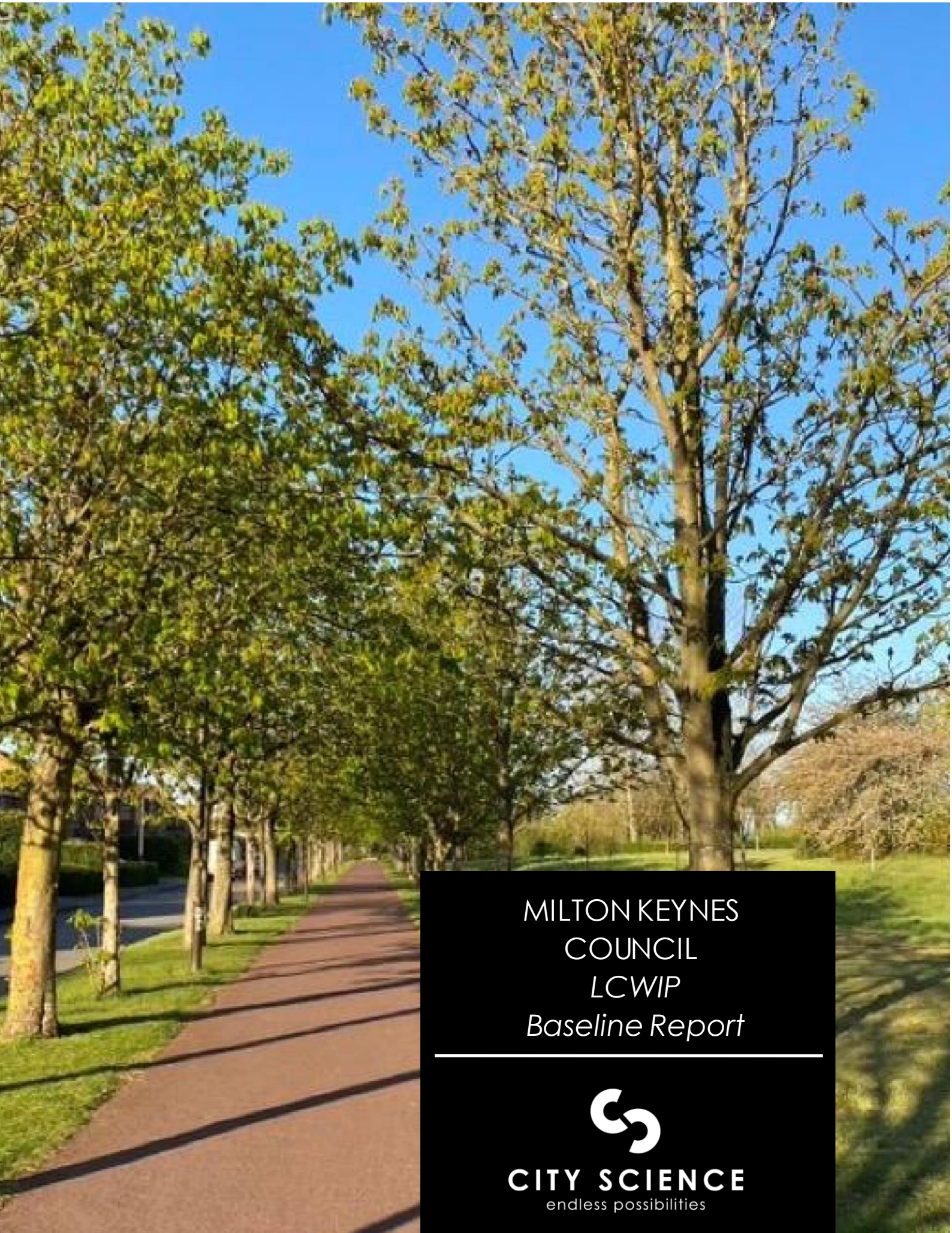

MILTON KEYNES COUNCIL
LCWIP
Baseline Report

CITY SCIENCE
endless possibilities

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Contents

Executive Summary

This Baseline Report summarises the evidence brought together to support the development of a Local Cycling and Walking Infrastructure Plan (LCWIP) for Milton Keynes. This initial stage of the LCWIP has been largely desk-based, consisting of:

- A summary of findings from stakeholder engagement
- A review of policy and planning documents
- Geospatial analysis

The analysis has focused on the Borough of Milton Keynes including Central Milton Keynes and the surrounding towns of Bletchley, Hanslope, Haversham, Newport Pagnell, Olney, Stony Stratford and Wolverton.

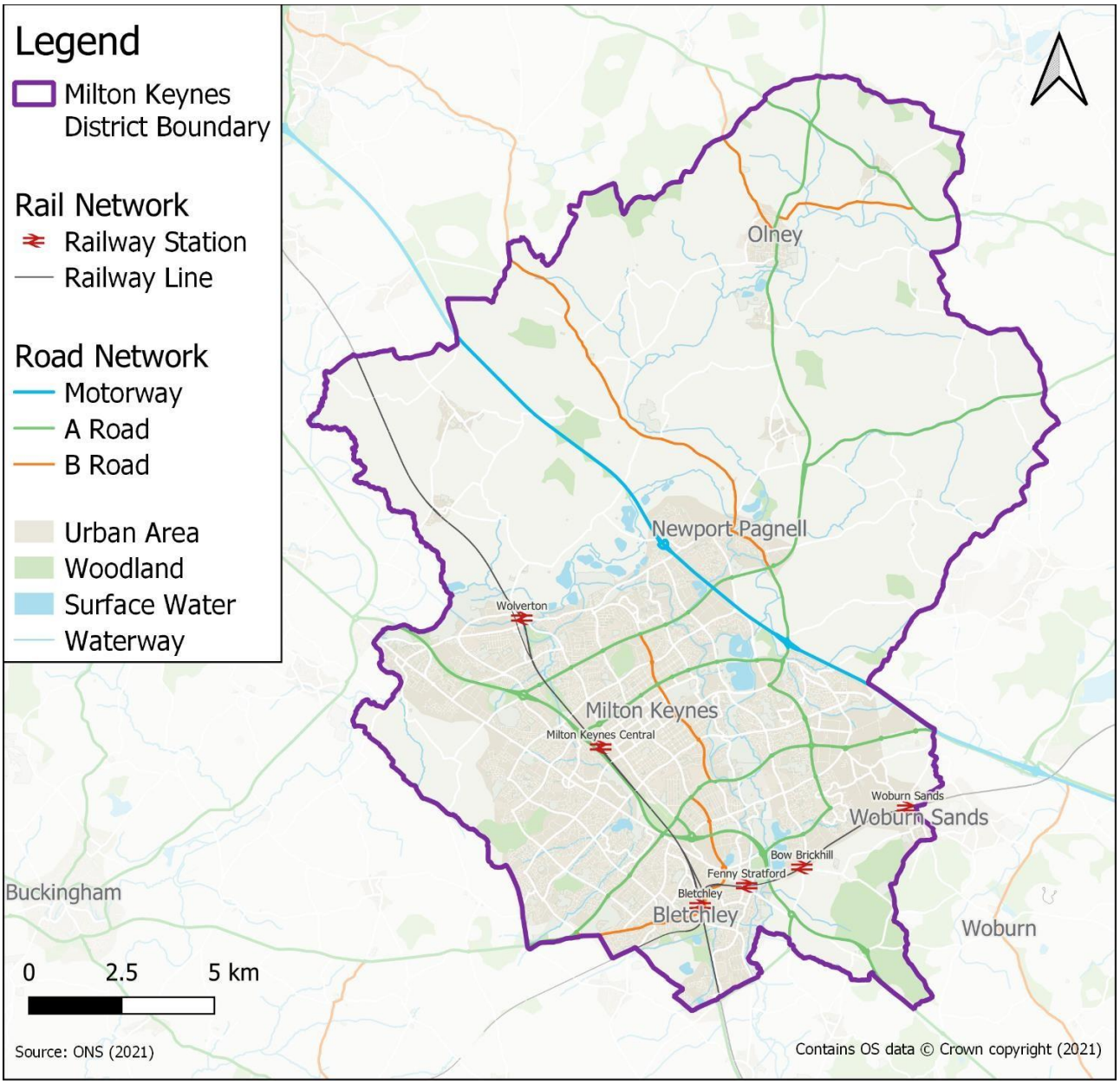


Figure 1-1: Study Area

In line with Department for Transport (DfT) LCWIP guidance, the role of this report is to provide an evidence base that will support later stages of the LCWIP development, namely – detailed network

analysis, scheme prioritisation, establishing the programme of interventions and prioritisation of route improvements.

1 Introduction

1.1 Background to Milton Keynes

This LCWIP aims to provide a strategic plan for active travel infrastructure development throughout the Borough of Milton Keynes. The Borough of Milton Keynes is the northernmost district in Buckinghamshire covering an area of 199 square miles. The Borough's largest urban area is the town of Milton Keynes with over 90% of the Borough's population living within the town's boundary. Other towns within the Borough include Olney, Hanslope and Bletchley, home to the world-famous Bletchley Park, the WW2 code breaking HQ.

The Borough of Milton Keynes lies within the Oxford-Cambridge Arc, a globally significant area between Oxford and Cambridge which supports over 2 million jobs and contributes over £110 billion to the economy each year. Milton Keynes town is one of the fastest growing urban areas in the UK, achieving the status of the fastest-growing town or city economy in 2017 (UK Powerhouse).

With regards to transport, Milton Keynes is known for its unique grid-based road network and one of the highest numbers of roundabouts for a town in the UK with 130. This road system makes it very easy to travel around the town by car, however this is to the detriment of other transport modes particularly active travel as it makes cycling routes indirect, bus stops inaccessible and lacks crossing points. Despite there being over 340km of dedicated bridleways, footpaths, cycle tracks and shared paths (e.g. Redways) in Milton Keynes the dominant mode of transport is still the private vehicle.

In order to combat private vehicle usage within the Borough and to help reduce transport emissions, the Milton Keynes Mobility Strategy, the fourth Local Transport Plan (LTP4) , sets out four key objectives which have formed the basis for the transport policies reviewed in this LCWIP and the LCWIP itself. More details on these objectives and the Mobility Strategy can be found in Section 2.3.2.

Mobility Strategy (LTP4) Objectives:

- *Support growth & provide mobility for all* – support the growth ambition of Milton Keynes and provide good connectivity throughout the Borough and beyond
- *Provide an effective network* – provide a transport network that is well maintained, free flowing, and operating efficiently at all times
- *Maximise travel choices* – maximise the use of technology and innovation to both inform the traveller and to provide travel options
- *Protect transport users & the environment* – the safety of all transport users is a key part of this strategy as is the need to reduce transport pollution and CO2 emissions, protect the natural environment and promote improved public health and wellbeing

1.1.1 Topography & Natural Environment

As shown in Figure 1-1, Milton Keynes is relatively flat, with very few contours appearing on the map. This is a positive for active travel, as hilliness can cause an obstacle to active travel uptake. There are quite a few waterways passing through the Borough which cause potential access issues between towns, which will be evaluated in detail as part of the LCWIP, to inform network planning. The 5,000+ acres of parkland, rivers, lakes and woodland in the Borough, also indicates a potential

for active travel leisure trips either to access these spaces to enjoy them on foot, by bike or by horse.

Over two thirds of the Borough is countryside and so any strategic cycling and walking infrastructure schemes suggested as part of this LCWIP must consider the market towns surrounding Central Milton Keynes and ensure connectivity between rural hubs and the central employment areas.

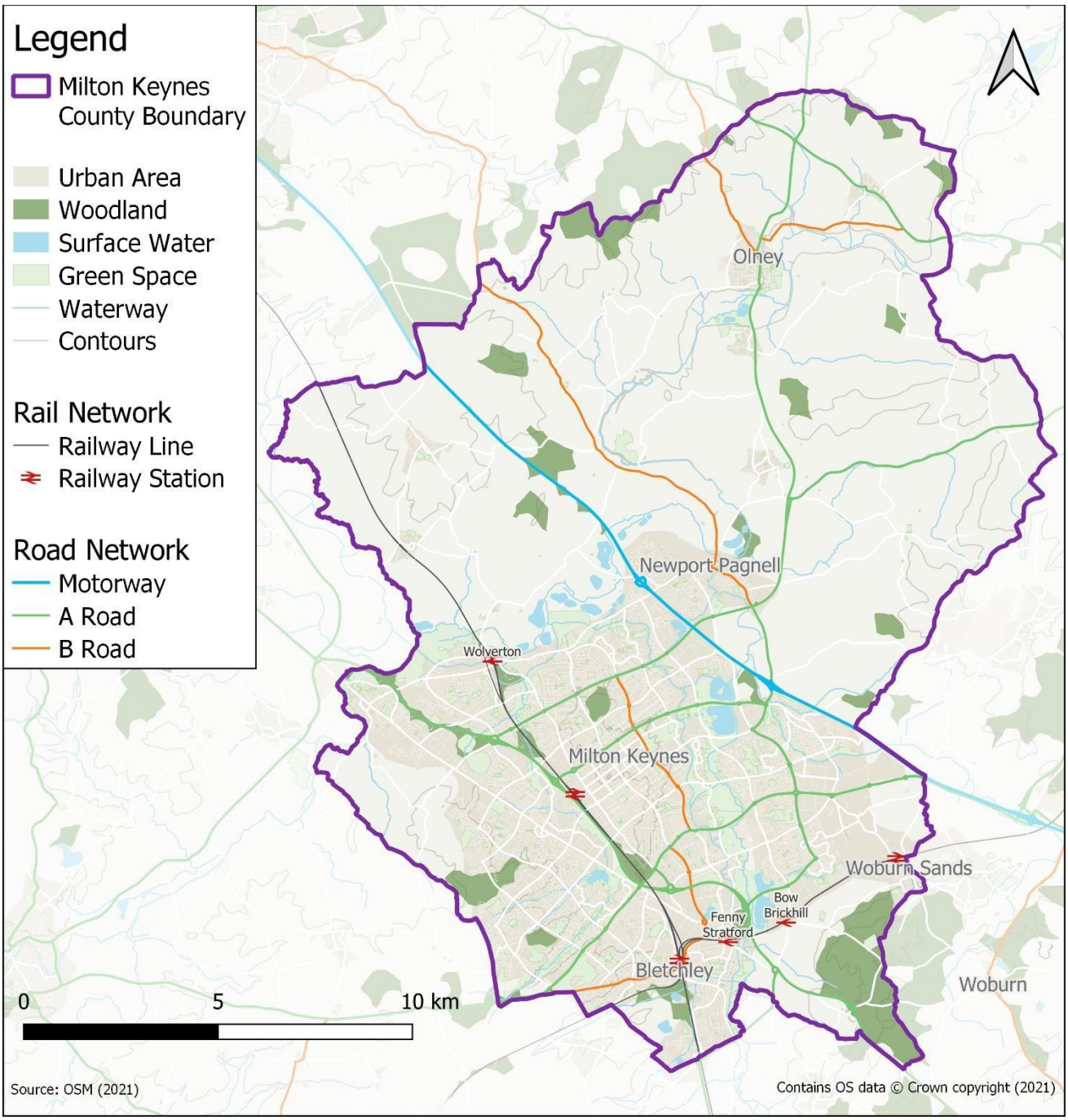


Figure 1-1: Topography of Milton Keynes Borough

1.1.1.1 The Grand Union Canal

The Grand Union Canal runs through Milton Keynes connecting London to Birmingham. A towpath runs along this Canal providing a well-maintained walking and cycling route around Milton Keynes surrounded by greenery. As this route is in-direct, it is less suitable for commuting but increasing accessibility to the canal path can improve access to leisure routes for all active transport users.

Picture

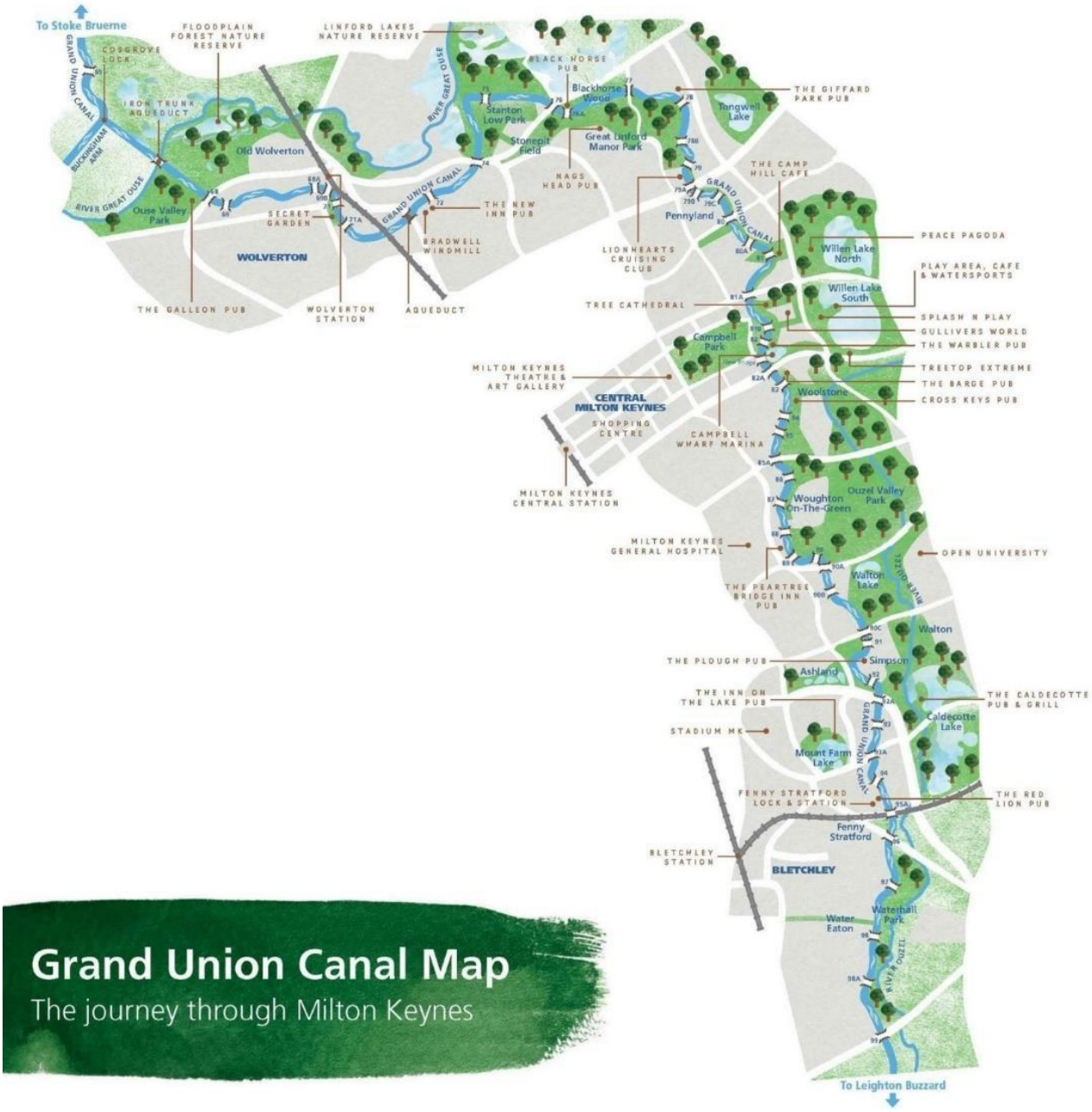


Figure 1-2: Map of the Grand Union Canal through Milton Keynes (The Parks Trust Milton Keynes, 2021)

1.1.2 Population

In 2016, around 264,500 people were estimated to be living in Milton Keynes. This was a growth of nearly 3,000 from 2015, a growth rate of 1.05% compared to 0.83% for the whole of England. The Office for National Statistics' (ONS) projected population growth for the period 2018 to 2043 (see Figure 1-3), shows a potential increase in population of 6%, which is low compared to the projected growth rate for the whole of England (of 11%). The ONS mid-year population report in 2019 estimates that the population had grown to around 269,500.

The Milton Keynes 2050 Strategy aims to grow the population of Milton Keynes to around 410,000 people living in the borough by 2050 (Milton Keynes Council, 2020), which is significantly higher than the population growth shown in Figure 1-3. This is because the population growth shown below is forecasted using sub-national ONS assumptions and therefore does not account for the

ambitious locally specific housing and employment growth from developments identified within the Strategy.

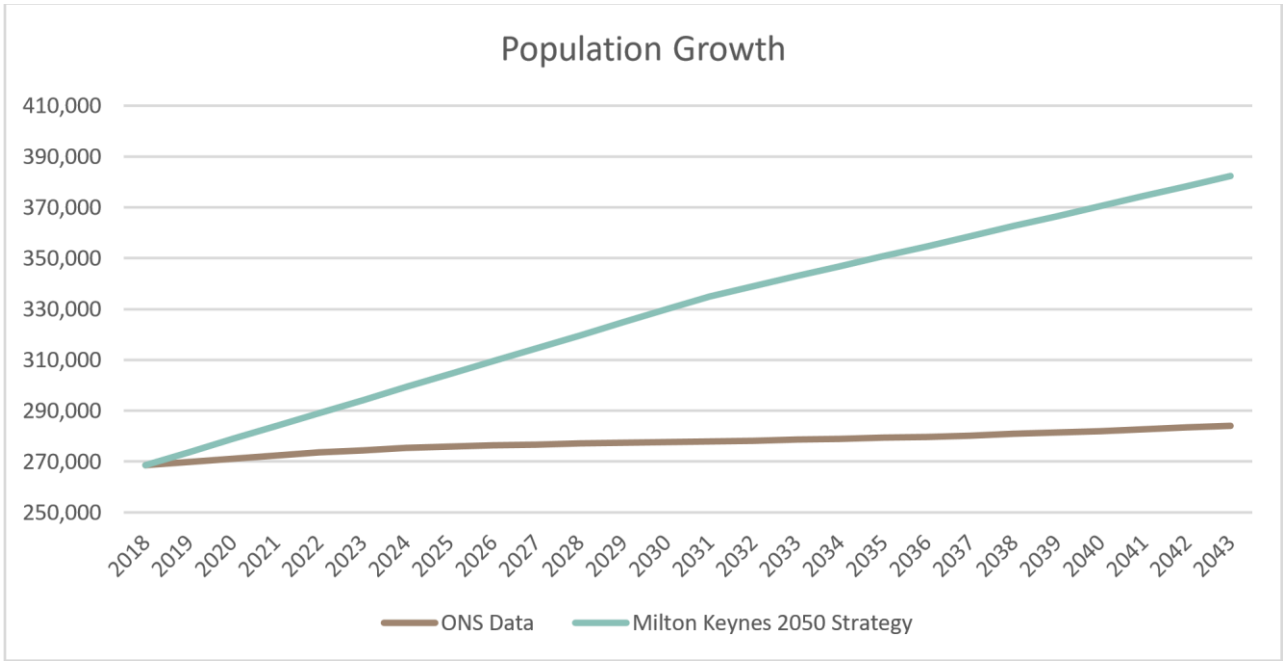


Figure 1-3: Population growth for the Borough of Milton Keynes 2018-2043 (Office for National Statistics, 2018) (Milton Keynes Council, 2020)

With the proportion of young people aged below 19 at 27% in 2019 Milton Keynes has a younger age profile than the national average where 24% of people were aged below 19 (Milton Keynes Council, 2021). However, using data from the ONS population projection for Milton Keynes (see Figure 1-4), the proportion of younger people in the Borough is likely to decrease over the coming decades with the proportion of people aged over 50 increasing.

