.5%, which is markedly higher than both the North West average of 22.7% and the England average of 21.5%. Among reception age children, the percentage of children deemed obese was 12.3%, which again is higher than the regional and national averages at 10.4% and 4.9% respectively[12]. Spatially, these children tend to be residing in more urban areas of the LCR where takeaways are more concentrated, such as central Liverpool, east Wirral and south Sefton.

LIFESTYLE

4.2.11   Smoking is a major risk factor for many diseases, such as lung cancer, chronic obstructive pulmonary disease (COPD) and heart disease, as well as being linked to cancers in other organs, including lip, mouth, throat, bladder, kidney, stomach, liver and cervix.

As of 2023, smoking prevalence among adults in the LCR (18 years) was 17.4%. This was significantly higher than both the national and regional averages at 14.7% and 13.6% respectively[13].

4.2.12   The number of COPD emergency hospital admissions in LCR in 2023 were higher than the regional and national figures at 825 per 100,00 as compared to 536 per 100,000 and 414 per 100,000[14].

4.2.13   Notably, the number of hospital admissions for alcohol-specific conditions was significantly higher in LCR (1,138 per 100,000) than the national and regional averages at 815 per 100,000 and 626 per 100,000 respectively. In accordance with this, the number of unintentional alcohol related injuries are high in LCR in comparison to the rest of England, at 70.0 per 100,000 compared to 50.8 per 100,000[14].

UNEMPLOYMENT/ECONOMY

4.2.14   According to data collated from October 2022 to September 2023, a total of 255,800 LCR residents are considered to be economically active (aged 16-64 years). The economically inactive population of LCR (including those who are students, retired, or temporary / long-term sick) is 85,000 people. At 37.1%, the largest proportion of economically inactive residents in LCR are students (around 10% higher than regional and national averages). As of 2021, unemployment in LCR was at 5.7%, which is notably higher than both the North West (3.6%) and the rest of England (3.7%)[6]. Since the Covid-

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[12] Child Obesity Prevalence - Obesity Profile - Data - OHID (phe.org.uk)
[13] Smoking prevalence -
https://fingertips.phe.org.uk/search/smoking#page/1/gid/1/pat/15/ati/501/are/E08000012/iid/91547/age/188/sex/4/cat/-1/ctp/-1/yrr/1/cid/4/tbm/1
[14] Hospital admissions -
https://fingertips.phe.org.uk/search/hospital%20admissions#page/1/gid/1/pat/6/ati/501/are/E08000012/iid/11201/age/1/sex/4/cat/-1/ctp/-1/yrr/3/cid/4/tbm/1

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19 Pandemic, however, LCR residents are now increasingly more likely to be in employment and less likely to be in economic inactivity. Between 2021 and 2022, the proportion of residents economically inactive fell from 28% to 22%. In line with this, the employment rate also rose from 65% to 75%.

4.2.15 LCR has a higher than average proportion of workers in high value occupations when compared to the rest of England. 56.7% of the population in LCR are employed in SOC 2010 Major Groups 1-3, including managerial and professional occupations. This is 4.6% higher than the regional average of 52.1%[6].

EDUCATION

4.2.16 The proportion of the population of LCR who have gained formal qualifications at the RQF level, is broadly in alignment with the national average, with the notable exception of a 4.4% increase in the proportion of the population having obtained RQF4 and Above compared to the rest of England[6]. Conversely, the proportion of people in LCR who have no formal qualifications is higher than both the regional and national averages. **Table 4-4** shows the percentages of the population in LCR with qualifications compared to North West and England averages.

Table 4-4: Qualification Level in LCR 2022[6]

Qualification	LCR (%)	North West (%)	England (%)
RQF4 and Above	50.1	42.6	45.7
RQF3 and Above	65.8	64.5	66.9
RQF2 and Above	83.6	85.3	85.8
RQF1 and Above	85.1	88.1	88.5
Other Qualifications	5.1	3.9	4.7
No Qualifications	9.8	8.0	6.8

HEALTH

4.2.17 The proportion of residents within LCR living with a long-term illness or health condition is 22.4%. This is 4.8% higher than the national average of 17.6%[15]. Prevalence of long-term illness varies greatly between wards as demonstrated below in **Table 4-5**. The lowest proportion of long-term illness comes from Central at 8.1%, and the highest prevalence of long-term illness can be found in Everton at 32.6%[9].

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[15] Long-term illness - Public health profiles - OHID (phe.org.uk)

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Table 4-5: Prevalence of Long-term Illness by Ward 2021[9]

Ward	Long-term Illness (%)
Allerton and Hunts Cross	21.9
Anfield	24.9
Belle Vale	29.3
Central	8.1
Childwall	17.9
Church	16.9
Clubmoor	28.4
County	25.2
Cressington	21.7
Croxeth	22.9
Everton	32.6
Fazakerley	21.8
Greenbank	14.4
Kensington and Fairfield	24.2
Kirkdale	28.7
Knotty Ash	25.5
Mossley Hill	17.6
Norris Green	26.7
Old Swan	24.3
Picton	20.0

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Ward	Long-term Illness (%)
Princes Park	23.9
Riverside	21.0
St Michael's	19.5
Speke-Garston	25.5
Tuebrook and Stoneycroft	23.5
Warbreck	22.1
Wavetree	19.8
West Derby	21.1
Woolton	23.0
Yew Tree	23.8

4.2.18   Suicide rates within areas can provide an indication of the current state of mental health of residents. The suicide rate within LCR is 12.3 per 100,000 people. This rate is marginally higher than the North West at 11.8 per 100,000 and notably higher than the rest of England at 10.3 per 100,000[16]. In keeping with regional and national averages, occurrence of suicide is higher in males than females in LCR, with a difference of 11.1 per 100,000.

Self-assessed general health within LCR indicates that although the majority of the population identify as being in a state of 'Very good health' there is a notably large proportion of the population also implying a lowered level of health. In 2021, 2% of the population of LCR reported themselves to be in a state of 'Very bad health'. This is higher than both the regional and national averages, at 0.8% and 0.6% respectively[7]. A similar pattern can be observed for 'Bad health', as shown below in **Table 4-6**.

Table 4-6: Self-reported General Health in LCR 2021[7]

General Health	LCR (%)	North West (%)	England (%)

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[16] Suicide Rates - Public health profiles - OHID (phe.org.uk)

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Very good health	47.7	48.5	47.7
Good health	30.9	33.7	32.7
Fair health	13.4	12.7	13.4
Bad health	6.0	4.0	4.8
Very bad health	2.0	1.2	1.4

INCOME

4.2.19 **Table 4-7** below exhibits the average gross hourly and weekly wages of residents in full-time employment within LCR, compared to both North West and England averages. Average wages of LCR residents in full-time employment are notably higher the North West average, but marginally lower (by £11.80 a week) than the rest of England[6].

