Environment and Transport Commissioning Framework

Leicestershire County Council

South of Leicester Area LCWIP

Phase 1 Report – Network Planning for Cycling and Walking

23rd November 2023
3360.141

Leicestershire County Council

Document Sign-off

Control Details

Document Location:	X:\TMODELLING\03. 3360 (Internal)\MF3360.141 South Leicester LCWIP\12. Deliverables\01. Reports\Phase 1\3360.141_South of Leicester Area LCWIP Phase 1 Report - Network Planning for Cycling and Walking_v1.0.docx
Production Software:	Microsoft Word 2010
Author:	JG
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Document history and status

Ver	Date	Description	Author	Review	Approved	Released
0.1	01/06/22	Draft for internal review	JG	RB	RB	JG
0.2	06/06/22	Draft version for release to the client	JG	RB	RB	JG
0.3	28/09/22	Draft for internal review	JG	RB	RB	JG
0.4	30/09/22	Draft version for release to the client	JG	RB	RB	JG
0.5	11/08/23	Draft version for release to the client	JG	RB	RB	JG
0.6	01/09/23	Draft version for release to the client	JG	RB	RB	JG
1.0	23/11/23	Final version for release to the client	JG	RB	RB	JG

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1. Introduction

1.1. Background

1.1.1. Leicestershire County Council Network Data and Intelligence has been commissioned by Assets and Major Projects to provide evidence to inform the preparation of the South of Leicester Area Local Cycling and Walking Infrastructure Plan (LCWIP).

1.1.2. Figure 1 shows the extents of the LCWIP study area which was identified prior to this study. The area comprises of Blaby, Oadby, Wigston and South Wigston, and covers an area of roughly 12.8km (east - west) by 9km (north - south).

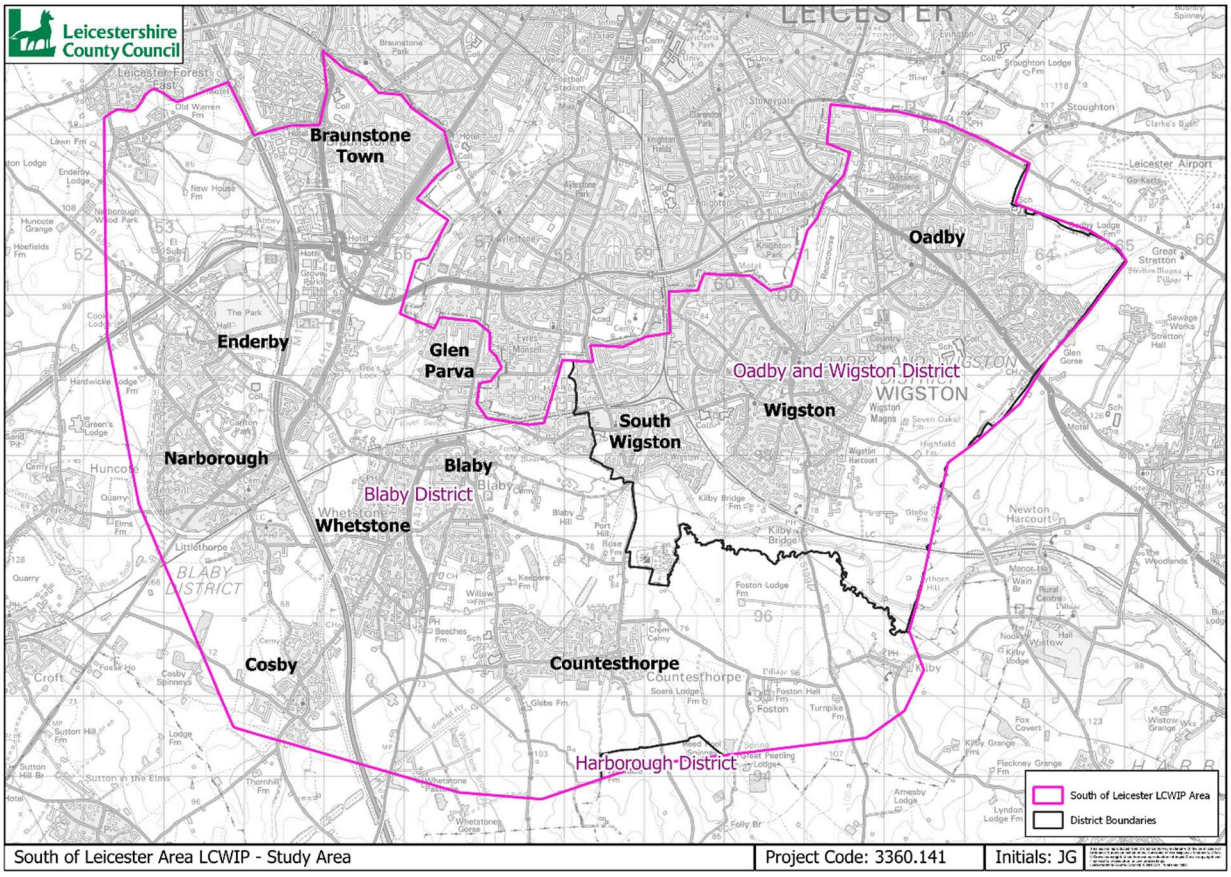

Figure 1. South of Leicester Area LCWIP Boundary

1.1.3. The aim of this study is to provide the following 2 sources of information necessary for developing a robust LCWIP submission:

- Phase 1 - to produce cycling and walking network plans which identify where investment in active modes should be targeted.
- Phase 2 - to provide a value for money assessment on each of the proposed schemes and score several factors in a prioritisation table.

1.1.4. This document summarises the work undertaken during Phase 1 of the project, including the methodology adopted, evidence gathered, and network plans produced.

1.2. LCWIP Process

1.2.1. The Department for Transport (DfT) have published the Local Cycling and Walking Infrastructure Plans Technical Guidance[1] which sets out a recommended method for producing LCWIPs. Table 1 outlines the full process, parts of which are addressed in the analysis of this report.

Table 1. LCWIP Process

Stage	Name	Description
1	**Determining Score**	Establish the geographical extent of the LCWIP, and arrangements for governing and preparing the plan.
2	**Gathering Information**	Identify existing patterns of walking and cycling and potential new journeys. Review existing conditions and identify barriers to cycling and walking. Review related transport and land use policies and programmes.
3	**Network Planning for Cycling**	Identify origin and destination points and cycle flows. Convert flows into a network of routes and determine the type of improvements required.
4	**Network Planning for Walking**	Identify key trip generators, core walking zones and routes, audit existing provision and determine the type of improvements required.
5	**Prioritising Improvements**	Prioritise improvements to develop a phased programme for future investment.
6	**Integration and Application**	Integrate outputs into local planning and transport policies, strategies, and delivery plans.

1.2.1. The work of this commission is split into two phases. This report deals with phase 1 and reviews how the evidence gathered has been used to develop the network plans for the study area, contributing towards stages 2 – 4 of the process. The phase 2 report will show the network priorities in the form of a prioritisation table, contributing towards stage 5 of the LCWIP process.

1.3. Policy Context

1.3.1. The DfT's Cycling and Walking Investment Strategy (CWIS)[2] was published in 2017, covering the period between 2016 and 2021. This was the most up-to-date version of the strategy when the project commenced. The CWIS defines LCWIPs as a strategic approach to identifying cycling and walking improvements required at the local level.

1.3.2. The Second Cycling and Walking Investment Strategy (CWIS2)[3] has since been published, covering the period between 2021 and 2025. The principal aims of the CWIS2 are to:

[1] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/908535/cycling-walking-infrastructure-technical-guidance-document.pdf
[2] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/918442/cycling-walking-investment-strategy.pdf
[3] https://www.gov.uk/government/publications/the-second-cycling-and-walking-investment-strategy/the-second-cycling-and-walking-investment-strategy-cwis2

- increase the percentage of short journeys in towns and cities that are walked or cycled from 41% in 2018 to 2019 to 46% in 2025,
- increase walking activity, where walking activity is measured as the total number of walking stages per person per year, to 365 stages per person per year in 2025,
- double cycling, where cycling activity is measured as the estimated total number of cycling stages made each year, from 0.8 billion stages in 2013 to 1.6 billion stages in 2025
- increase the percentage of children aged 5 to 10 who usually walk to school from 49% in 2014 to 55% in 2025

1.3.3. LCWIPs are a tool which will help to support the delivery of the CWIS2. They enable a long-term approach to developing local cycling and walking networks, ideally over a 10-year timescale, and represent a vital part of the Government's strategy to increase the number of trips made on foot or by cycle.

1.3.4. The key outputs of LCWIPs are:

- a network plan for walking and cycling which identifies preferred routes and core zones for further development,
- a prioritised programme of infrastructure improvements for future investment; and
- a report setting out the underlying analysis carried out with accompanying narrative supporting the identified improvements and network.

2. Evidence Base

2.1. Introduction

2.1.1. This section displays a collection of evidence from national and local databases to support and inform the development of the LCWIP cycling and walking network plans. The evidence identifies the existing geographic, environmental, demographic, and existing and forecasted travel situation in the area.

2.2. Local Geography

Topography

2.2.1. Figure 2 shows the topography of the study area; contour lines that are closer together indicate a steeper slope and contour lines that are further apart show flatter slopes. Steep gradients are an impedance to cycling and are an important factor in the choices that users make when considering route options. Whilst most of the study area has minimal topographical variation there are sections that could present a challenge to cyclists, such as the areas around Enderby High Street which are marked on the map.

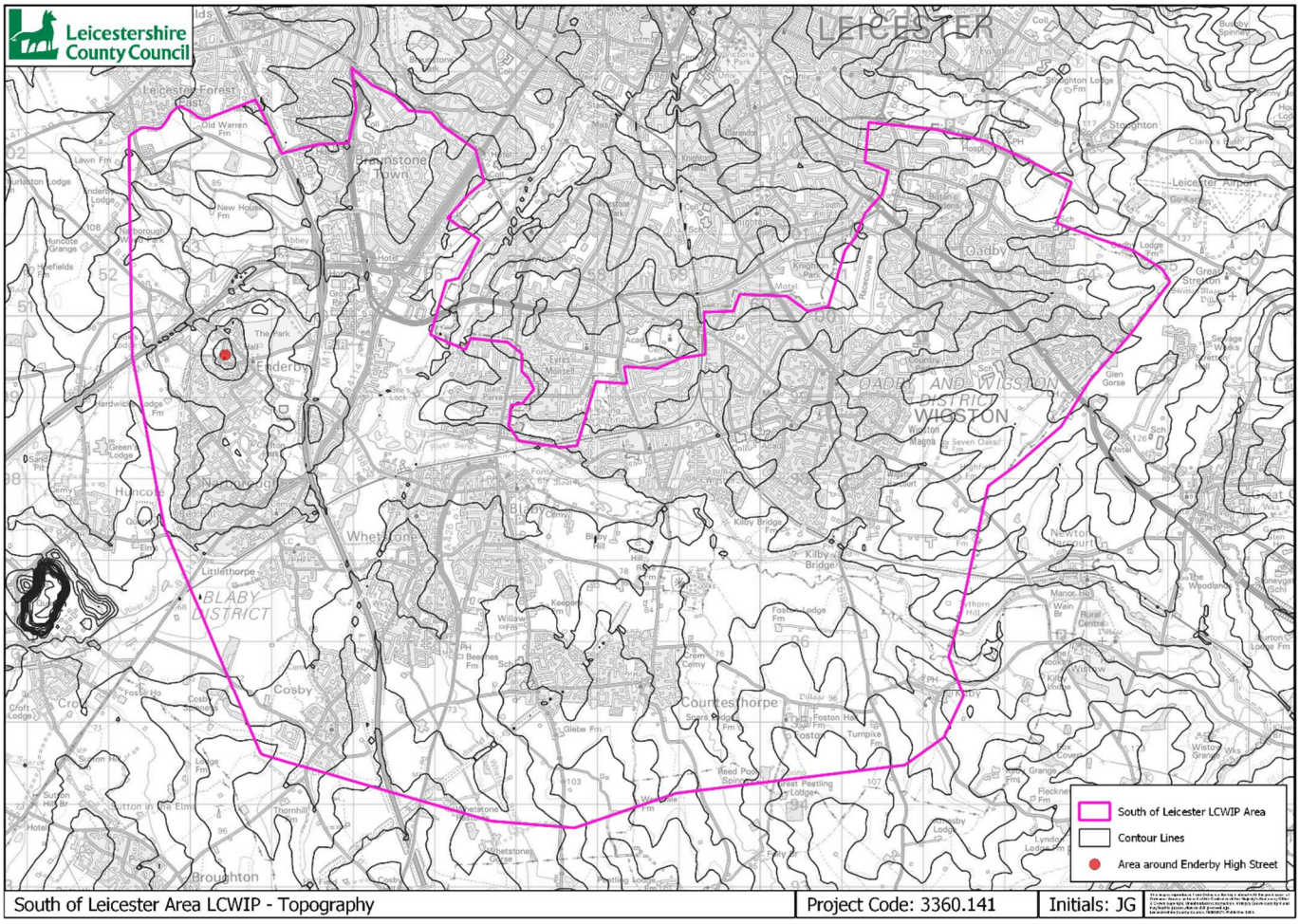

Figure 2. Topographic Map

2.2.2. According to the Department for Transport's Cycling Infrastructure Design (LTN 1/20), cycling routes should avoid steep gradients where possible. People can cycle steep gradients that are fairly short but are not capable of maintaining high levels of effort over longer distances[4].

Barriers to Movement

2.2.3. A major barrier to active modes is the perception that roads are dangerous and unpleasant. However, there are also several physical barriers to active movements including rivers, canals, railway lines and heavily trafficked roads which have limited crossing points. Figure 3 illustrates where these features are in the study area.

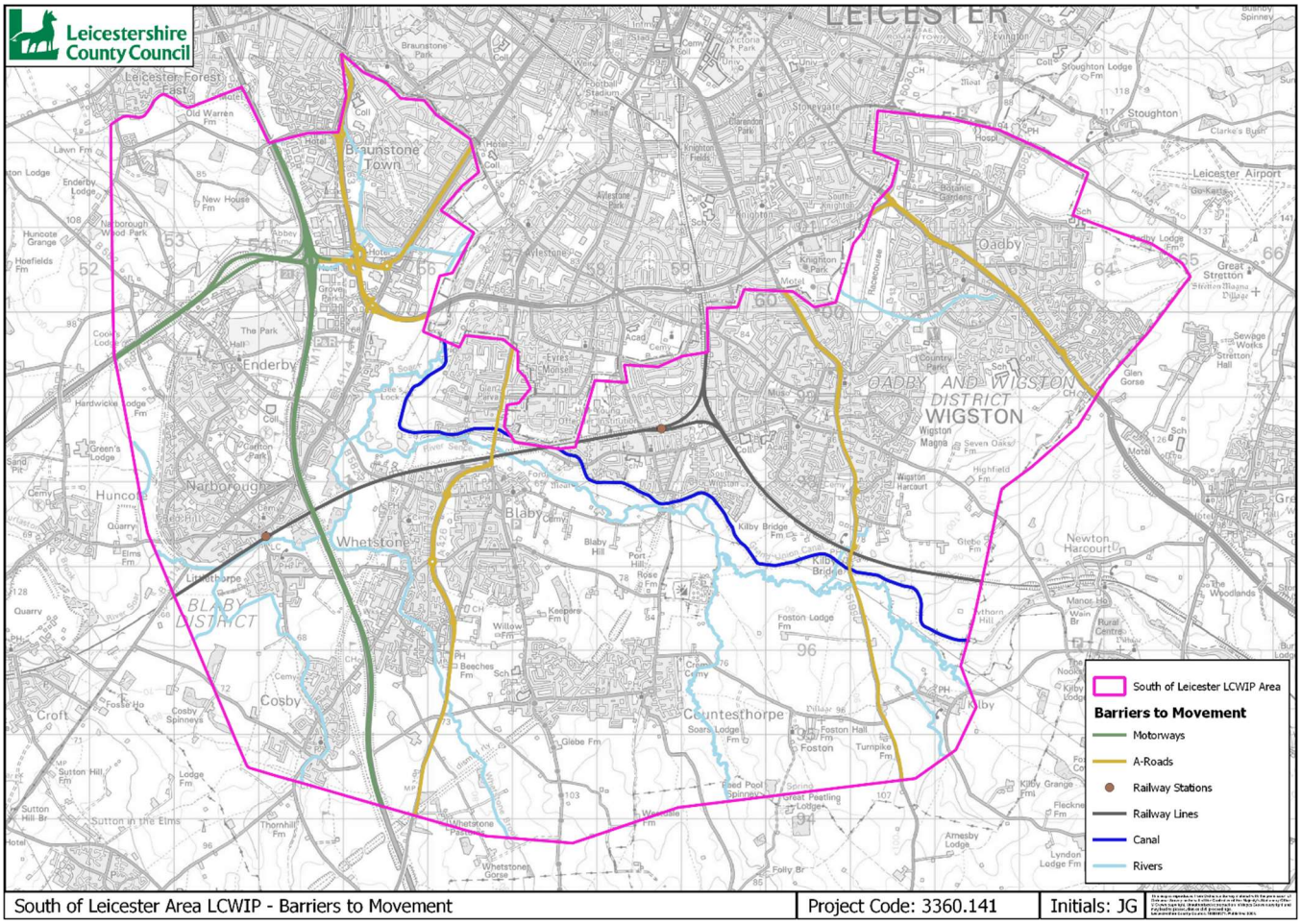

Figure 3. Barriers to Movement

2.2.4. There are also several design and maintenance issues that could act as a barrier to active modes, such as overgrown plants, damaged or unsuitable surfaces, parked cars, chicanes, flights of steps, gates, narrow widths, gaps in the infrastructure, and so on[5].

[4] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/951074/cycle-infrastructure-design-ltn-1-20.pdf

[5] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/904146/gear-change-a-bold-vision-for-cycling-and-walking.pdf

2.3. Environmental Considerations

Air Quality Management Areas (AQMAs)

2.3.1. An AQMA is an area where the level of air pollutants exceeds the national Air Quality Objective[6]. Figure 5 shows the AQMAs in the South of Leicester area, specifically:

- AQMA 1: A5460 Narborough Road South and Fosse Park
- AQMA 2: M1 corridor in Enderby and Narborough
- AQMA 3: M1 corridor between Thorpe Astley and Kirby Muxloe (in part)
- AQMA 4B: B582 Enderby Road, Whetstone

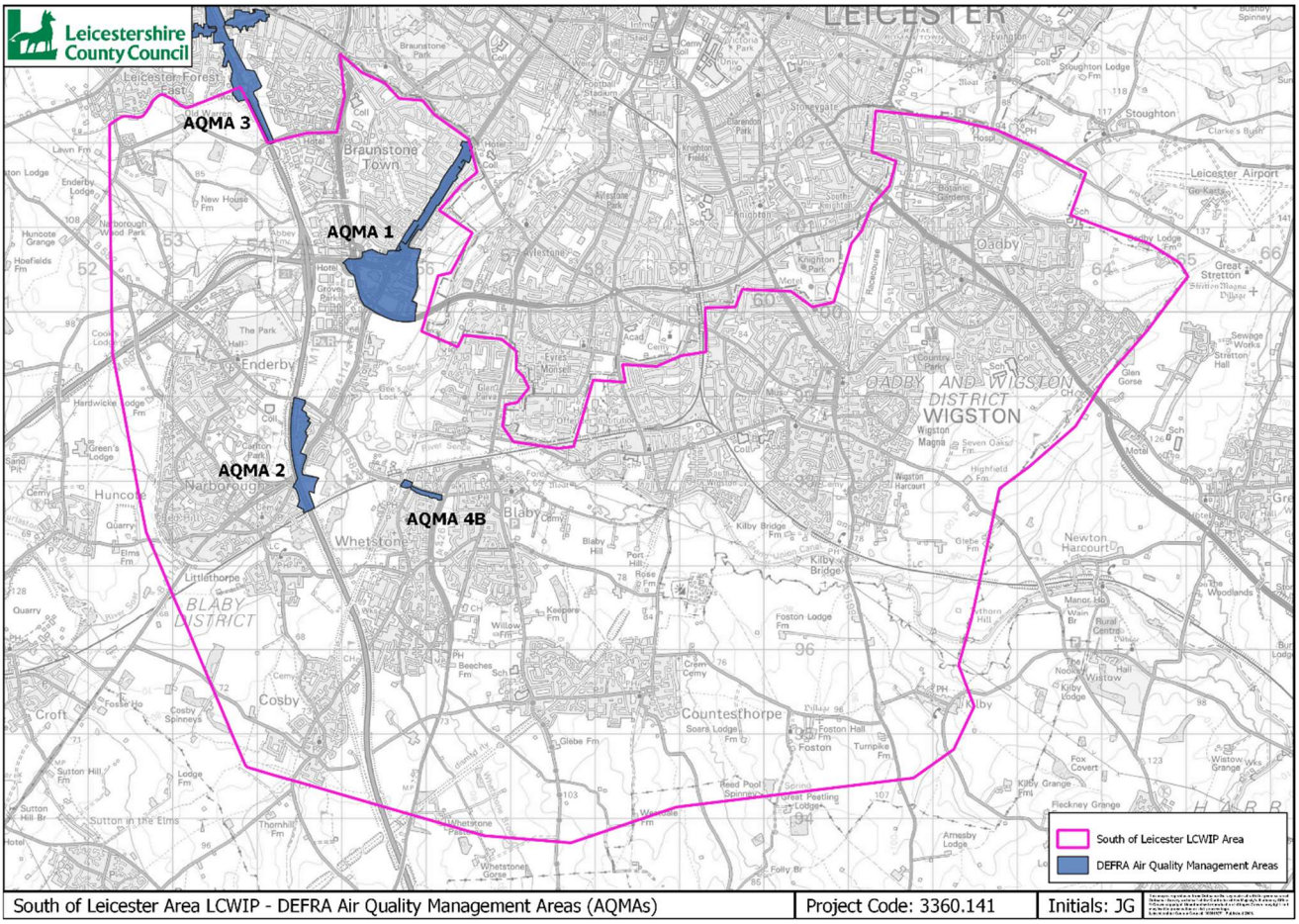

Figure 4. Air Quality Management Areas (AQMAs)

2.3.2. In the 4 areas shown, the major source of nitrogen dioxide (NO_2) emissions is road traffic[7]. Blaby District Council's Air Quality Strategy 2018-2021[8] and Air Quality Action Plan 2021-2025[9] contain several actions intended to improve air quality, including increasing walking and cycling activity.