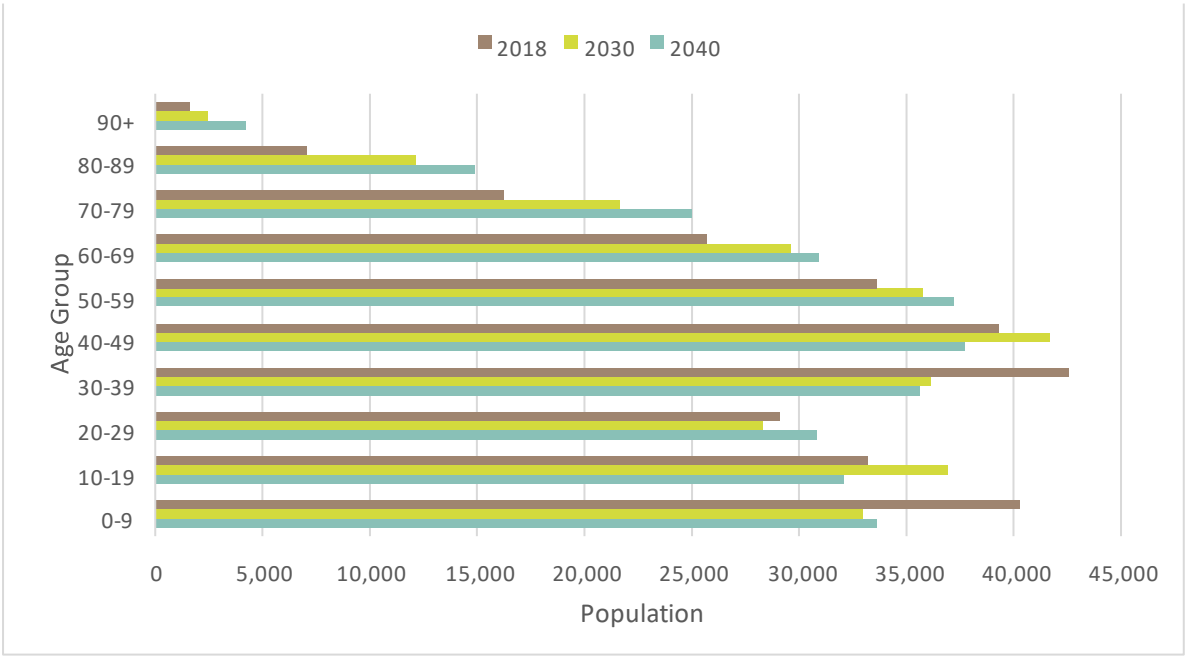


Figure 1-4: Population growth by age (Office for National Statistics, 2018)

Data from the 2016/17 Population Bulletin showed that approximately 91% of the Borough's population lived in an urban area according to census data (Milton Keynes Council, 2017). From the 2011 Census, around 26% of the Borough's population were from Black and Minority Ethnic groups,

which is defined as all other races except White-British. This is higher than the total for England and Wales which was 9%.

1.2 Cycle Routes

The Redways Network plays a major part in the walking and cycling infrastructure within Milton Keynes, particularly within Central Milton Keynes. With over 350km of paths crossing the town of Milton Keynes and beyond into the surrounding market towns, it is a defining feature of the town. The Redways network is shown in Figure 1-5 and the design standards for Redways have been reviewed in Section 2.3.6.

Figure 1-5 also shows the two National Cycle Routes which pass through Milton Keynes and utilise parts of the Redway network:

- Route 6 runs north to south from Sheffield to London, passing through the area from Hanslope to Fenny Stratford
- Route 51 runs east to west from Oxford to Bedford, passing through the area from Far Bletchley to Wavendon

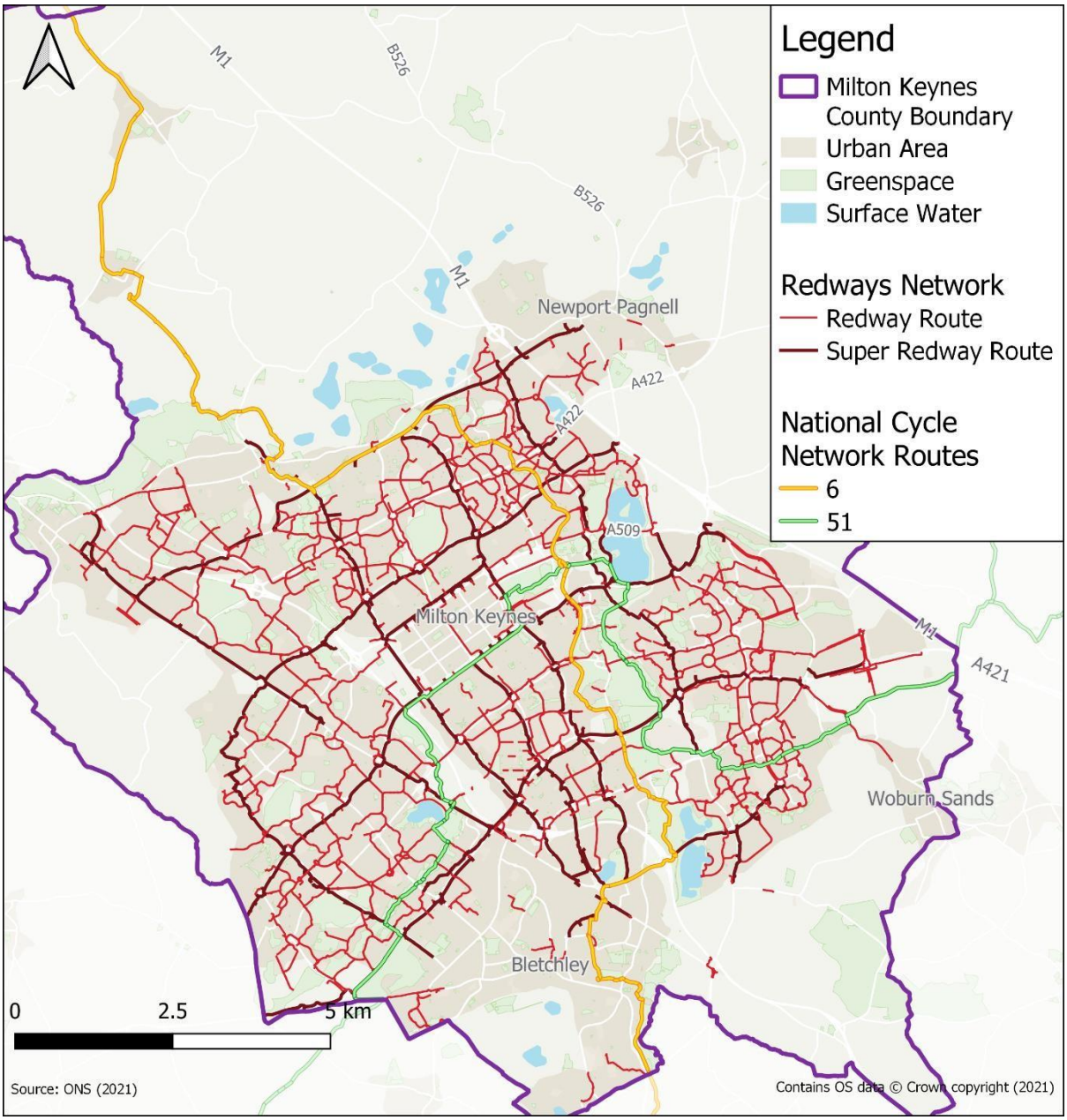


Figure 1-5: Existing Redway network throughout Milton Keynes

2 Policy Context & Active Travel Strategy

2.1 Background to LCWIPs

An LCWIP is to support local authorities in creating materially better places to live and work, including:

- Places designed for people: Places that have cycling and walking at their heart where cycling and walking offer a safe and reliable way to travel for short journeys
- Healthy places: The development of a wider green network of paths, routes and open spaces
- Better mobility: Engagement with citizens to encourage uptake of cycling and walking, making it easy, normal and enjoyable

LCWIPs also aim to support investment cases into future cycling and walking infrastructure. While non-mandatory, the process is a key part of the UK Government's Cycling and Walking Investment Strategy (CWIS), see Section 2.2.2.

'While the preparation of LCWIPs is non-mandatory, LAs who have plans will be well placed to make the case for future investment.' LCWIP, Technical Guidance for Local Authorities

LCWIPs provide a mechanism to engage the public and stakeholders in a clear, transparent, evidencebased process, to enhance and prioritise cycling and walking provision across the chosen area. This aims to result in a shared vision for infrastructure enhancements that is prioritised and achievable.

2.1.1 Aims

LCWIPs aim to:

- Ensure that appropriate consideration is given to cycling and walking in all local planning and transport decisions, and identify potential policy conflicts
- Provide an evidence base which can be used to support a Local Plan, Neighbourhood Plan or Local Transport Plan
- Enable the consideration and adoption of wider policy levers to encourage more walking and cycling
- Enable authorities to seek appropriate contributions to the provision of walking and cycling infrastructure when drawing up the Regulation 123 list for the Community Infrastructure Levy; through planning agreements in the form of Section 106 obligations; and when Section 278 highway agreements are made
- Identify places where new strategic cycling or walking routes should be delivered by a new development and ensure the protection of alignments for future planned cycling and walking routes

2.1.1.1 Adoption of Wider Policy Levers

The aim of LCWIPs is also to support local authorities by providing a long-term strategy that can be linked to other policies and plans, including:

- 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

- A report which sets out the underlying analysis carried out and provides a narrative which supports the identified improvements and network.

2.1.1.2 Planning applications

Preparing a LCWIPs assists authorities to consider the impact of planning applications and other land use changes on existing and planned cycling and walking infrastructure, and to identify sites well served, or capable of being well served, by cycling and walking routes. The existence of a LCWIP will also assist developers and site owners in the preparation of Travel Plans, Transport Assessments and Statements.

2.2 National Policy Context

2.2.1 National Planning Policy Framework

The revision to the National Planning Policy Framework (NPPF) was published in July 2018 (Ministry of Housing, Communities and Local Government, 2019). This is the first revision of the NPPF since 2012. The revision implements around 85 reforms.

The policy on town centre car access and parking retains much of the original focus, but also adds that Local Authorities undertake measures to promote accessibility for pedestrians and cyclists (NPPF s106). Planning policies are also encouraged to provide for high quality walking and cycling networks and supporting facilities such as cycle parking (NPPF s104d). The sections on promoting sustainable transport have been updated to reflect the need to consider transport issues from the earliest stages of plan-making, add consideration of the changes in transport technology (NPPF s102b) and for opportunities to promote walking, cycling and public transport.

The rapid changes that are affecting the retail sector and, as a consequence, England's town centres are acknowledged and reflected in the wording. Planning policies are encouraged to clarify 'the range of uses permitted in such locations, as part of a positive strategy for the future of each centre' (NPPF s85b).

2.2.2 Cycling and Walking Investment Strategy (CWIS)

The ambition set out by the UK Government in the CWIS (Department for Transport, 2017), is to make walking and cycling the natural choice for shorter journeys, or as part of a longer journey. For this to be the case walking and cycling need to become part of everyday life and as such they are the natural choice for journeys to school, college or work, travelling to public transport hubs.

The 2025 targets set out in the CWIS align with the LCWIP guidance to:

- Double cycling from 0.8 billion stages in 2013 to 1.6 billion stages
- Increase walking activity to 300 stages per person per year
- Increase the percentage of children aged 5 to 10 that usually walk to school from 49% (2014) to 55%
- Reduce the rate of cyclists killed or seriously injured on England's roads Their ambition is set out in three objectives they wish to deliver by 2040:

1. Better Safety - A safe and reliable way to travel for short journeys:

   Streets where cyclists and walkers feel they belong and are safe

   Better connected communities

   Safer traffic speeds, with lower speed limits where appropriate to the local area

   Cycle training opportunities for all children 2. Better Mobility - More people cycling and walking:

More high-quality cycling facilities
More urban areas that are considered walkable
Rural roads which provide improved safety for walking and cycling
Technological innovations that can promote more and safer walking and cycling
Behaviour change opportunities to support increased walking and cycling
Better integrated routes for those with disabilities or health conditions

3. Better Streets - Places that have cycling and walking at their heart:

Places designed for people of all abilities and ages so they can choose to walk or cycle with ease
Better planning for walking and cycling
A wider green network of paths, routes and open spaces

Alongside setting the above objectives and targets the CWIS outlines different sources of funding for walking and cycling infrastructure, including the DfT's cycling and walking to work fund and Local Growth Fund.

2.2.3 Gear Change

DfT's Gear Change (Department for Transport, 2020) is a visionary strategy which identifies how walking and cycling will be revolutionised across England. IT is based around four themes of:

- Theme 1 – Better streets for cycling and people
- Theme 2 – Cycling at the heart of decision-making
- Theme 3 – Empowering and encouraging Local Authorities
- Theme 4 – Enabling people to cycle and protecting them when they do

The Gear Change Vision is that:

"England will be a great walking and cycling nation. Places will be truly walkable. A travel revolution in our streets, towns and communities will have made cycling a mass form of transit. Cycling and walking will be the natural first choice for many journeys with half of all journeys in towns and cities being cycled or walked by 2030."

- *"**Healthier, happier and greener communities:** through reducing the number of short journeys by car and improving peoples' health and quality of life"*
- *"**Safer Streets:** Fear of cycling is eliminated"*
- *"**Convenient and accessible travel:** active travel modes recognised as the most attractive way to travel by being affordable and allowing everybody to have opportunities to walk or cycle"*
- *"**At the heart of transport decision-making:** Placing walking and cycling infrastructure as a priority consideration rather than an afterthought"*

Theme 2 of Gear Change is associated with making active travel an integral element of the transport decision-making process. It aspires that 'all new housing and business developments are built around making sustainable travel, including cycling and walking, the first choice for journeys.' To ensure this is realised, a new public body, Active Travel England (due to be established by 2021), will become a statutory consultee through the plan preparation process.

As replicated in the UK Government's Ten Point Plan for a Green Industrial Revolution, Theme 3 aspires to empower and encourage local authorities to deliver new active travel infrastructure by 2025. A key element of qualifying for funding is through ensuring that new schemes comply with

the key design principles identified in Local Transport Note 1/20 (see Section 2.2.4) which includes ensuring cycling infrastructure is accessible, segregated from traffic, resilient to future usage increase, legible and direct and with consistent provision.

2.2.4 Cycle Infrastructure Design (LTN 1/20)

The Cycle Infrastructure Design guidance (Department for Transport, 2020) sets out 22 summary principles which form an integral part of the guidance. Below is a selection of these principles and how they apply to Milton Keynes.

Cycles must be treated as vehicles and not as pedestrians

On urban streets, cyclists must be physically separated from pedestrians and should not share space with pedestrians. Where cycle routes cross pavements, a physically segregated track should always be provided. At crossings and junctions, cyclists should not share the space used by pedestrians but should be provided with a separate parallel route. This means that the current Redways do not meet this standard as they are shared space, going forward any new Redways built should be segregated and, a plan for the segregation of existing Redways should be considered especially on high volume routes.

Cycle infrastructure should be designed for significant numbers of cyclists, and for non-standard cycles

In order to allow for high numbers of cyclist, including non-standard cycles such as cargo bikes, handcycles and trikes, cycle tracks should ideally be 2 metres wide in each direction, or 3 to 4m (depending on cycle flows) for bidirectional tracks though there may have to be exceptions. The Redway design manual states that Redways should be a minimum of 3m wide, however allowing for segregation and pedestrians on the routes this is not likely to be sufficiently wide enough when considering high cycle volumes and non-standard cycles.

Cycle infrastructure must join together, or join other facilities together by taking a holistic, connected network approach which recognises the importance of nodes, links and areas that are good for cycling

Routes should be planned holistically as part of a network. Isolated stretches of provision, even if it is good are of little value. As such, when looking at improvements to the Redway network and filling in missing links, this suggests focus should be on joining up isolated stretches of Redway to the wider network to create a more holistic network.

As important as building a route itself is maintaining it properly afterwards

Road markings get dug up by utility contractors, ignored in repaints or just worn away; tarmac is allowed to crack and part; tracks and lanes are seldom or never swept, leaving them scattered with debris and broken glass. As the condition of the Redways is key to increasing usage, analysis of the path condition is carried out in Section 5.2.

In winter, cycle lanes are usually the last place to be cleared of snow and ice, if they are cleared at all. Routes must be properly maintained and swept frequently for debris and broken glass. As such, schemes proposed as part of the LCWIP should include a clear programme of maintenance to avoid such issues occurring.

Cycle routes must flow, feeling direct and logical

Users should not feel as if they are having to double back on themselves, turn unnecessarily, or go the long way round. Often, cycling schemes - when crossing a main road, for instance - require cyclists to make a series of ninety-degree turns to carry out a movement that a motor vehicle at the

same location could do without turning at all. Schemes should be based on a proper understanding of how people actually behave rather than how they might be expected to behave. This is particularly relevant to Milton Keynes as the Redways follow the grid-like road network which prioritises vehicles over cycles resulting in indirect routes at junctions and non-linear routes across the town.

2.2.5 National Infrastructure Strategy

The National Infrastructure Strategy (HM Treasury, 2020) sets out how the UK Government will address key issues including insufficient funding outside of London, slow adaptation of new technology and 'stop-start' public investment.

In order to address these issues the UK Government will:

- Boost growth and productivity across the whole of the UK
- Put the UK on the path to meeting its net zero emissions target by 2050
- Accelerate and improve delivery to transform the way infrastructure projects are delivered

The UK Government's vision is for greener and more beautiful places with cleaner air and more cycling.

The COVID-19 pandemic has shown that improving general public health is more critical than ever and to do so there needs to be an improvement in air quality and an increase in walking and cycling to help fight obesity. There will be UK Government support for walking and cycling to improve public health by providing ways for people to exercise as well as to get from A to B. Investing in well integrated cycling infrastructure to help spark a change the way people travel.

Over the course of 2020, through the pandemic, there has been an increase in walking and cycling. Despite fewer people travelling overall during the pandemic, in the summer there was around a 100% increase in weekday cycling and on some weekends the increase has been around 200% compared to early March, prior to the pandemic (DfT, November 2020).

In order to help tackle some of the most challenging faces facing UK society including climate change, inequalities, air quality and road congestion, the UK Government aims to increase the share of journeys taken by public transport, walking and cycling.

In order to achieve all this, the UK Government is committing to £5 billion investment over this parliament for buses and cycling.

2.2.6 Health Matters: Getting Every Adult Active Every Day

The Health Matters report (Public Health England, 2016) sets out how to achieve higher levels of physical activity to improve the overall health of the nation. It recommends that adults should take part in at least 150 minutes of moderate intensity activity each week. Many adults spend in excess of 7 hours per day sedentary, with people in the UK being around 20% less active now than in the 1960s. Physical activity is beneficial to health and wellbeing, with low physical activity being one of the top 10 causes of disease and disability in England.

PHE's national physical activity framework, 'Everybody active, every day', identifies four areas for action to increase population physical activity. These are:

- Active Society – normalising physical activity at a community level, launching national and local campaigns such as Couch to 5k
- Moving professionals – encouraging people to increase their activity levels through healthcare professionals

- Active environments – switching more journeys to active travel through re-allocation of road space to support walking and cycling, restricting motor vehicle access and creating safe routes to schools
- Moving at scale – integrate public health objectives into strategies and plans more effectively including transport strategies and development plans

2.3 Local Transport Policy Context

2.3.1 Cycling and Walking Technical Report

The Milton Keynes Cycling and Walking Technical Report (Milton Keynes Council, 2020) summarises the evidence relating to walking and cycling in Milton Keynes, informing the development of their Walking and Cycling Position Paper. In this Technical Report a comprehensive review of existing policies, travel demand and commuting patterns and existing walking and cycling infrastructure, particularly the Redway network.

This LCWIP will build on the evidence base summarised in the Technical Report and Position Paper, providing supplementary data, analysis and planning. It is recommended that the two documents be considered as part of an overall whole evidence base to support the continuation of the LCWIP process.

The Technical Report includes Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis for walking and cycling in Milton Keynes (see Table 2-1).

Strengths	Weaknesses
• Comprehensive shared use network in the Redways providing links across the city • Residents are generally satisfied with walking and cycling provision in Milton Keynes • The majority of services are within 15 minutes cycle time for the majority of people • Establishment of cycle hire operators in the city • Strong local authority commitment to becoming zero carbon • Comparatively good record on road casualties for pedestrians and cyclists	• Low commuting share for cycling and walking • Routes provided are often indirect, and lack pedestrian and cycle priority throughout • Poor perception of safety of walking and cycling on Redways , including poor lighting • Poor ride comfort for cyclists reported in many locations • Wayfinding raised as an issue in consultation feedback • Lack of secure cycle parking provision around the city • Conflict between pedestrians, cycles and cars at crossing points • Not all areas have Redways (older towns) and more traditional approach is required due to lack of space
Opportunities	Threats

• Significant proportion of journey to work trips are 5 miles or less • Active travel being realised as a public health intervention • Increasing investment in new mobility services and technologies that favour walking and cycling • Delivery of the Redway super routes project to improve cross-city links • New mobility service models having bike share included as standard • Higher investment in walking and cycling routes and maintenance of existing Redways would increase modal shift away from the car • MK to be the greenest city in the world by 2030 – opportunities to reduce carbon emissions from transport	• Limitations on funding available for basic infrastructure and maintenance of existing infrastructure • Car centric MK – changing opinions to steer investment towards active travel • Political uncertainty affecting priority for walking and cycling • Safety risk of driverless pods or other innovations sharing space on the Redways • New mobility services delivered in a closed fashion, so the public benefits are not fully realised • Increasingly inactive population reducing willingness to travel by walk and by cycle

Table 2-1: SWOT analysis (Cycling and Walking Technical Report)

The following Objectives are set out for the Walking and Cycling Technical Report, which align with the objectives of the Mobility Strategy, these are:

- To make walking and cycling the default choice for Milton Keynes residents for the majority of trips less than 2 miles
- To make the cycling infrastructure of Milton Keynes the best cycling infrastructure of any UK city, which is accessible to all residents regardless of their cycling proficiency
- To deliver improvements to our streets that are accessible, and can be easily used by anyone, regardless of mental or physical impairment
- To provide walking and cycling links between key services that are convenient, direct, and prioritise the movement of pedestrians and cyclists
- To double the amount of cycling undertaken by vulnerable groups within 5 years
- Reduce the number of pedestrians and cyclists killed or seriously injured in Milton Keynes
- Leverage our smart city capability to make Milton Keynes the leading city in the UK for the deployment of technologically enabled walking and cycling solutions
- To create a mode shift from private car to walking and cycling and scooting to school of 8% within the next 5 years

Its delivery plan sets out a proposed approach to delivery, finance options and a schemes review. A list of cycling and walking schemes is outlined, this includes creating a plan to expand the Redway network which references using an LCWIP to develop this. Other schemes outlined in this delivery plan listed will form the basis of the long list of schemes produced as part of the LCWIP process, These include:

- Redway network expansion within Central Milton Keynes
- Upgrade existing Redway Super Routes
- Improvements in infrastructure around schools and school travel planning
- Junction/crossing point improvements

- Rural cycle routes
- Supporting infrastructure such as cycle parking and wayfinding

2.3.2 Milton Keynes Mobility Strategy (Milton Keynes Council, 2018)

This Mobility Strategy sets out the ambitions of Milton Keynes with regards to transport. One of Milton Keynes' biggest transport issues is that it is very car dominated, this Strategy reflects this by setting ambitious targets (see Table 2-2) to create a better balance between private car users and alternative forms of travel.