Table 4-7: Average Gross Weekly and Hourly Earnings of Residents in LBTH 2023[6]

Earnings	LCR (£)	North West (£)	England (£)
Gross Weekly Earnings	670.8	646.3	682.6
Gross Hourly Pay	17.86	16.55	17.49

4.2.20 In LCR, the proportion of children (under 16 years) in relative low-income families is 26.3%. This is significantly higher than the North West average, at 18.0% and the England average at 17.0%[17]. The same trend applies for children (under 16 years) living in absolute low-income families, with LCR being 3.6% higher than the Northwest, and 4.9% higher than the rest of England.

DEPRIVATION

4.2.21 The Index of Multiple Deprivation (IMD) is the official measure of relative deprivation for small neighbourhoods in England[18]. IMD is used by local governments to focus programmes in the most deprived areas and develop strategies, such as the NLPR in RBKC.

4.2.22 In 2019, of the 298 Lower Super Output Areas (LSOAs) across LBTH, 216 were ranked within the 30% most deprived neighbourhoods and 34 were within the 40-50% of most deprived neighbourhoods. 26 LSOA's were within the 40-50% least deprived neighbourhoods, and 21 were

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[17] Children living in low-income families - Public health profiles - OHID (phe.org.uk)
[18] English Indices of Deprivation 2019: research report (publishing.service.gov.uk)

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within the 30-20% least deprived neighbourhoods. Only one LSOA's in LCR was ranked in the 10% least deprived neighbourhoods[19].

4.2.23 The most deprived LSOA's in LCR are located centrally in the city, and consist of the wards Anfield, County and Tuebrook and Stoneycroft.

4.2.24 The least deprived LSOA's in LBTH are located in the south of the city and consist of the wards Childwall, Mossley Hill and Church.

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[19] Indices of Deprivation 2015 and 2019 (communities.gov.uk)

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5 ASSESSMENT OF LTP POLICIES AND DELIVERY PLAN

5.1 INTRODUCTION

5.1.1 The policies of the LTP have been reviewed and assessed against the key determinants of health, previously outlined, to identify potential effects within the study area population.

5.1.2 Policies have been split by their five overarching goals for ease of assessing, as follows:

- Support good, clean job growth and opportunity for all;
- Achieve net-zero carbon and an improved environment;
- Improve health, safety and quality of life;
- Transport that's well maintained and tough; and
- Plan and respond to uncertainty and change and be innovative.

5.2 SUPPORT GOOD, CLEAN JOB GROWTH AND OPPORTUNITY FOR ALL

ASSESSMENT SUMMARY

5.2.1 The assessment identified the following social groups that could be affected by 'Support Good, Clean Job Growth and Opportunity For All' policies:

- Infants/children;
- Young people in education;
- The elderly;
- Low income groups; and
- Women and girls.

5.2.2 The 'Support Good, Clean Job Growth and Opportunity For All' policies aim to create equal opportunities for all to access affordable transport systems that connect people to jobs and services, whilst also being considerate of the environment. This goal is anticipated to bring about a high degree of positive effects across numerous social groups.

5.2.3 The improved connectivity (particularly inter-regionally) will enable greater access to employment, education, and services for all residents. Additionally, the support packages proposed under this goal will work to make travel affordable and convenient for groups including young people, the elderly and those with low income. Accessibility improvements of this nature will generate positive effects for the health and wellbeing of residents.

5.2.4 Alternative improvements to the transport network will target community safety. A better serviced transport network will reduce reliance on walking late at night, which will be particularly beneficial for women and girls who experience feelings of fear in this space currently. Safety could, however, be compromised by the increased ease and convenience of e-scooters. Such improvements will encourage inexperienced users onto the roads resulting in a higher occurrence of road traffic accidents.

5.2.5 Finally, strategic housing locations in line with transport improvements will create better housing opportunities for all, especially those who cannot afford to live in a disconnected area.

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SUPPORT GOOD, CLEAN JOB GROWTH AND OPPORTUNITY FOR ALL - ASSESSMENT

Table 5-1 below presents the assessment for 'Support Good, Clean Job Growth and Opportunity For All' policies.

Table 5-1: 'Support Good, Clean Job Growth and Opportunity For All' Policy Assessment

Determinant of Health	Assessment
Air Quality	By promoting active travel as a first choice option for residents, LCRCA indirectly supports the reduction of emissions through this goal. Associated improvements to local air quality will generate health benefits for all residents, especially infants and children particularly vulnerable to pollutants.
Noise	The policies outlined within this goal are unlikely to directly impact upon noise within LCR.
Housing and Homelessness	The consideration of strategic housing sites in the specification of enhanced active travel, bus and rail links will support convenient and advantageous housing for residents. This is particularly beneficial for low-income groups who are unable to afford the costs of a private vehicle necessary to live in an area poorly connected to employment and other services. The policies outlined within this goal are unlikely to directly impact upon homelessness within LCR.
Economy and employment	Inter-regional accessibility will enable more residents to access employment in the wider area. This improved opportunity for income generation will not only support individual health and wellbeing but contribute positively to the economy allowing further investment into resident wellness. Fast, frequent and reliable connections between economic centres for people, businesses and goods will also bolster economic growth. Additionally, support packages geared towards supporting those struggling to access work by providing financial relief will aid individuals in seeking out employment.
Skills and education	Travel support packages will alleviate barriers relating to cost that young people currently face when accessing education. Lower or free cost tickets will make travel more affordable and education more obtainable, leading to happier and healthier lives for young people.

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Social cohesion and community safety	Improvements to the transport network in ways that reduce sub-optimal travel (e.g. walking along dark streets at night) will be beneficial to the overall safety of the community, especially women and girls who experience feelings of fear in these spaces. The increased ease and affordability of e-scooter usage through Policy G1-3 may generate an increase in road traffic accidents as uptake by inexperienced users could lead to greater incidence and injuries on the roads, posing a threat to community safety.
Access to services	The transport and spatial planning integrated approach outlined under Policy G1-1 and G1-2 will ensure homes, shops, workplaces, schools and facilities are strategically located and accessible via public and active travel. Ensuring key areas of growth are well serviced by bus and rail will result in positive health outcomes for residents with a need to access services regularly, including the elderly and expectant mothers. In a broader sense, consideration to cross-boundary travel and inter-regional accessibility will make additional positive contributions.
Physical activity	Policy G1-1 will prioritise plans supporting the transport hierarchy, including positioning active travel modes such as walking and cycling as first choice travel options for people of all ages and abilities. Higher levels of physical exercise through engagement with active travel will boost the overall physical and mental wellbeing of the population.
Green Infrastructure	The policies outlined within this goal are unlikely to directly impact upon green infrastructure within LCR.
Climate change resilience	The policies outlined within this goal are unlikely to directly impact upon climate change resilience within LCR.

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5.3 ACHIEVE NET-ZERO CARBON AND AN IMPROVED ENVIRONMENT

ASSESSMENT SUMMARY

5.3.1 The assessment identified the following social groups that could be affected by 'Achieve Net-Zero Carbon and an Improved Environment' policies:

- Infants/children;
- Young people in education; and
- The elderly.

5.3.2 The 'Achieve net-zero carbon and an improved environment' policies set an aim to reach net-zero carbon emissions by 2035 or sooner, whilst protecting and improving the local environment. This goal is anticipated to bring about a high degree of positive effects across numerous social groups.