[6] https://uk-air.defra.gov.uk/air-pollution/uk-eu-limits
[7] https://uk-air.defra.gov.uk/assets/documents/no2ten/Local_zone32_Blaby_AQActionplan_1.pdf
[8] https://w3.blaby.gov.uk/decision-making/documents/s35225/Appendix%20A%20-%20Air%20Quality%20Strategy%20v1.pdf
[9] https://www.blaby.gov.uk/media/z3opt2yt/air-quality-action-plan-2021-2025.pdf

Place-Based Carbon Calculator (PBCC)

2.3.3. The PBCC is a tool which estimates the per-person carbon footprint for every Lower Layer Super Output Area (LSOA) in England[10]. The tool uses a consumption-based approach to carbon footprints, meaning that the emissions are counted by the consumer of a good or service not the producer. The tool provides a wide range of layers, but only total emission grade and car emissions grade have been explored for the LCWIP.

2.3.4. The PBCC draws on a wide range of data and research to give an overview of the carbon footprint for an LSOA. This is divided by the population in the LSOA to get an average carbon footprint per person. Each area has a grade from A+ (low emissions) to F- (high emissions) in comparison to the England average.

2.3.5. Figure 5 shows the total emission grade for each LSOA in the study area, which is the estimated average annual carbon footprint per person. Oadby has the worst carbon footprint in the area and South Wigston has the best.

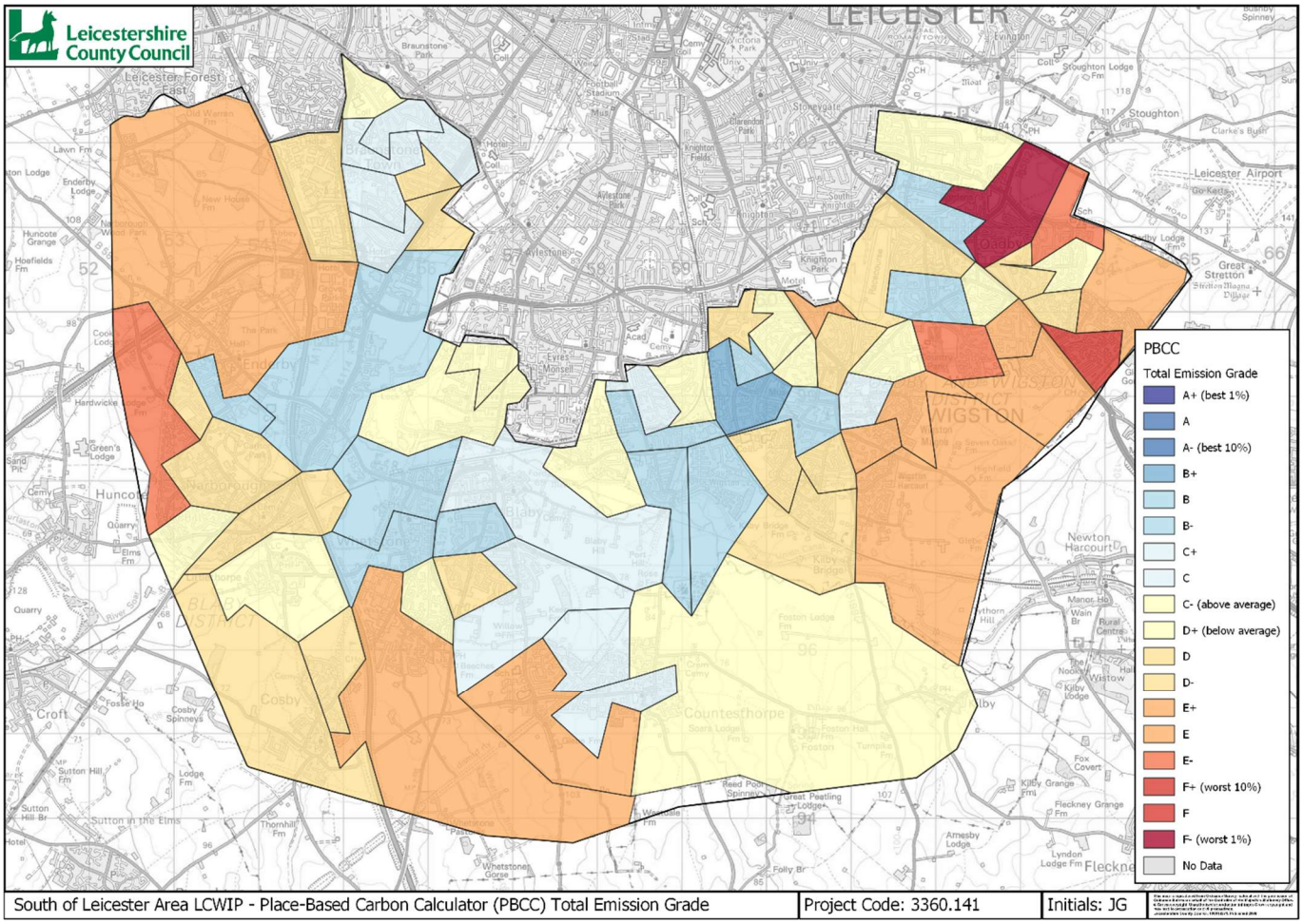

Figure 5. Place Based Carbon Calculator (PBCC) Total Emission Grade

[10] https://www.carbon.place/ *Morgan, Malcolm, Anable, Jillian, & Lucas, Karen. (2021). A place-based carbon calculator for England. Presented at the 29th Annual GIS Research UK Conference (GISRUK), Cardiff, Wales, UK (Online): Zenodo.* ***http://doi.org/10.5281/zenodo.4665852***

2.3.6. Out of 71 LSOAs in the study area, 29 are above average for total emissions grade and 42 are below average. Furthermore, there are no LSOAs in the best 10% in England and 2 in the worst 10%.

2.3.7. Figure 6 shows the car emissions grade for each LSOA in the study area, which is the estimated average carbon footprint per person from driving cars. The car emissions data largely mirrors the total emissions grade; the LSOAs in Oadby have the worst carbon footprint and the ones in and around South Wigston have the best.

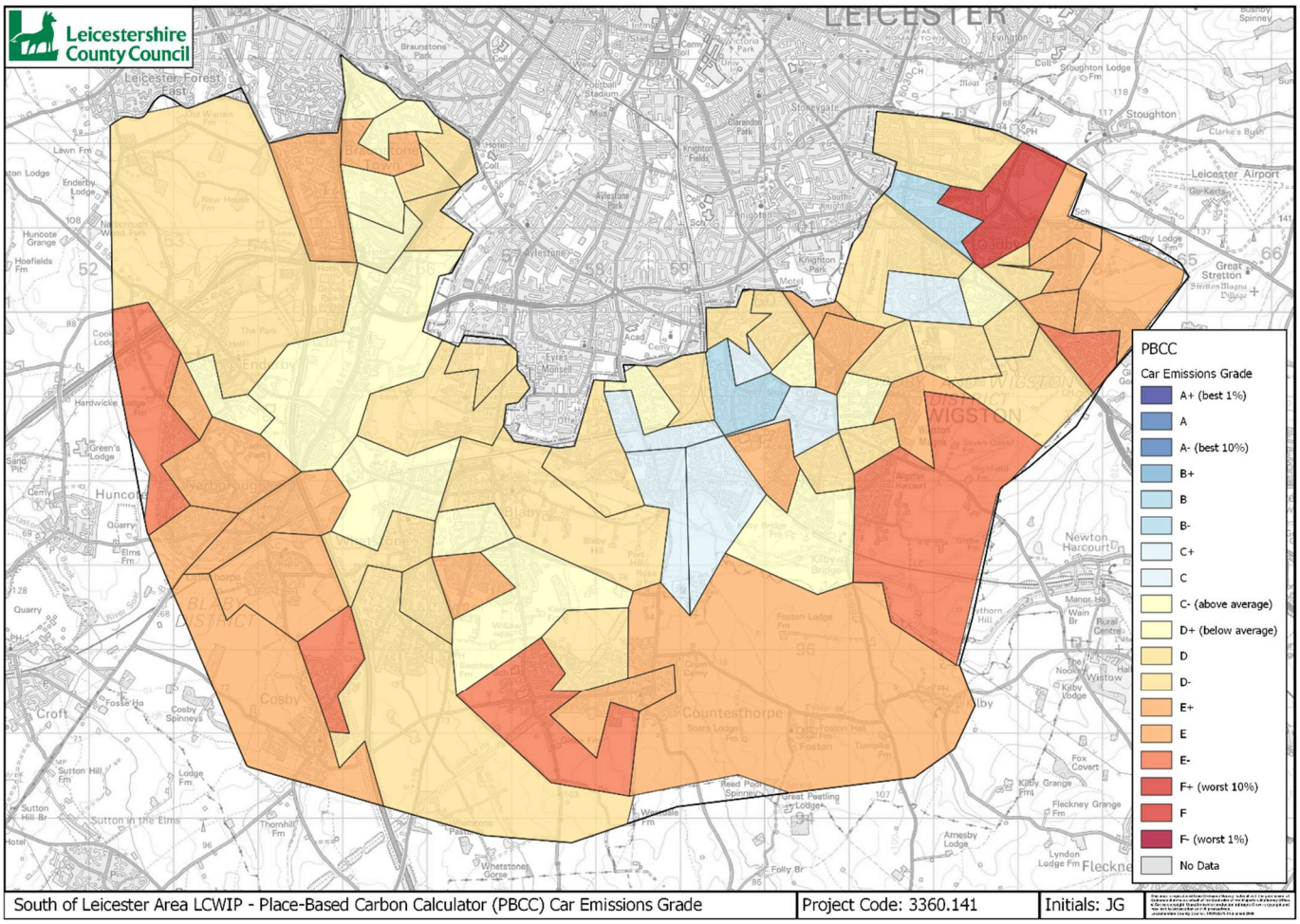

Figure 6. Place Based Carbon Calculator (PBCC) Car Emissions Grade

2.3.8. Out of 71 LSOAs in the study area, 14 are above average for car emission grade and 57 are below average. Furthermore, there are no LSOAs in the best 10% in England and 1 in the worst 10%. Those LSOAs with the worst car emission grades may be targeted for behaviour change towards active modes to improve the carbon footprint in those areas.

Flood Risk Zones

2.3.9. Figure 7 shows the Environment Agency flood zones 2 and 3. The flood zones are based on the likelihood of an area flooding; flood zone 1 areas have a low probability of flooding from rivers and the sea, flood zone 2 areas have a medium probability and flood zone 3 areas have a high probability.

2.3.10. Flooding can have significant impacts on the operation and safety of walking and cycling routes. According to Sustrans[11], the inundation of a traffic-free path can serve to:

- Sever a traffic-free route.
- Cause substantial damage to the composition of the path.
- Exclude certain user groups from the path.
- Lead to serious injury where the alignment of the path cannot be determined.

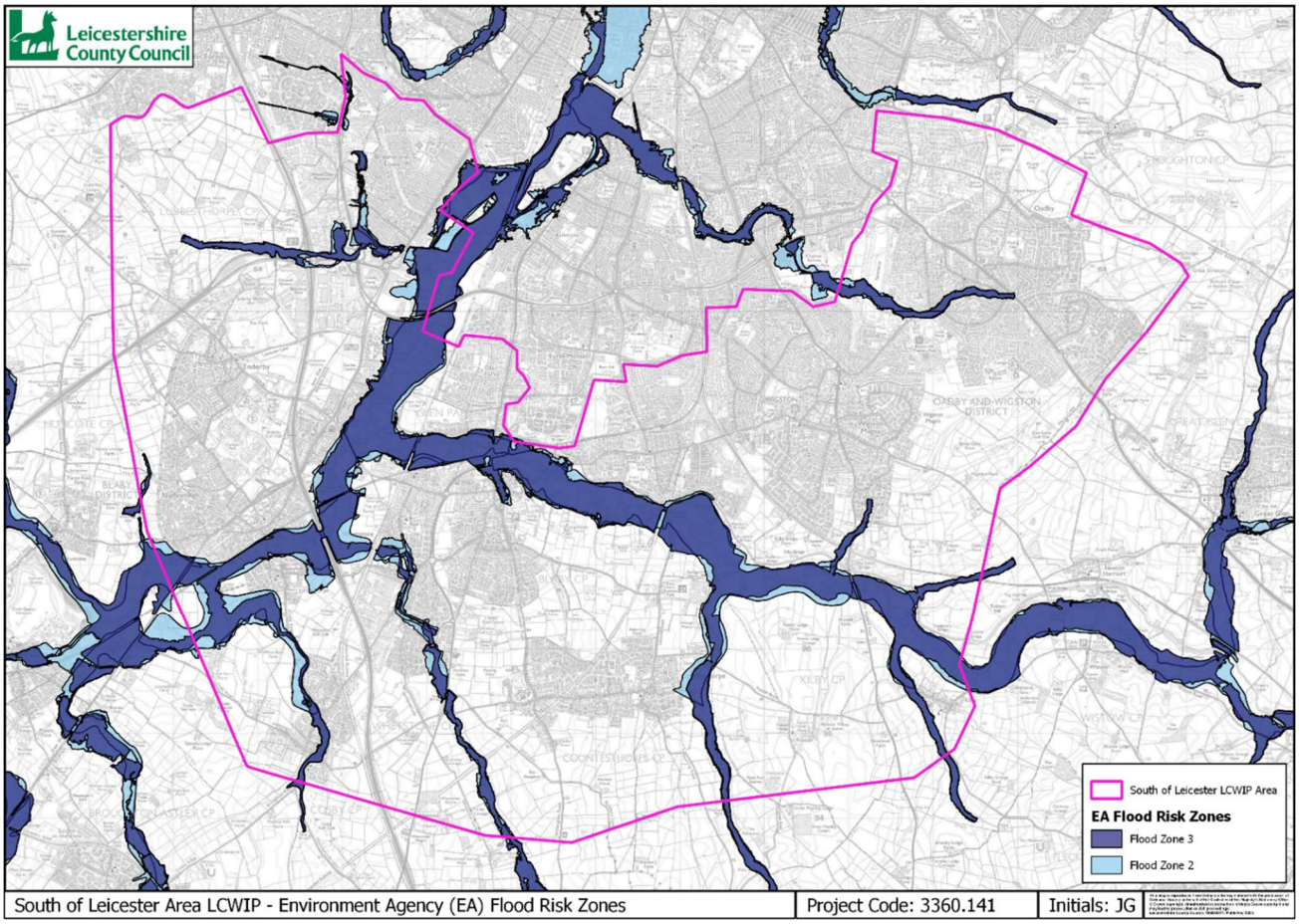

Figure 7. Environment Agency Flood Risk Zones

2.3.11. The risk of flooding should be a significant consideration during the design and There are a number of design recommendations for routes prone to flooding in the LTN 1/20.

[11] https://www.sustrans.org.uk/for-professionals/infrastructure/sustrans-traffic-free-routes-and-greenways-design-guide/

Nationally Protected Sites

2.3.12. The National Heritage List for England (NHLE)[12], developed by Historic England, is a register of all the listed buildings, scheduled monuments, protected wrecks, registered parks and gardens, and battlefields in England. There are many protected heritage assets in and around the South of Leicester due to the positive contribution they give to the character and sense of place of the area.

2.3.13. There also several conservation areas within the study area, which are listed on the Oadby & Wigston[13] and Blaby District Council websites[14], namely the Grand Union Canal, The Lanes, North Memorial Homes, Spa Lane, South Wigston, Oadby Hill Top and Meadowcourt, Oadby Court, Midland Cottages, London Road and Saint Peters, All Saints, Blaby, Cosby, Countesthorpe, Enderby, and Narborough conservation areas.

2.3.14. A Site of Special Scientific Interest (SSSI) is an area of particular interest to

N

2.3.15. Figure 8 shows the heritage assets, conservation areas and SSSIs in the study area. Any cycling or walking interventions proposed should be conscious of these areas and, as a minimum, the preservation of the assets should be sought.

[12] https://historicengland.org.uk/listing/the-list/
[13] https://www.oadby-wigston.gov.uk/pages/conservation_information_and_enquiries
[14] https://www.blaby.gov.uk/planning-and-building/conservation/conservation-areas/
[15] https://www.woodlandtrust.org.uk/blog/2019/03/sssi-definition/

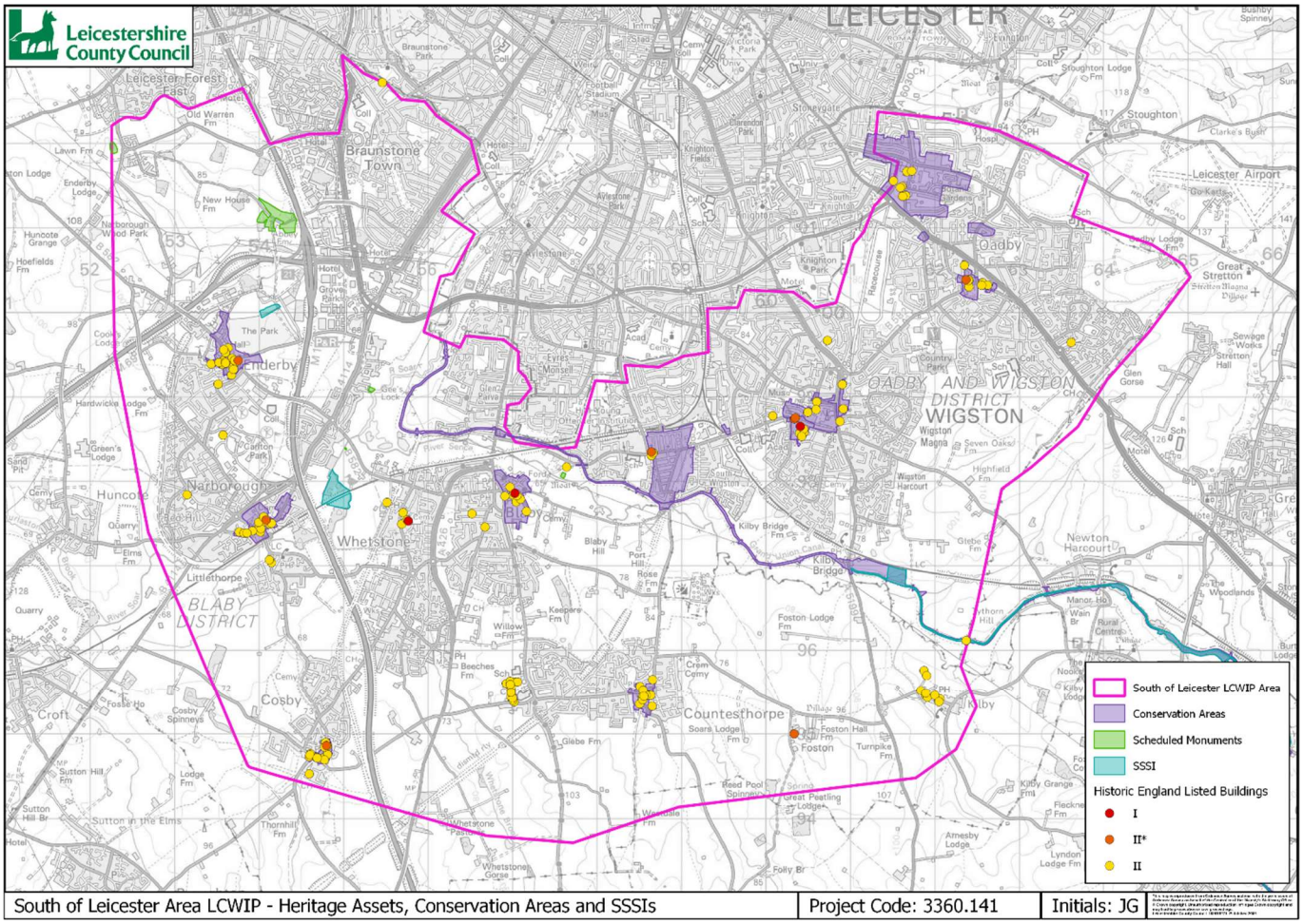

Figure 8. Heritage Assets, Conservation Areas and SSSIs

2.4. Demographics

Population and Age

2.4.1. Census data has been analysed to determine information about the population. 2011 data has been used throughout this report as it was the latest census available when the assessments were undertaken. In 2011, the LSOAs in the study area had an overall population of 117,658, comprising of 49% males and 51% females. According to the DfT's National Travel Survey (NTS) in 2019 males of all ages made 3 times more cycle trips than females in England.

2.4.2. The NTS also found that the age group most likely to cycle at least once a week for travel were 16-24 year olds. Table 2 shows that 16-24 year olds made up 10.8% of the population in 2011. Another age group with a high proportion of residents are 10-15 year olds. This suggests that there is a good opportunity to encourage cycling to school in the South of Leicester area.

Table 2. Age of Residents in South of Leicester Area (Census 2011)

Age	Residents	Proportion
0-4	6,441	5.5%
5-9	7,109	6.0%
10-15	8,495	7.2%
16-19	5,830	5.0%
20-24	6,869	5.8%
25-29	6,299	5.4%
30-34	7,243	6.2%
35-39	7,277	6.2%
40-44	6,759	5.7%
45-49	7,808	6.6%
50-54	8,414	7.2%
55-59	8,175	6.9%
60-64	6,817	5.8%
65-69	6,086	5.2%
70-74	6,268	5.3%
75-79	4,560	3.9%
80-84	3,581	3.0%
85-89	2,320	2.0%
90+	1,307	1.1%

English Indices of Deprivation 2019

2.4.3. The Index of Multiple Deprivation (IMD) is an overall measure of deprivation that is made by combining seven domains of deprivation[16], namely:

- Income Deprivation,
- Employment Deprivation,
- Education, Skills and Training Deprivation,
- Health Deprivation and Disability,
- Crime,
- Barriers to Housing and Services; and
- Living Environment Deprivation.