Journey	2011 (Actual)	2030 (Target)	2050 (Target)
Central Milton Keynes	35	40	50
Intra-borough	20	30	45
Inter-borough	15	20	40

Table 2-2 Milton Keynes non-car mode share targets up to 2050

To achieve these ambitious targets the Strategy outlines four key objectives for transport and the outcomes related to them (see Table 2-3) Active travel can be considered in all of the below objectives but it is specifically mentioned in the fourth objective to "protect transport users and the environment".

Objective	Outcomes
Support growth and provide mobility for all	Reliable journey times
	A transport system to support growth
	Modern regulatory system
Provide an effective network	An integrated traffic management system
	A well-maintained transport system
	A transport system that is available, accessible and safe for all users
Maximise travel choices	Integrated journey planning available on smartphone devices
	Making the most of autonomous vehicles
	Increasing mobility as a service
	Seamless integrated travel
Protect transport users and the environment	Supporting and encouraging use of active modes which deliver health and wellbeing benefits
	Supporting and encouraging travel patterns which minimise CO2 emissions and other pollutants
	Ensuring the safety of all travellers

Table 2-3 Transport objectives and outcomes set out in the Milton Keynes Mobility Strategy

2.3.3 Milton Keynes Mobility Strategy Evidence Base

The Mobility Strategy for Milton Keynes (Milton Keynes Council, 2018) reviews the performance of the Local Transport Plan (LTP3) and gathers evidence about the existing and future transport

network in Milton Keynes to inform a summary of how Milton Keynes is progressing and establish a baseline of the challenges and opportunities for transport.

In order to address challenges of the LTP3, Milton Keynes Smarter Choices brand was developed to create a comprehensive, joined up approach to smarter choices within the Borough. Included within this brand are Get Smarter Travel, Get Cycling and Get Changed.

'Get Smarter Travel' provides marketing and promotion activities aimed at promoting sustainable travel within Milton Keynes. It provides advice and tips allowing the public to make smarter, more sustainable choices about their travel.

The website contains resources such as a comprehensive Redway map, cycling facilities, access to bikes and a multi-modal journey planner.

Each travel mode's section it provides a benefit analysis of choosing that mode of private car use (see Figure 2-1).

Figure 2-1: 'Get Smarter Travel' benefit analysis of walking over driving

'Get Cycling' provides a range of cycling related activities to encourage participation. This includes around 80 adults receiving one-to-one Learn to Ride sessions with free adult Bikeability training and guided rides for families and beginners on offer to provide entry level, stepping-stone activities. Alongside this a 10-month physical activity challenge called 'Beat the Street' was delivered by Intelligent Health targeting 100,000 residents and 42 primary and junior schools. Over 13,000 people took part in the initial six-week phase, walking, cycling and scooting over 85,000 miles.

'Get Changed' is a unit to provide secure cycle parking and changing facilities including showers to cycle commuters in the city centre.

Although this LCWIP looks at only infrastructure development, research has shown that investment in both infrastructure and behaviour change interventions can help maximise increases in walking and cycling (Transport for Quality of Life and TRL, 2016). The above campaigns show that this engagement in walking and cycling is already progressing in Milton Keynes. These invaluable resources will be key to increasing uptake of any new infrastructure developed as a result of the LCWIP.

2.3.4 Mobility Strategy (LTP4): Road Safety, Walking & Cycling and Smarter Travel Strategy

The Mobility Strategy (Milton Keynes Council, 2020) emphasises the objective of Milton Keynes to make walking and cycling the default choice for residents for short journeys (less than 3 miles), which has been echoed throughout the policies reviewed. The particular focus of this Strategy is to improve the safety for all road users including pedestrians and cyclists and reduce the number of pedestrians and cyclists killed or seriously injured in Milton Keynes.

In order to achieve this, the Strategy sets out some solutions, including:

- Expanding the walking and cycling network and improving the quality of the Redways, options and prioritised for expansion to be determined by the LCWIP
- Improve walking and cycling infrastructure around schools to reduce car dominance and improve walking and cycling accessibility
- Support community led Safer School Zones which promote safer traffic around schools by implementing temporary restrictions limiting vehicle access, speeds or drop-offs/pick-ups
- Improve walking and cycling road crossings to improve safety and accessibility for all users

2.3.5 Transport Infrastructure Development Plan

The Transport Infrastructure Delivery Plan (TIDP) (Milton Keynes Council, 2019) sets out its overall transport infrastructure objectives which are linked to the Mobility Strategy to ensure an integrated approach.

"This Transport Infrastructure Delivery Plan (TIDP) builds on the Mobility Strategy and sets out the transport vision for Milton Keynes, highlighting the challenges and opportunities along with the transport infrastructure that needs to be delivered within the short and medium term to enable growth to come forward sustainably as well as supporting the existing local communities."

Its objectives include:

- Promote active travel: improve quality and directness of strategic walk/cycle routes to reduce journey times, improving their attractiveness relative to car-based options
- Safer transport network: improve safety for all transport users, including pedestrians and cyclists
- Protect transport users and the environment: reduce transport pollution and CO2 emissions and promote improved public health and wellbeing through increased activity levels

To accompany these objectives the TIDP sets out the challenges facing the current transport provision in Milton Keynes, with regards to active travel the challenge is to encourage active and healthy travel and improve local connectivity. As part of the TIDP, 103 schemes were identified to address the current challenges in the network. The 18 active travel schemes are summarised in Table 2-4.

The TIDP also sets out the initial action plan split by transport modes, for active travel it is as follows:

- Policy enabler: Produce and adopt a Milton Keynes Cycling and Walking Strategy (LCWIP)
- 3-year scheme implementation: Enhance existing Redway network, expand the Redway network, expand the Redways into Central Milton Keynes and implement consistent wayfinding signage
- 3-year scheme development: Plan new rural cycle routes to extend the Redway network and improve local community connectivity by ensuring safe pedestrian routes are provided within development and between local communities and public transport hubs

Name	Phasing	Description
Cycle hire schemes	Short	Expand and promote cycle hire schemes to cover a larger area, includes new hire stations
Grand Union Canal upgrade	Short	Upgrade quality of the Grand Union Canal towpath through Milton Keynes to Wolverton Railway Station
High quality destination cycle parking	Short	Implementation of secure, covered, high-quality cycle parking at key destinations
Local community pedestrian connectivity improvement	Medium	Package of local walking connections to enable improved local community connectivity
New urban Redway Super Routes	Short	Expansion of Redway Super Routes programme to provide additional links along key routes and desire lines

Redway network expansion	Short	Expansion of existing Redway cycle routes into CMK providing direct, high-quality, segregated cycle routes
Redway network upgrades	Short	Includes improved wayfinding, widening, cycle priority at junctions, side roads, surface quality enhancements, improving lighting
Rural Cycle Routes	Medium	Expand existing cycle routes beyond Milton Keynes to create network of longer-distance cycle routes
Wayfinding	Short	Implement a comprehensive Milton Keynes wayfinding scheme

Table 2-4 Selection of Core active travel schemes identified as part of the TIDP The TIDP also outlines that:

- 74% of Milton Keynes residents live and work within the Borough
- 15% of residents travel less than 2km to work (reasonable walking distances)
- 40% travel less than 5km (reasonable cycling distance)

2.3.6 Redway Design Manual

The Milton Keynes Redways are a network of cycle and walkways, constructed in tandem with the town itself, with the aim of providing coherent, convenient and direct access for cyclists and walkers to different parts of the city on routes that are safe and attractive.

The system consists of over 200 miles of segregated walking and cycling routes and will continue to expand and fully integrate into new developments. The network is comprised of key routes connecting the city centre, public transport hubs and other major points, known as Redway Super Routes, and other routes serving smaller destinations such as residential estates, local shops and schools, known simply as Redways.

The Redway Design Manual: Consultation Draft 2020 (Sustrans, 2020) that, if adopted, will replace the 1991 Redway Design Manual, gives specifications for:

- Geometric design of the Redways
- Design of road crossings and access points
- Lighting, drainage, and landscaping
- System monitoring to understand who is using the Redways and how

These specifications will be applied when we come to our recommendations for network improvements.

2.3.7 A Highway Guide for Milton Keynes

The Highway Guide for Milton Keynes (Milton Keynes Council, 2018) sets out how "high quality access to new developments should be available to all potential users and provision for the car should never be to the detriment of provision for pedestrians and cyclists." It includes specific guidance on cycle parking for developers, to support them with interpreting the council's adopted Parking Standards.

2.4 Wider Local Policy Context

2.4.1 Milton Keynes Sustainability Strategy

The Sustainability Strategy (Milton Keynes Council, 2018) sets out a Vision for Milton Keynes to be the world's greenest and most sustainable city, the main objective is to be carbon neutral by 2030 and carbon negative by 2050.

It also identifies three key sustainable principles:

- Green Energy: intends to maximise the use of renewable energy and reducing carbon emissions across the city
- Circular Economy: intends to use resources more efficiently particularly water and land
- Low Emissions: intends to reduce the level of emissions from transport and ensure clear air by promoting low-emission vehicles and public transport use across the city

Despite active travel not being mentioned in the strategy, encouraging the uptake of walking and cycling will be a critical part of reducing carbon and vehicle emissions to meet the ambitious carbon neutrality and high air quality targets.

2.4.2 Health Impact Assessment Supplementary Planning Document

The Health Impact Assessment Supplementary Planning document (Milton Keynes Council, 2020) aims to support the process of submitting planning application. It outlines what needs to be considered as part of the health impact assessment, including active travel considerations. It includes 11 categories of considerations with potential impacts on health. As well as Accessibility & Active Travel, the others particularly relating to walking and cycling are explained below:

- Access to healthcare services & other social infrastructure: with walking and cycling as key access modes
- Access to open space & nature: with these best experienced on foot or bike
- Air quality, noise & neighbourhood quality: with alternative modes to private car, enhancing quality
- Social cohesion & lifetime neighbourhoods: with walking and cycling promoting social interaction
- Minimising the use of resources: with walking and cycling being very resource efficient
- Climate change: with increased walking and cycling, helping to tackle climate change

The document also suggested ways of promoting walking and cycling within new developments, including:

- Connecting routes and public rights of way to wider networks
- Providing safe junctions
- 20mph speed limits in new residential developments
- Traffic calming measures
- Provision of secure cycle parking, showers and cycle lanes
- Provision of routes and spaces that are green
- Creating pedestrian routes which are overlooked by adjacent housing and streets to improve the safety of routes by making them more visible

These will be considered as part of the LCWIP process and, as they form part of the health impact assessment guidance, will hopefully promote more well-designed walking and cycling infrastructure as part of future developments.

2.4.3 Joint Health and Wellbeing Strategy

The Joint Health and Wellbeing Strategy (Milton Keynes Council, 2018) identifies priorities for partners such as local authorities and hospitals to focus on. The three priority areas are:

- Starting Well: aimed at young people. Making it easier for children and young people to become more active through walking and cycling to school. Another key recommendation is to improve

  public transport to enable connectivity to green spaces and cultural venues to improve physical and mental wellbeing
- Living Well: intended for the majority of adults. Encourage a more active lifestyle to help combat obesity and health conditions such as heart disease. Although it doesn't mention active travel specifically walking and cycling regular journeys is a simple way to incorporate exercise into the daily routine
- Ageing Well: aimed at adults over 65, focussing on providing physical activity as a means of retaining independence. Access to public transport and safe active travel networks is key to allowing the elderly to continue to move about the Borough

2.4.4 MK Futures 2050 – A Strategy for 2050

The MK Futures 2050 Strategy (Milton Keynes Council, 2020) sets out seven big ambitions for Milton Keynes to achieve by 2050, one of these is to "Make it easier for everyone to travel on foot, by bike and with better public transport". In order to address the congestion and pollution levels within Milton Keynes it is noted the importance of making active travel the first choice for shorter trips. To do this the Strategy aims to improve the Redway network through providing more direct routes for commuting and giving Redway users priority over road users at appropriate locations.

The Strategy emphasises the importance of mobility for all, committing to "make it easier for everyone, including our younger and older residents and people with disabilities to enjoy easy movement and access" to all the Borough can offer.

Looking to the future the Strategy outlines plans for Redway 'Super Routes' which will include upgrading "cross-city Redways that run parallel to the grid roads and making them safer and more attractive" to commuters and leisure users. Investment is also being committed to the maintenance of the wider Redway and footpath network to improve the overall quality of the networks.

Future communities within Milton Keynes will be "designed to encourage more walking and cycling. This will include cycle hubs at transport interchanges", extending the existing network to reach more communities and considering segregated spaces for pedestrians and cyclists to improve user safety, particularly with the rise of powered micro-mobility (e.g. e-scooters).

2.4.5 Plan:MK

Plan:MK (Milton Keynes Council, 2019) is Milton Keynes Local Plan and sets out the vision and framework for the future development of the Borough of Milton Keynes until 2031, covering housing, the economy, infrastructure, the environment, adapting to climate change and securing good design.

Its Vision for the Borough includes an aspiration by 2031 that Milton Keynes will enhance its reputation as a pleasurable and exciting place to live, work, play and visit by creating a green, open

and spacious layout and a transport system that makes its facilities easily accessible to all. Smart methods of travel that combine effective use of road and parking space with personal mobility to improve access for all in Milton Keynes.

The Plan sets out seventeen Strategic Objectives which will be used to guide and monitor the delivery of the Vision.

This includes:

- Supporting the regeneration of Wolverton and Bletchley as town centres within the main urban area
- Reduce health inequalities and deprivation, and improve housing quality and access to services for all
- Managing increased travel demands (which includes encouraging an increased number of people to walk and cycle by developing and expanding the Redway network)
- Mitigating the Borough's impact on climate change and reduce carbon dioxide emissions (including through sustainable transport initiatives)
- Encouraging healthy lifestyles

2.4.5.1 Transport & Connectivity – Creating a Sustainable Transport Network

The Plan outlines steps for achieving a more sustainable transport network. Those relevant to the LCWIP include:

- Improving integration between active travel and sustainable transport modes
- Increasing the coverage of cycle hire schemes, identifying gaps in the cycle network, increasing secure cycle parking and providing a range of parking available to all needs
- Promoting and improving the provision of walking and cycling routes and facilities in the Borough *2.4.5.2 Walking & Cycling*

The Plan recognises the importance of walking and cycling in reducing transport emissions, improving accessibility for all and promoting a healthy lifestyle and specifically covers this in Policy CT3 and CT4. Due to their relevance to this LCWIP, they are provided in full below.

Policy CT3: The Council will support developments which enable people to access employment, essential services and community facilities by walking and cycling. In particular:

1. The layout of the external environment, including links to adjoining areas should provide attractive, convenient, direct, safe, secure and easy-to follow pedestrian and cycle routes that are well connected to the existing network. Primary cycling routes such as those to Central Milton Keynes and public transport hubs should be as direct and uninterrupted as possible, e.g. along grid road corridors
2. Incorporate measures to minimise vehicle speed and give priority to pedestrians and cyclists
3. Create safe, well lit, convenient and attractive walking and cycling connections to existing developments, neighbourhoods, jobs and services. Locations that are a deterrent to pedestrians and cyclists should be improved, including crossing points at roads
4. A Transport Statement or Transport Assessment should be undertaken to ensure that the impact of proposed new development at existing level crossings is assessed by developers, and suitable mitigation incorporated within the development proposals
5. The existing Redway, footway and right of way network should be retained, improved and extended to the current Redway design standards
6. Provide supporting facilities including wayfinding, pick up points, secure cycle parking, electric bike charging facilities and, where necessary, shower and changing facilities
7. Facilitate cycle hire schemes through the provision of land and/or planning obligations, where relevant, to ensure the provision of sufficient capacity
8. The Council's priorities for improving access and conditions for pedestrians and cyclists are:
   i. Routes from nearby settlements to Milton Keynes City
   ii. The Redway Super Route Network
   iii. Routes to and within Central Milton Keynes and Town Centres
   iv. The National Cycle Network

Policy CT4: New development proposals should aim to protect and enhance the existing Redways in the Borough. Where development proposes to crossover or remove an existing section of a Redway, a safe crossover or convenient alternative route should be provided, which safeguards the existing network and does not impede or comprise the safety of highway users.

2.5 Summary

A key focus of the above policies is to increase active travel within the Borough to help reduce private vehicle mode share and transport emissions, whilst improving health, well-being, inclusivity and accessibility of the whole Borough. Within Milton Keynes the Redways are a defining feature of the active travel network. Their high design standards and wide coverage help many to walk and cycle within the town. Priorities for the future investment in walking and cycling outlined in these policies include continuing with the Redway Super Routes and expanding the network beyond Central Milton Keynes, including to more of the surrounding market towns. The creation of a LCWIP was mentioned in many of these policies, providing the potential to help with the prioritisation of the future infrastructure development.

3 Stakeholder Engagement

As part of the initial stages of this LCWIP, we have engaged with both internal (e.g. council officers) and external (e.g. Sustrans, Milton Keynes Cycling Forum) stakeholders. In these engagement sessions stakeholders were asked about their knowledge, opinions and personal experience with the walking and cycling infrastructure within Milton Keynes. These conversations focussed heavily on the existing Redway network however other potential infrastructure solutions were also discussed.

3.1.1 Positives with Walking & Cycling in Milton Keynes

The general feeling for the existing infrastructure in Milton Keynes is that the Redways are an asset to the Borough and there are a lot of positive views on walking and cycling infrastructure within Milton Keynes. The Borough is considered unique and doing a good job with regards to walking and cycling infrastructure compared to other towns and cities in the UK.

Cyclists feel safe on the Redways compared to cycling on the roads, the low number of accidents seen in Section 5.8 aligns with this perception.

Stakeholders have seen the work that has been going on with prioritising cyclists at junctions, for example with the introduction of yellow bollards to highlight cycle crossings to drivers. This is a step in the right direction and shows that members of the public are noticing the shift in the Council's priorities towards walking and cycling.

3.1.2 Challenges to Walking & Cycling in Milton Keynes

The majority of challenges raised by Stakeholders were in regard to supporting infrastructure such as signage and the lack of coverage of the Redways in the surrounding market towns.

Wayfinding: This is deemed a challenge across the Redways due to the indirect routes required to transverse the town, lack of visible landmarks (such as a church spire which is normally visible in most UK towns) and a lack of consistent signage. Signage across the Redways is inconsistent with a combination of road markings, directional signs which can be span around and some national cycle route directions using stickers on lampposts.

Crossing Points: Crossing points are limited and are often not highlighted on maps of the network as where two routes may cross on a map is not always where a user can cross onto another route due to grade separation of routes through underpasses and bridges. The crossing points which do exist can be perceived as unsafe to some users, particularly on routes away from the road network as a lack of 'eyes on streets' can make people feel more vulnerable, even though the route is well-lit by design.

Underpasses: Crossing the road network often requires using an underpass which have always had negative connotations when considering safety, particularly for vulnerable user groups. They also create a problem with gradient as although Milton Keynes is relatively flat, when using the Redways a user needs to change height regularly through underpasses and along roads.

Integration: Stakeholders perceived a lack of integration between the Redways, the Leisure Routes and roads. This lack of integration means that cyclists can face differing surfaces and standards of path making the journey less comfortable and when the Redway ends and joins the highway this can also cause safety issues.

Barriers: Physical barriers put in place to stop motorbikes using the network can cause issues for cyclists, particularly those with non-standard bikes such as cargo bikes, trailers for children and hand-cycles.

Car-Centric Developments: Concern that developers are car-centric and so any infrastructure put in place as part of developments prioritises the car, over active travel and the Redways.

3.1.3 Draft Priorities for Walking & Cycling Infrastructure in Milton Keynes

From the above challenges with the existing infrastructure and wider engagement, the following draft priorities for focus were identified, both as part of this LCWIP work and further work to improve active travel in the Borough.

- To extend the Redway network beyond Central Milton Keynes into the surrounding towns and villages (e.g. Bletchley, Wolverton and Stony Stratford), whilst also creating more direct routes through the centre
- To improve the existing Redway network, particularly around wayfinding
- To consider segregation of the Redways in busier areas to create a safer space for pedestrians
- To better integrate with existing public transport hubs such as bus stops and train stations (notably Milton Keynes Central and Wolverton to support those wanting to commute to the nearby Cranfield University)
- To consider and gain views from all potential users of the network when proposing improvements and extensions (e.g. young families, older people and students), to get a broader view of walking and cycling in the Borough

3.1.4 Alternative Infrastructure Solutions to the Redways

Although Redways are the dominant walking and cycling infrastructure within Milton Keynes, it is acknowledged that other infrastructure solutions should be considered to increase active travel users, particularly in the surrounding market towns (e.g. Bletchley, Stony Stratford and Olney). For example, it is noted that it would be difficult to retro-fit Redways into a town such as Bletchley due to narrow streets and high density. Instead solutions such as on-road cycle lanes and low traffic neighbourhoods might be more appropriate.

Lowering speed limits in residential areas or introducing car parking charges could be considered. However, stakeholders perceived the Council and developers as prioritising the car and felt that such measures are often "kicked back" and opposed as a result.

It is suggested that lower speed limits would only be appropriate where the road space is shared, whereas areas with segregated Redways would be unlikely to need speed reductions.

3.1.5 Comparisons to Other Towns & Cities

In discussion with stakeholders with knowledge of active travel infrastructure in other towns and cities, highlighted the following comparisons:

- London: For its cycling innovations, particularly with regards to cycle crossings, low traffic neighbourhoods, wayfinding and strategic cycleways
- Stevenage: A new town built in the 1940s, Stevenage has a similar beginning to Milton Keynes. Like Milton Keynes, Stevenage was built with an integrated network of paths. However, Stevenage reduced the amount of gradient changes along the paths by splitting the height differential with the road, meaning the cycling routes are relatively flat compared to the road network. Despite this, Stevenage also has a relatively low cycling commuter rate similar to Milton Keynes
- Cambridge: Where a lot of high-tech infrastructure has been developed and implemented

3.1.6 Perceived Effect of the COVID-19 Pandemic on Active Travel in Milton Keynes

Stakeholders perceive an increase in walking and cycling in and around Milton Keynes as a result of the pandemic. This is backed by evidence seen in Section 6.1. The increased volume using the network alongside the need to socially distance has highlighted the need for wider paths in some areas along the national cycle routes due to cyclists having to leave the pathway to increase space, churning up the mud on either side of the path.