5.3.3 Notably, improvements to air quality via emissions reductions will be generated under this goal. Measures including the modal shift from private vehicle to public transport usage, decarbonisation of freight, and proposal assessment based on demonstration of carbon reduction potential will all contribute to a lessening of harmful pollutants in the local environment, and subsequent generation of positive health outcomes for all residents.

5.3.4 The car club scheme will be beneficial to those young people and working age looking for entry into education and employment respectively. Representing a new option for transport in the city, the scheme offers all the benefits of private vehicle usage, without the same degree of adverse financial or environmental costs whilst enabling greater engagement in income generating activities. This will positively contribute to the overall health and wellbeing of young and working age residents in the city region. Additionally, the scheme holds potential to promote socialisation opportunities for elderly groups experiencing loneliness and feelings of isolation, bringing about a greater sense of community cohesion in the city region.

5.3.5 Finally, with the modal shift away from private vehicles placing a strong emphasis on active travel uptake, physical exercise levels are likely to increase with engagement in walking and cycling. Higher levels of physical exercise will in turn boost the overall physical and mental wellbeing of the population.

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Achieve Net-Zero Carbon and an Improved Environment - ASSESSMENT

Table 5-2 below presents the assessment for 'Achieve Net-Zero Carbon and an Improved Environment' policies.

Table 5-2: 'Achieve Net-Zero Carbon and an Improved Environment' Assessment

Determinant of Health	Assessment
Air Quality	Under this goal, all transport proposals will be assessed on their ability to reduce carbon, with plans demonstrating a significant reduction in carbon emissions being viewed favourably. Emissions reductions works to improve overall air quality will result in positive health and wellbeing benefits for all residents, especially infants and children particularly vulnerable to pollutants. Decarbonising freight and logistics activities under Policy G2-6 including the uptake of clean, sustainable fuels will also generate improvements to the local air quality, generating the same positive health outcomes as outlined above. The modal shift from private vehicle usage to public transport including bus and rail (including the introduction of hydrogen fuelled buses) as well as car club schemes will also contribute to emission reductions and positive health outcomes. Notably, it is not just carbon being tackled by this goal, but other harmful pollutants including nitrogen dioxide that will be reduced via the modal shift to electrical or sustainably fuelled vehicles.
Noise	The policies outlined within this goal are unlikely to directly impact upon noise within LCR. Reduced private vehicle usage and associated congestion may alleviate noise pollution in city centre areas.
Housing and Homelessness	The policies outlined within this goal are unlikely to directly impact upon housing and homelessness within LCR.
Economy and employment	Economic competitiveness is indirectly bolstered through reduced congestion on key network routes. A safer, more attractive public space as well as more efficient and reliable freight journeys will support good economic growth in the city region. Equally, the additional transport option provided through the car club

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Determinant of Health	Assessment
	scheme may also help support employment and income generation for individuals, contributing to overall health and wellbeing.
Skills and education	The introduction of car club schemes will support access to education for young people across the city region by providing an additional option of transportation. Educational attainment will improve opportunities for employment and income generation later on in life, having a positive effect on the health and wellbeing of this group.
Social cohesion and community safety	The alleviation of congestion under Policy G2-1 will work to improve community safety in the city region. Fewer private vehicles on the roads will lessen the risk of road traffic accidents. Equally, solutions to capacity and overcrowding problems at Liverpool Central Station and in the wider network will foster feelings of elevated safety and comfort when making use of transport services.
	The introduction of the car club scheme will bring groups together for the purpose of travel and has the potential to alleviate feelings of loneliness in the elderly population of the city region.
Access to services	By targeting issues of connectivity across the wider city region and working to join up key areas, access to services will be improved. This will be beneficial to the health and wellbeing of those residents with a need to access services regularly, including the elderly and expectant mothers.
Physical activity	The modal shift away from private vehicle usage places a strong emphasis on the uptake of active travel. By prioritising pedestrian and cyclist network users through the creation of dedicated walking and cycling routes, residents will be encouraged to engage in active travel on a more regular and utilitarian basis. Higher levels of physical exercise through engagement with active travel will boost the overall physical and mental wellbeing of the population. Additionally, integrating active travel with the wider network (e.g. joining up walking routes to key transport stations) will encourage uptake further.
Green Infrastructure	The policies outlined within this goal are unlikely to directly impact upon green infrastructure within LCR.

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Determinant of Health	Assessment
Climate change resilience	The policies outlined within this goal are unlikely to directly impact upon climate change resilience within LCR.

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5.4 IMPROVE HEALTH AND QUALITY OF LIFE

ASSESSMENT SUMMARY

5.4.1 The assessment identified the following social groups that could be affected by 'Improve health and quality of life All' policies:

- Infants/children;
- The elderly;
- Low income groups; and
- Women and girls.

5.4.2 The 'improve health and quality of life' policies aim to improve the health and quality of life for individual and communities across the city region. This includes ensuring transport is safe, clean and good for the environment and those around us. Whilst this goal only focuses in on a small selection of health determinants, positive effects are still anticipated to be widespread.

5.4.3 Improvements to community safety and social cohesions are anticipated through this goal. The "Vision Zero" for no avoidable deaths or serious injuries by 2040 sets into motion the designing out of dangerous road layouts and implementation of a safe systems approach that will ultimately improve community safety and foster happier, healthier lives. Bikability training for children is also a notable aim in relation to safety, supporting children and young people's safe and healthy entry onto the highways. Safety is also considered through the approach to designing out crime and antisocial behaviour at waiting and interchange spaces. Creating well-lit, inviting spaces will foster feelings of safety and comfort for all users, especially those women and girls who experience existing feelings of fear.

5.4.4 Community cohesion is also covered in detail under this goal. The intended retention of staff at railway stations will ensure a physical presence across the transport network. By supporting in-person interactions, the goal will be particularly beneficial to the mental health of those residents experiencing feelings of loneliness and isolation, especially the elderly.

5.4.5 Through improvement of public spaces and their attractiveness to walkers and cyclists, engagement with active travel is encouraged under this goal, therefore boosting physical activity levels across the city region. By building physical activity into the day to day lives of residents, the need to expend financial resources on physical activity is lessened, which is particularly beneficial to those low income groups who may struggle to afford paid activity. Increased accessibility to physical activity will improve the mental and physical wellbeing of the population.

5.4.6 Finally, improvements to air quality via pollutant reductions will be generated under this goal. Notably, the shift away from private vehicle usage and towards public transport and active travel will contribute to a lessening of harmful pollutants in the local environment, and subsequent generation of positive health outcomes for all residents, including those infants and young children particularly vulnerable to it.

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IMPROVE HEALTH, SAFETY AND QUALITY OF LIFE - ASSESSMENT

Table 5-3 below presents the assessment for 'Improve Health, Safety and Quality of Life' policies.