2.4.4. The figures below show the levels of deprivation in deciles. These deciles are calculated by ranking all LSOAs in England from most deprived to least deprived and dividing them into 10 equal groups, with 1 being the most deprived 10% of LSOAs nationally to 10 being the least deprived 10% of LSOAs nationally.

[16] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/833973/File_2_-_IoD2019_Domains_of_Deprivation.xlsx

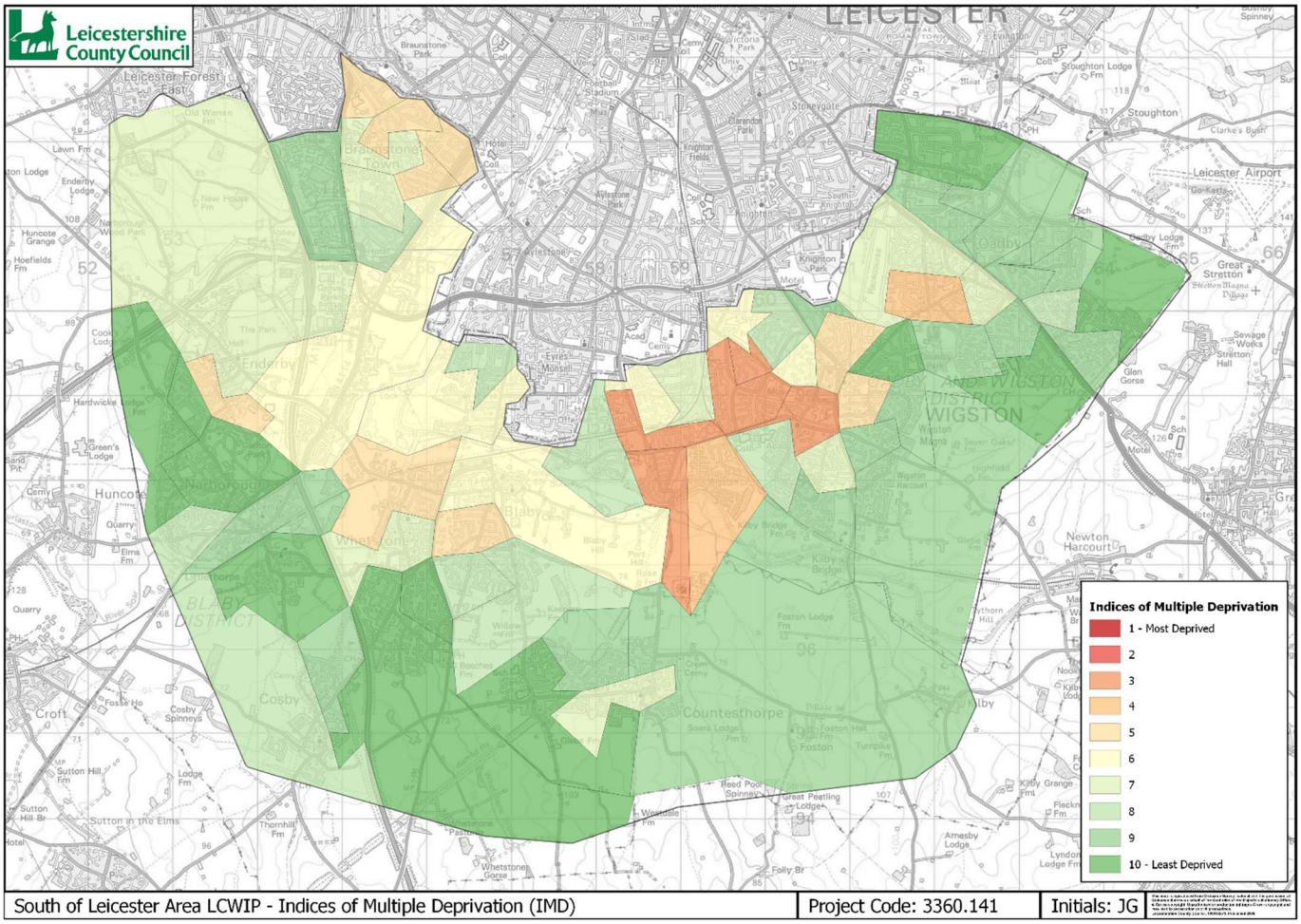

Figure 9. South of Leicester Area Indices of Multiple Deprivation (IMD)

2.4.5. Figure 9 shows the overall IMD for each LSOA in the LCWIP area. Out of the 71 LSOAs, 55 are in the 50% least deprived areas in England (deciles 6-10), 11 are in the 10% least deprived (decile 10) and none are in the 20% most deprived (deciles 1-2). There is some variation in the levels of deprivation across the area, with the least deprived LSOAs mainly located in Oadby, Countesthorpe, Littlethorpe, Narborough and the south of Whetstone, and the most deprived LSOAs located in Wigston and South Wigston.

2.4.6. The most deprived areas are likely to have lower levels of car ownership, so the use of public transport and active modes is more likely. The NTS cites that people without access to a car walk and cycle more and further than those that have access to a car[17].

[17] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/906698/walking-and-cycling-statistics-england-2019.pdf

Health Deprivation and Disability

2.4.7. The Health Deprivation and Disability Domain measures the risk of premature death and the impairment of quality of life through poor physical or mental health. Health deprivation is an important aspect to consider in terms of walking and cycling as these activities can have a positive impact on both mental and physical health.

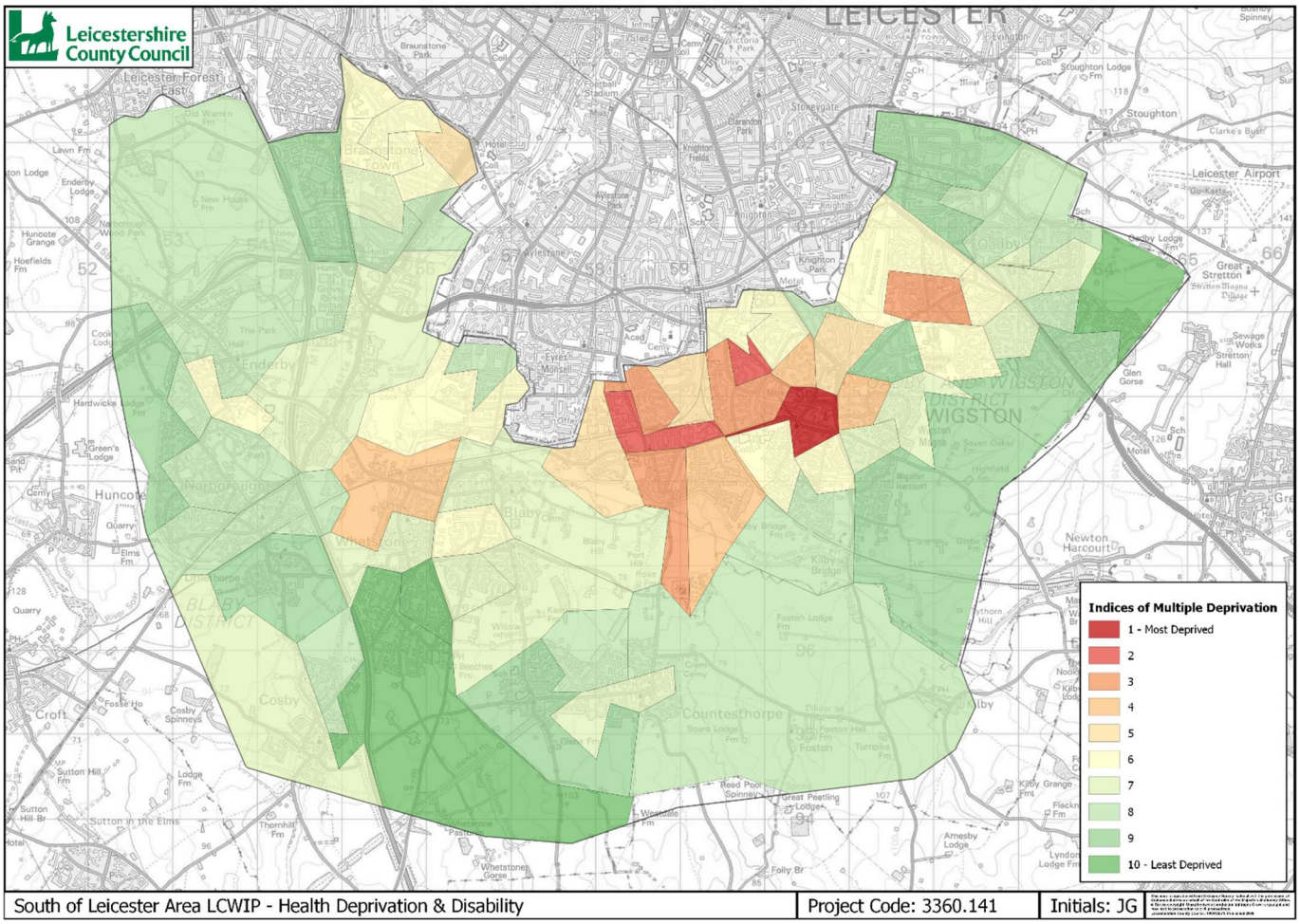

Figure 10. IMD - Health Deprivation & Disability

2.4.8. Figure 10 shows the level of health deprivation and disability in the LCWIP study area. Out of the 71 LSOAs, 56 are in the 50% least deprived areas in England (deciles 6-10), with 3 in the 10% least deprived and 1 in the 10% most deprived. The patterns of deprivation are similar to the overall IMD.

Barriers to Housing and Services

2.4.9. The Barriers to Housing and Services Domain measures the physical and financial accessibility of housing and local services. Figure 11 illustrates the levels of deprivation relating to barriers to housing and services across the study area. Out of the 71 LSOAs, 58 are in the 50% least deprived areas in England (deciles 6-10), 16 are in the 10% least deprived and none are in the 10% most deprived.

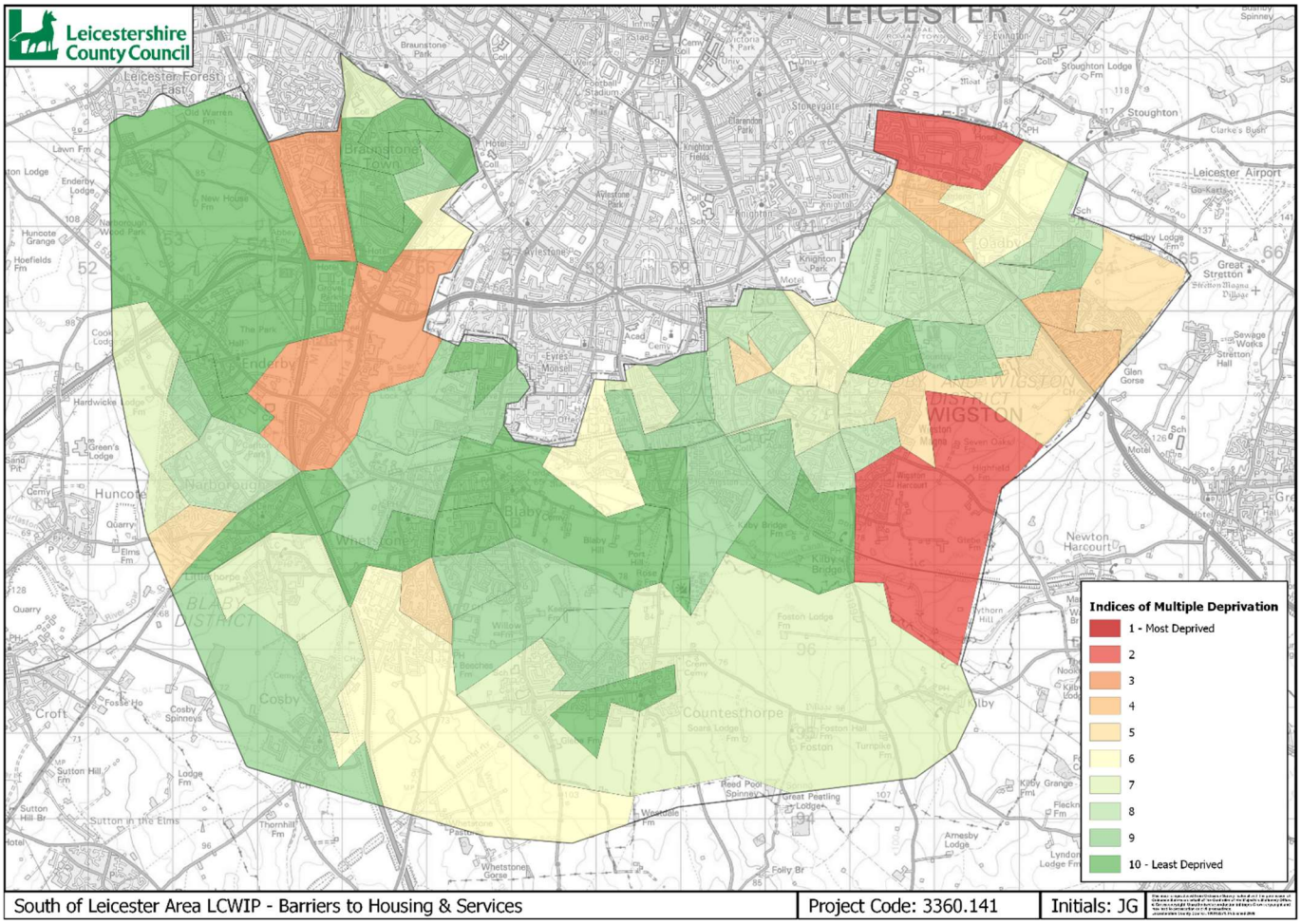

Figure 11. IMD - Barriers to Housing & Services

Living Environment Deprivation

2.4.10. The Living Environment Deprivation Domain measures the quality of the local environment, both indoors (quality of housing) and outdoors (air quality and road traffic accidents). Figure 12 shows the level of deprivation for the living environment domain in the study area. Out of the 71 LSOAs, 62 are in the 50% least deprived areas in England (deciles 6-10), 16 are in the 10% least deprived and none are in the 10% most deprived. The most deprived LSOA is in the area between Enderby, Braunstone Town and Leicester Forest East.

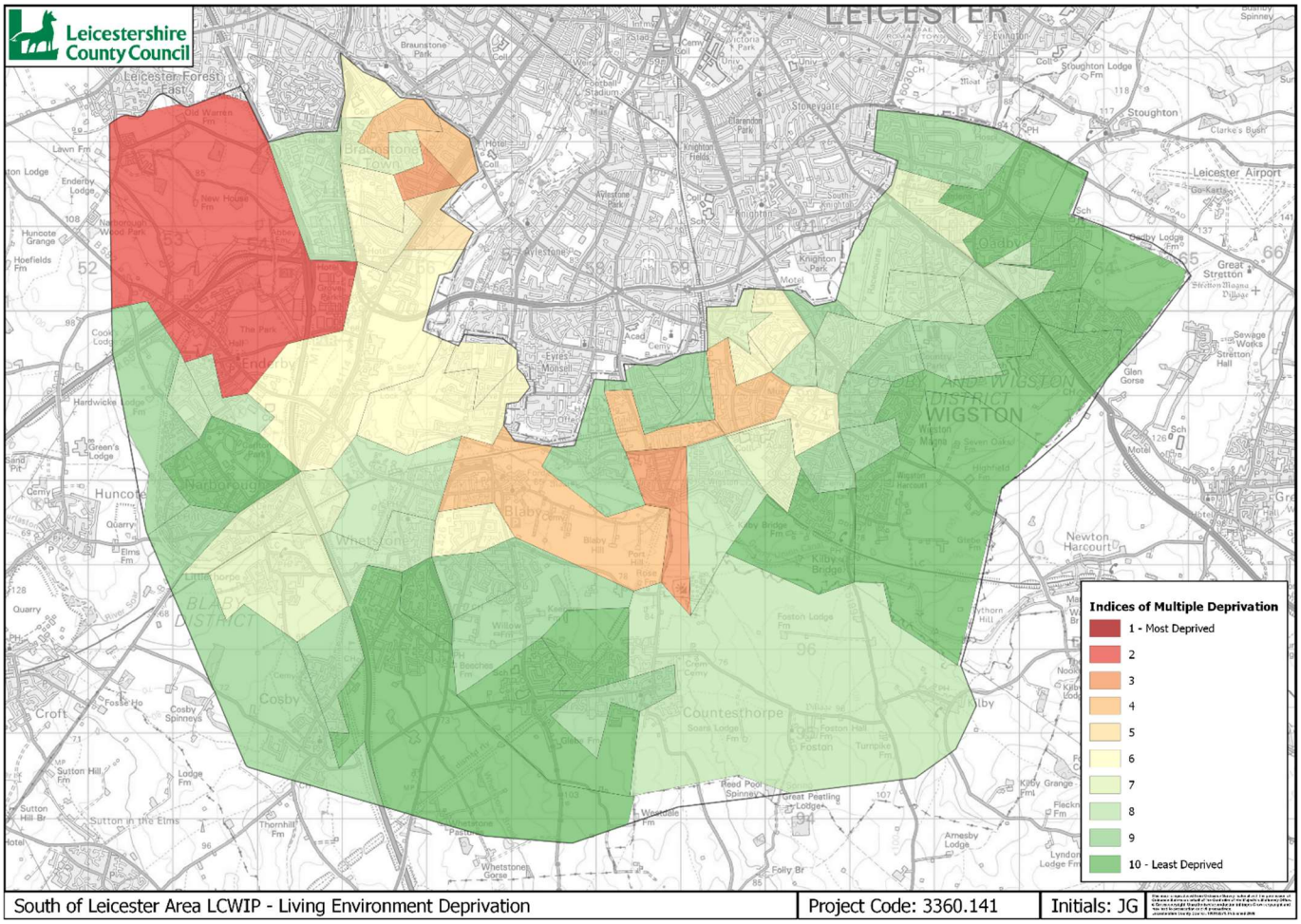

Figure 12. IMD - Living Environment Deprivation

2.4.11. The IMD data presented shows that there are varying levels of deprivation within the study area. There are several LSOAs in the 50% most deprived in England with regards to health which should be addressed. Increasing levels of cycling and walking can help to improve people's both physical and mental health.

2.5. Journey to Work Travel Patterns

2.5.1. 2011 Census data has been analysed to establish journey to work travel patterns. Table 3 summarises where residents in the study area were travelling for work purposes, based on Middle Layer Super Output Area (MSOA) boundaries. The data illustrates that 33.6% of residents worked within the study area itself in 2011, of which 4.6% worked in Oadby, 6.2% in Wigston, 3.1% in South Wigston, 2.3% in Blaby and 17.5% from elsewhere in the study area. 64.2% of residents were travelling to areas outside of Oadby & Wigston Borough or Blaby District for work purposes, of which 37% were travelling to Leicester City.

Table 3. Journey to Work: Travel Patterns from the Study Area

Location	No. in	% of Total
Study Area	17,639	33.6%
(Oadby)	*2,398*	*4.6%*
(Wigston)	*3,229*	*6.2%*
(South Wigston)	*1,615*	*3.1%*
(Blaby)	*1,230*	*2.3%*
(Other)	*9,167*	*17.5%*
Blaby District (excluding Study Area)	1,157	2.2%
Leicester	19,411	37%
Other (elsewhere in Leicestershire)	14,278	27.2%
Total	**46,165**	**100%**

2.5.2. Table 4 shows the origins of people who commuted to the study area for work in 2011. The data shows that 38.2% of people who worked in the study area were also residents, meaning that these were internal commuter trips. Moreover, 4.4% of the workplace population commuted into the study area from the wider Blaby District area, 31.6% from Leicester City and 25.8% from elsewhere in Leicestershire.

Table 4. Journey to Work: Origin of Trips into the Study Area

Location	No. in	% of Total
Study Area	17,639	38.2%
Blaby District (excluding Study Area)	2,031	4.4%
Leicester	14,571	31.6%
Other (elsewhere in Leicestershire)	11,924	25.8%
Total	**46,165**	**100%**

2.5.3. The location of travel is important for understanding patterns of commuter trips. However, it is also important to look at the modal choice of internal trips to understand how the existing network is used. Table 5 summarises the modal split of internal commuter trips within the study area.

Table 5. Journey to Work: Modal Split of Internal Trips

Mode	% of Travellers				
	Oadby	Wigston	S. Wigston	Blaby	Rest of Study
Car (Driver or Passenger)	71.3%	67.8%	58.3%	71.7%	76.1%
Bus	3.8%	3.6%	3.5%	2.2%	3.3%
Walk	19.8%	21.6%	28.4%	19.1%	14.2%
Cycle	3.3%	5.7%	7.8%	6.2%	5.0%
Other	1.8%	1.3%	2.0%	0.8%	1.4%

2.5.4. This data shows that there was a high number of trips made by car, either as the driver or passenger. 23.1% of internal trips from Oadby were made by walking or cycling, 27.3% from Wigston, 36.2% from South Wigston, 25.3% from Blaby and 19.2% from elsewhere in the study area. This suggest that there may be barriers to why more internal trips aren't made by active modes.

2.5.5. Table 6 supports that there is scope to change people's behaviour and encourage more people to make trips by active modes such as walking and cycling, with 64.5% of people in Blaby travelling less than 5km and 78.6% less than 10km, etc.