4 Environment

4.1 Air Quality Analysis

4.1.1 Air Quality Management Area

An area over the centre of Olney, located in the north of the Borough, was declared an Air Quality Management Area (AQMA) in 2008. The area, shown in Figure 4-1, is to monitor the annual mean of the pollutant Nitrous Dioxide (NO_2), the most common pollutant to be monitored as part of an AQMA. The latest air quality monitoring report (Milton Keynes Council, 2020) shows that the annual mean nitrogen dioxide objective has not been exceeded in the AQMA since 2015. It was intended to revoke the AQMA in 2019, however the report states that it was prudent to await a full year of data before revoking the AQMA, this is now expected early 2021.

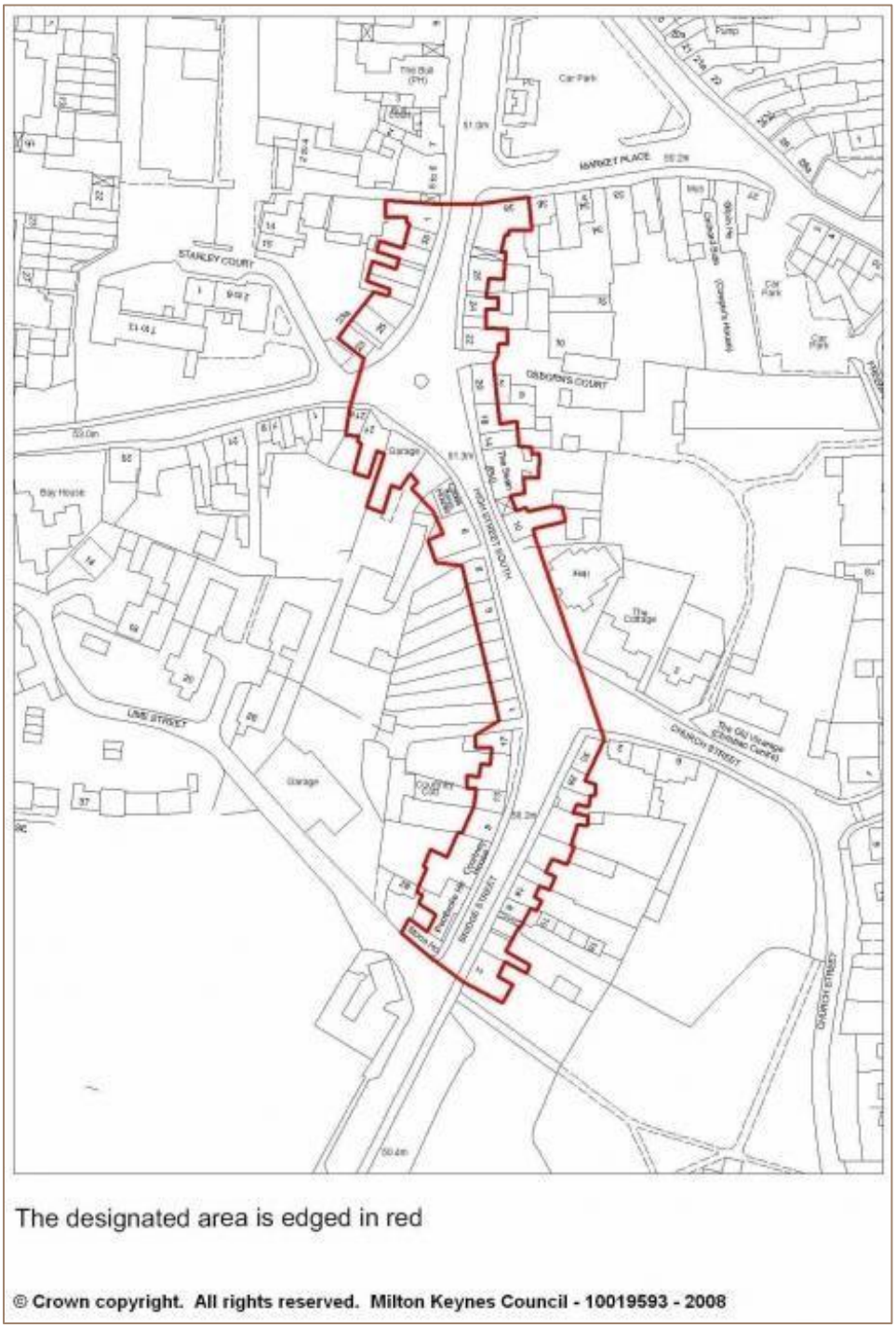
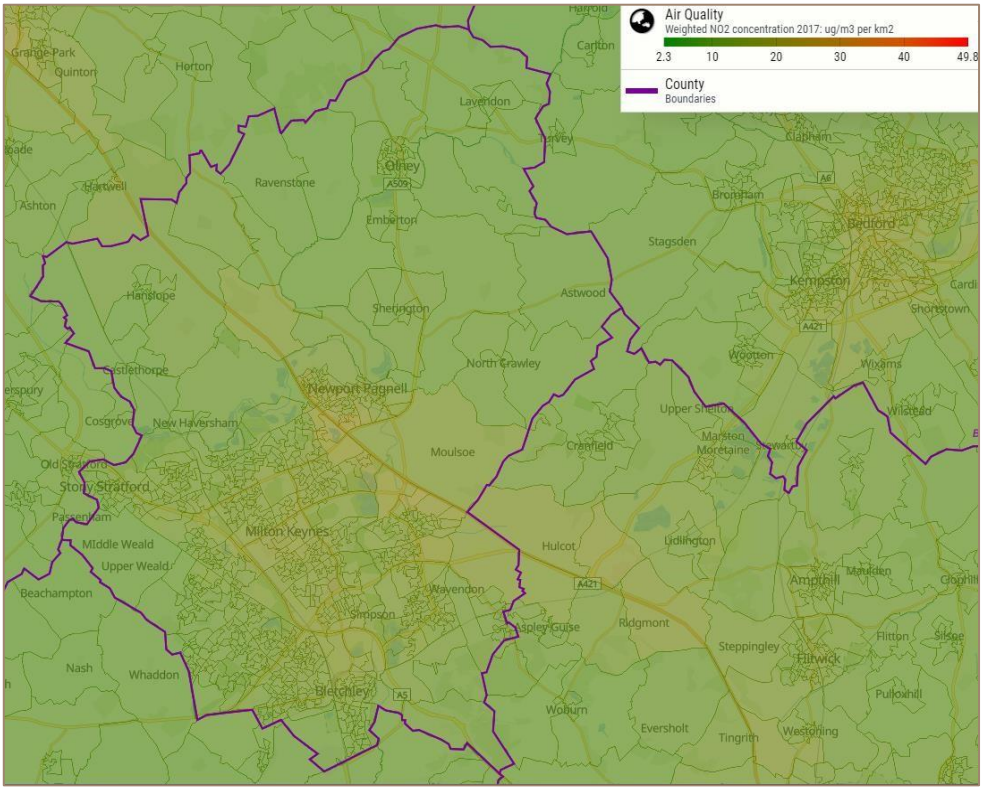


Figure 4-1: Location of the Air Quality Management Area over Olney

4.1.2 NO_2 Concentration



2017 levels of weighted NO_2 concentration are shown in Figure 4-2.

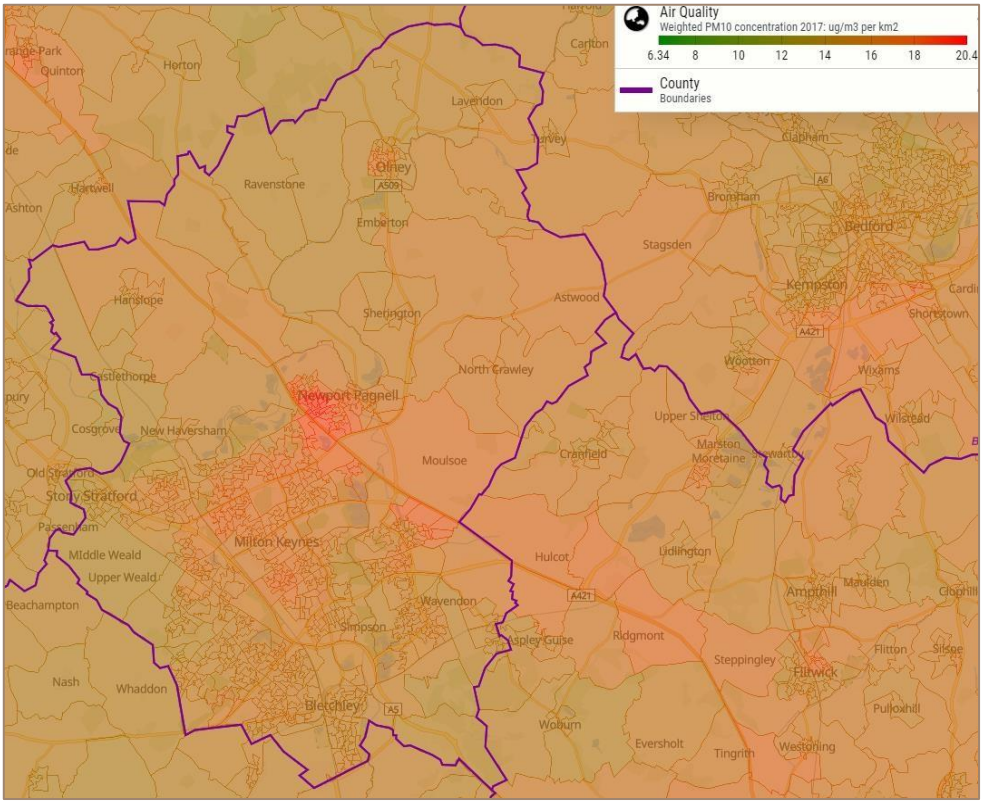
Over the AQMA in Olney the levels are between 10 – 11.6 micrograms per cubic metre per km^2, some of the lowest concentrations in the Borough.

Areas with the highest concentration within the Borough lie around the M1 that intersects the Borough, particularly around Newport Pagnell where the concentration exceeds 21 ug/m^3 per km^2.

Figure 4-2: NO2 concentration in 2017 (City Science Cadence Software)

4.1.3 Particulate Matter Concentration

Particulate Matter (PM10) are particles with a diameter of 10 micrometres, which can cause respiratory issues. They are generally a mixture of soot, smoke, metals, rubber and other pollutants.



PM10 concentrations for 2017 (see Figure 4-3), are high across the Borough.

Highest concentrations are located around Newport Pagnell which has over 19 ug/m3 per km2, with other high concentration areas being focussed around the M1 and Central Milton Keynes.

Lowest concentrations are recorded around the outskirts of the Borough to the north and west near Ravenstone and Castlethorpe.

Figure 4-3: PM10 concentrations in 2017 (City Science Cadence Software)

4.2 Flood Risk

The majority of the cycling and walking infrastructure within the Borough is located away from the waterways and as such is unlikely to be impacted by flooding (see Figure 4-4). The Redways are located within Milton Keynes and only pass near the canal, which is not subject to flooding. However some other infrastructure such as the National Cycle Routes and highways lie in affected areas of flood risk.

According to Sustrans, the National Cycle Route 6 to the north of Central Milton Keynes is prone to flooding, with no diversion route. A key consideration when planning any future infrastructure within these flood risk areas needs to be a realistic mitigation plan and/or diversion route. For vehicles an extra couple of miles for a diversion is inconvenient but does not significantly impact the journey, however for active travel a diversion of a mile can significantly impact the journey time and difficulty and hence the public are less likely to use any route prone to flooding in case such a situation occurs.

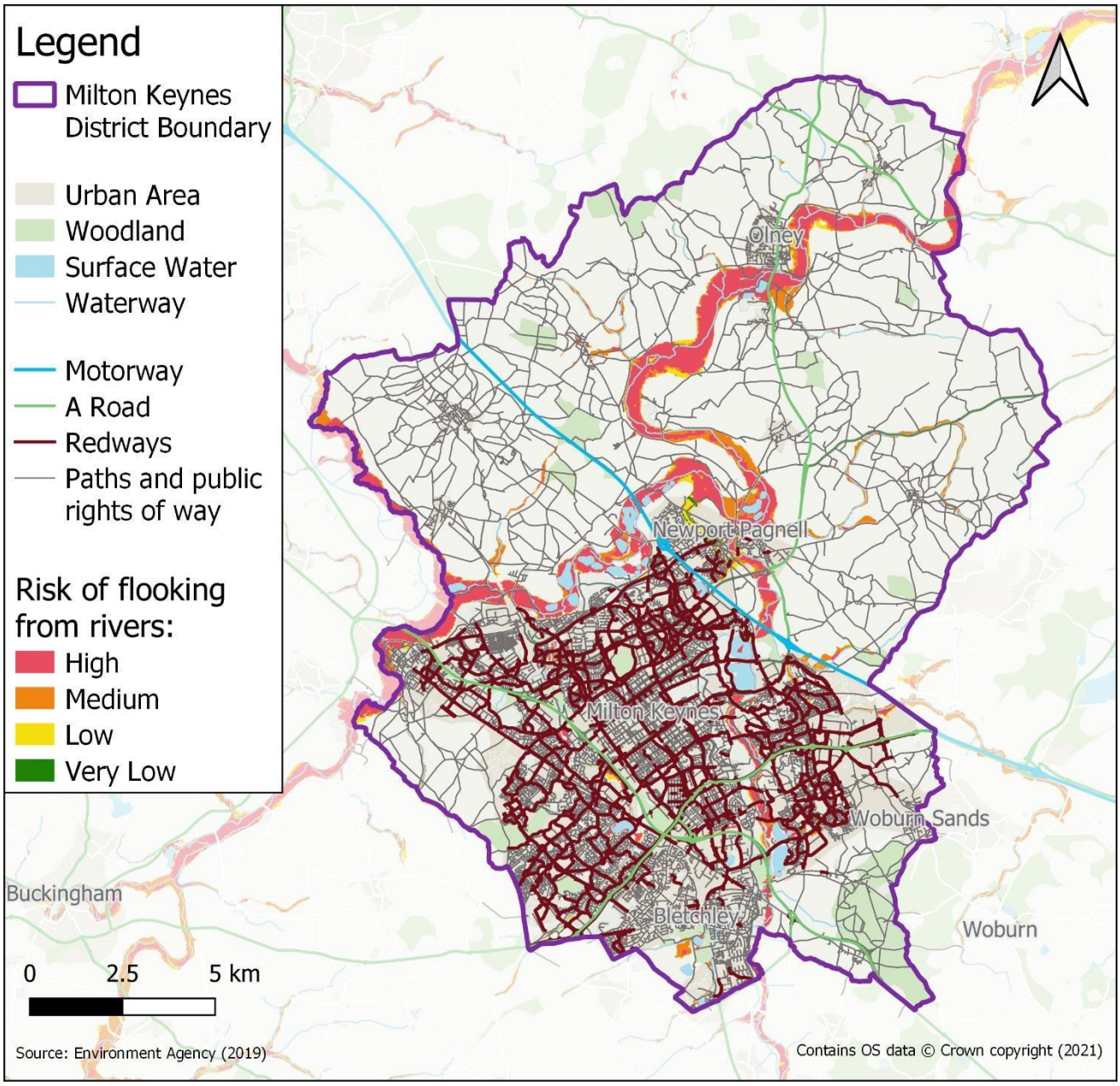


Figure 4-4: Risk of flooding from rivers overlaid with transport infrastructure

5 Network Analysis

5.1 Cycle Mesh Density

Cycle mesh density is a measure of the amount of cycling infrastructure (metres of cycle paths) per kilometre squared. Figure 5-1 shows the cycling mesh density over the Borough of Milton Keynes, more detailed maps of key destinations within the Borough are shown in 9.1

From this it is clear that the town of Milton Keynes is well served by cycling infrastructure, analysis on a wider scale shows that these are some of the highest values in the country. Outside of Milton Keynes there is less cycling infrastructure with only a few cycleways in the surrounding rural area with little connectivity between rural communities. Notably, Bletchley is one of those areas with no infrastructure despite being so close to Milton Keynes with Old Bletchley, Far Bletchley and Water Eaton of particular note. Another surrounding town which lacks infrastructure is Olney, this is a more remote town than Bletchley but infrastructure within the town centre should still be expected.

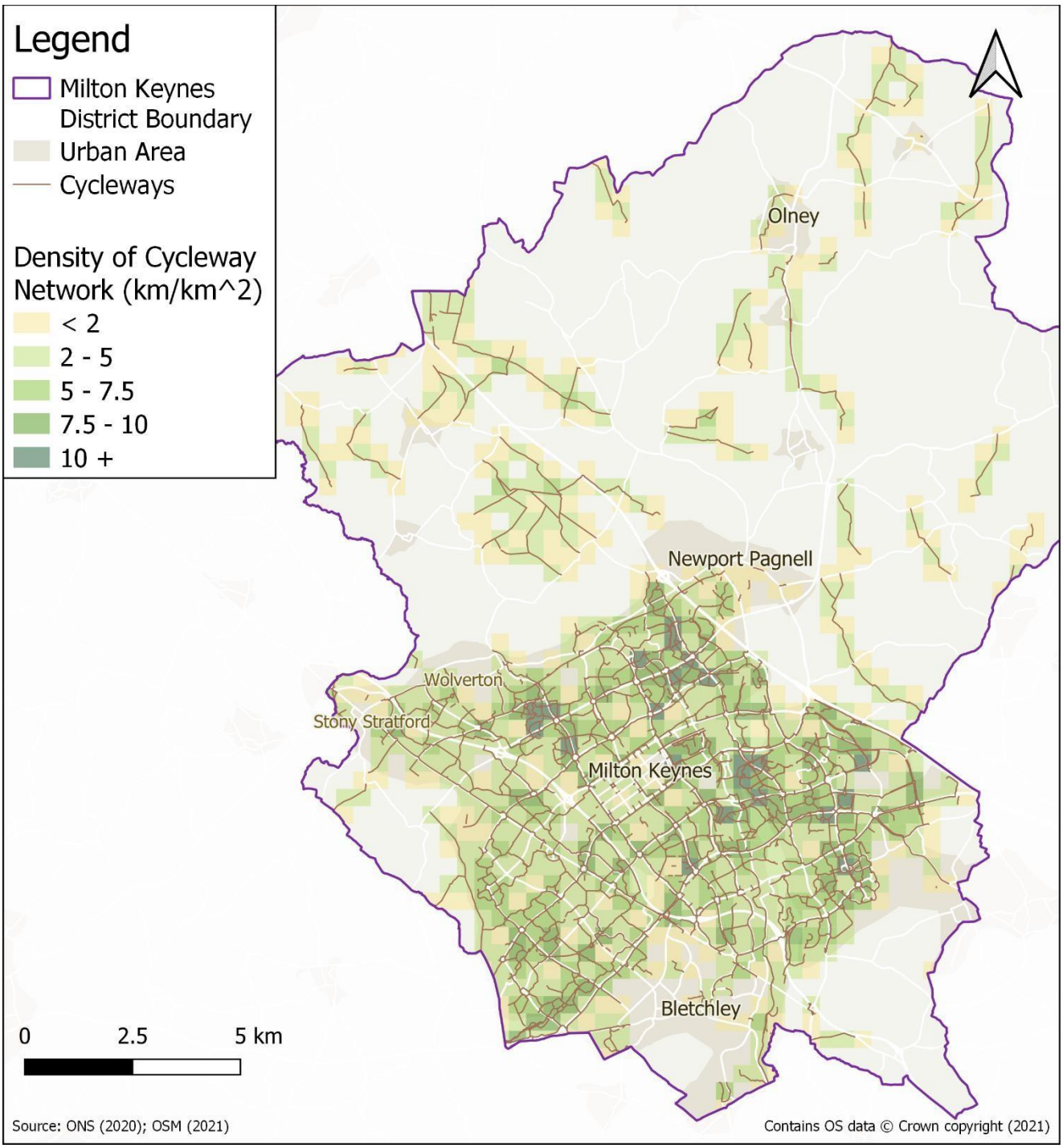


Figure 5-1: Density of cycling infrastructure (m per km²)

5.2 Path Condition

Data was provided by Vaisala on the condition of the existing Redways and paths within Milton Keynes. Footage was taken of the network by bike and car and the videos were passed through their AI software which identified different faults with the paths. The paths were then assigned a score out of 5 (with 1 being the worst and 5 being the best score) depending on the condition of the path based on elements such as cracking. To caveat, the software is not infallible and sometimes poor conditions can be incorrectly identified. For example, a path that has had a trench dug and re-laid to lay cables beneath it can show as poor as the software thinks the re-laid surface is cracking which is incorrect.

The results of this are shown in Figure 5-2 and Figure 5-3. This analysis shows that the majority of Redway paths are of a good condition, with only a few sections of pathway raising concern. However the majority of proposed Super Routes have some sections with a lower quality. This would suggest that the paths along these routes may require further enhancement, although it would be advisable to carry out more in-depth audits of these sections of path before any decisions are made. There are also some stretches of low-scoring sections of paths which lie on the National Cycling Routes (6 & 51).