Table 5-3: 'Improve Health and Quality of Life' Assessment

Determinant of Health	Assessment
Air Quality	A fundamental aim under this set of policies is to eliminate harmful pollutants at the source in ways that improve air quality. Whilst Goal 2 centres around carbon emission reduction, the 'Improve Health and Quality of Life' policies also considers other pollutants, especially nitrogen dioxide from vehicles engines. The modal shift away from petrol and diesel cars towards electric vehicles will be a key factor in meeting this goal. Additionally, encouragement of public transport and active travel uptake will positively contribute to pollutant reduction across the city region. The reduction of all pollutants will improve overall air quality, resulting in positive health and wellbeing benefits for all residents, especially infants and children particularly vulnerable.
Noise	The policies outlined within this goal are unlikely to directly impact upon noise within LCR. Indirectly, the reduction in congestion on key highways across the city region due to the modal shift away from private vehicle usage may reduce noise pollution on key routes.
Housing and Homelessness	The policies outlined within this goal are unlikely to directly impact upon housing and homelessness within LCR.
Economy and employment	The policies outlined within this goal are unlikely to directly impact upon economy and employment within LCR.
Skills and education	The policies outlined within this goal are unlikely to directly impact upon skills and education within LCR.

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Determinant of Health	Assessment
Social cohesion and community safety	The "Vision Zero" for no avoidable deaths or serious injuries on the city region's roads by 2040 reinforces a clear vision to achieve a significant reduction in the number and severity of road traffic accidents. This will work through designing out dangerous road layouts and implementing a safe systems approach, to empower users to safely navigate areas whilst reducing danger and therefore casualty rates. Low traffic neighbourhoods which remove through traffic and reduce volumes and the speed of motor traffic are a good example of applying a safe systems approach. Efforts towards this initiative would significantly improve community safety, leading to happier and healthier lives for residents. Bikability training will be especially beneficial, using educational measures to support all people's safe and healthy entry onto the highways.

Policy G3-4 is geared towards designing out the risk of crime and antisocial behaviour, including creating inviting spaces for people waiting or interchanging between different forms of travel. Creating transport corridors and points that are well-lit, well designed, and inviting will foster feelings of safety and comfort among users, especially women and girls who experience feelings of fear in these spaces currently. Improved safety will boost overall mental health of residents.

Policy G3-4 also implies the retention of staff at railway stations and ensuring a physical presence across the transport network is not totally eradicated under the digitisation of travel. Support in-person interactions will foster community cohesion and be particularly beneficial to the mental wellbeing of those residents experiencing feelings of loneliness and isolation, especially the elderly. Ensuring an in-person presence will also boost feelings of safety.

Additionally, improvements to public realm and street furniture as part of a package aimed at reducing the speed, volume and dominance of traffic under this goal will also positively contribute towards increased feelings of community safety across the city region. |
| Access to services | The policies outlined within this goal are unlikely to directly impact upon access to service within LCR. |
| Physical activity | By making highways and other spaces used by the public safe and attractive for pedestrians and cyclists as a first priority, Policy G3-2 will encourage the uptake of active travel by all able residents. A shift towards active travel through improving its attractiveness as a travel option will increase resident's day to day activity levels, therefore boosting physical and mental health. Notably, by |

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Determinant of Health	Assessment
	building physical activity into utilitarian aspects of residents lives the policy also alleviates the need for formal, paid activity (such as using a gym) which may be financially inaccessible to many. The increased access to physical activity without any additional cost brought about under this goal will be beneficial to many. Additionally, the specific attention given to horse riders under Policy G3-2 through the accommodation of shared user paths will not only support existing riders in continuing to access physical activity in this way, but will also increase the viability of horse riding as an option for physical activity by those previously put off by perceived and real experiences of sub-optimal safety.
Green Infrastructure	The policies outlined within this goal are unlikely to directly impact upon green infrastructure within LCR. Improvements to the public realm suggested under Policy G3-2 include planting, which may involve elements of green infrastructure.
Climate change resilience	The policies outlined within this goal are unlikely to directly impact upon climate resilience within LCR.

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5.5 TRANSPORT THAT'S WELL MAINTAINED AND TOUGH

ASSESSMENT SUMMARY

5.5.1 The assessment identified the following social groups that could be affected by 'Transport That's Well Maintained and Tough' policies:

- Young people; and
- The elderly.

5.5.2 The ''Transport That's Well Maintained and Tough' policies set an aim make sure the city region transport network and assets are well maintained, long lasting, and tough to the effects of climate change. Whilst this goal is anticipated to bring about positive effects, the determinants of health and social groups affected are not as broad as other goals.

5.5.3 In designing transport systems that are resilient to the effects climate change as well as retrofitting existing infrastructure to include features equipped to manage weather events such as heat, wind and storm surges, this goal ensures the efficient operation of the city regions transport system into the future. In improving public transport in this way, the shift away from private vehicle usage is facilitated, bringing improvements to air quality, congestion, safety, and physical activity, which all positively contributing to the health and wellness of the population.

5.5.4 In addition, the introduction of green infrastructure through this policy will not only support carbon reduction goals but encourage residents to make use of outdoors spaces for both travel and socialisation, having a positive effect on the health and wellness of young people and the elderly in particular.

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TRANSPORT THAT'S WELL MAINTAINED AND TOUGH - ASSESSMENT

Table 5-4 below presents the assessment for 'Transport That's Well Maintained and Tough' policies.

Table 5-4: 'Transport That's Well Maintained and Tough' Assessment

Determinant of Health	Assessment
Air Quality	The policies outlined within this goal are unlikely to directly impact upon air quality within LCR.
Noise	The policies outlined within this goal are unlikely to directly impact upon noise within LCR.
Housing and Homelessness	The policies outlined within this goal are unlikely to directly impact upon housing and homelessness within LCR.
Economy and employment	The policies outlined within this goal are unlikely to directly impact upon economy and employment within LCR.
Skills and education	The policies outlined within this goal are unlikely to directly impact upon skills and education within LCR.
Social cohesion and community safety	The policies outlined within this goal are unlikely to directly impact upon social cohesion within LCR. The implementation of green infrastructure across the city region may indirectly encourage socialisation in outdoors spaces, positively contributing to health and wellbeing. Community safety is likely to benefit from the maintenance and increased resilience of infrastructure, reducing risk of physical harm during severe weather events. Systems efficiencies and safe operations will be bolstered, allowing residents to make use of them with ease and convenience. Transport assets (such as trains and buses) and associated infrastructure (waiting areas, travel corridors) are captured under this goal. This way, users are protected at all stages in their journey. Walkways that are covered and protected from the elements for instance, will encourage residents to make use of public transport and its associated infrastructure even during adverse conditions.