Table 6. Distance Travelled to Work (Census 2011)

Distance Travelled to Work	% of Travellers				
	Oadby	Wigston	S. Wigston	Blaby	Rest of
Less than 2km	11%	17.9%	20.1%	54%	53.2%
2km to less than 5km	21.3%	21.5%	22.1%	10.5%	12%
5km to less than 10km	32.5%	29.9%	27.6%	14.1%	12.9%
10km to less than 20km	6.7%	7.2%	7.4%	5.8%	7.2%
20km to less than 30km	3.6%	3.3%	3.1%	2.2%	1.9%
30km to less than 40km	2.5%	1.7%	1.4%	0.9%	1.1%
40km to less than 60km	3%	1.9%	1.7%	1.3%	1.3%
60km and over	4.1%	2.1%	2.5%	1.4%	1.4%
Work mainly at or from home	9.2%	8%	6.8%	5.4%	4.9%
Other	6%	6.6%	7.3%	4.6%	3.9%

2.6. Existing Cycling and Walking Networks

2.6.1. Public Rights of Way (PRoW) provide a great opportunity for walking and cycling and are a traffic free alternative to on-road routes. Figure 13 shows the existing Public Footpaths and Bridleways in the South of Leicester LCWIP area[18] which are to be used by[19]:

- Footpaths – pedestrians, mobility scooters or powered wheelchairs
- Bridleways – pedestrians, horse riders, bicycles, mobility scooters or powered wheelchairs

[18] https://www.leicestershire.gov.uk/roads-and-travel/cycling-and-walking/where-to-walk-in-leicestershire
[19] https://www.gov.uk/right-of-way-open-access-land/use-public-rights-of-way

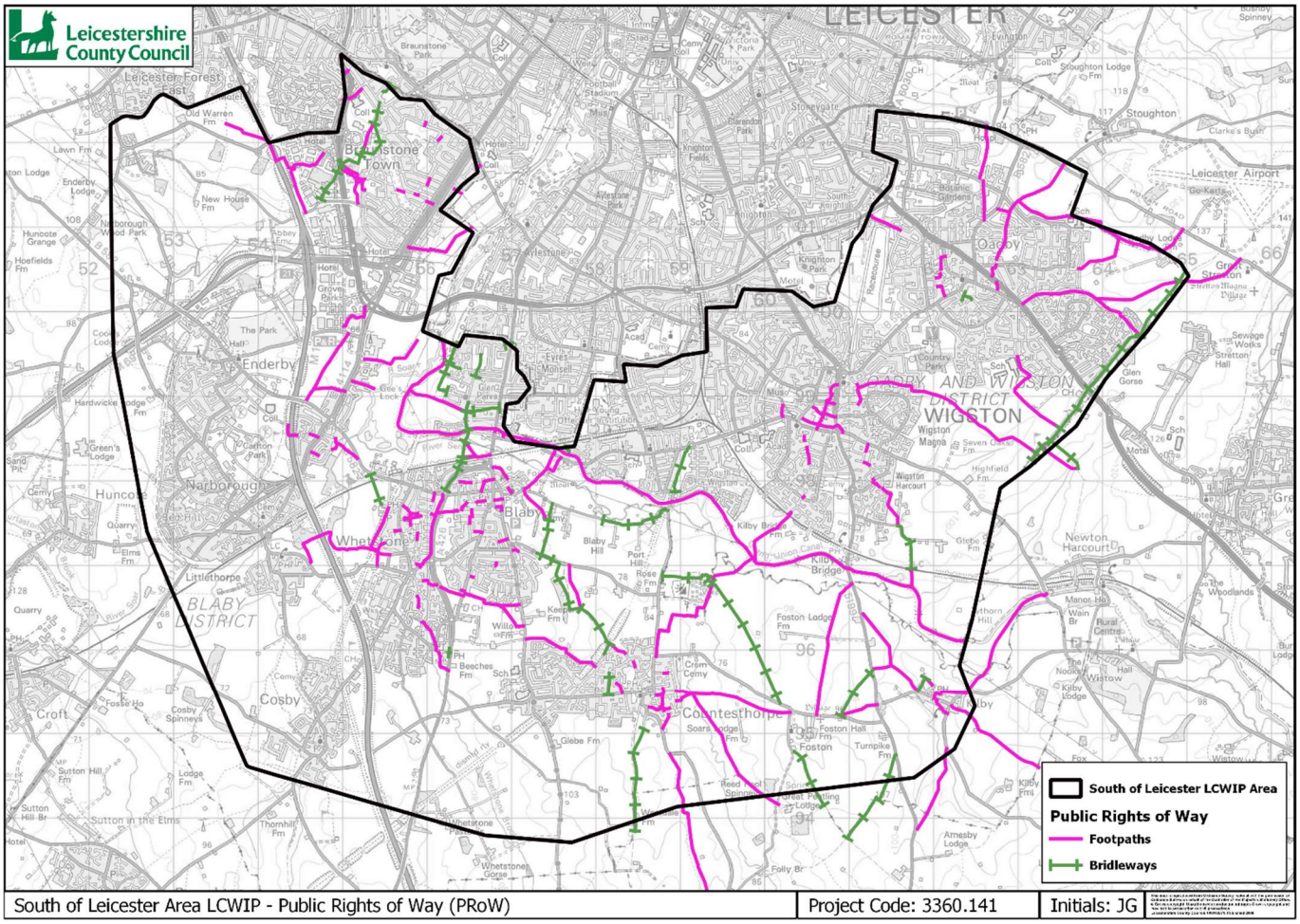

Figure 13. Public Rights of Way

2.6.2. Figure 14 shows the existing cycle network within the study area. It has been split into the DfT's Active Mode Appraisal Toolkit (AMAT) categories of:

- Off-Road Segregated Cycle Track
- On-Road Non-Segregated Cycle Lane
- Shared Bus Lane
- On-Road Segregated Cycle Lane
- Wider Lane (there are currently no roads of this nature in the LCWIP area)

2.6.3. The National Cycle Network (NCN) Route 6 has also been identified on the map, running through Glen Parva, Blaby and Countesthorpe. Looking at this in conjunction with the existing infrastructure allows for any gaps in the network to be identified between key attractors.

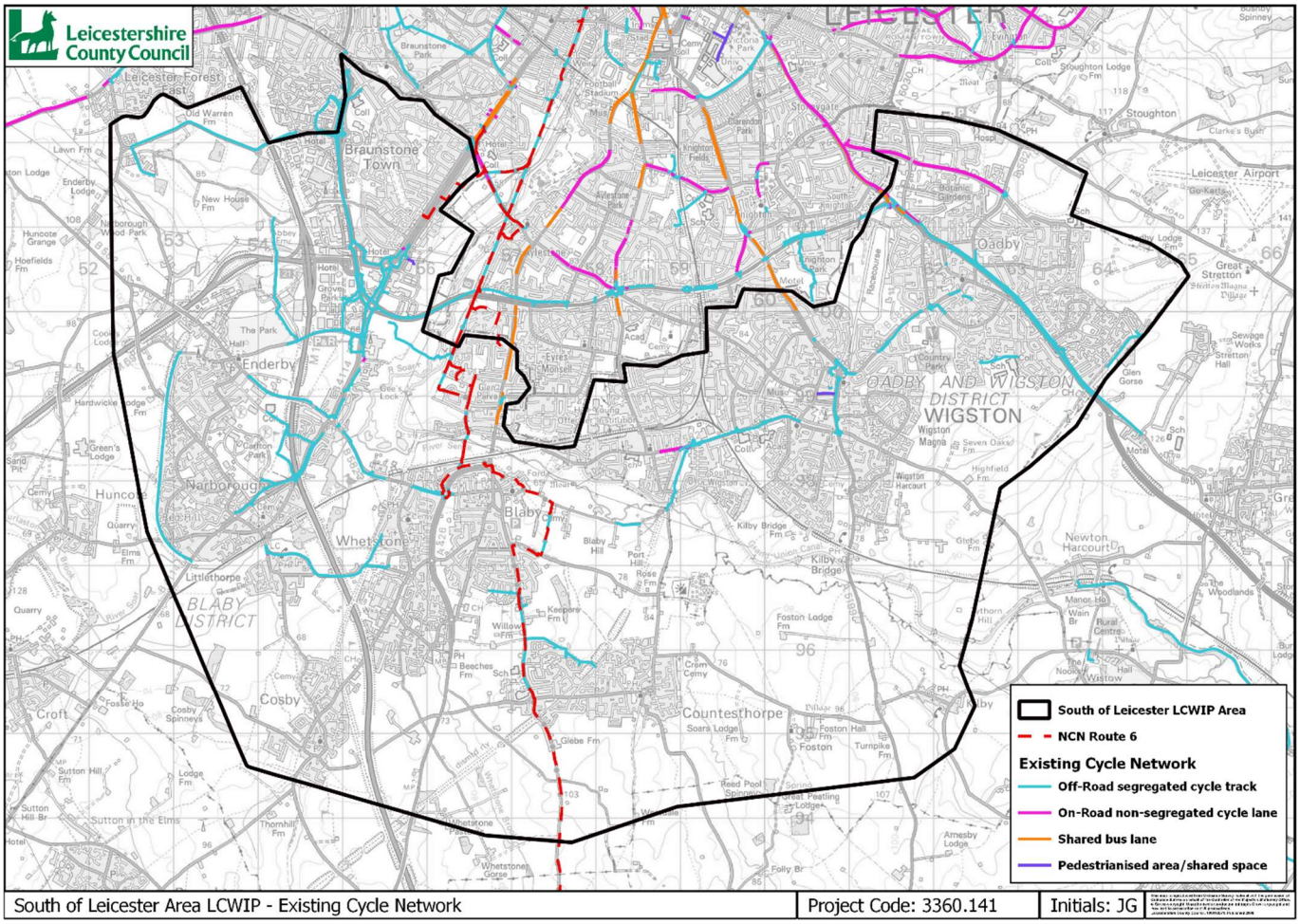

Figure 14. Existing Cycling Network (using AMAT Categories)

Public Suggestions for Improvement

2.6.4. As a result of the Covid-19 Pandemic, the government announced that councils should be creating new cycleways and wider pavements for physical distancing. Cycle Streets[20] created the Widen My Path tool to enable the public to identify where changes are needed on the walking or cycling network in the UK[21]. The data is available to local authorities to see where changes should be prioritised. Figure 15 shows the location of walking suggestions put forward, categorised into the following:

- Width – where the width of the path should be increased
- Condition – where the condition of the path needs improving
- Parked cars – where parked cars are making path difficult to use / dangerous
- New footway – where a new footway is needed
- Safety – where the safety of users' needs to be improved, e.g. with school streets
- Crossing – where a pedestrian crossing is needed

[20] www.cyclestreets.net
[21] https://www.widenmypath.com/leicestershire/#10/52.6672/-1.1137

- Dropped Kerb – where a dropped kerb is needed
- Multiple – where more than one of the above has been listed
- Other – includes things that have only been mentioned once, such as a road being used as a rat run

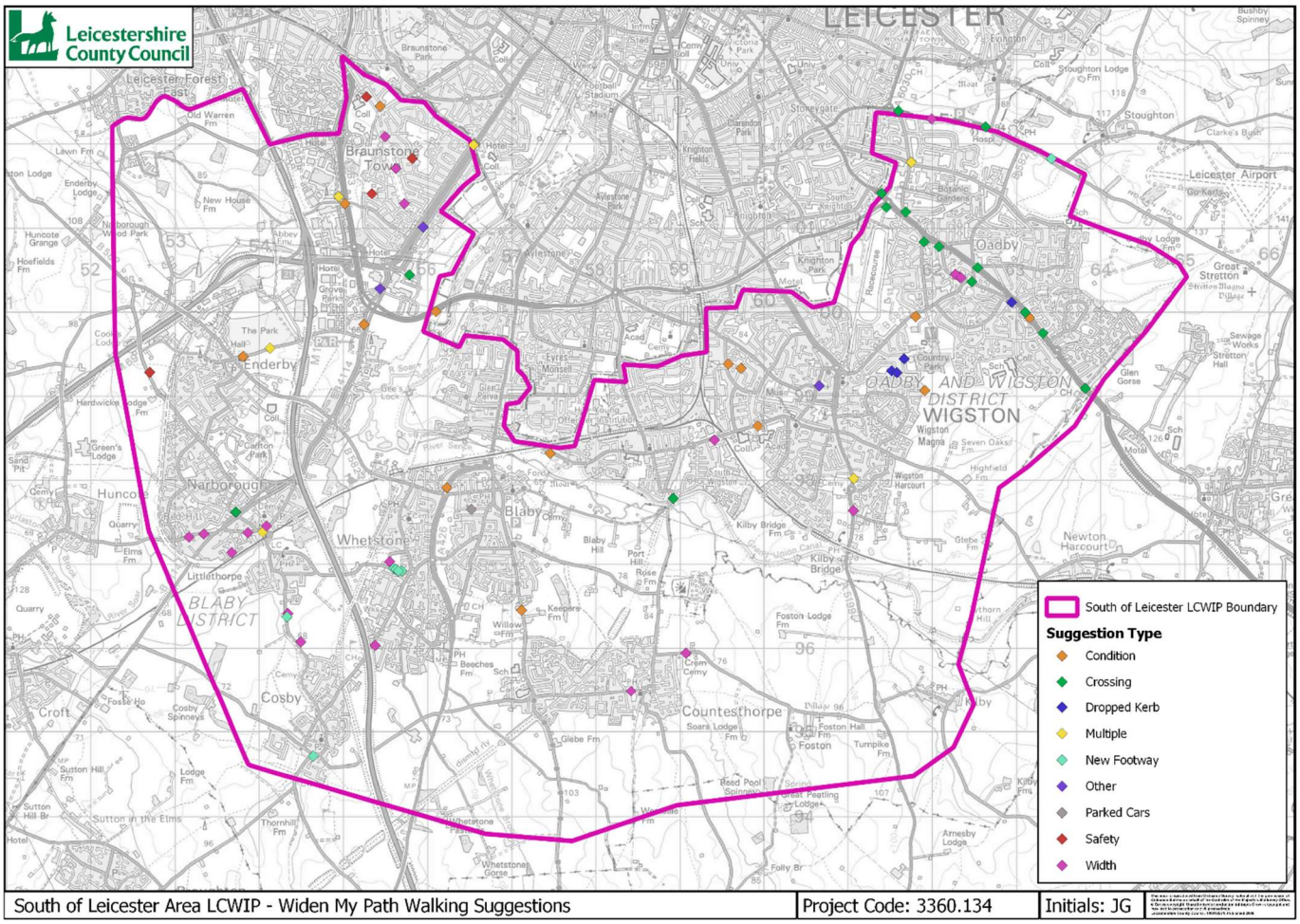

Figure 15. Widen My Path Walking Suggestion (as at Oct 2021)

2.6.5. Figure 16 shows the location of cycling suggestions put forward, categorised into the following:

- Width – same as above
- Condition – same as above
- Parked cars – same as above
- New cycle path – where a new cycleway is needed
- Crossing – where a crossing needs improving
- Dropped Kerb – same as above
- Signage / Markings – where new / improved signage or markings are needed
- Multiple – same as above
- Other – includes things that have only been mentioned once, such as permitting cycling along a footpath

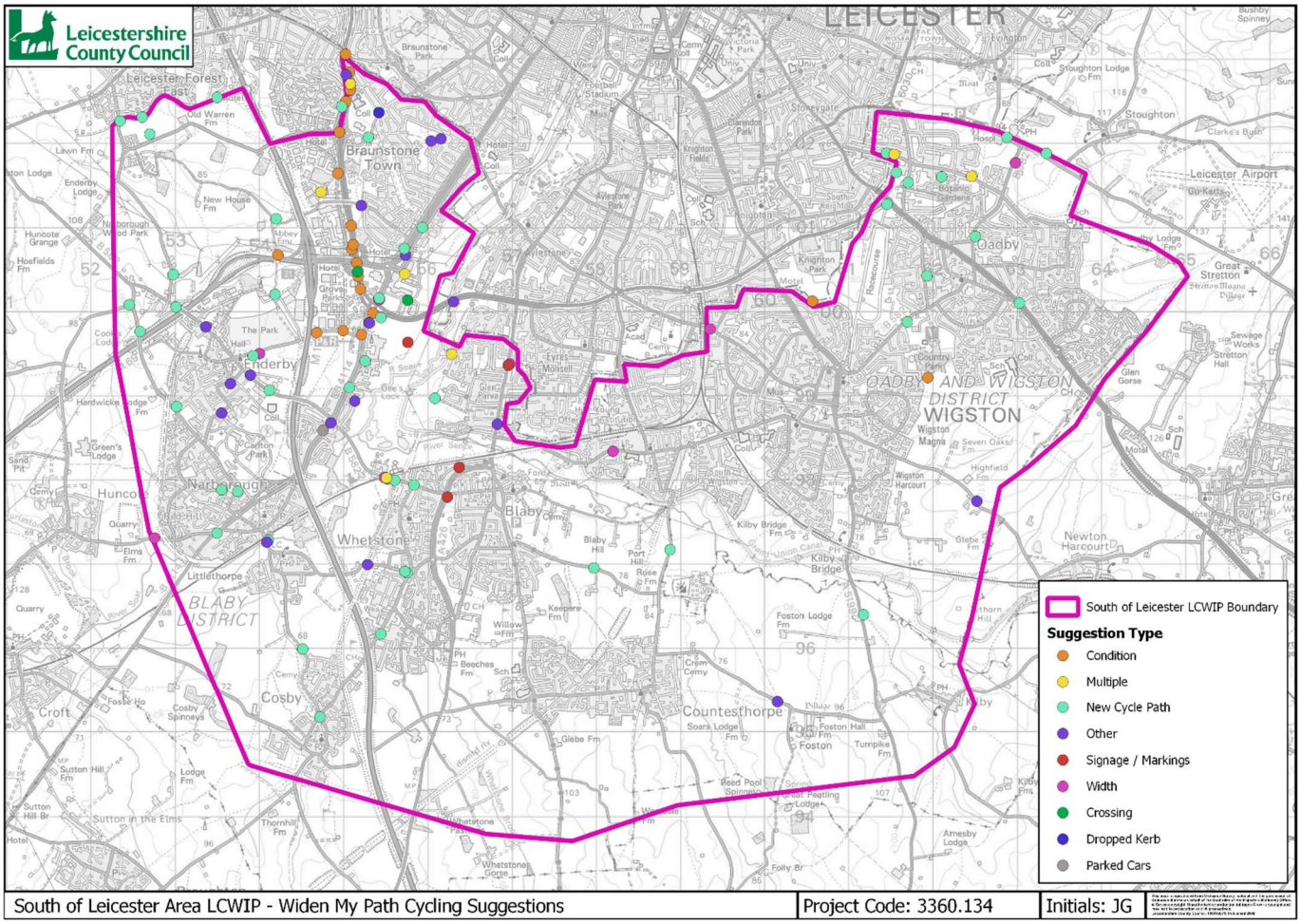

Figure 16. Widen My Path Cycling Suggestion (as at Oct 2021)

Pedestrian and Cyclist Collision Data

2.6.6. Table 7 summarises the collision records for pedestrians and cyclists in the study area for 2015 - 2019. Although data is available for the full year of 2020, this has not been included in the analysis due to the unknown impacts of the Covid-19 pandemic.

Table 7. Pedestrian and Cyclist Collision Data (2015-19)

Severity	Cyclist Collisions					Pedestrian Collisions				
	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Minor	32	23	20	19	7	22	18	14	17	8
Serious	1	4	6	3	4	6	4	3	3	6
Fatal	1	0	0	0	0	0	0	1	1	1
Total	**34**	**27**	**26**	**22**	**11**	**28**	**22**	**18**	**21**	**15**

2.6.7. The data shows that there was 1 fatal cyclist collision over the 5-year period and 3 fatal pedestrian collisions. There were minor and serious cyclist and pedestrian collisions across all 5 years. Improvements to cycling and walking infrastructure could alleviate the number of collisions by minimising the conflict between active mode users and vehicles.

2.6.8. Figure 17 shows the spatial distribution of the cyclist and pedestrian collisions summarised in Table 7.

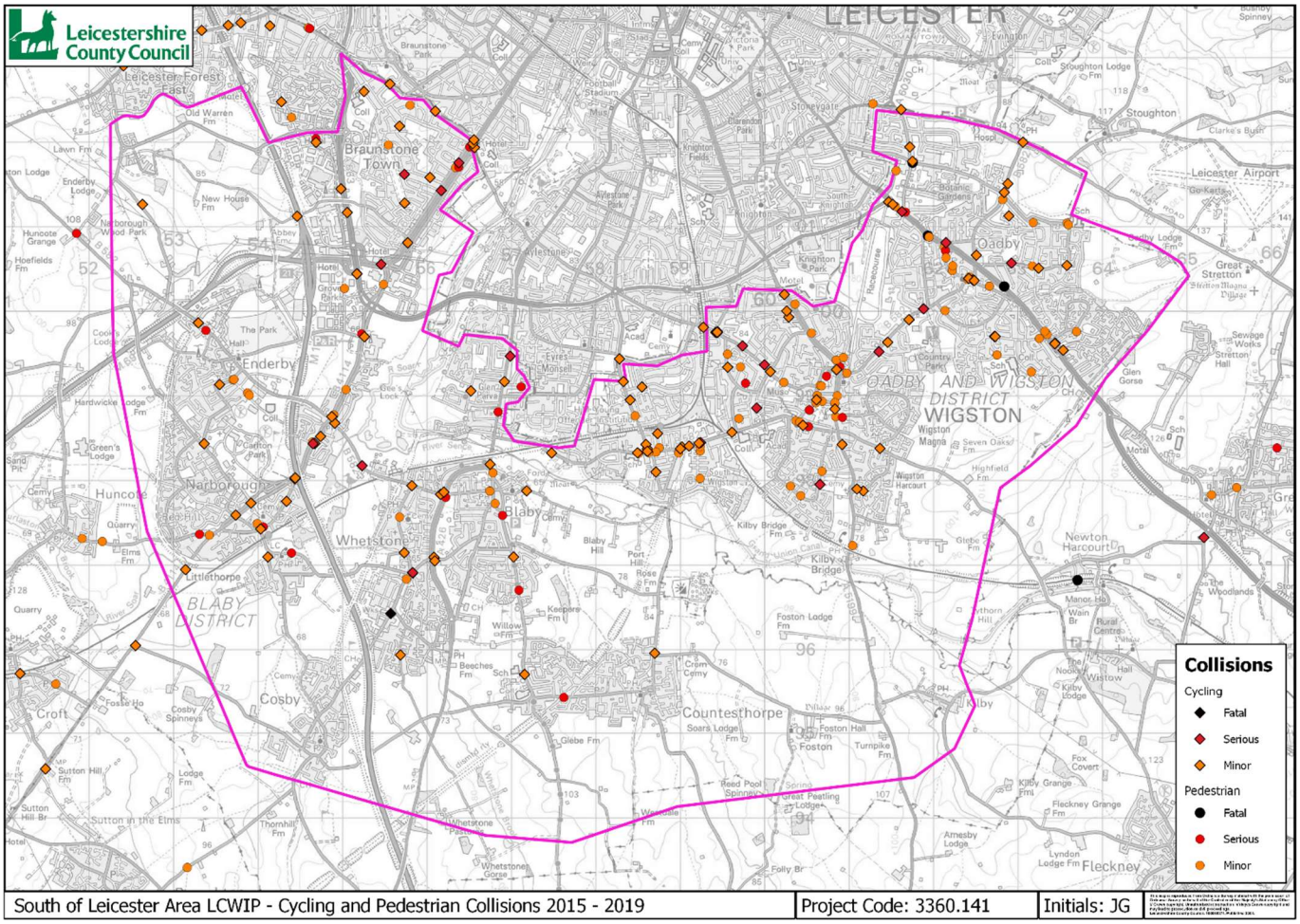

Figure 17. Cycling and Pedestrian Collisions 2015 – 2019

2.6.9. The map shows that collisions have taken place across the whole of the study area, with many collisions clustered around Oadby and Wigston town centres and along arterial routes into the city, such as the B4114, A426, B5418 and A6. The fatal cyclist collision occurred on Cambridge Road in Whetstone, and the fatal walking collisions all occurred in Oadby on the A6, Brabazon Road, and Stoughton Drive South.