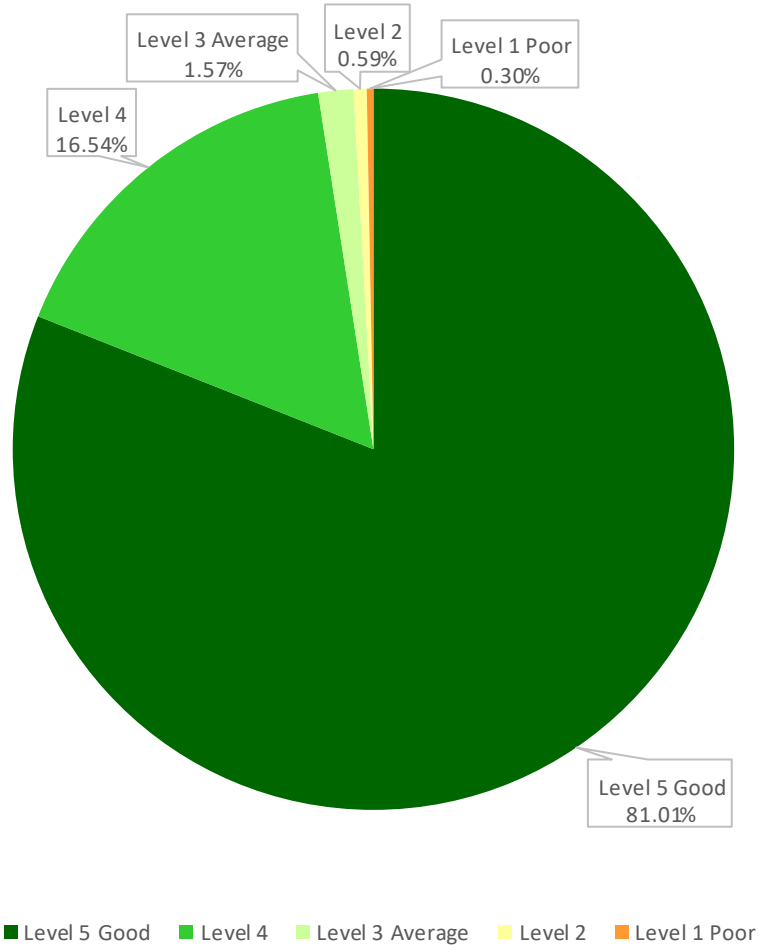


Figure 5-2: Proportion of pathway sections of each condition class

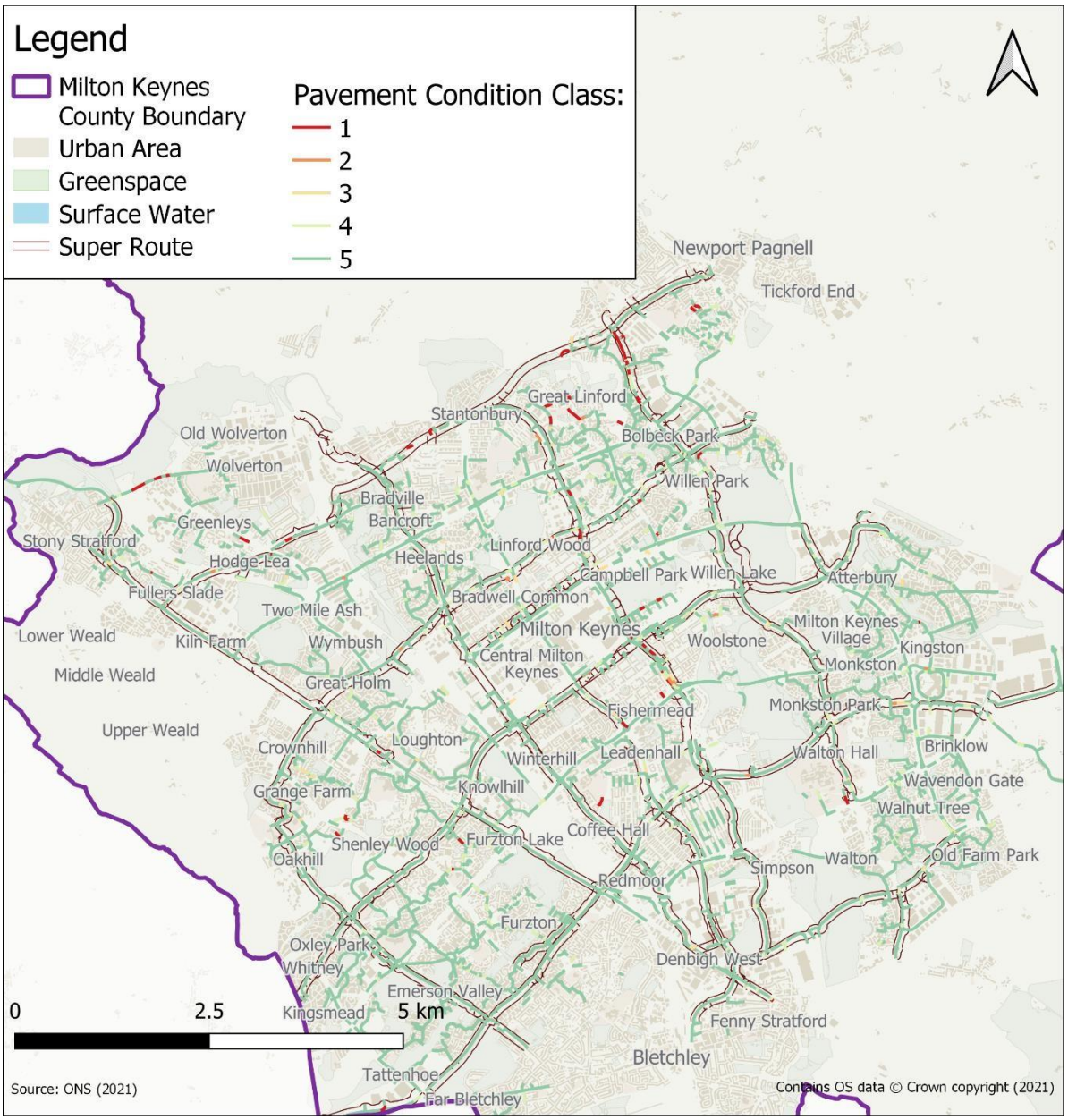


Figure 5-3: Condition of the existing Redway network

5.3 Cycle Parking

Figure 5-5 shows the location of Cycle Parking throughout Milton Keynes taken from the Cycle Parking Audit carried out by ParkThatBike in February 2020. The results of this audit were split into existing and potential cycle parking locations, with existing facilities scored Good, Adequate or Poor during the course of the audit.

Cycle parking is centred around the town of Milton Keynes with only a few of the surrounding towns having cycle parking facilities, with a total of approximately 3,500 spaces across the borough. The majority of cycle parking locations are classed as good, Figure 5-4, with only a few locations being classed as poor. Through this audit ParkThatBike also identified 49 potential locations for cycle parking across the borough.

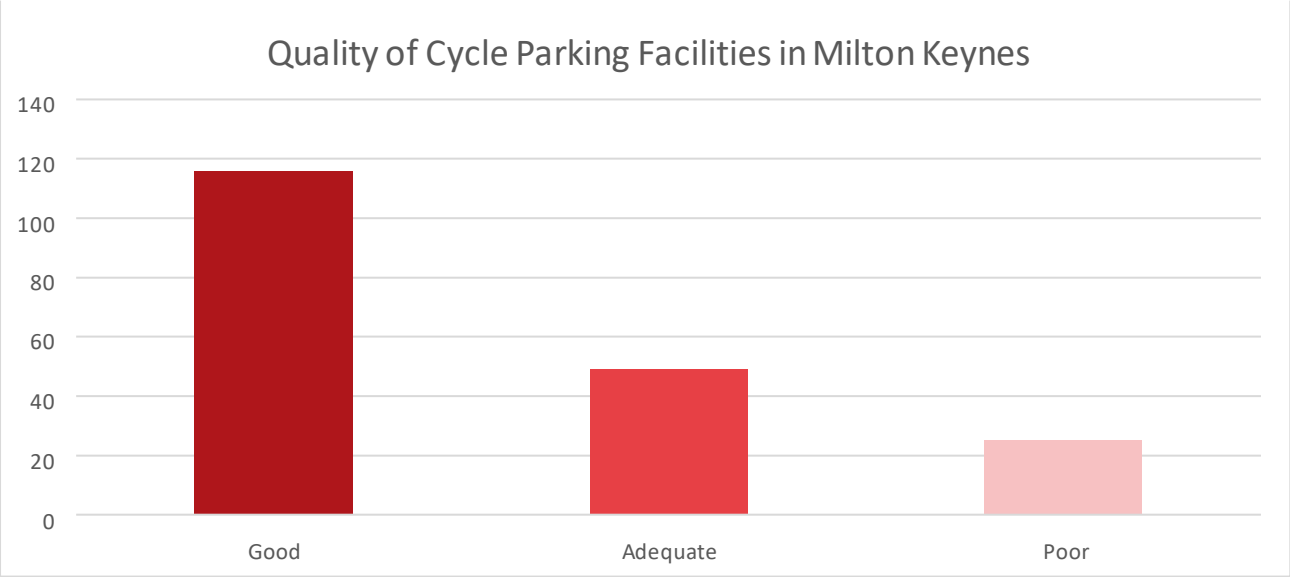


Figure 5-4: Number and quality of Cycle Parking facilities in Milton Keynes

Standard cycle stands are located in most car parks in Central Milton Keynes and at local centres, leisure centres, places of interest along with many schools. Although the majority of these are free, there are also chargeable, secure cycle lockers located at Milton Keynes Central train station, each with room for one standard bicycle. Almost all of the train stations in Milton Keynes provide some form of free cycle parking and there are 10 covered cycle stands at Milton Keynes Coach Station.

As per the 'GetChanged' initiative (see Section 2.3.3), there is a shower and changing facility located on Witan Gate/Midsummer Boulevard. The unit has internal lockers for personal belongings, secure cages in a drying room, showers, a changing room and 48 secure cycle lockers.

Alongside cycle parking there are also three locations in Milton Keynes which provide air pumps and tool stations with work stands and basic tools for the public. These are free to use and easy to access at Milton Keynes Central and Bletchley railway stations, and outside the Get Changed unit in Central Milton Keynes.

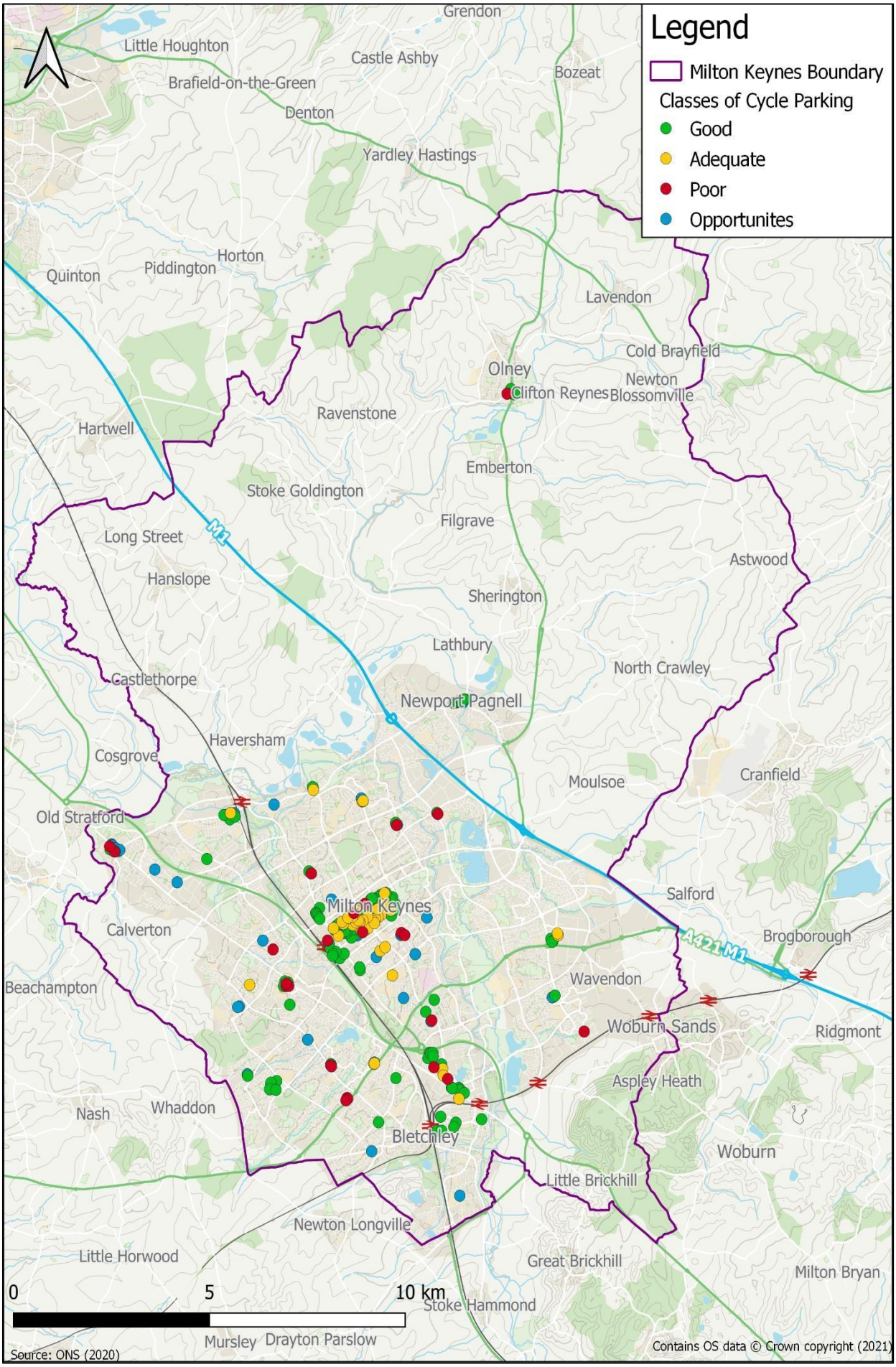

Legend
Milton Keynes Boundary
Classes of Cycle Parking
Good
Adequate
Poor
Opportunites
Grendon
Little Houghton
Castle Ashby
Bozeat
Brafield-on-the-Green
Denton
Yardley Hastings
Horton
Quinton
Piddington
Lavendon
Cold Brayfield
Olney
Newton Blossomville
Clifton Reynes
Ravenstone
Hartwell
Emberton
Stoke Goldington
Filgrave
Long Street
M1
Astwood
Hanslope
Sherington
Lathbury
North Crawley
Castlethorpe
Newport Pagnell
Haversham
Cosgrove
Moulsoe
Cranfield
Old Stratford
Salford
Milton Keynes
Calverton
A421 M1
Brogborough
Beachampton
Wavendon
Woburn Sands
Ridgmont
Aspley Heath
Nash
Whaddon
Bletchley
Woburn
Little Brickhill
Newton Longville
Little Horwood
Great Brickhill
Milton Bryan
Stoke Hammond
0
5
10 km
Mursley
Drayton Parslow
Source: ONS (2020)
Contains OS data © Crown copyright (2021)

Figure 5-5: Location of cycle parking within Milton Keynes (Milton Keynes Cycling Audit, ParkThatBike 2020)

5.4 STRAVA Metro Data

STRAVA is a tracking app used by many people walking, cycling or running to track their activity. STRAVA Metro provides data on the routes their users take with all personal identifiers removed and aggregates it to provide a source of trends and insights. The data most useful to this study is the corridors taken by users split by whether they are on foot or on bike which can be used to identify demand trends at a more route-based level than 2011 Census data.

The data presented here is taken between May 2019 and April 2021 for corridors of up 8km long. It should be noted that data captured only reflects people who purposefully track their movements using the app. It therefore does not fully represent all active travel movements (e.g. those without access to a smartphone or who use an alternative app).

5.4.1 Cycling

There were over 18,000 people using the app to track their cycling journeys in 2020 within the borough of Milton Keynes. Cycling tracking saw significant increases during 2020 (see Figure 5-7) with over 250,000 trips made throughout the year. Nearly 8,000 of the cycling users are not from the area which is likely made up of two categories: commuters who cycle from their point of entry to the borough to work and tourist visitors cycling to enjoy the area.

Figure 5-6: STRAVA Cycling data for 2020 (STRAVA Metro)

Figure 5-7, which shows the age demographics of the cycling users within the borough, demonstrates that those aged 20-54 are well represented but the younger and older generations are underrepresented.

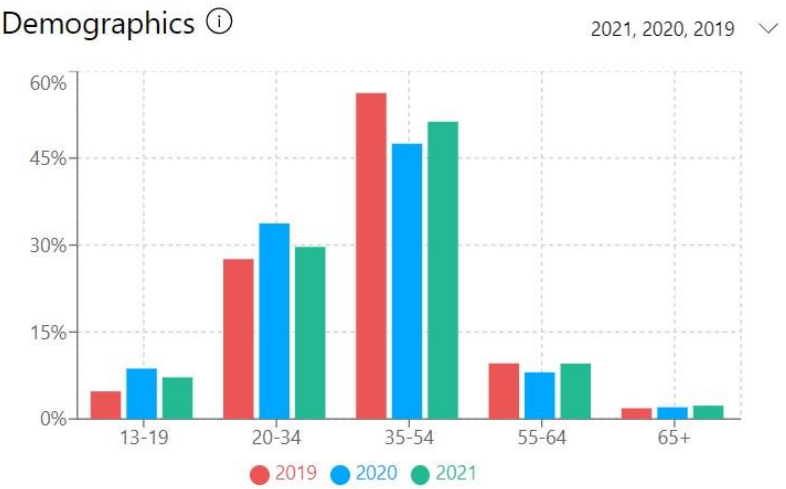


Figure 5-7: Demographics of STRAVA cycling users within Milton Keynes Borough (STRAVA Metro)

High usage corridors through Milton Keynes are shown in Figure 5-8: Cycling Corridors within Milton Keynes (STRAVA Metro), with some of the key routes noted below:

- Stony Stratford to Milton Keynes Central Railway Station
- Stony Stratford to western Milton Keynes

- Furzton to Milton Keynes Central train station
- Broughton to Central Milton Keynes
- Westcroft to Central Milton Keynes
- Stony Stratford to Wolverton
- Woburn Sands to Bow Brickhill
- Wolverton to Newport Pagnell

Analysis into these routes show a higher usage pattern during the morning and evening weekday peaks; implying these are commuting based trips.

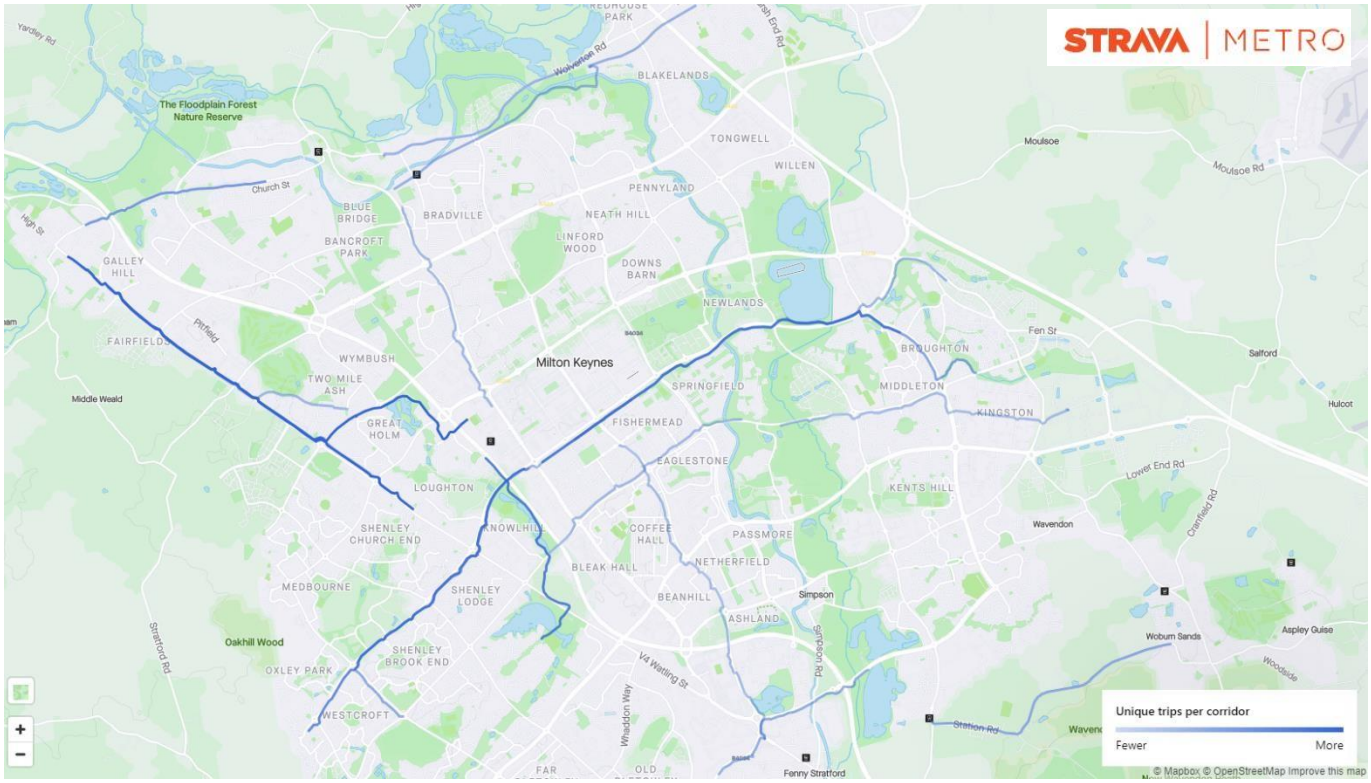


Figure 5-8: Cycling Corridors within Milton Keynes (STRAVA Metro)

From Newport Pagnell there are two main routes used; south towards Milton Keynes and Wolverton and north towards Sherington (see Figure 5-9). Unlike in Milton Keynes, the majority of these trips do not appear to be for commuting purposes as they generally occur around the evening and weekends; implying these are routes taken for leisure/exercise purposes.

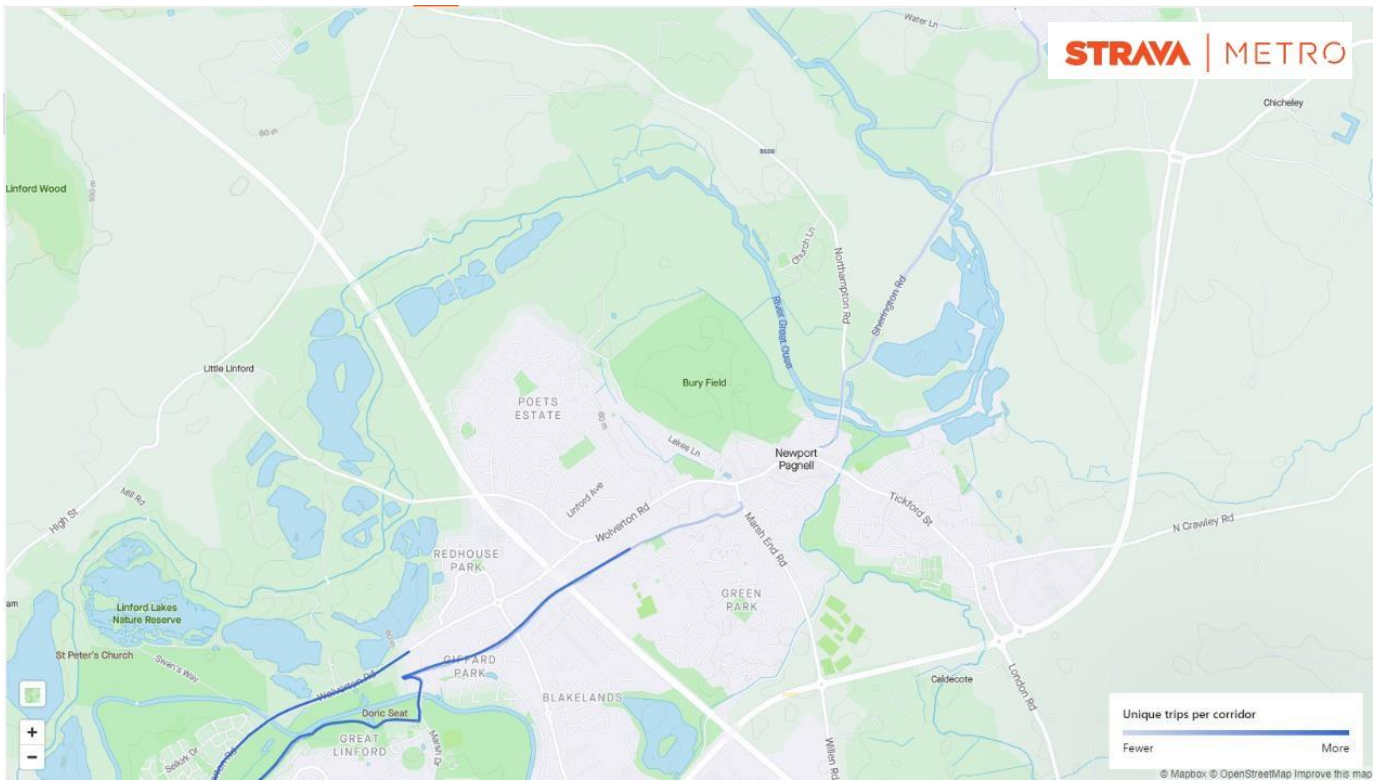


Figure 5-9: Cycling Corridors around Newport Pagnell (STRAVA Metro)

There is a route between Olney and Lavendon (see Figure 5-10) which is used by a few users as a commuting route. This route was only taken during the month of March so has limited data however it does show the most likely route any cyclists would take between these two areas as there is a demand for that route based on census commuting data.