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Determinant of Health	Assessment
Access to services	The policies outlined within this goal are unlikely to directly impact upon access to services within LCR.
Physical activity	Through maintaining footways, cycleways, and public rights of way, Policy G4-1 will indirectly support the uptake of active travel and therefore physical activity. Residents will be more inclined to walk or cycle if the route is safe and comfortable, meaning good maintenance will support physical activity levels and overall physical and mental wellbeing of residents.
Green Infrastructure	Under Policy G4-3, existing transport infrastructure will be retrofitted and incorporate green infrastructure to help mitigate impacts of climate change on the transport network. Additionally, the complementary Local Nature Recovery Strategy will inform opportunities for nature recovery when implementing nature-based solutions across the city region. A greener city region will positively contribute to the mental and physical wellbeing of all residents. Equally, encouragement to get out in nature under this policy could indirectly boost socialisation in outdoor spaces, which will be particularly beneficial to the health and wellbeing of young people looking to grow their network and the elderly who may experience feelings of loneliness currently. Policy G4-2 will actively support new methods and technologies that absorb carbon and support wider biodiversity and nature recovery plans in ways that make areas feel safer and more attractive for people. For instance, the installation of green roofs and wildflower planting. As above, an increasingly green area with the additional benefit of reduced carbon with be beneficial to the health of all residents.
Climate change resilience	In committing to work with the rail industry to improve the systems resilience against changing weather patterns (brining high winds, flooding and ice) this goal encompasses measures to support climate change resilience in the city regions transport system. In doing so, systems efficiencies and safe operations will be bolstered, allowing residents to make use of them with ease and convenience. By improving public transport in this way, the shift away from private vehicle usage is facilitated, bringing improvements to air quality, congestion, safety, and physical activity, all positively contributing to the health and wellness of the population. Importantly, both transport assets (trains, buses) and associated infrastructure (waiting areas, travel corridors) are captured under this goal. This way, users are protected at all stages in their journey. Walkways that are covered and protected from the elements for instance,

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Determinant of Health	Assessment
	will encourage residents to make use of public transport and its associated infrastructure even during adverse conditions.
	Under Policy G4-1, new infrastructure assets should be designed, built and operated in anticipation of the effects of climate change they may face in their lifetime. Equally, existing infrastructure should be retrofitted with appropriate measures to ensure that threats including heat, wind, storm surges and precipitation are well managed, allowing the continual use of the city regions transport network through challenging weather events.

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5.6 PLAN AND RESPOND TO UNCERTAINTY AND CHANGE AND BE INNOVATIVE

ASSESSMENT SUMMARY

5.6.1 The assessment identified the following social groups that could be affected by 'Plan and Respond to Uncertainty and Change and be Innovative' policies:

- Low income groups; and
- Women and girls;

5.6.2 The 'Plan and Respond to Uncertainty and Change and be Innovative' policies are centred around making the city region more forward-thinking. They encourage the use of innovation and new technologies, as well as planning for uncertainty and change with a view to improve future travel in the region. This goal brings specific advantages for economic efficiency, and road safety improvements.

5.6.3 Through both testing plans and proposals against a range of uncertain futures and trialling new developments before rolling out a programme of full implementation, this goal aims to avoid overspending on unproven technologies. In doing so, funding for alternative purposes in the transport network (including for reduced ticket cost for low income groups) is protected in the long term. By ensuring this groups continued use of the transport network, health and wellness is assured under this goal.

5.6.4 Road safety through technological innovation is also captured under this goal. Improved digital connectivity will alleviate feelings of fear (especially for women and girls) when using public transport by connecting users to family and friends. Additionally, general improvements to existing safety measures such as road safety cameras will positively contribute to the overall safety and wellbeing of users.

5.6.5 Finally, innovation required under this goal will likely generate new employment opportunities across the city region. Increased employment and subsequent income generation will support the healthy living of individuals taking up roles in this sector.

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PLAN AND RESPOND TO UNCERTAINTY AND CHANGE AND BE INNOVATIVE - ASSESSMENT

Table 5-5 below presents the assessment for 'Plan and Respond to Uncertainty and Change and be Innovative' policies.

Table 5-5: 'Plan and Respond to Uncertainty and Change and be Innovative' Assessment

Determinant of Health	Assessment
Air Quality	Policy G5-3 facilitates the transition from petrol and diesel vehicles to electric and other sustainable fuels. Additionally, the rollout of electric vehicles will be supported by on-street low powered chargers and a high capacity hub charger. Support of this modal shift indirectly benefits air quality in the city region, reducing carbon emissions and harmful pollutants, and improving the health and wellbeing of all residents.
Noise	The policies outlined within this goal are unlikely to directly impact upon noise within LCR.
Housing and Homelessness	By committing to a public charging network for electric vehicles, Policy G5-3 will support the development of homes with maximised living space, instead of using up available household space for charging infrastructure. Being able to use space for planting as opposed to charging for instance will improve the health and wellbeing of residents who will directly benefit from a greener environment.
Economy and employment	By testing new plans and proposals against a range of uncertain future scenarios (including varying economic states), and trialling schemes for a short period of time before full roll-out, this goal ensures the developing transport system across the city region will be resilient to future changes. A resilient system is one that supports the health and wellbeing of its users. The uncertain future angle posed under this goal also facilitates a consideration of making best use of existing assets before building new, potentially a more cost-effective way of developing the transport system. This approach will reduce the risk of overspending on unproven technology and improve the existing transport system for current users in the present day. Additionally, testing and trialling various schemes including e-scooters and battery powered trains on a small scale prior to city-wide rollout is a cost effective way to assess the effectiveness of the scheme before investing heavily in its implementation. By reducing the risk of overspending on unproven schemes, funding for alternative purposes in the transport network (including for reduced ticket cost

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Determinant of Health	Assessment
	for low income groups) is protected in the long term. By ensuring this groups continued use of the transport network, health and wellness is assured under this goal. This goal also supports the implementation of money saving schemes including car clubs and ride sharing apps, which will positively contribute to health outcomes for low income groups.
Skills and education	Goal 5 focuses on innovation and technological advancement in relation to transport will likely generate a new sector for upskilling and future employment across the city region. A newly trained workforce will be required to exploit technology in ways that allows the local transport plans goals to be met, and this can help towards boosting educational engagement and future employment across the city. Increased employment and subsequent increased income generation will support the healthy living of individuals being trained and taking up roles in this sector.
Social cohesion and community safety	Improved digital connectivity across the travel network under Policy G5-3 will positively contribute to community safety in the city region. Especially for women and girls, public transport can be an uncomfortable and fearful setting. The introduction of better connection will alleviate feelings of fear by facilitating communication between family and friends whilst travelling. Technological innovation will also play a key role in reducing road traffic accidents across the city region. Improvements to existing road safety measures such as road safety cameras will boost feelings of safety for road users, positively contributing to overall health and wellbeing.
Access to services	The policies outlined within this goal are unlikely to directly impact upon access to services within LCR.
Physical activity	The policies outlined within this goal are unlikely to directly impact upon physical activity within LCR.
Green Infrastructure	The policies outlined within this goal are unlikely to directly impact upon green infrastructure within LCR.

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Determinant of Health	Assessment
Climate change resilience	The policies outlined within this goal are unlikely to directly impact upon climate resilience within LCR.

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5.7 DELIVERY PLAN

5.7.1 The assessment identified the following social groups that could be affected by the short-, medium- and long-term objectives included within the Delivery Plan:

- Infants/children;
- Young people in education;
- The elderly;
- Low income groups; and
- Women and girls.

5.7.2 The short-, medium- and long-term objectives aim to create equal opportunities for all to access transport systems that connect people to jobs and services, whilst also being considerate of the environment. This is anticipated to bring about a high degree of positive effects across numerous social groups.