2.6.10. The collision hotspots identified above will be considered when identifying key routes for cycling and walking, especially when they occur on routes close to schools, as reducing the rate of cycling accidents is a principal aim of the CWIS.

Propensity to Cycle Tool (PCT)

2.6.11. The PCT[22] is an online resource, funded by the DfT, that is available to assist with the strategic planning of cycling networks. It includes 2011 Census (Journey to Work) data which is the most up-to-date source of publicly available Origin-Destination (OD) data for cycling. The LCWIP technical guidance advises that PCT Journey to Work data can assist with the preparation of LCWIPs at a number of different stages[23], including:

- Planning the cycling network
- Defining potential demand for cycling
- Assisting with scheme prioritisation

2.6.12. Figure 18 shows the cycling ODs (>5 trips) at LSOA level which have been derived from the PCT commuting data.

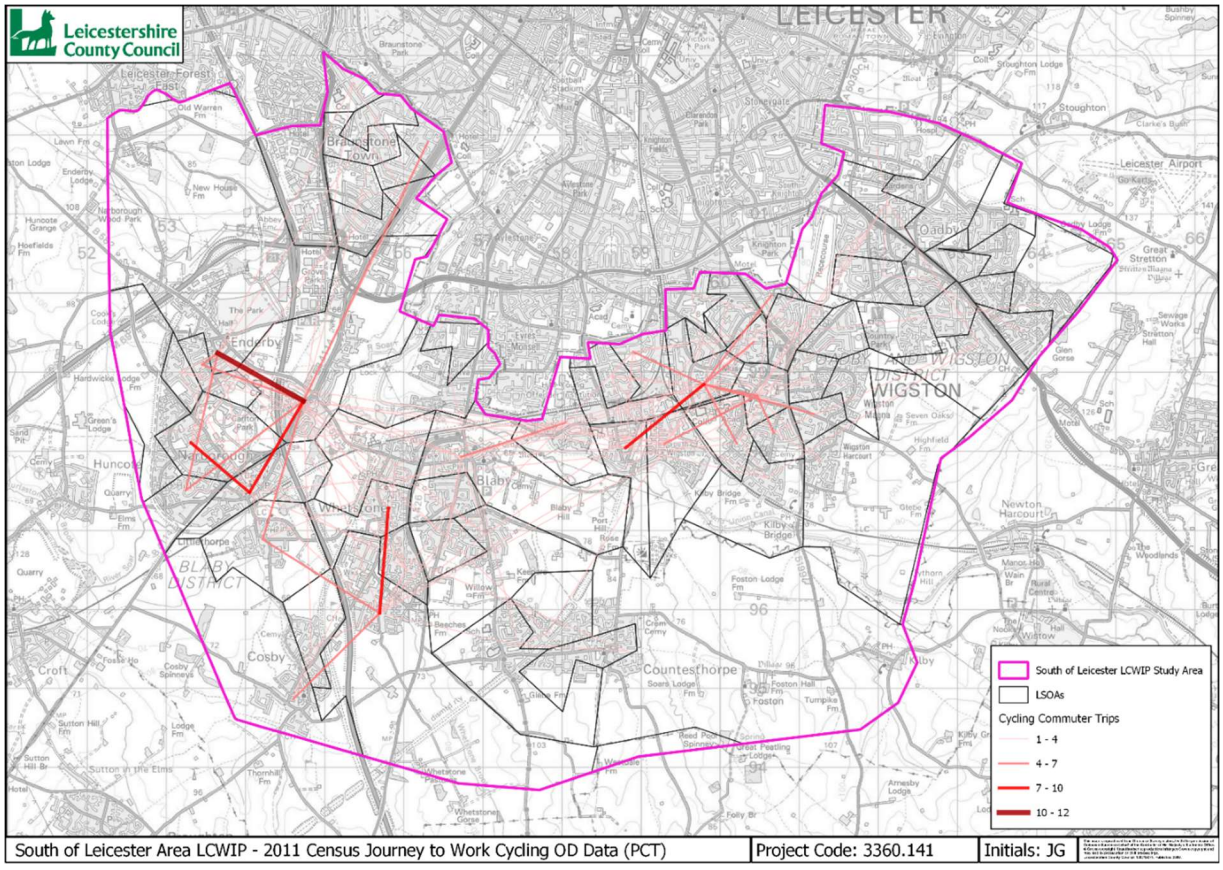

Figure 18. 2011 Census Cycling Journey to Work Origin-Destinations (PCT)

2.6.13. As well as 2011 baseline data, the PCT also includes versions of the future that are represented through the various scenarios of change, including the DfT draft Cycling Delivery Plan target to double cycling in a decade and the more ambitious 'Go Dutch' scenario where Dutch cycling levels are reached in England.

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[22] https://www.pct.bike/ Lovelace et al. (2017) and/or Goodman et al. (2019)

[23] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/908594/cycling-walking-infrastructure-tools-document.pdf

2.6.14. It should be noted that only journey to work data is considered in the PCT tool. Therefore, a limitation of the tool is that other journey purposes are excluded, such as school trips, recreation, and tourism. The PCT outputs are therefore only a starting point for understanding cycling demand.

2.7. Existing Road Transport Network

2.7.1. In order to encourage modal shift towards walking and cycling, it is important to consider both current and prospective future road transport conditions in the area. Several layers have been extracted from Leicestershire's Pan Regional Transport Model (PRTM) to see the forecast road conditions in 2021 and 2036.

2.7.2. The blue bandwidths displayed on Figure 19 show the number of modelled highway trips to/from the LCWIP area under 10km in 2021, for the AM (08:00-09:00) and PM (17:00-18:00) peak hours combined; thinner lines show less trips and thicker lines show more trips. This gives an indication of both the potential for mode shift away from car journeys and the key corridors that could be targeted for active mode trips.

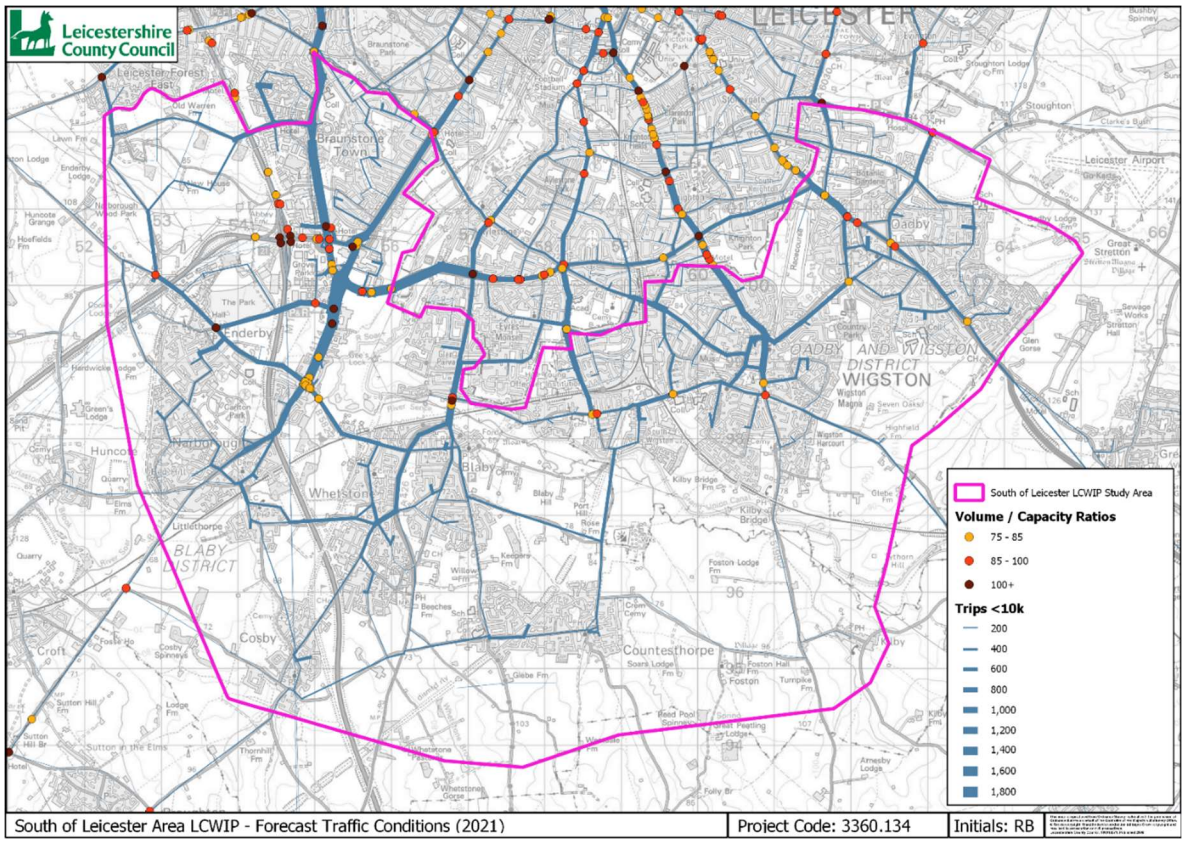


Figure 19. Forecast Traffic Conditions (2021)

2.7.3. The map also shows the volume over capacity (VoC) ratios for junctions, which is a measure of congestion. The junctions have been divided into 4 bands: 0-75% (not shown on the map), 75-85%, 85-100%, and >100%. A junction is considered to be operating under stress if it's VoC ratio exceeds 85%. A VoC ratio of 100% represents a theoretical capacity limit so these junctions are likely to experience an increased occurrence of

queueing and congestion. Many of the near-capacity and over-capacity junctions are on routes that experience a high number of short distance trips. It is hoped that by improving active mode alternatives, a modal shift away from car trips at these junctions will mitigate congestion in the future.

2.7.4. Figure 20 shows modelled road traffic conditions for 2036, including trips under 10km and VoC ratios for junctions. There is a large amount of short distance trips around Fosse Shopping Park and Meridian Business Park on routes such as Soar Valley Way, Narborough Rd South, St Johns and Lubbesthorpe Way, etc. There is also a high amount of short distance trips on arterial routes into the city, such as Welford Rd (A5199) from Wigston, Leicester Rd (A6) from Oadby, and Meridian Way from Lubbesthorpe, etc.

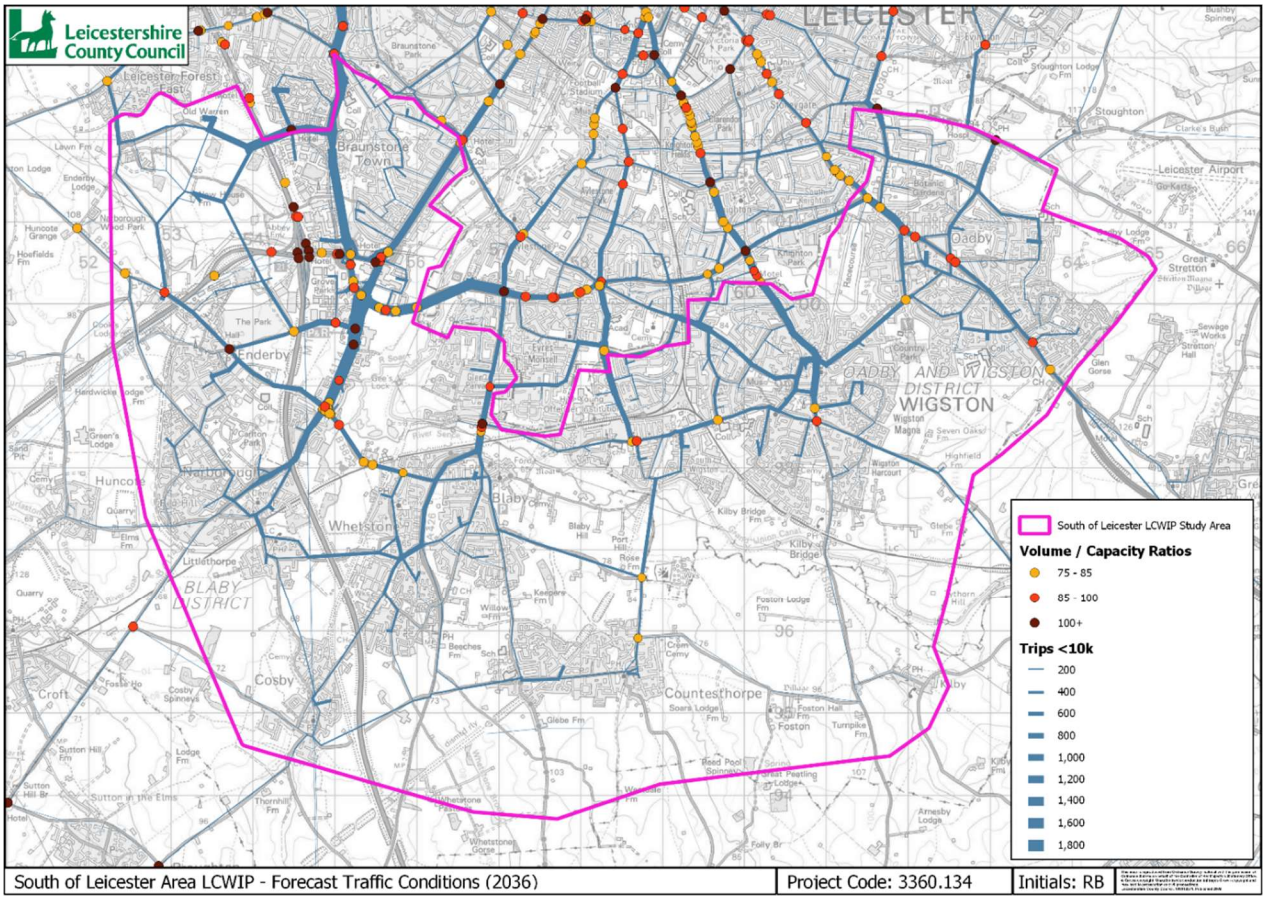


Figure 20. Forecast Traffic Conditions (2036)

2.7.5. Table 8 shows a comparison of junctions with VoC ratios exceeding 75% between 2021 and 2036.

Table 8. Number of Junctions with a VoC Ratio >75% (2021 vs 2036)

Volume to Capacity	2021		2036	
	AM	PM	AM	PM
75 – 85%	21	10	23	21
85 – 100 %	18	17	21	19
> 100%	10	9	15	13
Total	**49**	**36**	**59**	**53**

3. Cycle Network Map Development

3.1. Overview

3.1.1. The third stage of the LCWIP process is to map a future cycle network which identifies where investment should be targeted.

3.2. Methodology

3.2.1. The following method for developing a cycle network map has been developed from the LCWIP technical guidance:

1. Identifying Key Origins and Destinations
2. Clustering of Origins and Destinations
3. Identifying Desire Lines between Origins and Destinations
4. Identifying Routes Serving the Desire Lines
5. Identifying a Route Hierarchy
6. Producing Draft Cycle Network Map

3.2.2. The following sections explain each of these steps in greater detail.

3.3. Identifying Key Origins and Destinations

3.3.1. The first step to identifying demand for a network is mapping the key origin and destination points across the study area using GIS.

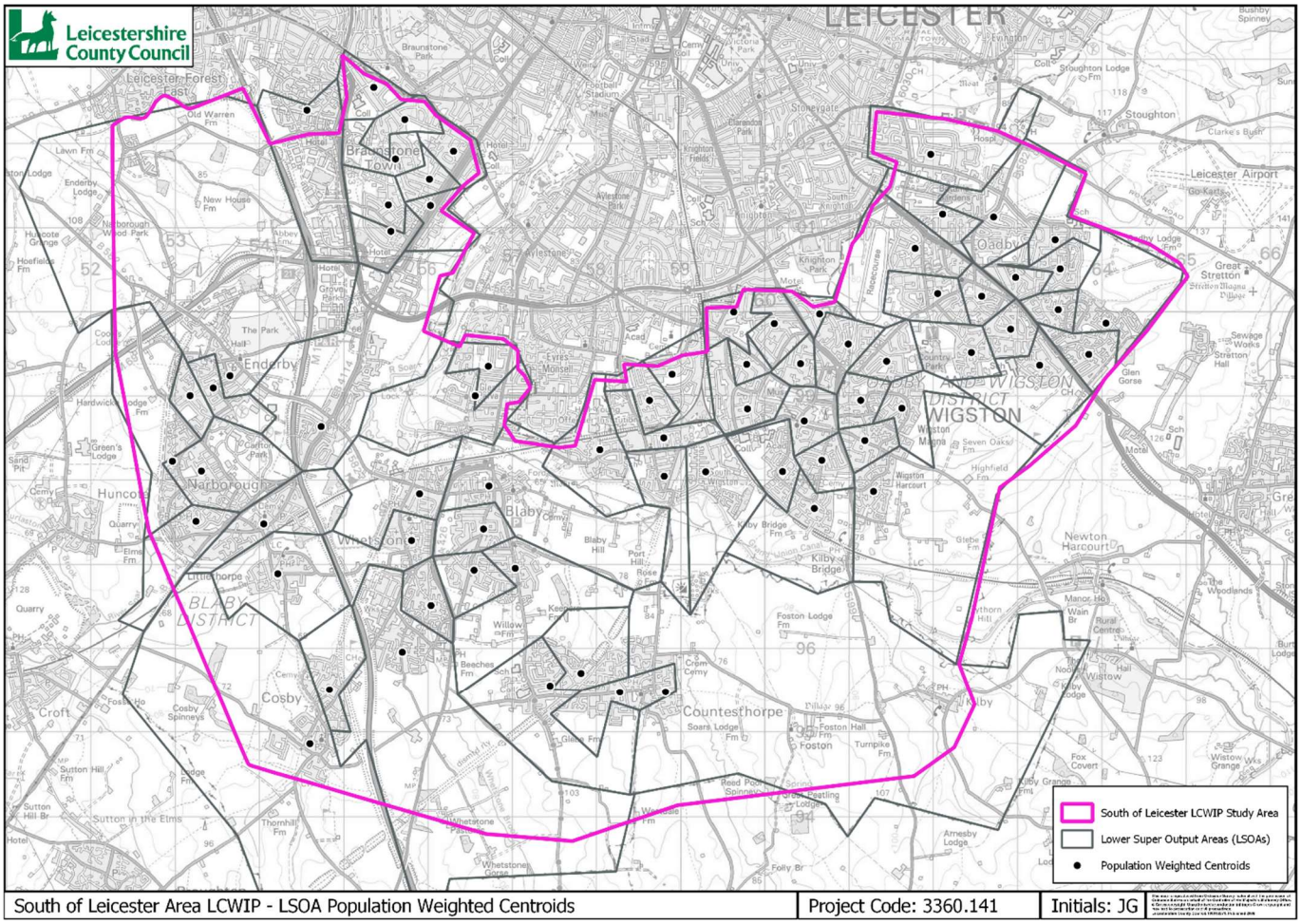
Origins

3.3.2. Cycling trips usually start at residential settlements, therefore 2011 Census data has been used to identify key residential origin points for the study area.

3.3.3. A file containing population weighted centroids for Lower Layer Super Output Area (LSOA) boundaries has been downloaded from the Office for National Statistics (ONS)[24] and mapped, see Figure 21. The centroids represent the centre of the population within each output area indicating where there is the greatest potential for trips.

3.3.4. As the data only considers residential properties that were present when the census took place, new development sites built since 2011 and those planned for the future will be mapped separately.

[24] https://geoportal.statistics.gov.uk/datasets/ons::lower-layer-super-output-areas-december-2011-population-weighted-centroids/explore?location=52.900002%2C-2.000000%2C7.40



Source: Office for National Statistics licensed under the Open Government Licence v.3.0

Figure 21. Population Weighted Centroids as of December 2011 (Census 2011)

Destinations

3.3.5. Common journey destinations have been identified to determine where people are likely to travel to on a regular basis. These key destinations include:

- healthcare establishments - including GPs and Hospitals,
- large employment sites,
- large supermarkets,
- pharmacies,
- primary education establishments
- secondary educational establishments – including colleges and universities,
- transport interchanges – including bus and rail stations,
- libraries; and
- leisure sites – including sports stadiums, entertainments venues, visitor attractions, leisure centres, cultural institutions, and parks, etc.

3.3.6. Figure 22 shows the spatial distribution of the key destinations listed above, as well as committed employment developments with over 50 jobs. There are some clusters of destinations in the town / village centres and Fosse Park.