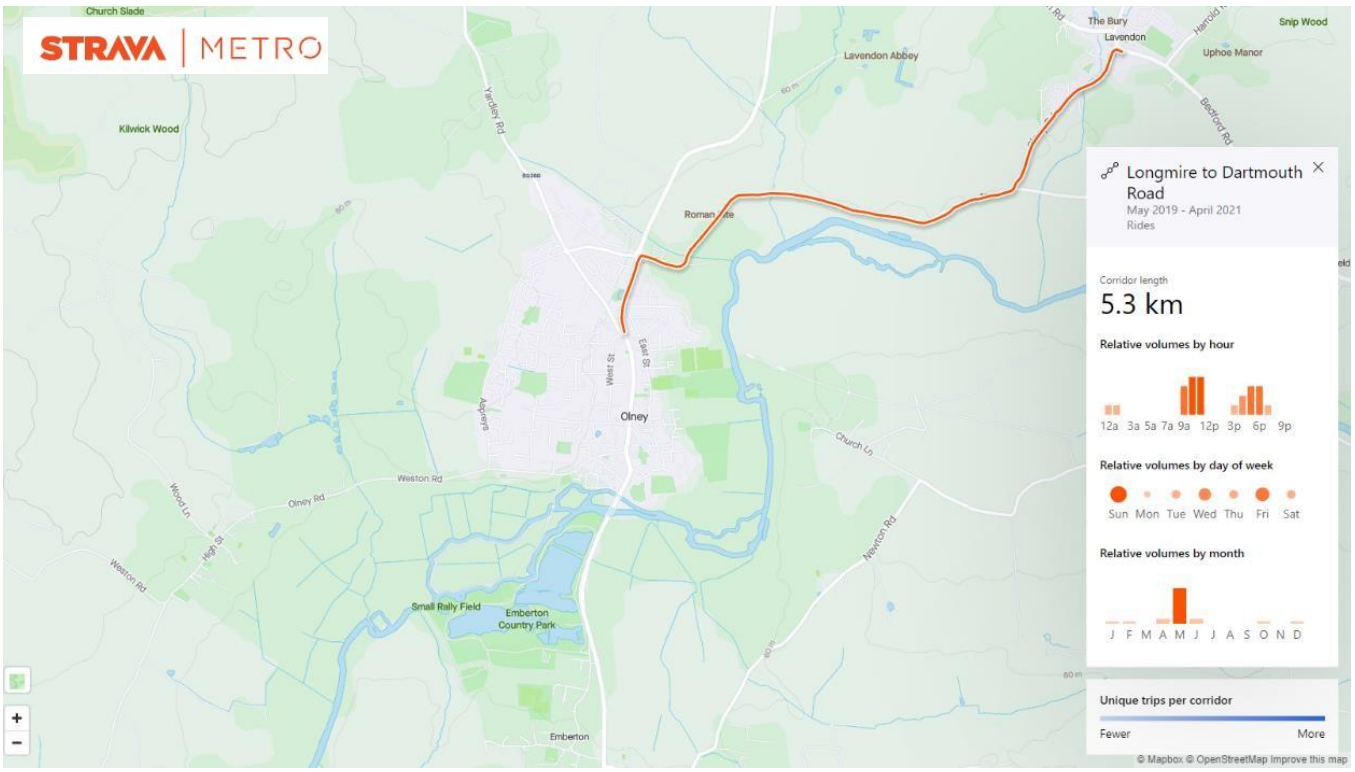


Figure 5-10: Cycling Corridors around Olney (STRAVA Metro)

5.4.2 Run, Walk, Hike

There were over double the number of trips taken by STRAVA users on foot than there were on bike during 2020 (see Figure 5-11 compared to Figure 5-10). This shows that there are a large number of people using the infrastructure by foot which is directly relevant to scheme identification. As with cycling there is a high proportion of users who are visitors to the area.

Figure 5-11: STRAVA Run, Walk, Hike data for 2020 (STRAVA Metro)

As with cycling, the demographics of users captured is around the ages 20-54 meaning that travel patterns of younger and older people are underrepresented.

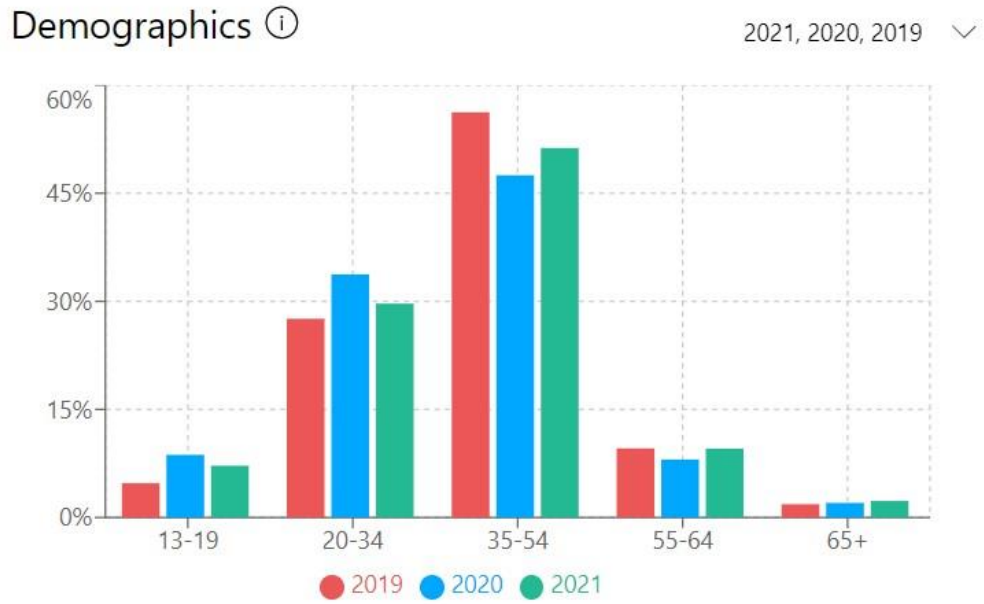


Figure 5-12: Demographics of STRAVA users on foot for 2020 (STRAVA Metro)

Figure 5-14 to Figure 5-19 show popular walking corridors around the borough. These routes are less direct than those selected by people cycling. This coupled with the demand profiles of the routes implies that the majority of these routes are for leisure purposes. The data also indicates that people frequently travel by one method (e.g. walking or running) during their inward journey to work and then use an alternative active method for their return journey (e.g. cycling).

The most popular routes (see Figure 5-13) are located around the main lakes throughout the town and tend to form loops. The exception to this is a 5km route between Denbigh and Central Milton Keynes, however, this route only appears to be used on Sunday mornings in March, which is not sufficient to indicate a trend.

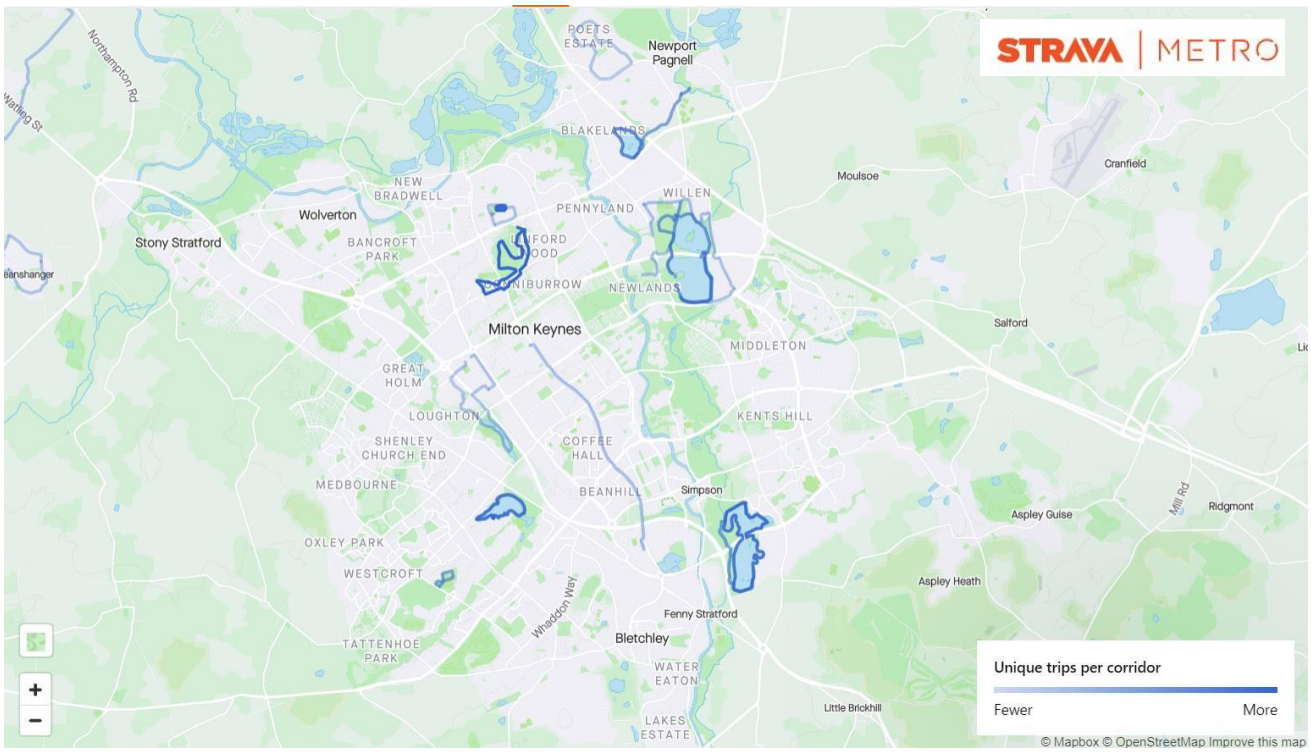


Figure 5-13: Popular walking corridors within Milton Keynes (2019-2021, STRAVA Metro)

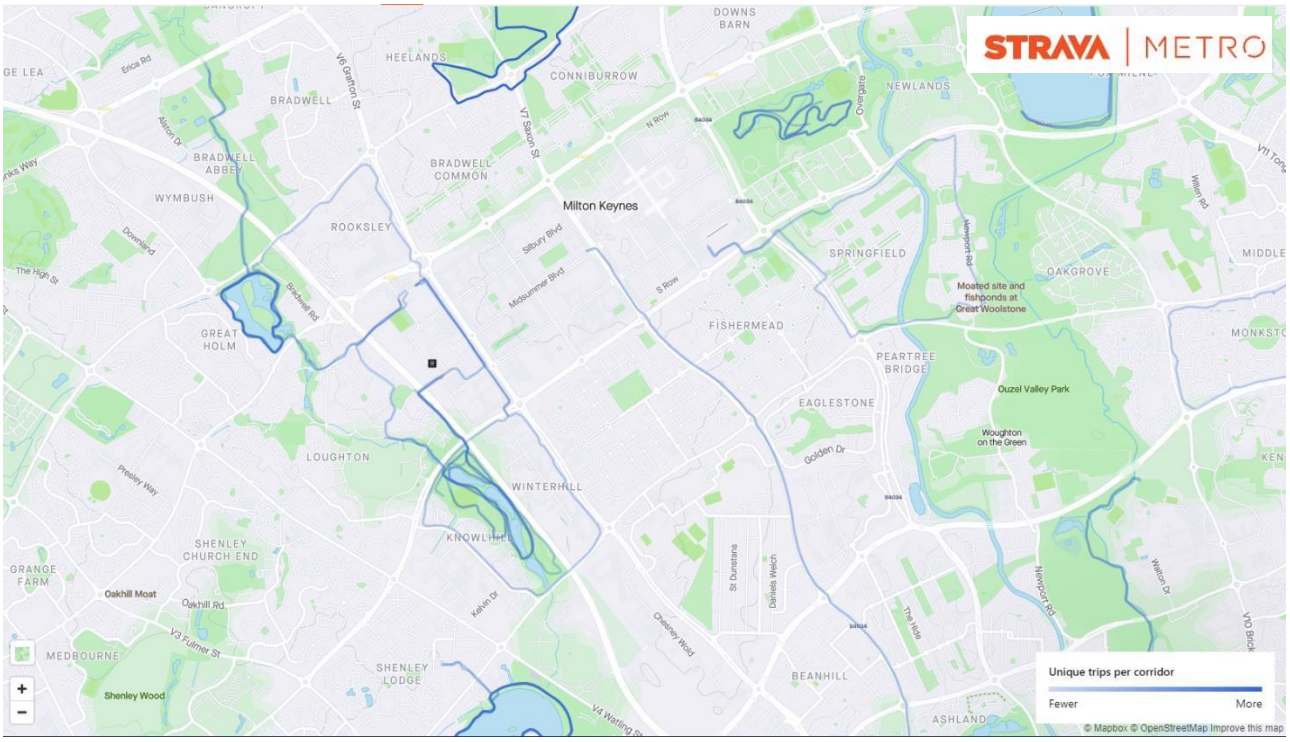


Figure 5-14: Walking corridors around Milton Keynes (2019-2021, STRAVA Metro)

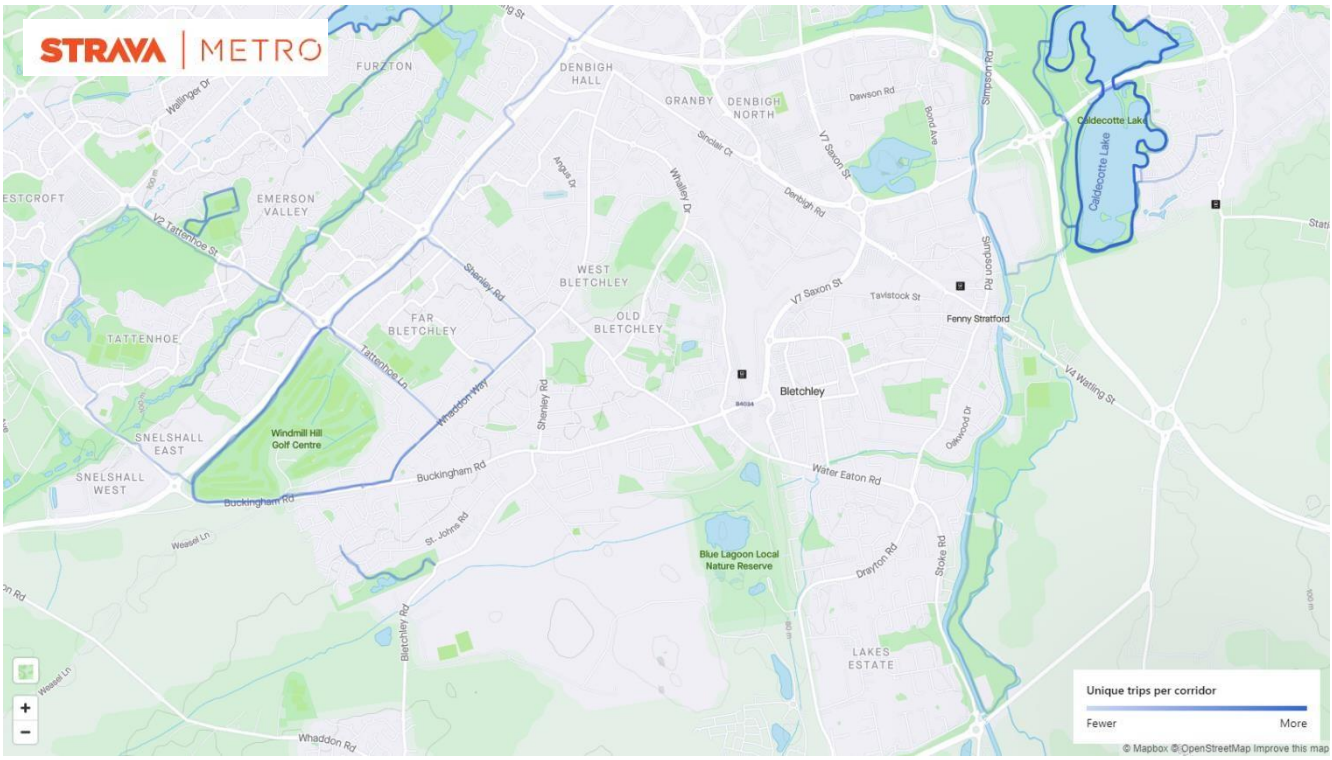


Figure 5-15: Walking corridors around Bletchley (2019-2021, STRAVA Metro)

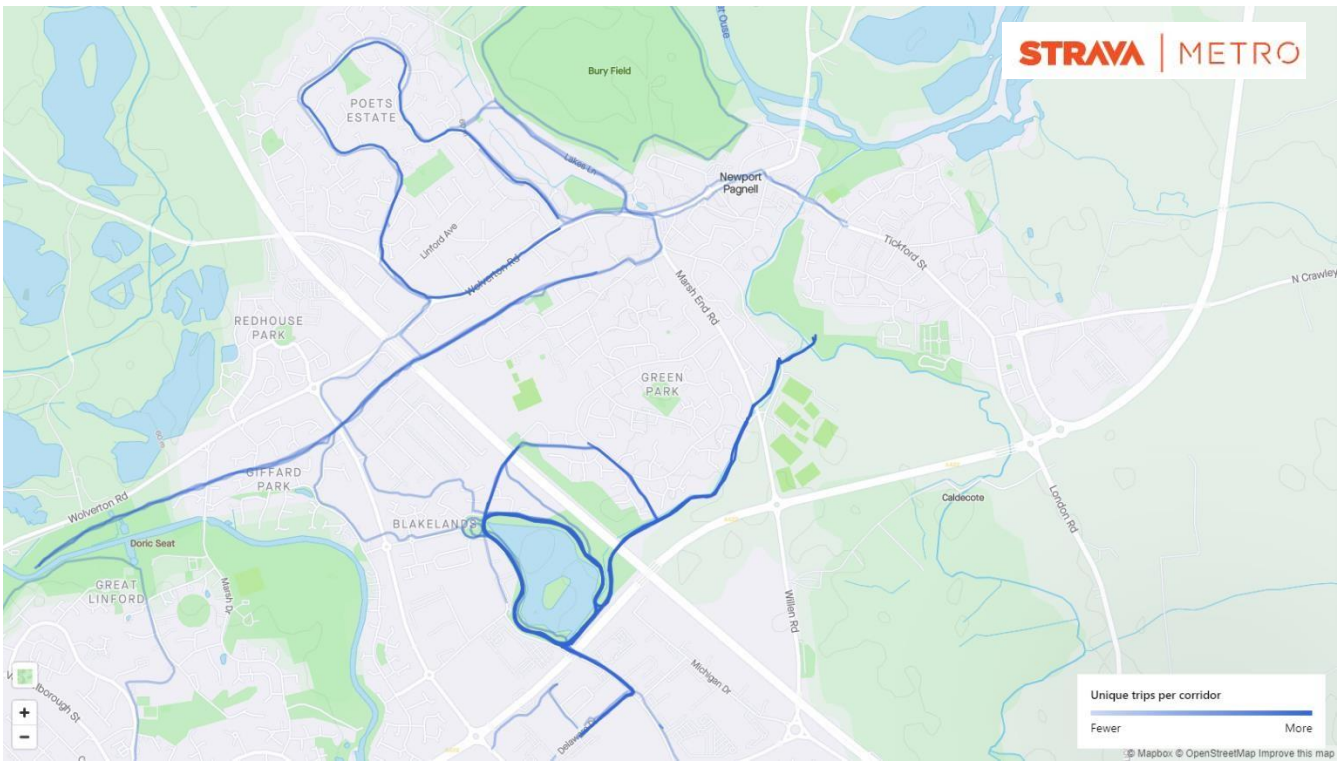


Figure 5-16: Walking corridors around Newport Pagnell (2019-2021, STRAVA Metro)

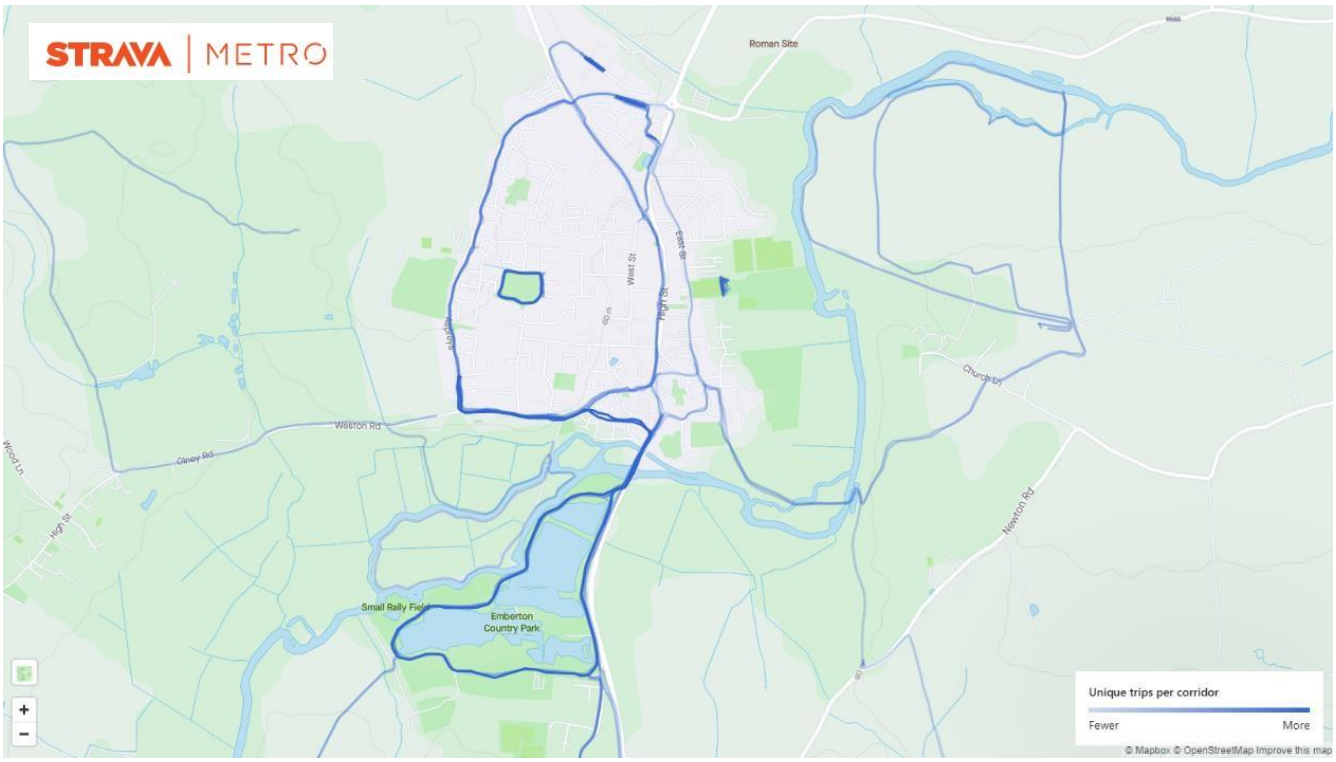


Figure 5-17: Walking corridors around Olney (2019-2021, STRAVA Metro)