5.7.3 The improved connectivity (particularly inter-regionally) will enable greater access and convenience to employment, education, and services for all residents. Accessibility improvements will also generate positive effects for the health and wellbeing of residents.

5.7.4 Alternative improvements to the transport network will target community safety. A better serviced transport network will reduce reliance on walking late at night, which will be particularly beneficial for women and girls who experience feelings of fear in this space currently.

5.7.5 Finally, place-based allocations to support key investment sites and aligned to housing pipeline will create better opportunities for all, especially those who cannot afford to live in a disconnected area.

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SHORT TERM - ASSESSMENT

Table 5-7 below presents the assessment for the 'Short term' objectives.

Table 5-7 - 'Short Term Objectives' Assessment

Determinant of Health	Assessment
Air Quality	Under the short term objectives, transport measures aim to reduce carbon emissions by promoting active travel and sustainable transport. Reduction in carbon emissions will improve overall air quality across the region, resulting in positive health and wellbeing benefits for all residents, especially infants and children particularly vulnerable to pollutants. The modal shift from private vehicle usage to public transport including bus and rail alongside the rollout of electric vehicle infrastructure will contribute to emission reductions and positive health outcomes. Support of this modal shift indirectly benefits air quality in the city region, reducing carbon emissions and harmful pollutants, and improving the health and wellbeing of all residents. Notably, it is not just carbon being tackled by this goal, but other harmful pollutants including nitrogen dioxide that will be reduced via the modal shift to electrical or sustainably fuelled vehicles.
Noise	The policies outlined within this goal are unlikely to directly impact upon noise within LCR. Reduced private vehicle usage and associated congestion may alleviate noise pollution in city centre areas and key routes.
Housing and Homelessness	By improving the public charging network for electric vehicles, the short term objectives will support the development of homes with maximised living space, instead of using up available household space for charging infrastructure. Being able to use space for planting as opposed to charging for instance will improve the health and wellbeing of residents who will directly benefit from a greener environment.
Economy and employment	Under the short term objectives, funding schemes aim to improve connectivity by sustainable travel to key destinations and opportunities across the city region, as well as improving the attractiveness and quality of active travel, bus and rail options. A more joined up city region will enable greater access to

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	education, employment, and services which will positively benefit the local economy and employment market. Investment in travel infrastructure is likely to lead to more fast, frequent and reliable connections between economic centres for people, businesses and goods and will bolster economic growth.
Skills and education	Improved connectivity across the region will support access to education for young people by providing an additional option of transportation. Educational attainment will improve opportunities for employment and income generation later on in life, having a positive effect on the health and wellbeing of this group.
Social cohesion and community safety	Schemes included in the short term objectives that improve highways, such as pothole repair funding, will likely help reduce road traffic accidents, improving overall safety across the City Region. Encouraging a modal shift away from cars to active transport will also help to reduce the number of cars on the road and therefore, the number of accidents. Additionally, improving existing connections and increasing the frequency and reliability of transport connections will improve feelings of safety, especially during the evening, at night, and in the dark.
Access to services	Improvements to public transport and active travel infrastructure will likely increase accessibility to employment, education and local facilities, especially if focused on areas that are currently poorly served by public transport services. This will particularly benefit those people that cannot drive such as the elderly, those with disabilities and younger people. By increasing the attractiveness and accessibility of these options, residents will not be so reliant on private vehicle usage - a particular benefit to those who are unable to access private transport in the first instance. Ensuring key areas of growth are well serviced by bus and rail will result in positive health outcomes for residents with a need to access services regularly, including the elderly and expectant mothers. In a broader sense, consideration to cross-boundary travel and inter-regional accessibility will make additional positive contributions.
Physical activity	By making highways and other spaces used by the public safe and attractive for pedestrians and cyclists as a first priority, residents will be more likely to consider active travel. A shift towards active travel through improving its attractiveness as a travel option will increase resident's day to day activity

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Determinant of Health	Assessment
	levels, therefore boosting physical and mental health. Notably, by building physical activity into utilitarian aspects of residents lives the policy also alleviates the need for formal, paid activity (such as using a gym) which may be financially inaccessible to many. The increased access to physical activity without any additional cost brought about under this goal will be beneficial to many.
Green Infrastructure	The policies outlined within this goal are unlikely to directly impact upon green infrastructure within LCR.
Climate change resilience	Schemes included in the short term objectives that focus on carbon reduction and promotion of a modal shift from cars to public transport, walking and cycling are beneficial to climate change resilience due to reducing reliance on fossil fuels, reducing greenhouse gas emissions and other harmful pollutants, and improving air quality.

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MEDIUM TERM - ASSESSMENT

Table 5-8 below presents the assessment for the 'Medium term' objectives.

Table 5-8: 'Medium Term Objectives' Assessment

Determinant of Health	Assessment
Air Quality	Under the medium term objectives, transport measures aim to reduce carbon emissions by promoting active travel and sustainable transport. Reduction in carbon emissions will improve overall air quality across the region, resulting in positive health and wellbeing benefits for all residents, especially infants and children particularly vulnerable to pollutants. The modal shift from private vehicle usage to public transport including bus and rail alongside the rollout of electric vehicle infrastructure will contribute to emission reductions and positive health outcomes. Support of this modal shift indirectly benefits air quality in the city region, reducing carbon emissions and harmful pollutants, and improving the health and wellbeing of all residents. Notably, it is not just carbon being tackled by this goal, but other harmful pollutants including nitrogen dioxide that will be reduced via the modal shift to electrical or sustainably fuelled vehicles.
Noise	Due to the nature of projects largely promoting active and sustainable transport modes, it is likely to encourage a modal shift away from private vehicle use, reducing road noise, congestion, and vehicle idling times. However, there is also the potential for increased noise and vibration associated with the proposed three new rail stations. These type of schemes may have localised negative effects upon noise which would require further consideration at project level.
Housing and Homelessness	Under the medium term objectives, place-based allocations to support key investment sites and aligned to housing pipeline will support convenient and advantageous housing for residents. This is particularly beneficial for low-income groups who are unable to afford the costs of a private vehicle necessary to live in an area poorly connected to employment and other services. The policies outlined within this goal are unlikely to directly impact upon homelessness within LCR.
Economy and employment	Under the medium term objectives, funding schemes aim to improve connectivity by sustainable travel to key destinations and opportunities across the city region, as well as improving the attractiveness

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Determinant of Health	Assessment
	and quality of active travel, bus and rail options. A more joined up city region will enable greater access to education, employment, and services which will positively benefit the local economy and employment market. Investment in travel infrastructure is likely to lead to more fast, frequent and reliable connections between economic centres for people, businesses and goods and will bolster economic growth.
Skills and education	Improved connectivity across the region will support access to education for young people by providing an additional option of transportation. Educational attainment will improve opportunities for employment and income generation later on in life, having a positive effect on the health and wellbeing of this group.
Social cohesion and community safety	Schemes included in the medium term objectives that improve highways will likely help reduce road traffic accidents, improving overall safety across the City Region. Encouraging a modal shift away from cars to active transport will also help to reduce the number of cars on the road and therefore, the number of accidents. Additionally, improving existing connections and increasing the frequency and reliability of transport connections will improve feelings of safety, especially during the evening, at night, and in the dark.
Access to services	Improvements to public transport and active travel infrastructure will likely increase accessibility to employment, education and local facilities, especially if focused on areas that are currently poorly served by public transport services. This will particularly benefit those people that cannot drive such as the elderly, those with disabilities and younger people. By increasing the attractiveness and accessibility of these options, residents will not be so reliant on private vehicle usage - a particular benefit to those who are unable to access private transport in the first instance. Ensuring key areas of growth are well serviced by bus and rail will result in positive health outcomes for residents with a need to access services regularly, including the elderly and expectant mothers. In a broader sense, consideration to cross-boundary travel and inter-regional accessibility will make additional positive contributions.