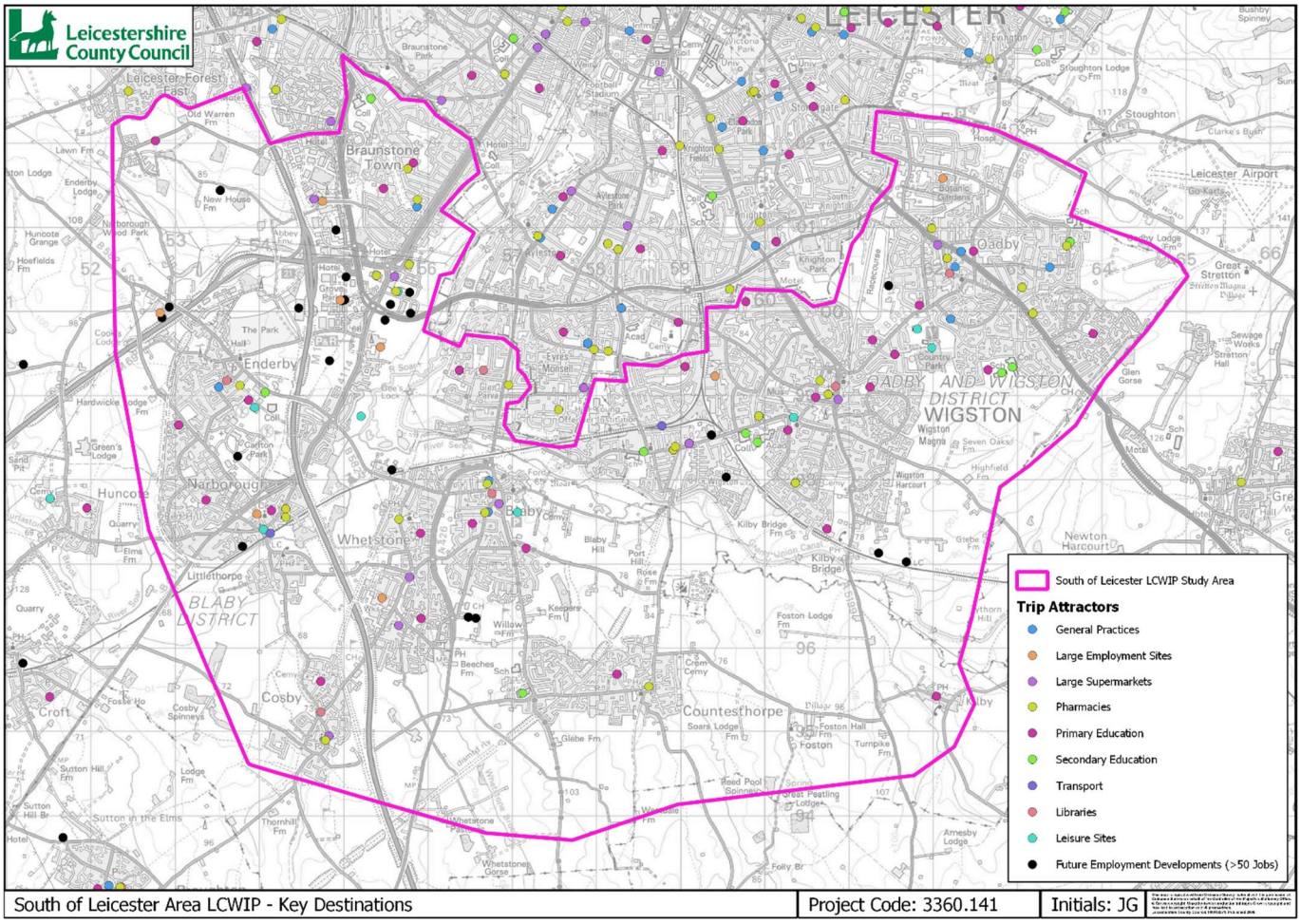


Figure 22. Key Journey Destinations

Key Future Developments

3.3.7. It is important that key future developments are considered when producing the draft cycling network as they may become significant origin or destination points. Depending on the size, location, and influence of the planned developments, it may be necessary to link them to the existing cycling network.

3.3.8. Figure 23 shows the committed housing (>100 dwellings) and employment (>50 jobs) developments in the study area, as well as the key local plan growth areas. The largest growth area is the New Lubbesthorpe development located to the south of Leicester Forest East and bordering the M1. There are also a number of key growth areas on the peripheries of Enderby, Wigston and Oadby.

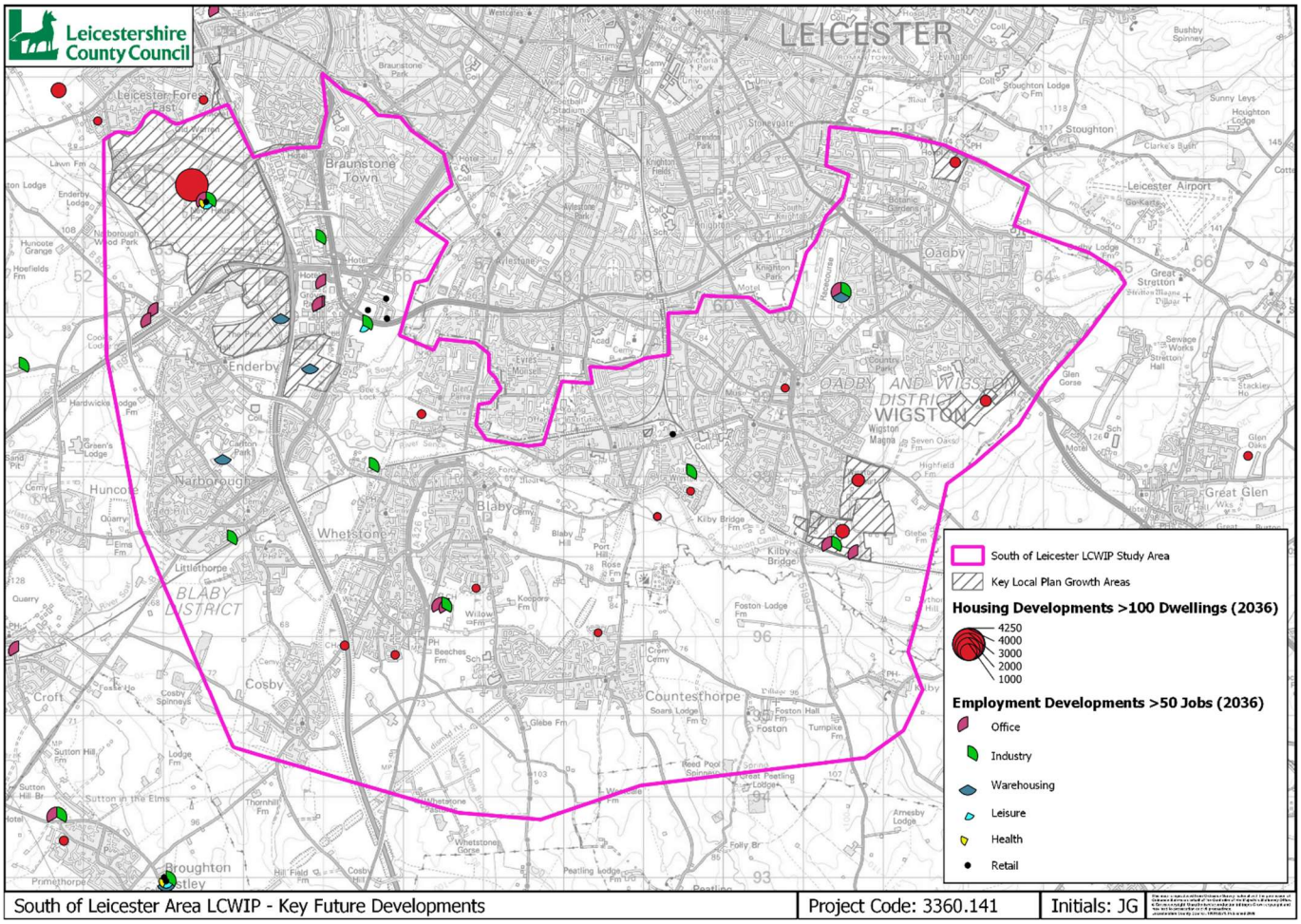


Figure 23. Key Future Developments

3.4. Clustering of Origins and Destinations

3.4.1. It is recommended that trip origins and destinations that are nearby to each other should be clustered together to simplify the analysis. The origins have already been clustered together as per the population weighted centroids in Figure 21.

3.4.2. To define the destination clusters, an exercise has been undertaken in GIS to create buffers around destinations that are within 400m of each other, representing a 5-minute walking distance. This is the recommended density for a joined-up urban cycle network as users should not have to travel further than 400m to get between routes of a similar quality.

3.4.3. The buffers have been drawn to include as many destinations as possible within a 400m radius but are positioned to avoid overlap where possible. In addition, destinations that are separated by a barrier, like a major road or railway line, have not been included in the same cluster as they are unlikely to be served by the same cycle route. Figure 24 shows the clusters of key destinations.

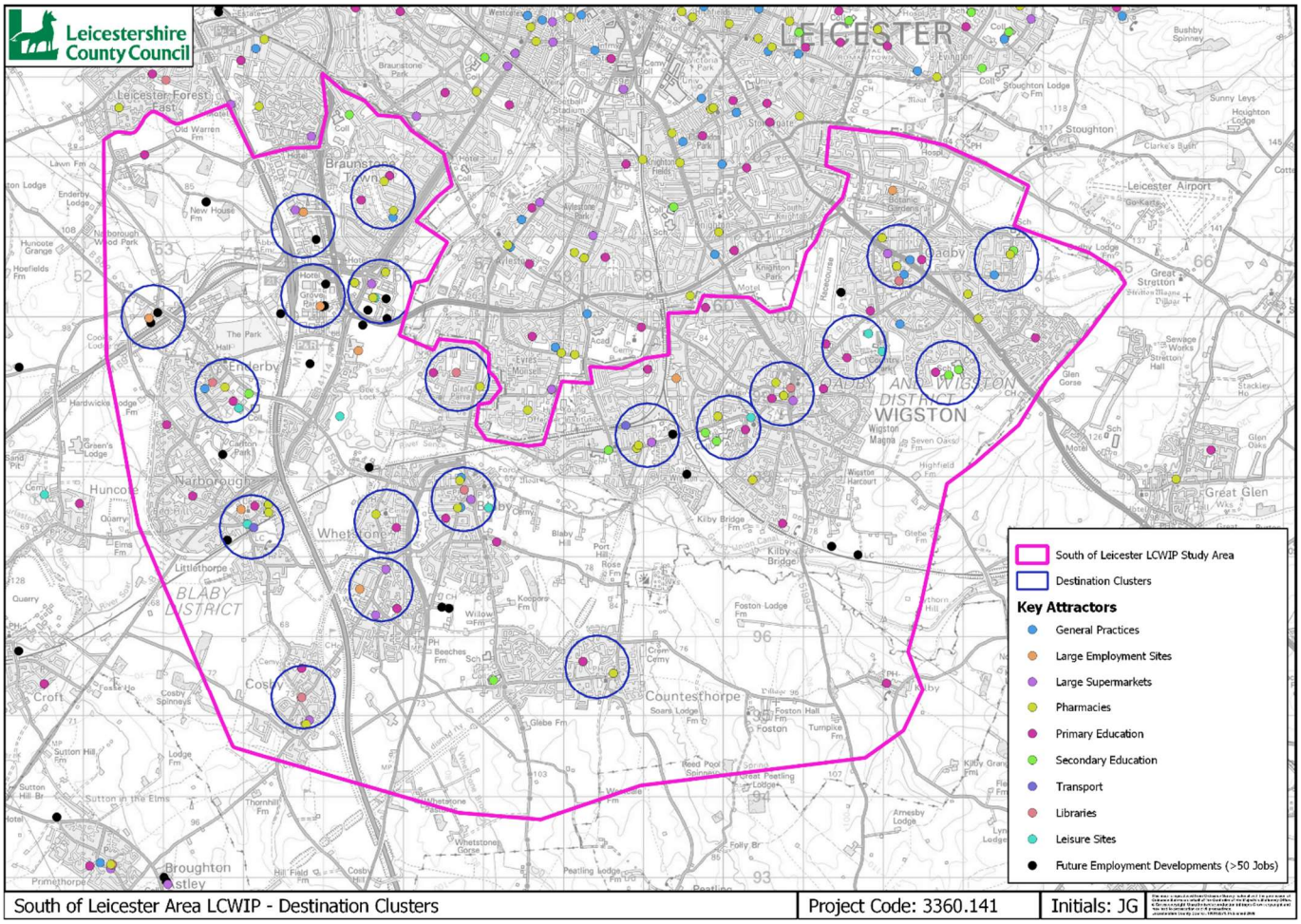


Figure 24. Key Destination Clusters

3.4.4. To determine which of the destination clusters are more desirable, they have been given a weighting based on the number and type of destinations present. The weightings range from 1-5 depending on the number of cyclists the destination is likely to attract, see Table 9. Employment sites, transport interchanges and secondary schools have been given a greater weighting.

Table 9. Destination Desirability Weighting

Destination Type	Weighting
Existing Large Employment Site	5
Future Large Employment Site	5
Transport Hub	5
Secondary School / College	5
Primary School	3
Large Supermarket	3
Leisure Site	3
General Practice	1
Pharmacy	1
Library	1

3.5. Identifying Desire Lines between Origins and Destinations

3.5.1. Direct desire lines have been drawn between each of the origin and destination points in the study area. These lines show the most direct route between OD pairs but are only indicative and do not follow specific routes on the network.

3.5.2. To identify which lines are most likely to be used by cyclists, the origin clusters have been assigned cycling demand based on the number of commuting trips from that LSOA in the 2011 Census (PCT). This demand has been combined with the weightings given to the destination clusters to give an overall desirability score.

3.5.3. Figure 25 shows the top 25% desire lines; the thicker, darker lines are likely to be more desirable to cyclists and the thinner, lighter lines are likely to be less desirable.

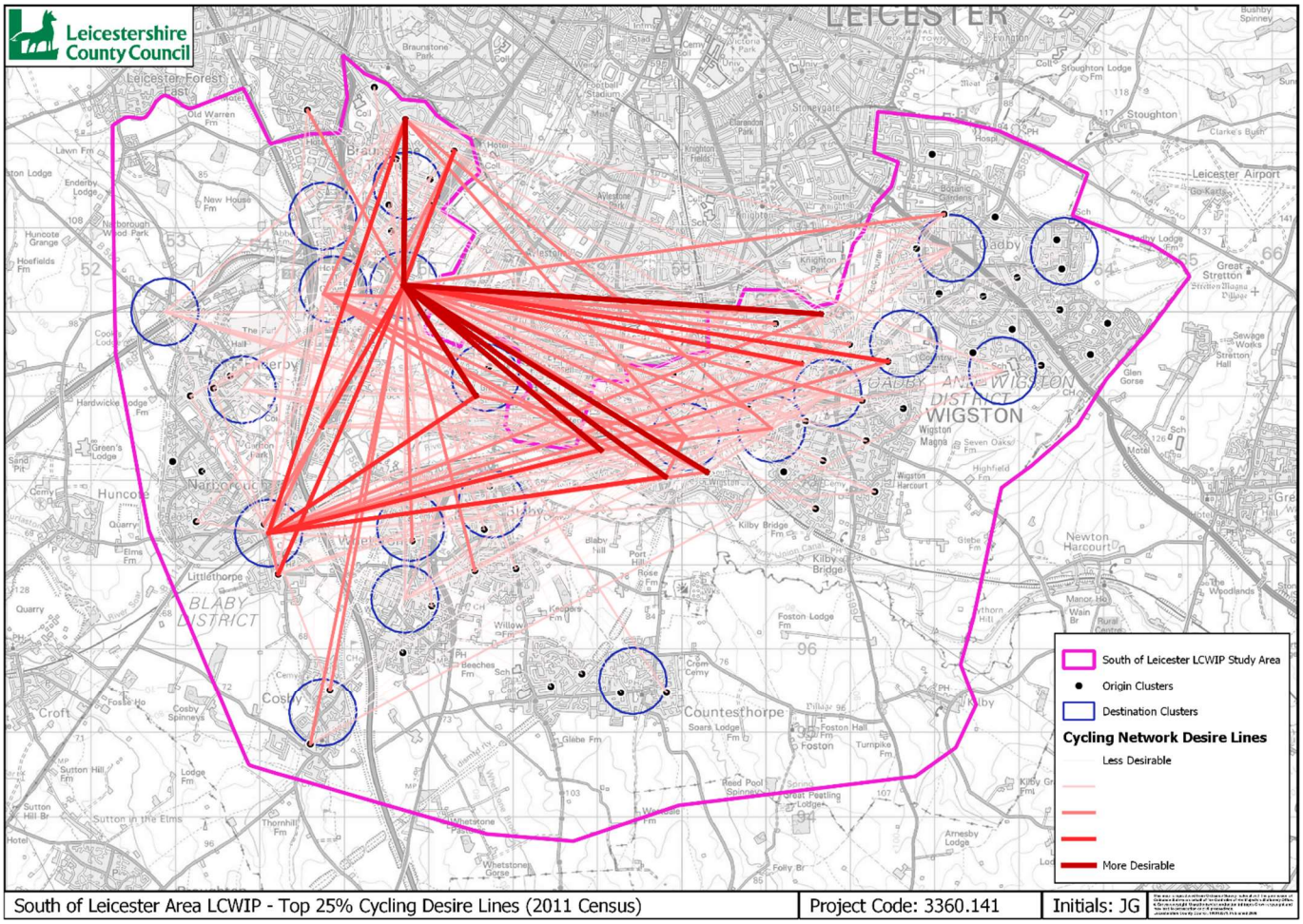


Figure 25. Top 25% Desire Lines between Origins and Destinations

3.5.4. Figure 26 shows similar to the above, however the ODs have been disaggregated to show the most desirable ODs within each settlement in the study area.

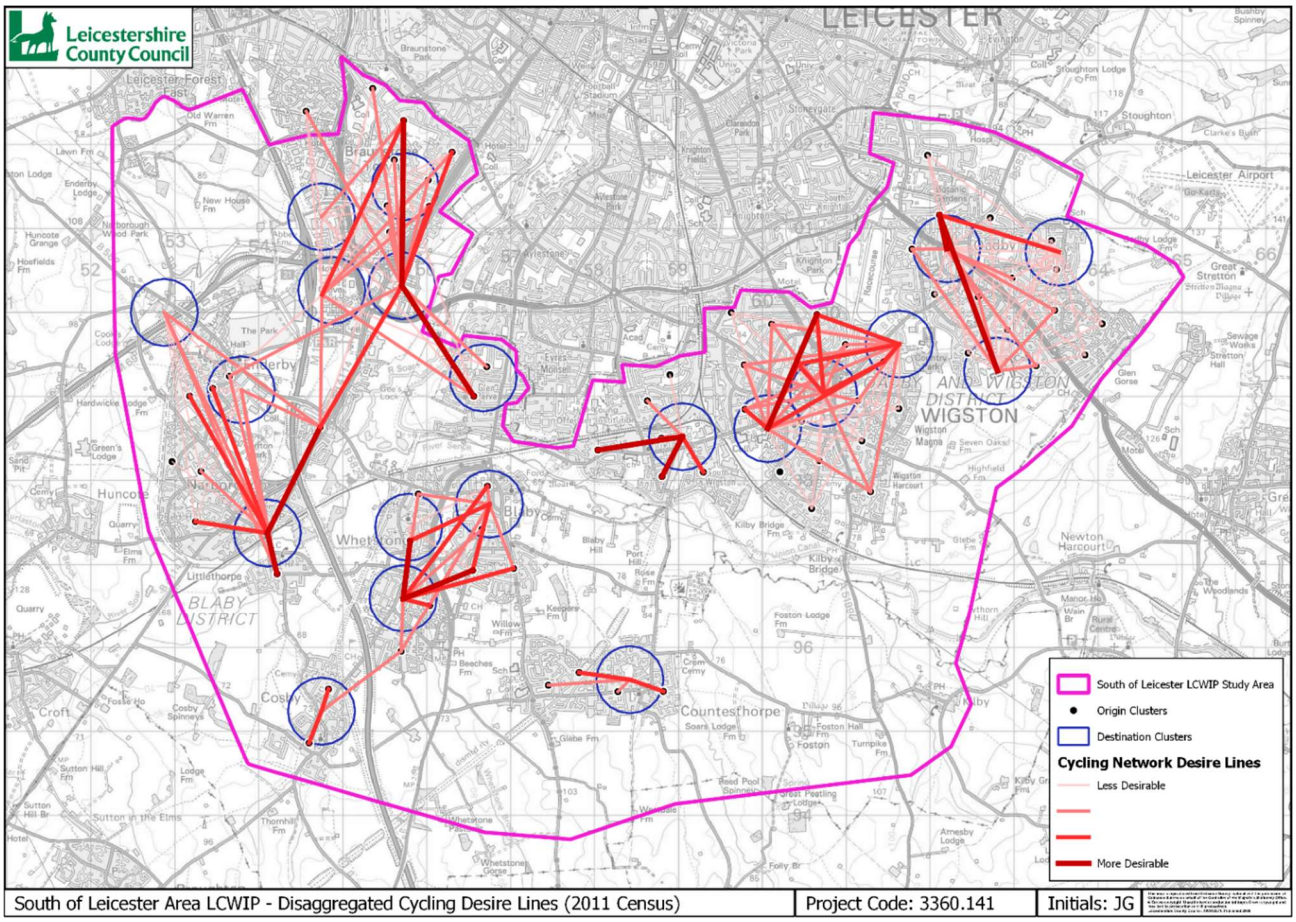


Figure 26. Desire Lines between Origins and Destinations (Disaggregated)

3.6. Identifying Routes Serving the Desire Lines

3.6.1. The desire lines indicate where people are most likely to cycle to / from in the study area but do not attribute trips to specific links on the network. There are often multiple routes that can be taken between two points, so several online resources were used to assist with route selection along desire lines, specifically Google Maps and Strava Metro.