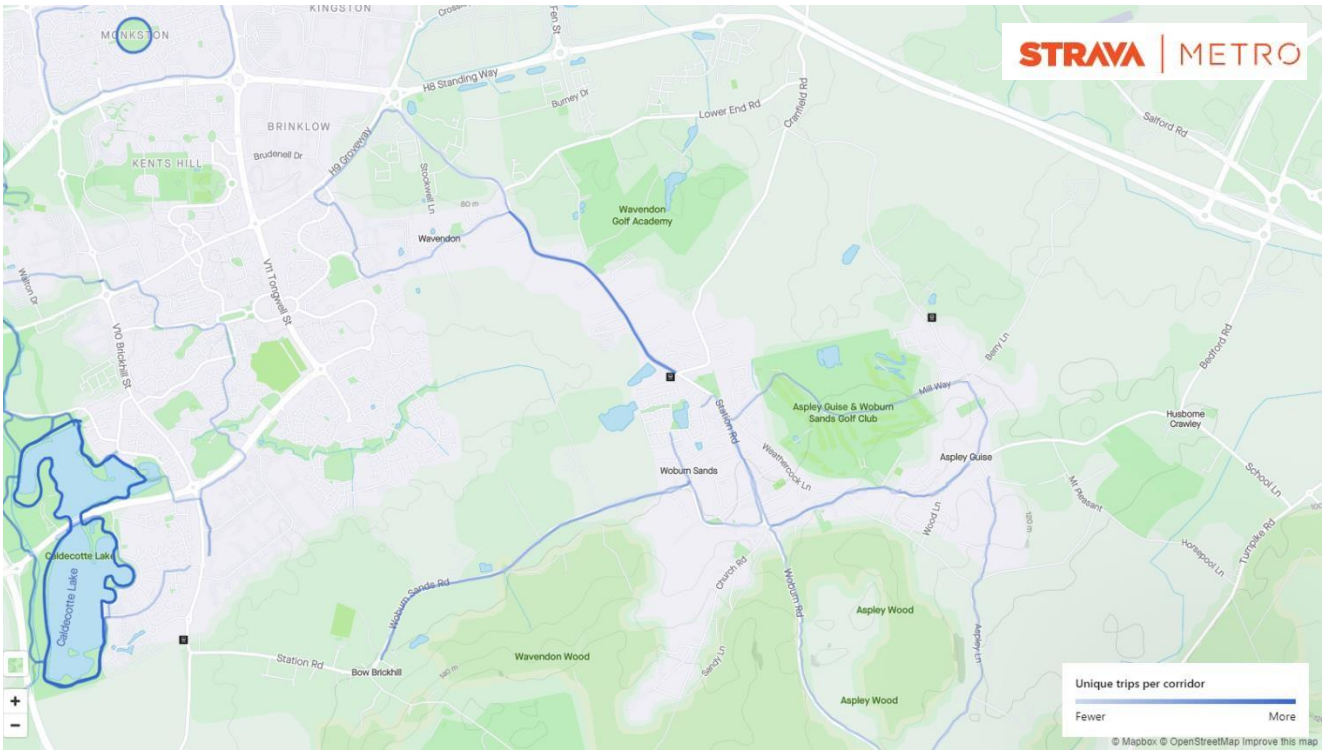


Figure 5-18: Walking corridors around Wavendon and Woburn Sands (2019-2021, STRAVA Metro)

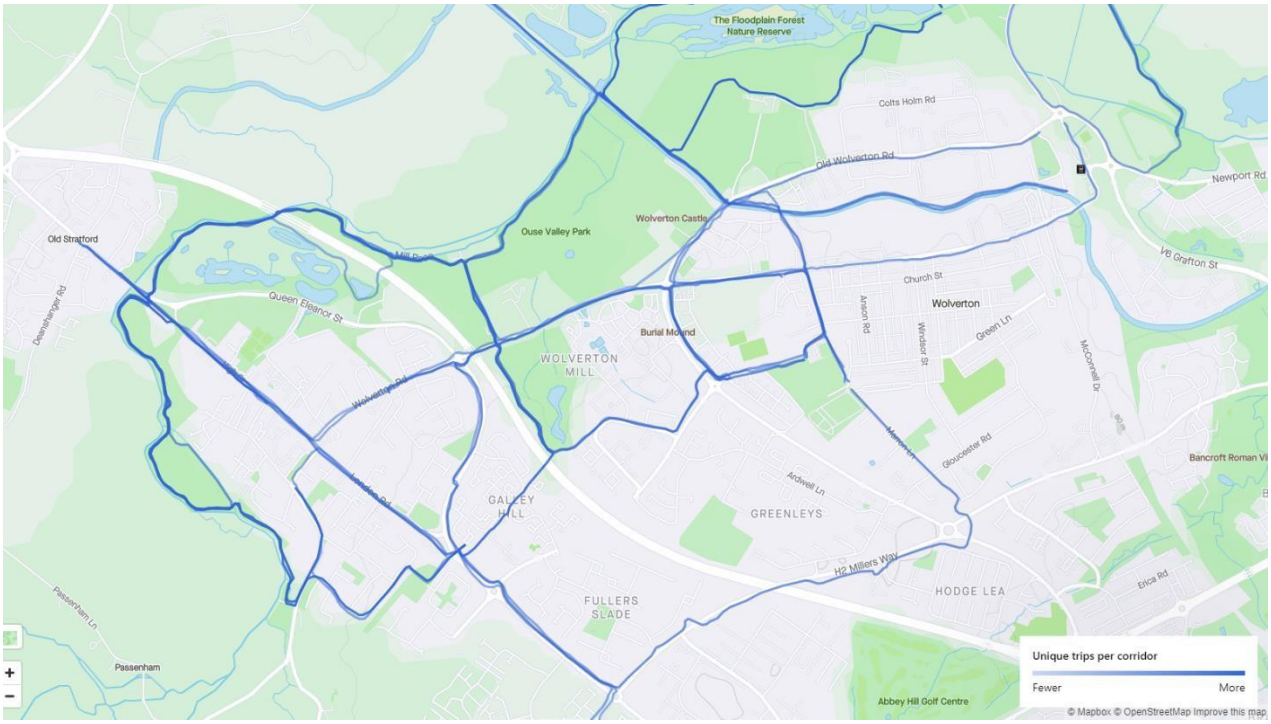


Figure 5-19: Walking corridors around Stony Stratford and Wolverton (2019-2021, STRAVA Metro)

5.5 Lime E-Scooter Hire Data

Lime has been operating in Milton Keynes since November 2018; initially they launched with e-bikes however these were removed in March 2020 due to COVID-19 restrictions. In August 2020 they then launched an e-scooter trial with over 300 e-scooters in operation across Milton Keynes. Since their launch they have seen over 101,000 trips with over 19,000 first rides, (Lime, 2021).

Data in this section has been taken from the March 2020 and March 2021 updates provided by Lime to Milton Keynes Council.

Average rides within Milton Keynes are approximately 10 minutes long with some outliers such as East and South Milton Keynes having average journey times of around 14 minutes. The average trip distance is around 1.6km with East and South Milton Keynes increasing to 2km.

High volumes of journeys begin/end within Central Milton Keynes with surrounding towns and villages showing a more spread-out usage pattern. This is shown by the location of 'Hotspots' in Figure 5-20, a 'Hotspot' is a primary deployment location for scooters. In general deployment spots will only be established if they produce over 2 rides per scooter per day minimum or 10 rides per spot per day minimum.

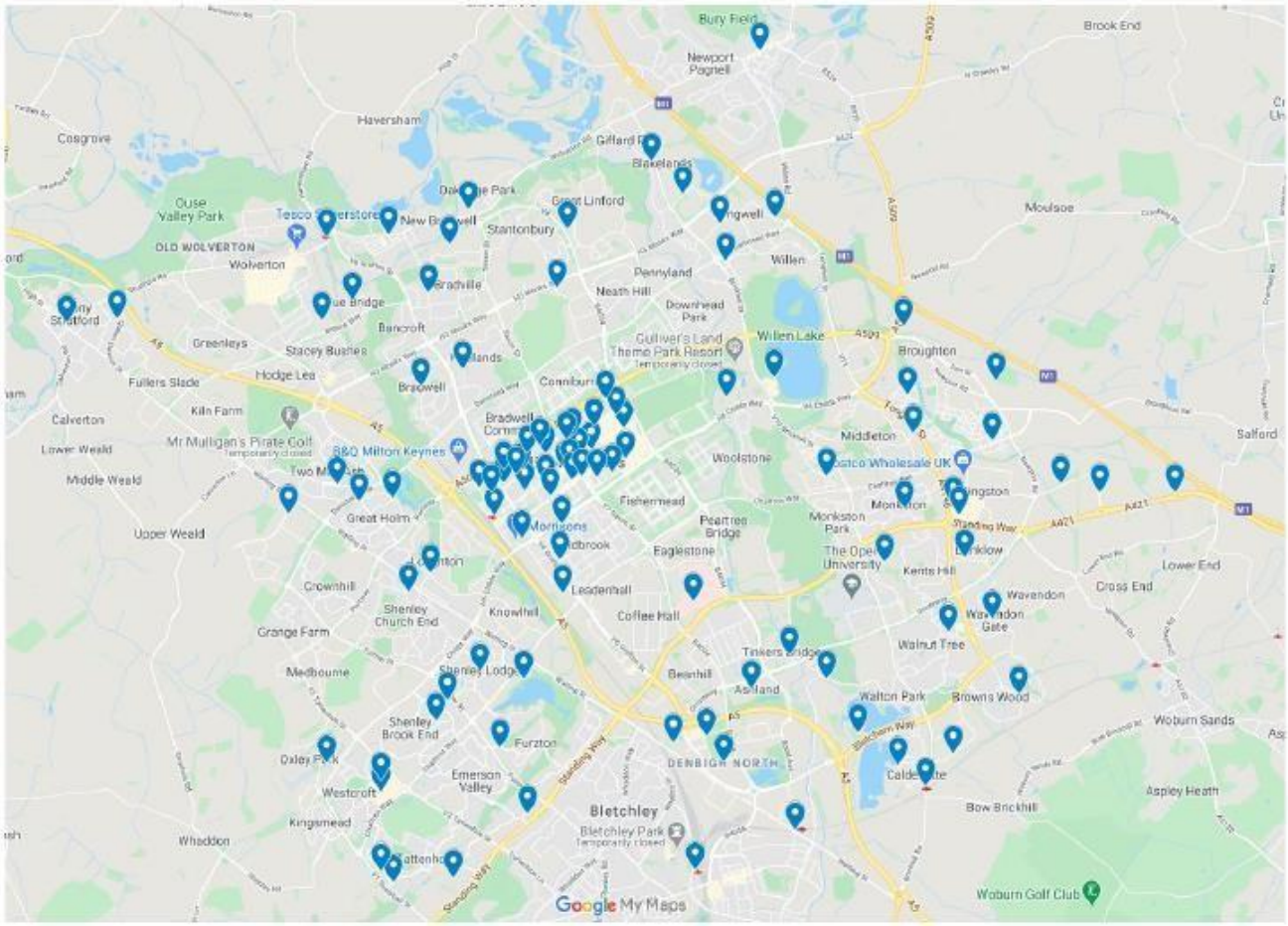


Figure 5-20: Hotspot distribution for the period March 2020 – 2021

Lime also provided the location of 'Hot Routes' through Milton Keynes, Figure 5-21, which are routes which have over 100 trips taken within a month. These are concentrated on the grid roads within Central Milton Keynes but stretch into the surrounding areas including Bletchley and Broughton. Notably there is a lack of 'hot routes' to the east of Central Milton Keynes and to some extent to the north near Wolverton and Stony Stratford.

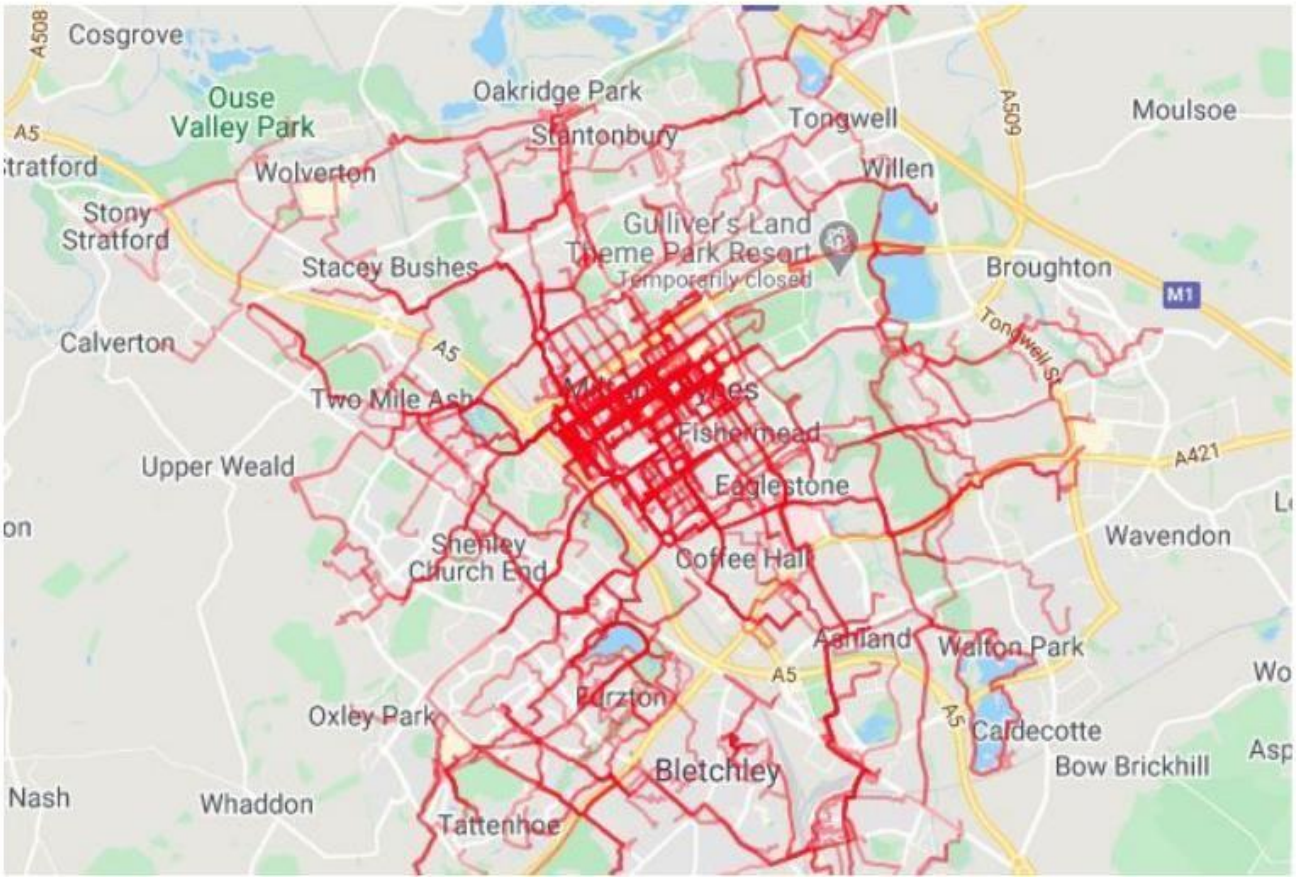


Figure 5-21: Location of 'Hot Routes' through Milton Keynes March 2020-2021

5.6 Public Rights of Way

Figure 5-22 shows the location of Public Rights of Way (PROW) throughout the Borough. It shows that the majority are within the rural portion of the Borough and are often fragmented and indirect, with the exception of a network of routes around Hanslope and Wavedon Woods. There are very few cycleways, with the majority being footpaths and bridleways. Looking at the border of the urban area of Milton Keynes, few Redways connect with the PROWs.

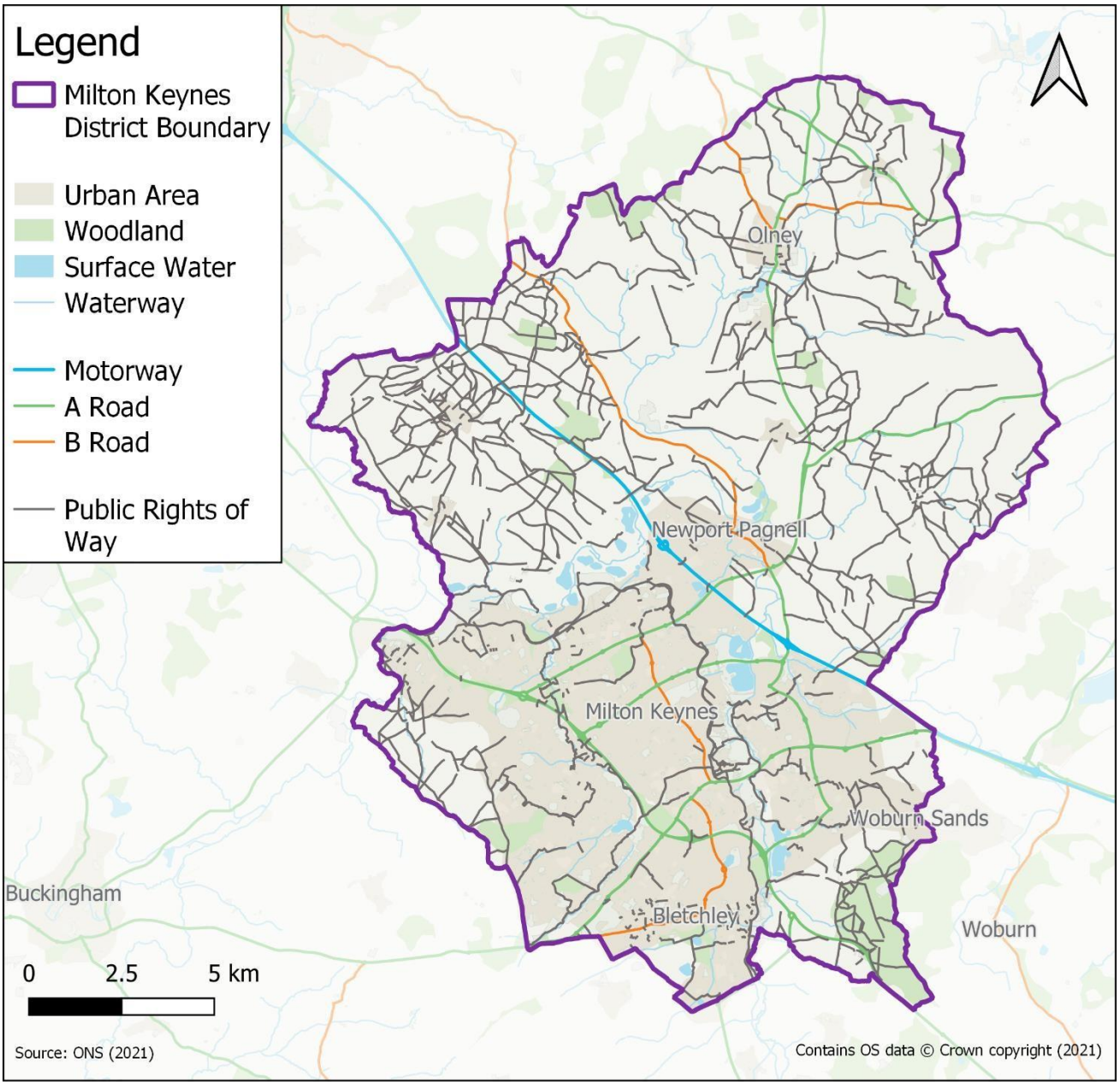


Figure 5-22: Public Rights of Way (PROW) within Milton Keynes

5.7 Porosity Analysis

Network Porosity Analysis seeks to identify natural or physical barriers which impede cycling and walking within a local area. For this example, Figure 5-23 shows the density of street crossing points (at grade and segregated) and crossings of barriers – more detailed maps of key areas within the Borough are shown in 9.2. Barriers are defined as rivers, railways, motorways and A-roads, and crossings are defined as any foot/cycle path with a bridge or tunnel tagged within Open Street Maps. Crossings also include zebra crossings, islands, pedestrian traffic light or rail crossing points tagged on a barrier feature within Open Street Maps.

Light shaded areas represent those where crossing access is poor while dark areas represent relatively good access. This shows significant areas in Central Milton Keynes with poor access to crossing location, which aligns with feedback from stakeholders.