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Determinant of Health	Assessment
Physical activity	By making highways and other spaces used by the public safe and attractive for pedestrians and cyclists as a first priority, residents will be more likely to consider active travel. A shift towards active travel through improving its attractiveness as a travel option will increase resident's day to day activity levels, therefore boosting physical and mental health. Notably, by building physical activity into utilitarian aspects of residents lives the policy also alleviates the need for formal, paid activity (such as using a gym) which may be financially inaccessible to many. The increased access to physical activity without any additional cost brought about under this goal will be beneficial to many.
Green Infrastructure	The policies outlined within this goal are unlikely to directly impact upon green infrastructure within LCR.
Climate change resilience	The TCR highways maintenance scheme aims to support the maintenance of existing network, structures and assets with a focus on road safety and climate resilience. This may include measures such as SUDs which will help to reduce flood risk and provide climate resilience. Additionally, the 'dig once' approach to construction and managing surface water and pollution coordinates construction works to minimise disruption and increase efficiency, which is beneficial to climate change resilience, and it reduces reliance on fossil fuels and minimises release of GHGs.

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LONG TERM - ASSESSMENT

Table 5-9 below presents the assessment for the 'Long term' objectives.

Table 5-9: 'Long Term Objectives' Assessment

Determinant of Health	Assessment
Air Quality	Under the long term objectives, transport measures aim to reduce carbon emissions by promoting active travel and sustainable transport. Reduction in carbon emissions will improve overall air quality across the region, resulting in positive health and wellbeing benefits for all residents, especially infants and children particularly vulnerable to pollutants. The modal shift from private vehicle usage to public transport including bus and rail alongside the rollout of electric vehicle infrastructure will contribute to emission reductions and positive health outcomes. Support of this modal shift indirectly benefits air quality in the city region, reducing carbon emissions and harmful pollutants, and improving the health and wellbeing of all residents. Notably, it is not just carbon being tackled by this goal, but other harmful pollutants including nitrogen dioxide that will be reduced via the modal shift to electrical or sustainably fuelled vehicles.
Noise	Due to the nature of projects largely promoting active and sustainable transport modes, it is likely to encourage a modal shift away from private vehicle use, reducing road noise, congestion, and vehicle idling times. However, there is also the potential for increased noise and vibration associated with new rail stations. These type of schemes may have localised negative effects upon noise which would require further consideration at project level.
Housing and Homelessness	The policies outlined within this goal are unlikely to directly impact upon housing and homelessness within LCR.
Economy and employment	Under the long term objectives, funding schemes aim to improve connectivity by sustainable travel to key destinations and opportunities across the city region, as well as improving the attractiveness and quality of active travel, bus and rail options. A more joined up city region will enable greater access to education, employment, and services which will positively benefit the local economy and employment

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Determinant of Health	Assessment
	market. Investment in travel infrastructure is likely to lead to more fast, frequent and reliable connections between economic centres for people, businesses and goods and will bolster economic growth.
Skills and education	Improved connectivity across the region will support access to education for young people by providing an additional option of transportation. Educational attainment will improve opportunities for employment and income generation later on in life, having a positive effect on the health and wellbeing of this group.
Social cohesion and community safety	Schemes included in the long term objectives that improve highways, such as pothole repair funding, will likely help reduce road traffic accidents, improving overall safety across the City Region. Encouraging a modal shift away from cars to active transport will also help to reduce the number of cars on the road and therefore, the number of accidents. Additionally, improving existing connections and increasing the frequency and reliability of transport connections will improve feelings of safety, especially during the evening, at night, and in the dark.
Access to services	Improvements to public transport and active travel infrastructure will likely increase accessibility to employment, education and local facilities, especially if focused on areas that are currently poorly served by public transport services. This will particularly benefit those people that cannot drive such as the elderly, those with disabilities and younger people. By increasing the attractiveness and accessibility of these options, residents will not be so reliant on private vehicle usage - a particular benefit to those who are unable to access private transport in the first instance. Ensuring key areas of growth are well serviced by bus and rail will result in positive health outcomes for residents with a need to access services regularly, including the elderly and expectant mothers. In a broader sense, consideration to cross-boundary travel and inter-regional accessibility will make additional positive contributions.
Physical activity	By making highways and other spaces used by the public safe and attractive for pedestrians and cyclists as a first priority, residents will be more likely to consider active travel. A shift towards active

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Determinant of Health	Assessment
	travel through improving its attractiveness as a travel option will increase resident's day to day activity levels, therefore boosting physical and mental health. Notably, by building physical activity into utilitarian aspects of residents lives the policy also alleviates the need for formal, paid activity (such as using a gym) which may be financially inaccessible to many. The increased access to physical activity without any additional cost brought about under this goal will be beneficial to many.
Green Infrastructure	The policies outlined within this goal are unlikely to directly impact upon green infrastructure within LCR.
Climate change resilience	Included in the long-term objectives is a goal of 'Maintaining resilient transport assets' which will likely have positive effects against climate change resilience across the region, however, the exact measures are currently not known.

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6 CONCLUSION

6.1 SUMMARY

6.1.1 On the whole the LTP is likely to result in a number of positive effects across the determinants of health and vulnerable groups. A summary of the key effects has been detailed below:

- **Air Quality:** Positive air quality effects are associated predominantly with the "Achieve Net-Zero Carbon and an Improved Environment' policies and the 'Improve Health and Quality of Life' policies. Through both of these, the modal shift away from petrol and diesel vehicles towards electric and other sustainably fuelled cars will facilitate emissions reductions of both carbon and other harmful pollutants including nitrogen dioxide. Improved air quality will have positive health outcomes for all residents, especially infants and young children who are particularly vulnerable to pollutants.

- **Noise:** The policies outlined within this goal are unlikely to directly impact upon noise within LCR. Indirectly, the reduction in congestion on key highways across the city region as a result of the modal shift away from private vehicle usage may reduce noise pollution on key routes.

- Housing and Homelessness: Few policies are likely to enact change to housing and homelessness across the city region. The consideration of strategic housing sites in the specification of enhanced active travel, bus and rail links will, however, support convenient and advantageous housing for residents. This is particularly beneficial for low income groups who are unable to afford the costs of a private vehicle necessary to live in an area poorly connected to employment and other services.