Google Maps

3.6.2. Google Maps[25] is an online service that provides satellite imagery, aerial photography, street maps,

[25] https://www.google.com/maps
[26] https://www.google.co.uk/maps/about/#!/

Strava Metro Data

3.6.3. Strava[27] is a social networking app that allows people to track their human-powered activities such as walking, running, and cycling. The app records information like distance, elevation gain, time, and route, etc. This data has been made available to local government authorities to help them identify opportunities for investment.

3.6.4. Not everyone tracks their activities on Strava, however the platform has shown that Strava Metro data is representative of the overall population. Several academic studies have analysed the relationship between Metro data and data recorded by counters and found robust correlations between the two[28].

3.6.5. The Strava Metro heatmap tool displays the level of cycling activity on routes for a given period. This has been used to inform route selection as it highlights which paths people currently avoid or favour in the study area.

3.7. Identifying a Route Hierarchy

3.7.1. The following hierarchy from the LCWIP Technical Guidance has been used to categorise cycling routes:

- **Primary**: High flows of cyclists are forecast along desire lines that link large residential areas to trip attractors such as a town or city centre.
- **Secondary**: Medium flows of cyclists are forecast along desire lines that link to trip attractors such as schools, colleges, and employment sites.
- **Local**: Lower flows of cyclists are forecast along desire lines that cater for local cycle trips, often providing links to primary or secondary desire lines.

3.7.2. For routes that will serve a key future development, but are not required for the existing cycling network, there is an additional 3 categories named Future Primary (Indicative), Future Secondary (Indicative) and Future Local (Indicative). As many of these sites are yet to go through the planning process and do not have agreed masterplans, these routes should be treated as indicative only.

3.8. Producing Draft Cycle Network Map

3.8.1. The data from the previous steps has been brought together to produce a draft cycle network, shown in Figure 27. The creation of the cycling network map is an iterative process and a final map has been produced following engagement with several key stakeholders.

[27] https://metro.strava.com/

[28] https://medium.com/strava-metro/cdc-finds-strava-metro-data-correlates-strongly-with-census-active-commuting-data-8ab1be0fe130

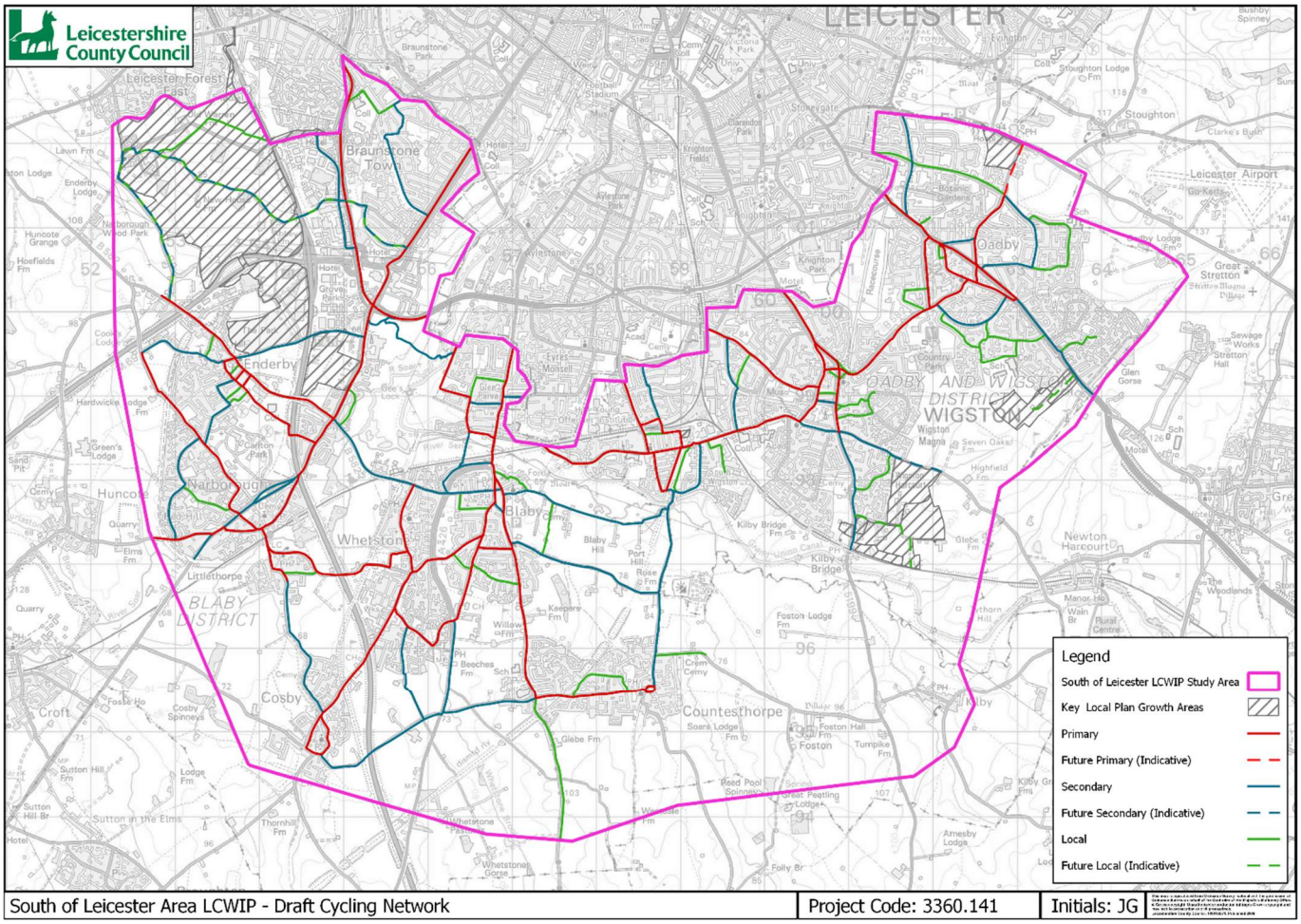


Figure 27. Draft Cycling Network Map

4. Walking Network Development

4.1. Overview

4.1.1. The fourth stage of the LCWIP process is to map a future walking network which identifies where investment should be targeted.

4.2. Methodology

4.2.1. The following method for developing a walking network map mirrors the recommended steps in the LCWIP technical guidance:

1. Mapping Walking Trip Generators
2. Identifying Core Walking Zones
3. Identifying Key Walking Routes
4. Identifying a Route Hierarchy
5. Producing Draft Walking Network Map

4.2.2. The following sections explain each of these steps in greater detail.

4.3. Mapping Walking Trip Generators

4.3.1. The key journey destinations have previously been plotted to create the cycling network map (figure 22). This layer has been utilised again to determine the walking trip generators; while people are likely to travel further on a bike, the trip generators remain the same for both modes of travel.

4.3.2. As the study area is reasonably large, only the most significant trip generators have been included for walking. These key trip generators are where several destinations are located close together and are likely to attract a large number of pedestrian trips, specifically:

- Oadby Town Centre
- Wigston Town Centre
- Blaby Town Centre
- Countesthorpe Village Centre
- Fosse Shopping Park
- Meridian Business Park / Leicestershire Police Headquarters
- South Wigston Rail Station
- The Whittle Industrial Estate
- Enderby Village Centre
- Narborough Village Centre
- Cosby Village Centre
- Wigston Cluster of Schools
- Oadby Cluster of Schools

4.3.3. Figure 28 shows the spatial distribution of the walking trip generators listed above.

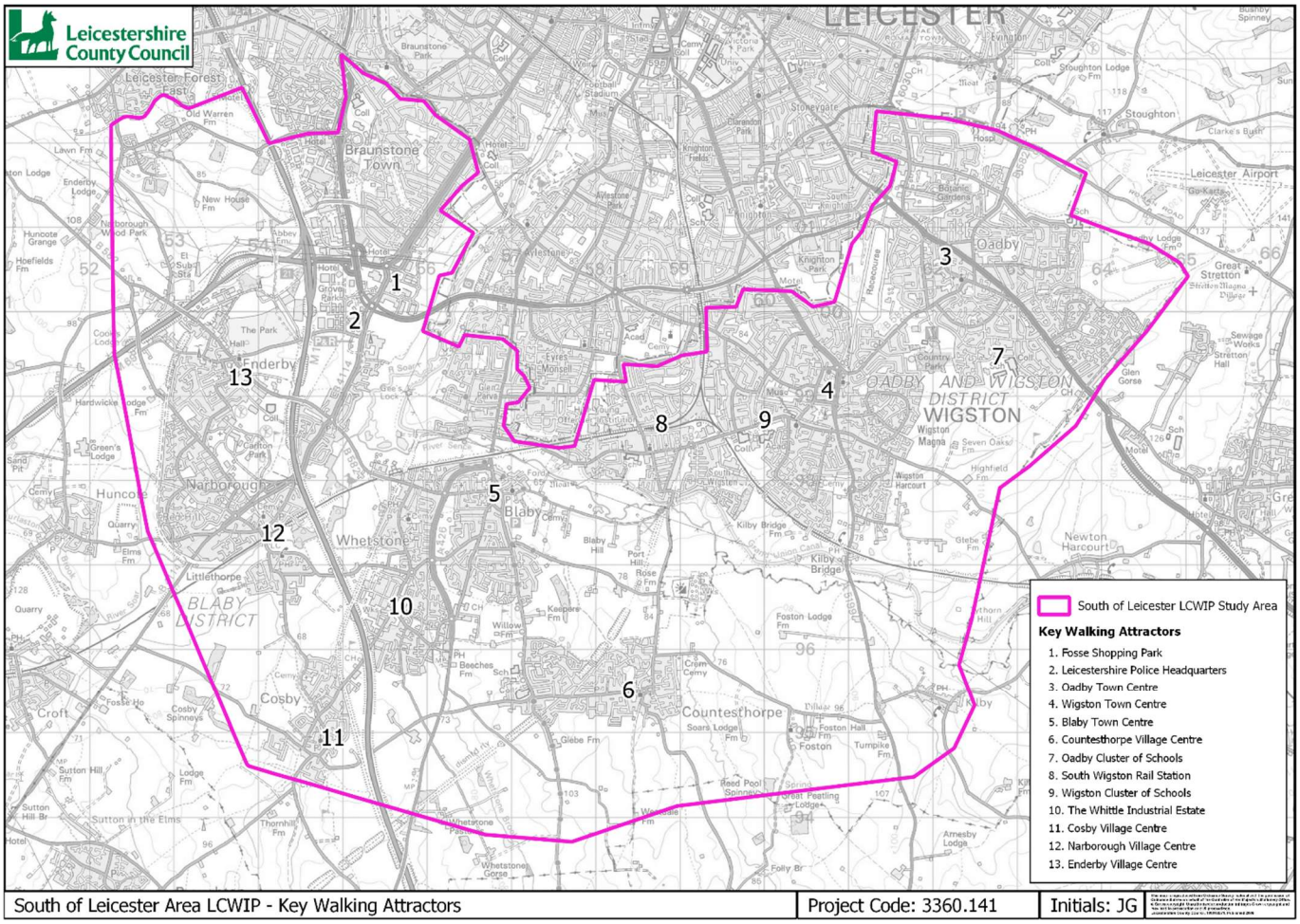


Figure 28. Key Walking Trip Generators

4.4. Identifying Core Walking Zones

4.4.1. Following on from identifying the key trip generators, the next step was to map core walking zones (CWZ). CWZs consist of several key trip generators in close proximity where there is potential for high footfall.

4.4.2. Figure 29 shows 400m CWZs from each of the key trip generators, which has been mapped via the shortest route along the road network in GIS. 400m represents approximately a 5-minute walking distance and is recommended in the LCWIP technical guidance as the minimum extents of a CWZ.

4.4.3. In addition, a 2km buffer has also been mapped to help identify the key routes that serve the CWZs. 2km is the maximum distance that people are likely to travel when walking.

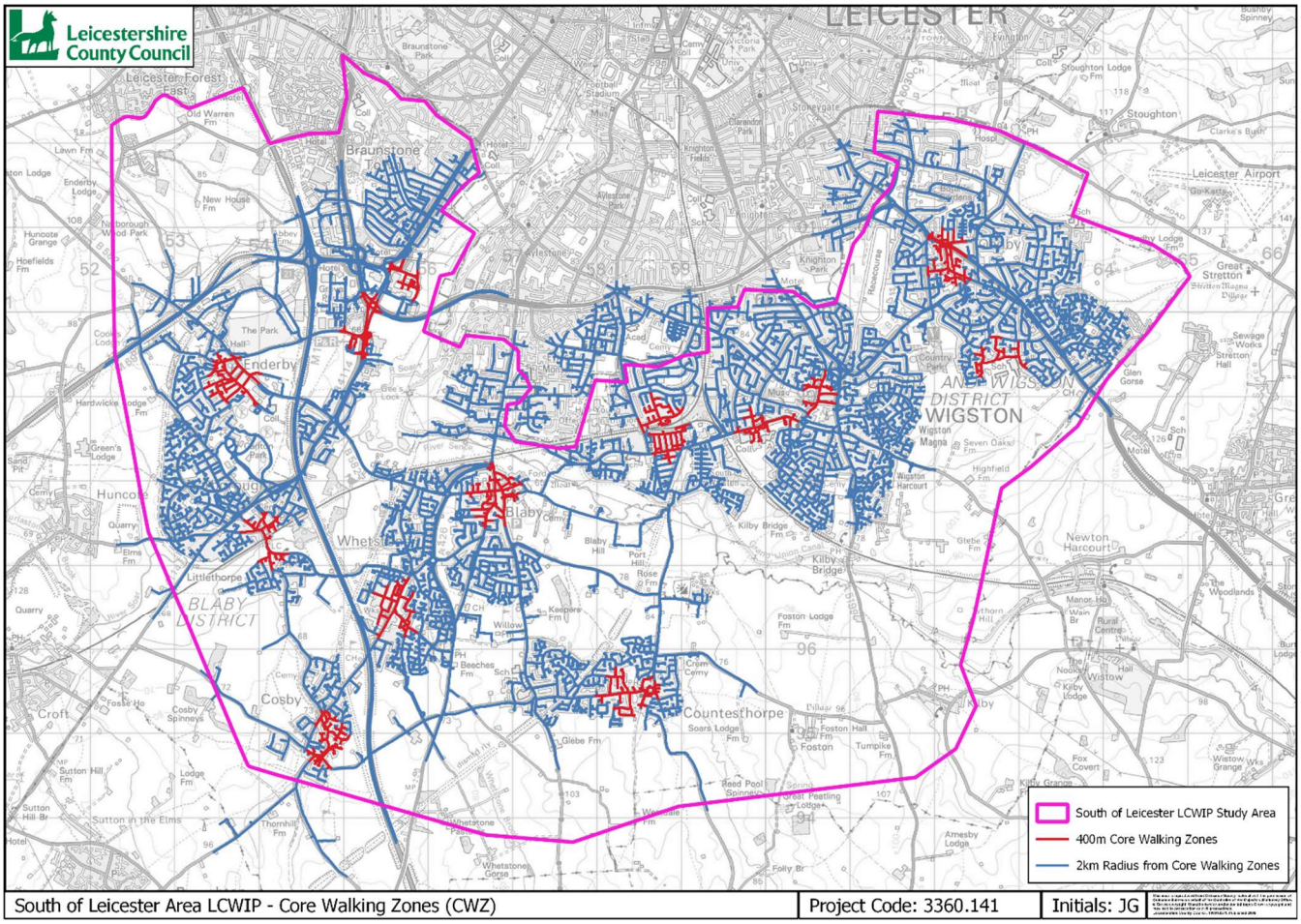


Figure 29. Core Walking Zones (CWZ)

4.5. Identifying Key Walking Routes

4.5.1. As with cycling, there is often more than one route between an origin and destination, so Google Maps, Strava Metro and Betterpoints were used to assist with route selection in the 400m and 2km zones.

4.6. Identifying a Route Hierarchy

4.6.1. The LCWIP Technical Guidance advises that the highest category footways from the Footway Maintenance Classification[29] can be used to define key walking routes. This classification is shown in Table 10.

4.6.2. Categories 1(a), 1, 2 and 3 have been used as the hierarchy for classifying walking routes; local access footways are not on the map as every footway would need to be included making the map unreadable. As with the cycling hierarchy, there will be an additional 3 categories for routes that are likely to serve key future developments named Future Primary (Indicative), Future Secondary (Indicative) and Future Links (Indicative).

[29] Well-maintained Highways: Code of Practice for Highway Maintenance Management 2005 Edition, updated September 2013, Roads Liaison Group – London: TSO

Table 10. Footway Hierarchy

Category	Name	Description
1(a)	**Prestige walking zones**	Very busy areas of towns and cities, with high public space and street scene contribution.
1	**Primary walking routes**	Busy urban shopping and business areas, and main pedestrian routes.
2	**Secondary walking routes**	Medium usage routes through local areas feeding into primary routes, local shopping centres, etc.
3	**Link footways**	Linking local access footways through urban areas and busy rural footways.
4	**Local access footways**	Footways associated with low usage, short estate roads to the main roads and cul-de-sacs.

4.7. Produce Draft Walking Network

4.7.1. The data from the previous steps has been brought together to produce a draft walking network, shown in Figure 30. The creation of the walking network map is an iterative process and a final map has been produced following engagement with several key stakeholders.

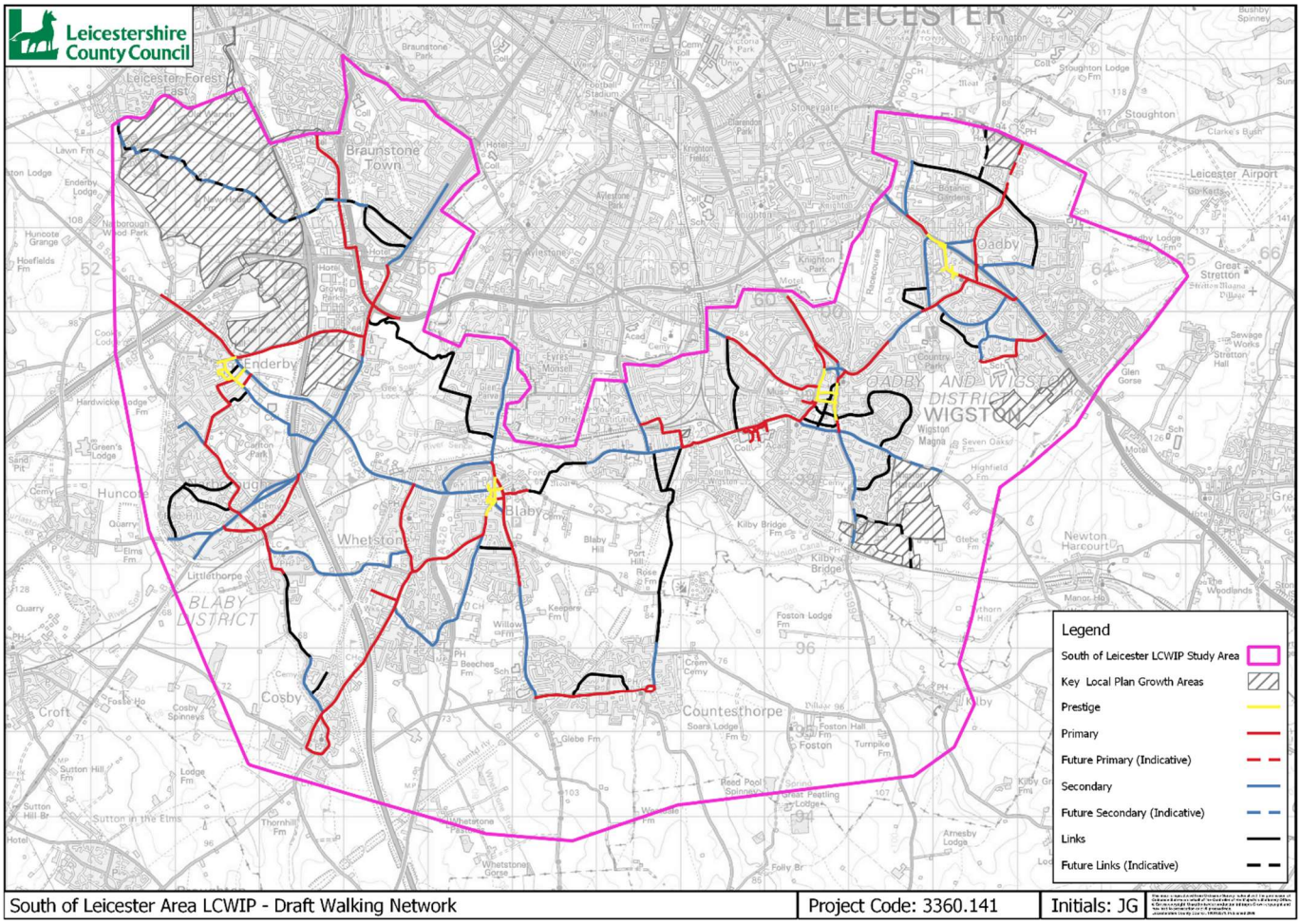


Figure 30. Draft Walking Network Map

5. Stakeholder Engagement

5.1. Overview

5.1.1. The validation of the draft network maps was informed by engagement with stakeholders, including councillors, local planning authorities and the public. Engagement responses were considered to help inform the final priority network routes.

5.1.2. It should be noted that many of the suggested routes have not been added to the network maps as they are not considered to be part of the core network that serve desire lines. However, these routes will likely still be used for walking and cycling and may be improved in the future.

Internal Stakeholder Engagement

5.1.3. Local councillors were given the opportunity to provide feedback on the network plans as they are aware of what is important to constituents in their areas. LCC teams, including Public Rights of Way (PRoW) and Traffic and Signals (T&S), also gave feedback on the network plans as they are up to date with internal schemes that need to be considered.

External Stakeholder Engagement

5.1.4. A public consultation was held for 4-weeks which allowed people to submit their views on the draft networks. Consultees were encouraged to say which of the routes they supported and / or opposed, and to highlight any other links that should be included on the maps.

Local Planning Authority Workshop

5.1.5. Workshop were held with Blaby District Council, Oadby and Wigston Borough Council, and Leicester City Council to discuss the draft network maps and any local priorities.

5.2. Changes to the Network Plans

5.2.1. Tables 11 and 12 list the amendments to the draft network maps that have been agreed in conjunction with stakeholders. The references include the letter ‘C’ or ‘W’ to indicate whether the comments refer to cycling or walking, and a number.

Table 11. Agreed Changes to the Draft Cycling Network Map

Ref	Request	Resulting Action
C1	GCW phase 2 works not shown on the plan.	GCW phase 2 works to be included as a future local (indicative) link.
C2	Footpath W16a from Enderby to Park and Ride would be a good off-road cycleway.	Footpath W16a, from Blaby Rd to Leicester Ln, to be added as a future secondary (indicative) link through the future development.
C3	There are a number of rights of way that with investment could be made excellent cycleway, and a couple of permissive paths and dismantled railways that would be worthwhile at least considering.	SE section to be included as local link from National Cycle Route to Kilby Bridge.
C4	"	To be included as a future local (indicative) link from Leicester Ln to Lubbesthorpe Bridle Rd.
C5	"	To be included as a local link from Harborough Rd to Severn Rd.
C6	"	To be included as a future local (indicative) link from existing primary route, east of Mill Ln, to Leicester Ln.
C7	"	Kirk Ln to be included as a future local (indicative) link.
C8	Development areas such as Enderby Hub where alternative routes will need to be added to the maps	'Roman Road', from Blaby Rd to Leicester Ln, to be added as a future secondary (indicative) link through the future development.
C9	Links to big employment sites such as Warren Lane, Enderby Hub and Lubbesthorpe Industrial Estate mapped on his plans.	Warren Park Way to be included as a future local (indicative) link, up to the bridleway running through Lubbesthorpe.
C10	Received layers showing the LCWIP cycling network for Blaby.	To be included as a future local (indicative) link.
C11	"	To be included as a future local (indicative) link.
C12	"	The Ford to be included as a local link.
C13	The route linking Oadby Student Village (furthest right) is a high priority and will link to bike share expansion in the short term.	The category of Knighton Grange Rd and Manor Rd, Oadby to be raised from local to secondary.
C14	Both the walking and cycling routes could go a little further south to the Grand Union Canal and in doing so, this will mean that the Canal infrastructure is directly linked (in the future) with the walking and cycling network in the Borough and further afield (and vice-versa).	The existing secondary link on Welford Rd to be extended to the canal.
C15	This cycle path ends abruptly, it should be extended past the Blaby and Whetstone Youth club to the co-op.	Warwick Rd, from Cambridge Rd to The Dicken, to be added as a local link.
C16	Could this become another greenway? It also connects Enderby to the P&R and might help alleviate the Leicester Lane issue.	'Roman Road', from Blaby Rd to Leicester Ln, to be added as a future secondary (indicative) link through the future development.
C17	Braunstone Town network should be far more ambitious, linking all the schools, shops, doctor's surgery, to Fosse Park, Meridian, Braunstone Lane and Narborough Rd.	Welcombe Ave, east of Henley Crescent, to be included as a secondary link.
C18	Make Tay Road Lubbesthorpe walking network as well as cycling.	Tay Rd to be included as a link. The existing route to the south to be removed.
C19	All main routes on the approved Lubbesthorpe planning documents to be included as indicative links.	To be included as future local links.

5.2.2. Figure 31 shows the spatial distribution of the cycling map amendments summarised in Table 11.

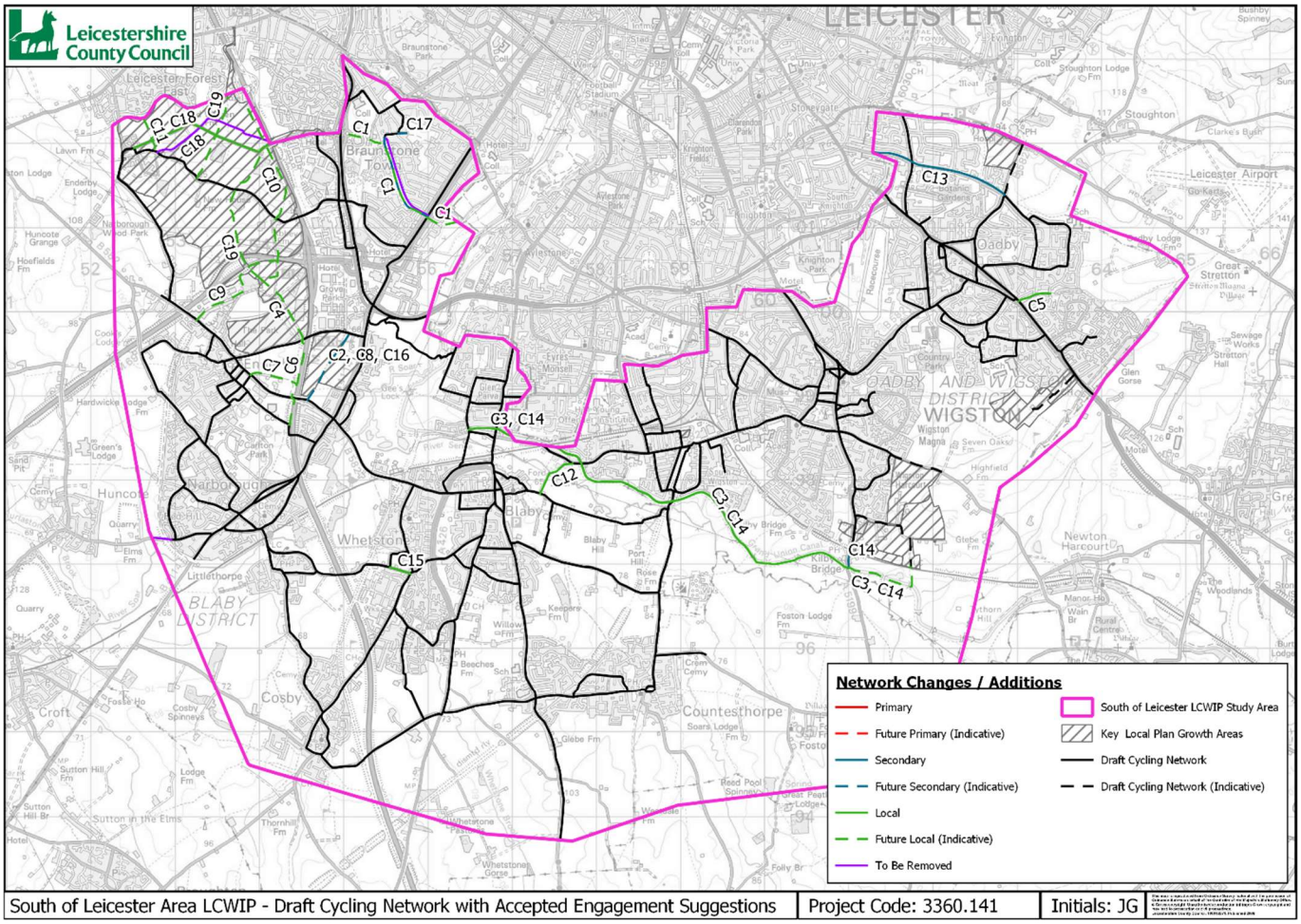


Figure 31. Draft Cycling Network Map with Agreed Engagement Suggestions

Table 12. Agreed Changes to the Draft Walking Network Map

Ref	Request	Resulting Action
W1	Z25 surfaced footpath.	Footpath Z25 to be included as a link.
W2	Possible route through Meridian which would link Lubbesthorpe to Braunstone Town	TCF route to be included as a future link (indicative).
W3	All main routes on the approved Lubbesthorpe planning documents to be included as indicative links.	To be included as future links (indicative).
W4	The A6 South (blue secondary route) be extended to the new development site.	The secondary route on the A6 to be extended to the key local plan growth area. A future link (indicative) to be included into the development.
W5	Gartree Road is likely to be a key route in the future.	Gartree Rd, from Stoughton Rd to Stoughton Dr, to be included as a future secondary (indicative) route.
W6	Oadby PTR/EDDR corridor.	EDDR corridor to be included as a future secondary (indicative) route.
W7	Manor Road / Grange Road Oadby linking the University Campus to the City to enable the expansion of the Bike Share scheme.	Knighton Grange Rd to be included as a link.
W8	Current Bike Share Plans / Proposals / Possible Sites are shown here.	The secondary route on Stoughton Dr S to be extended to the boundary of the study area.
W9	Make Tay Road Lubbesthorpe walking network as well as cycling.	Tay Rd to be included as a link.
W10	Warwick Rd is the number one concern for residents in this area. It is an important connecting route between Narborough village/station and Blaby. The new development alongside it left it without safe cycling/walking provision. Complete the Narborough Station to Blaby village connectivity.	Warwick Rd to be included as a link.

5.2.3. Figure 32 shows the spatial distribution of the walking map amendments summarised in Table 12.

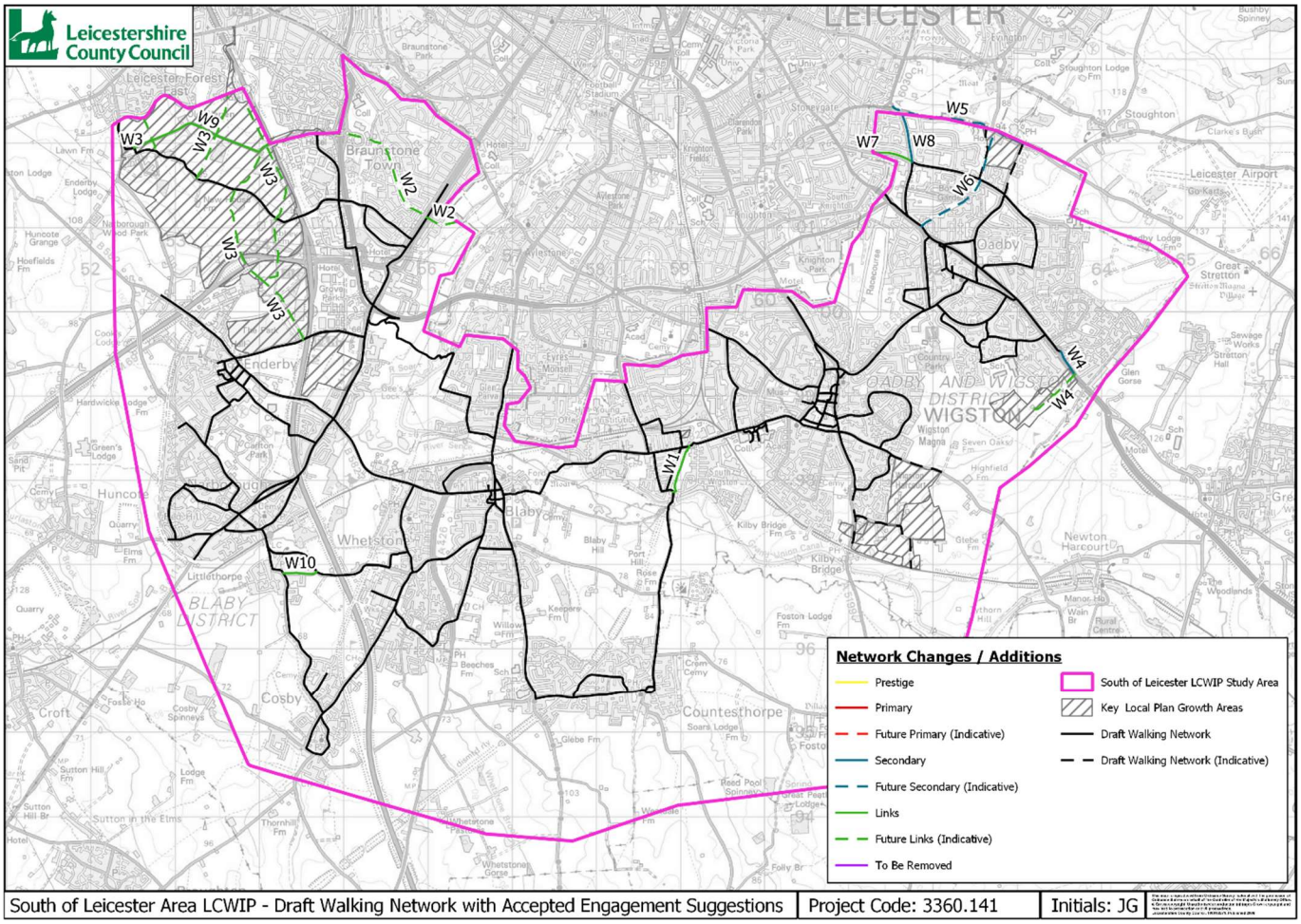


Figure 32. Draft Walking Network Map with Agreed Engagement Suggestions

6. Final Network Plans and Next Steps

6.1.1. This section of the report shows the final recommended cycling and walking network plans to be taken forward to the next phase of the South of Leicester Area LCWIP.

6.2. Cycling and Walking Network Plans

6.2.1. Figures 33 and 34 show the final cycling and walking network plans, respectively. The plans highlight several priority areas / corridors that have emerged in relation to the South of Leicester LCWIP study area, including:

- Fosse Shopping Park
- Oadby, Wigston, Blaby and Enderby Centres
- Arterial Routes to / from Leicester City – A6, A5199, B5418, B5366, A426, A5460 and A563.
- The B582 connecting Oadby, Wigston, South Wigston and Glen Parva.
- Great Central Way
- Leicester Outer Ring Road (A563)

6.3. Next Steps

6.3.1. The cycling and walking network plans will be passed to consultants, ITP, who will audit the existing cycling and walking networks and design concept schemes where infrastructure improvements are needed.

6.3.2. The long-term aspiration is to deliver these cycling and walking networks in their entirety as funding becomes available. Once concept schemes have been developed, the next step will involve prioritising the cycling and walking infrastructure improvements into three categories:

- Short term – improvements which can be implemented quickly or are under development
- Medium term – improvements where there is a clear intention to act, but delivery is dependent on further funding availability or other issues
- Long term – more aspirational improvements or those awaiting a defined solution

6.3.3. Scheme prioritisation will be undertaken using a scoring table, such as the example in the LCWIP technical guidance, based on 5 principal areas: effectiveness, attractiveness, policy, economic and deliverability. This will include undertaking an economic appraisal of proposed cycling and walking schemes using the Government's Active Mode Appraisal Toolkit (AMAT)[30]. An economic appraisal will help to identify which improvements are more likely than others to provide high value for money.

[30] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1078489/active-model-appraisal-toolkit-user_guidance.pdf

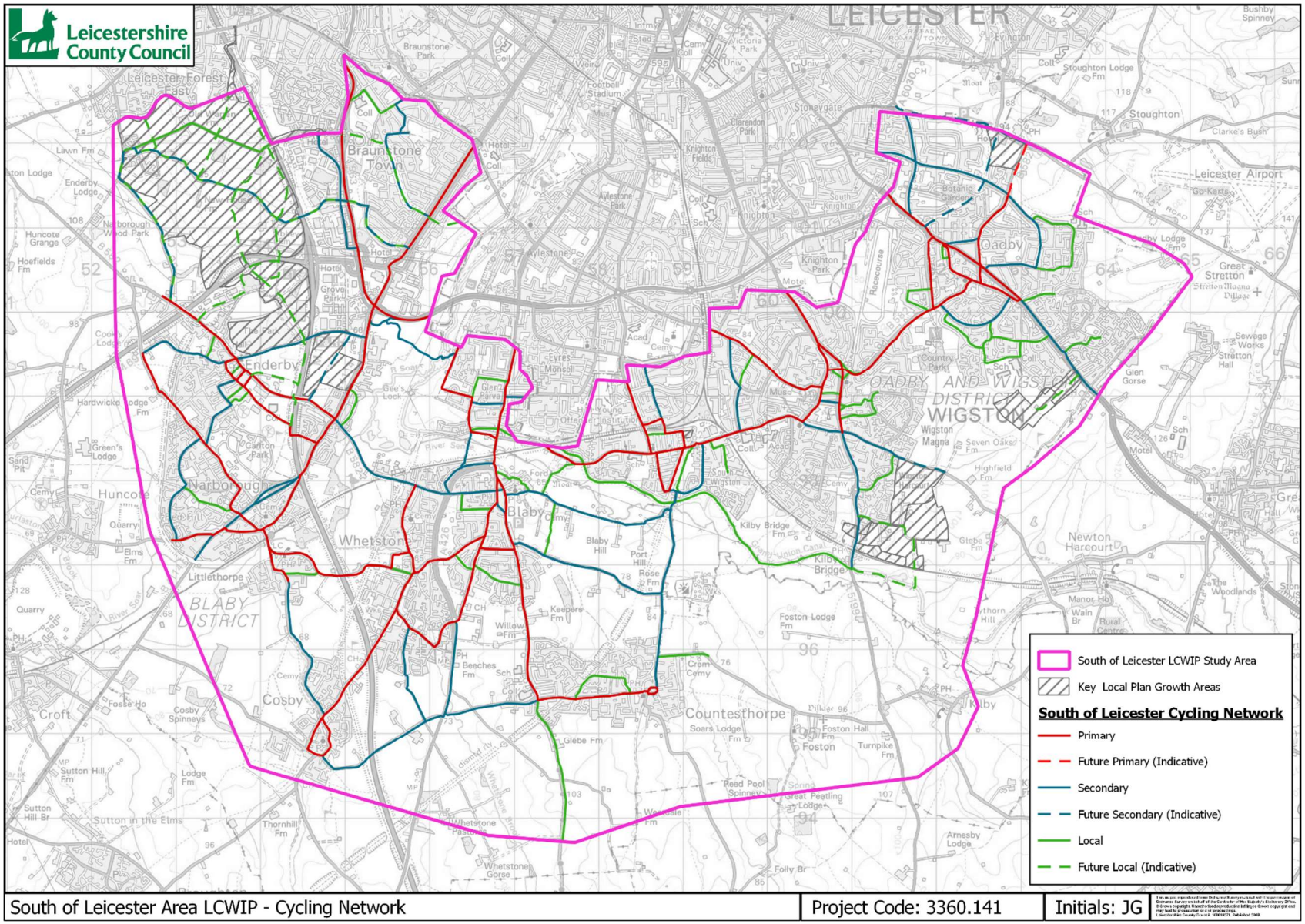


Figure 33. Cycling Network Plan

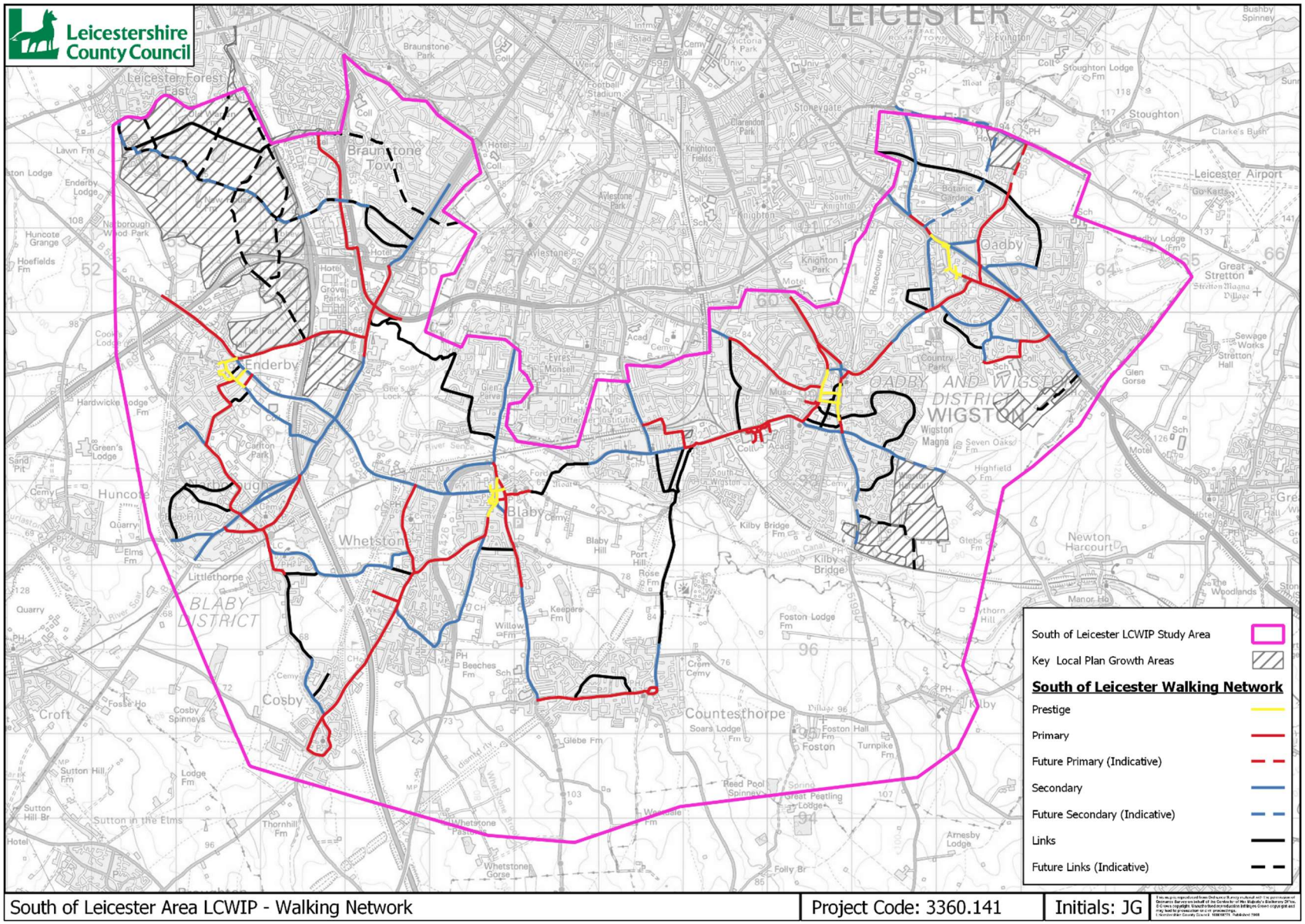


Figure 34. Walking Network Plan

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