- **Economy and employment:** Positive effects have been identified through the policies set out in LTP in relation to economy and employment. Greater connectivity through inter-regional transport options will enable residents to access employment in a wider area than their immediate residency, increasing the opportunity for income generation and subsequent positive health outcomes. The LTP's plan to test and trial new developments to avoid overspending on unproven technology will also protect funds channelled into other key areas of support, notably for those low income groups experiencing difficulty accessing the transport network. Finally, economic competitiveness is bolstered through reduced congestion on key network routes and the development of fast, frequent and reliable connections between economic centres. A safer, more attractive public space will support good economic growth in the city region, generating investment and boosting the quality of living and health for all residents.

- **Skills and education:** Positive effects have been identified through the policies set out in LTP in relation to skills and education. Measures including travel support packages and car club schemes proposed under LTP will alleviate barriers relating to cost young people currently face to accessing education. Lower cost options will make travel more affordable and education more attainable, leading to happier and healthier lives for young people. Finally, the strong focus on technological innovation will likely generate a new sector for upskilling and future employment across the city region. Increased educational engagement and future employment across the city

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will support income generation and the healthy living of individuals being trained and taking up roles in this sector.

- **Social cohesion and community safety:** A mix of positive and negative outcomes have been identified under social cohesion and community safety. To begin, public realm improvements, alleviation of congestion, and technological innovation under the LTP will all contribute to lessening the risk of road traffic accidents, fostering feelings of elevated safety and comfort for users. In particular, "Vision Zero" will empower users to safely navigate areas whilst reducing danger and therefore casualty rates. Improvements to community safety this way will lead to happier and healthier residents. Notably, improved digital connectivity across the travel network will positively contribute to the health and wellbeing of women and girls using public transport, by better connecting them to family and friends whilst travelling. However, the increased ease and affordability of e-scooter usage may generate an increase in road traffic accidents as uptake by inexperienced users could lead to greater incidence and injuries on the roads, posing a threat to community safety. Community cohesion may be brought about through the car club scheme or implementation of green infrastructure, facilitating spaces for social interaction and reducing feelings of loneliness and isolation often experienced by the elderly.

- **Access to services:** Access to services will be improved under LTP. The transport and spatial planning integrated approach will ensure homes, shops, workplaces, schools and facilities are strategically located and accessible via public and active travel. Ensuring key areas of growth are well serviced by bus and rail will result in positive health outcomes for those residents with a need to access services regularly, including the elderly and expectant mothers. Equally, by targeting issues of poor connectivity and joining up key areas, access to services will be improved.

- Physical activity: The LTP supports the transport hierarchy, positioning active travel modes such as walking and cycling a first choice travel options. This will involve improving the safety, comfort, and convenience of public spaces like footways, cycle lanes and public rights of way. Improved attractiveness of these options will encourage higher engagement with active travel and therefore higher levels of physical activity in the day-to-day lives of residents. This will boost the overall physical and mental wellbeing of the population.

- Green Infrastructure: A small number of positive effects have been identified through the policies set out in LTP in relation to green infrastructure. Existing infrastructure will be retrofitted and incorporate green infrastructure to help mitigate impacts of climate change on the transport network. A greener city region will improve air quality, increase the attractiveness of the public realm, and generate greater opportunities for socialisation in outdoors spaces all positively contributing to the overall health and wellbeing of residents.

- **Climate change resilience:** A small number of positive effects have been identified through the policies set out in LTP in relation to climate change resilience. In designing transport systems that are resilient to the effects of climate change as well as retrofitting existing infrastructure to include features equipped to manage weather events such as heat, wind and storm surges, this goal ensures the efficient operation of the city regions transport system into the future. In improving public transport in this way, the shift away from private vehicle usage is facilitated,

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bringing improvements to air quality, congestion, safety, and physical activity, which all positively contributing to the health and wellness of the population.

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6.2 RECOMMENDATIONS

6.2.1   A number of recommendations have been identified which have been outlined in **Table 6-1** below. These changes will be considered by LCR during the preparation of the preferred plan for Regulation 19 consultation.

Table 6-1: HIA Recommendations

Policy/ Goal	Recommendation
G1-1	In supporting proposals that facilitate active travel, it is important to consider the needs of those with physical disabilities as well as able-bodied users. Measures including wider pavements for easy wheeling as well as tactile paving at crossings and interchanges are recommended so that all residents are able to engage in active travel and benefit from the associated positive health effects. This recommendation applies to all policies under the LTP proposing the uptake of active travel.
G1-3	Increasing the ease and convenience of e-scooter usage will encourage inexperienced users onto the roads, increasing the risk of road traffic accidents. Safety requirements should be put in place for users taking out e-scooters, including an initial mandatory training session and subsequent refresher courses upon continued usage. This will bolster road safety across the city region.
G1-4	The review of travel support packages will be financially beneficial for multiple social groups in the city region. This scheme should not place constraints on distance / timings of travel enabled, as this will reinforce existing barriers to accessing education, employment, services etc. which will prohibit residents from having an increased quality of life.
G2-1	The modal shift from petrol and diesel vehicles to electric cars proposed under Policy G2-1 must be considerate of low-income groups who may experience financial difficulty in making this transition. Financial incentives to trading in petrol and diesel cars should be in place to facilitate this transition. Equally, charging infrastructure should be publicly available across the city region, as private charging infrastructure will likely not be feasible for those living in council housing / built up areas with no private parking / driveway space.
G2-2	The implementation of green infrastructure and general urban greening would likely aid the uptake of active travel among residents suggested by this policy, ensuring more widespread positive health effects.
G2-3	LGBTQIA+ / female exclusive car clubs would enhance the improved feeling of safety imparted under this policies introduction of the car club scheme. More inclusive options will encourage uptake by a wider group meaning a more successful shift away from private vehicle usage.
G2-6	New modes of freight transport such as cargo bikes will require users to undergo mandatory safety training before going out onto highways across the city region

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Policy/ Goal	Recommendation
	as well as subsequent refresher courses upon continued usage. This will bolster road safety across the city region.
G3-1	Educational measures and campaigns on road safety will positively contribute to "Vison Zero". currently, however, only Bikability is suggested to this effect. Educational campaigns on drink driving would be beneficial to the overall road safety education piece and help prevent avoidable accidents, improving community safety.
G3-2	Public realm improvements suggested under this policy should include the implementation of green infrastructure and general urban greening to support health and wellbeing for all residents.
G3-4	Community safety at transport interchanges is targeted under this policy but can be further improved. By encouraging and facilitating the opening of businesses in transport corridors and points of access, this policy could reduce the number of idle spaces that are conducive of feelings of fear for many residents, including women and girls. Guidance from Make Space for Girls suggests the presence of other people can boost feelings of safety for young women and girls in public spaces.
G4-2	The retrofitting of street lighting with LED and power saving technologies to consume less power should not compromise the community safety provided by night time illumination.
G5-3	As a priority, city region residents should be offered the upskilling and employment opportunities generated by this policies focus on technological advancements in the first instance (ahead of workers outside of the area). This will work to generate greater income and boost the local economy.
Delivery Plan	Mechanisms to design out crime on the transport network should be specified to improve feelings of safety when utilising public transport. For instance, improved surveillance will likely deter crime and anti-social behaviour at interchanging points

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