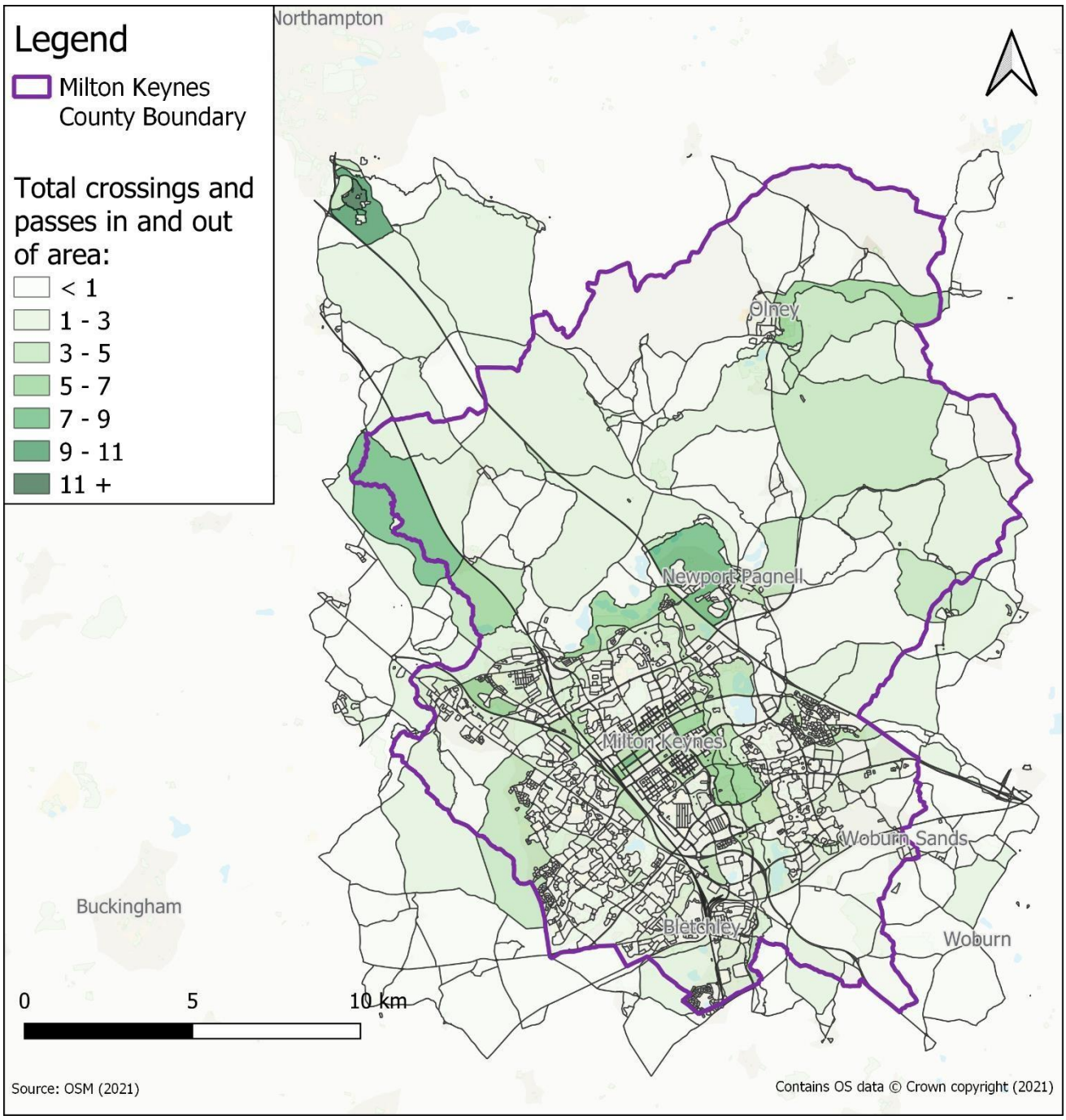


Figure 5-23: Network porosity

5.8 Accidents

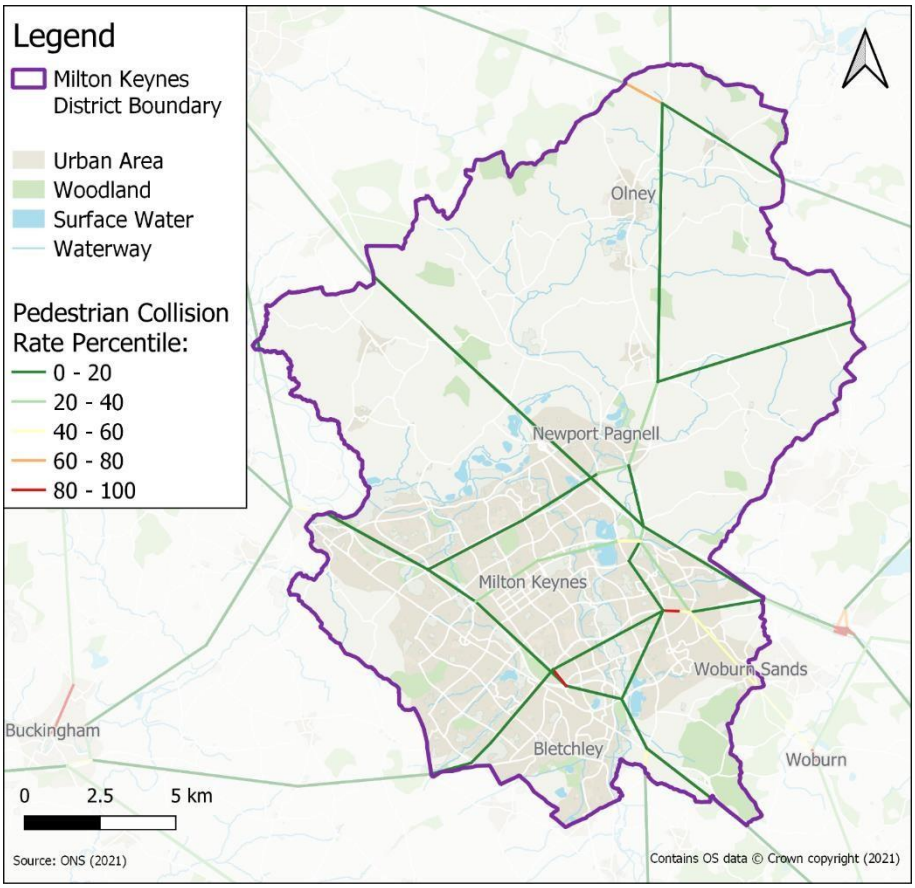


Figure 5-24: Collisions involving pedestrians per billion vehicle kilometres ranked by percentile

Collisions involving pedestrians per billion vehicle kilometres and ranked by percentile against the rest of Great Britain are shown in Figure 5-24. The majority of roads in Milton Keynes have a very low pedestrian collision rate when compared against other urban centres. This is likely due to its modern and segregated design. The exception is the Brinklow and Bleak Hall roundabouts on the A421 which score in the 20% highest collision rate of pedestrians per vehicle kilometre of the DfT's Major Roads in Great Britain.

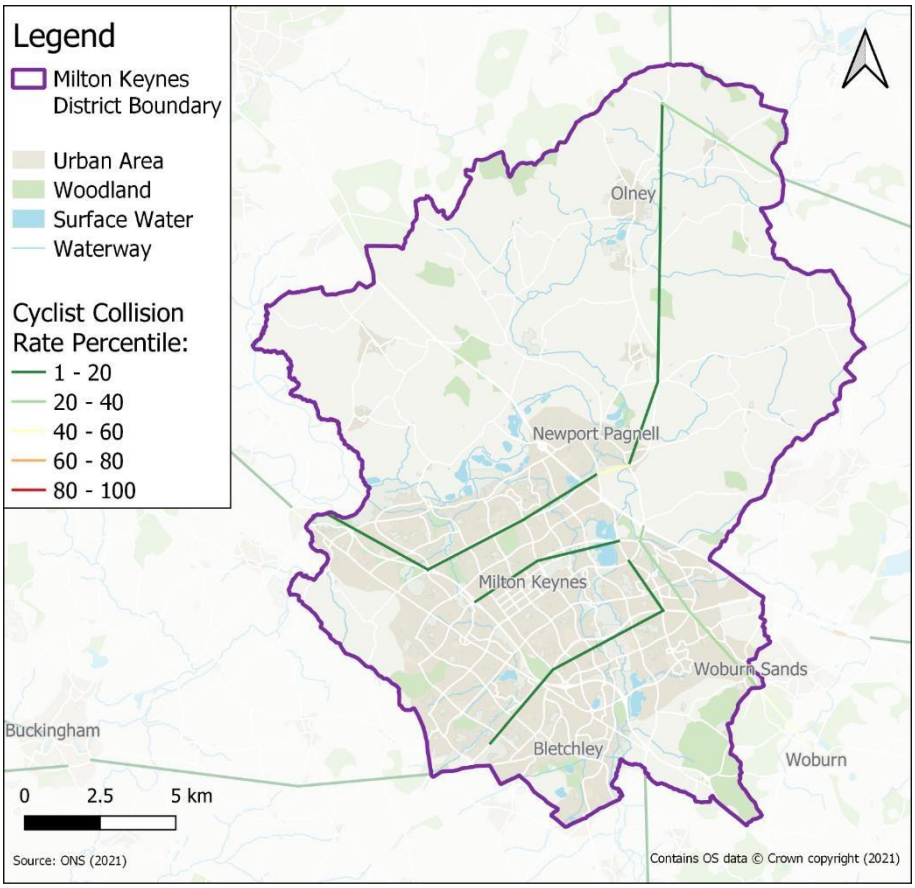


Figure 5-25 shows the equivalent statics for cyclists. The majority of roads in Milton Keynes have exceptionally low collision rates involving cyclists which is due to exceptionally low cycling flows on road due to the Redway network. The corridors that show the highest levels of on-road cycling and collisions involving cyclists is the A509 from Newport Pagnell, and the local road out to Woburn (these are likely due to not having Redway routes).

Figure 5-25: Collisions involving cyclists per billion vehicle kilometres ranked by percentile

The location and severity of collisions reported in Milton Keynes, see Figure 5-26, show that the town of Milton Keynes is the location of the majority of the collisions within the borough. There is only one fatal accident recorded in this data with the majority of accidents being of 'Slight' severity. Hotspots of accidents are located where there is poor coverage of Redways, as cyclists traveling along these corridors using the road carriageway at these points. This could imply the Redways are effective in reducing the number and severity of accidents involving cyclists however there are accidents occurring at the points the Redways join or cross the road network and hence these should be areas of improvement to reduce accidents.

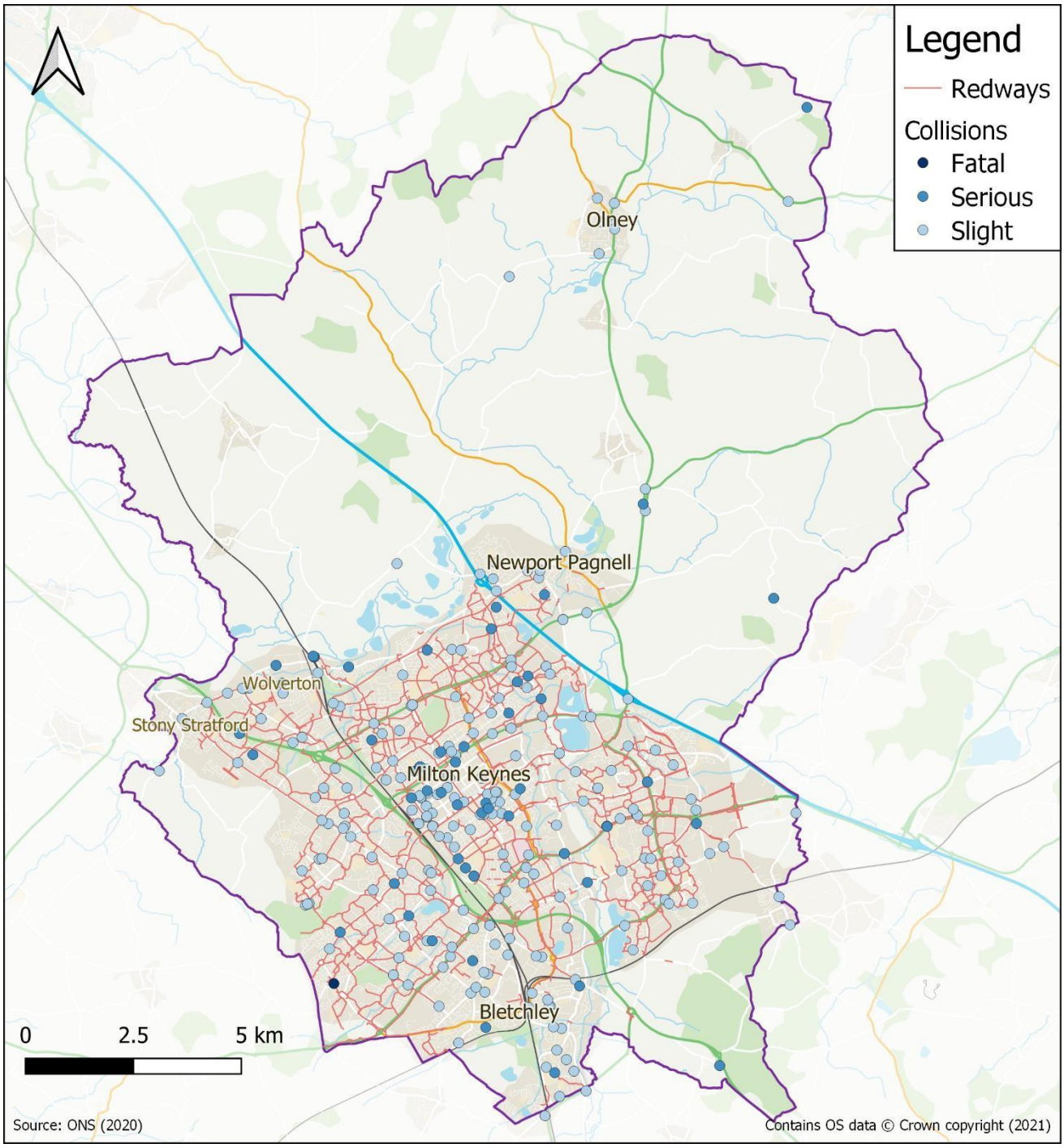
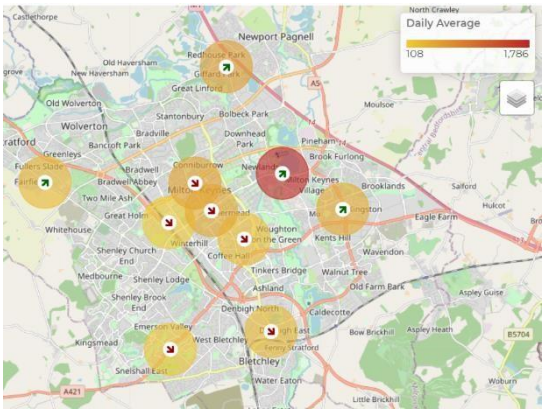


Figure 5-26: Location and severity of collisions involving cyclists

6 Demand

6.1 Count Data Analysis



Count data was provided by Eco-Visio for 10 sites across Milton Keynes (see Figure 6-1). Data was collected by direction for the majority of sites and is split by user group; pedestrian or cyclist. The daily profiles of pedestrians and cyclists for 2019 and 2020 are then shown in Figure 6-2.

Figure 6-1: Location of the count sites, coloured by the count of cyclists and pedestrians January -March 2021

The cycling profile shows a clear commuter trend with peaks at 8am and 5pm and fewer trips throughout the working day. This data is averaged over all days of the week (weekday and weekend) so the midday counts are likely lower during the weekday than over the whole week.

The pedestrians profile shows that although walking matches cycling in the morning and evening peaks, the height of the count is during the working day. This implies the majority of walking trips within the town are for leisure or utility purposes (e.g. shopping and visiting others).

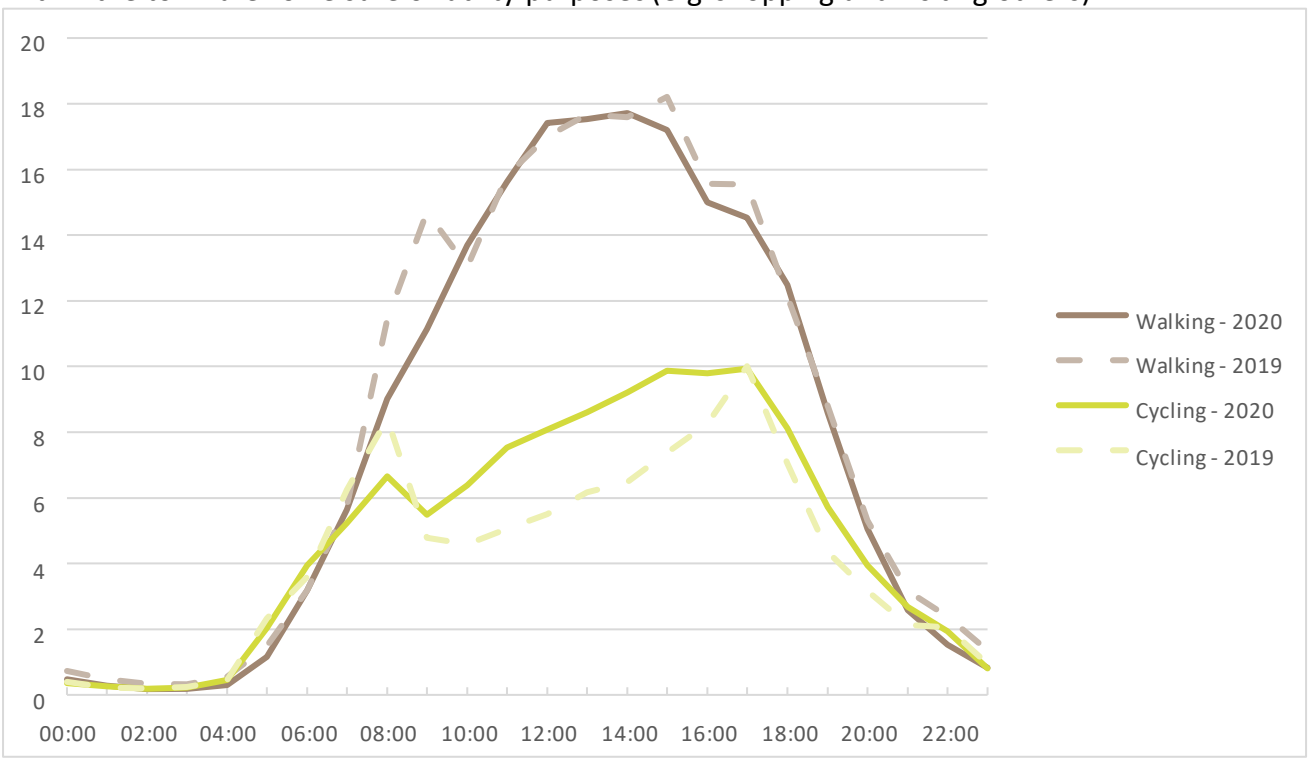


Figure 6-2: Daily profile of pedestrians and cyclists across all sites between 2019 and 2020 (whole week average)

From these daily profiles we can also see the impact of the COVID-19 pandemic by comparing 2019 and 2020. The walking profile differs little between the years, reaffirming our assumption that the majority of walking trips are not for commuting. The cycling profile however has a lower morning peak, but smoothed out and increased during the day (from before the pandemic). This shows an

increase in non-commuter journeys throughout the day, although there are still peaks consistent with 2019 in the 2020 data.

6.2 Mode Share & Propensity to Cycle

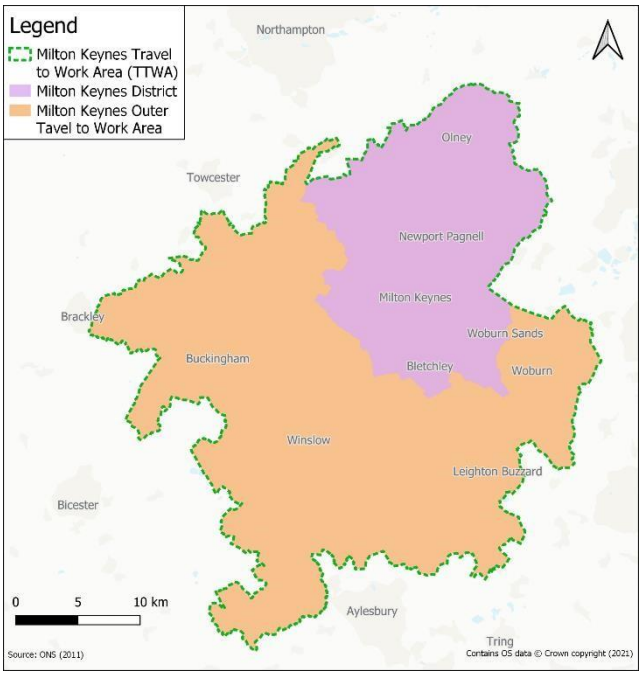


Figure 6-3 shows Milton Keynes 2011 Travel to Work Area (TTWA) split into three zones:

- Milton Keynes Central Zone
- Outer TTWA excluding the Central Zone
- Outside the Milton Keynes TTWA

The mode-share of trips originating in each of the three zones (see Figure 6-4), shows that the largest mode share is private vehicles. As you move away from the centre of Milton Keynes the percentage of commuter journeys made using private vehicles increases (76%, 80% and 89% respectively) and active travel decreases (11%, 9% and 3% respectively).

Figure 6-3: Definition of the three geographical locations to be assessed for mode share.

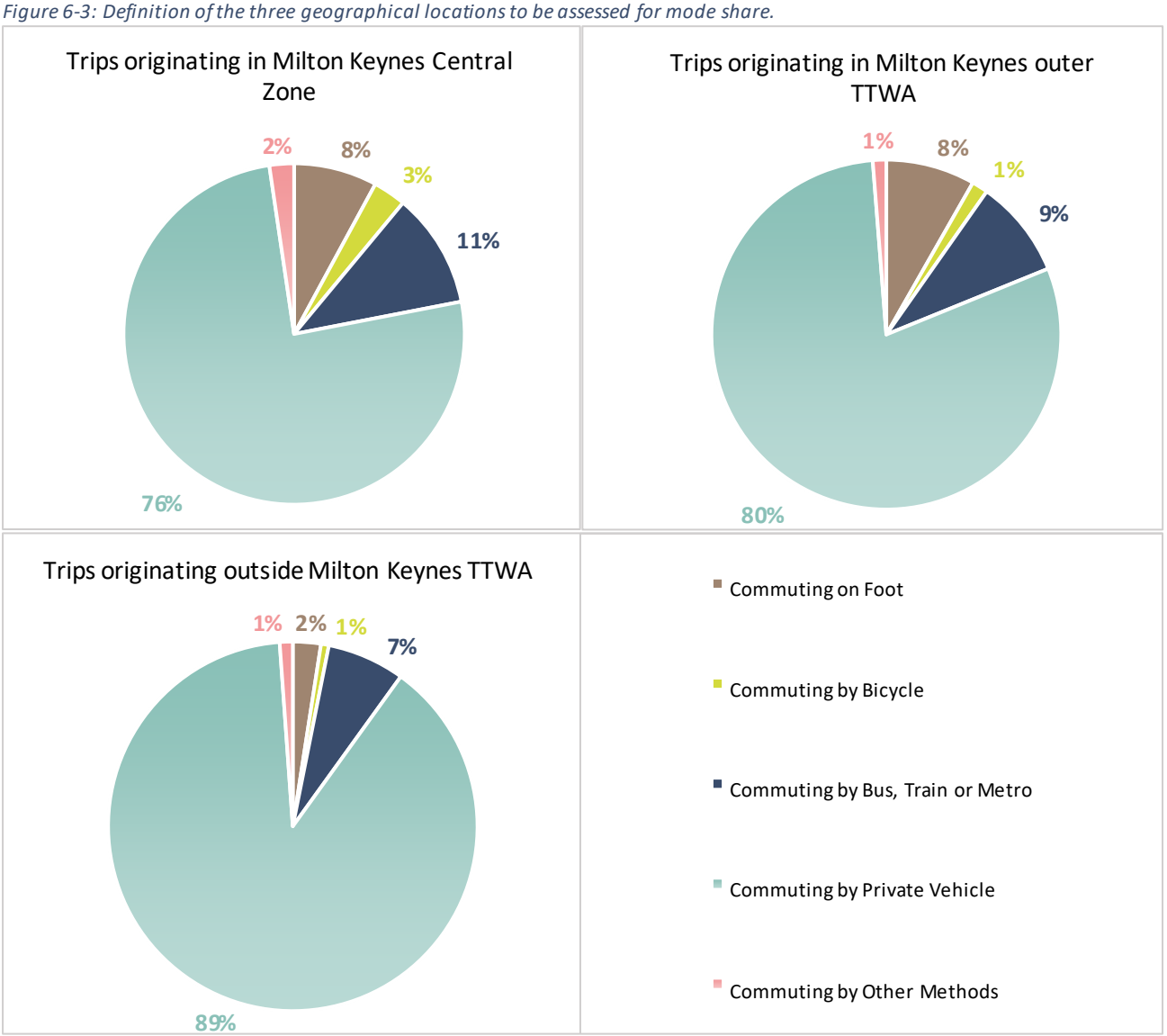


Figure 6-4: Mode share for commuter journeys originating from each zone

This increase in commuters using private vehicles in zones further from the central zone can be accounted for by a decrease in the percentage that walk or use public transport. This is consistent with other regions, where trips become more dispersed and less accommodatable by non-car modes.

The uptake of cycling within the Central Zone is assessed in more geographic detail in Figure 6-5. This shows that the average uptake in Central Milton Keynes (3%) is generally exceeded towards the centre of the city and falls short further out.

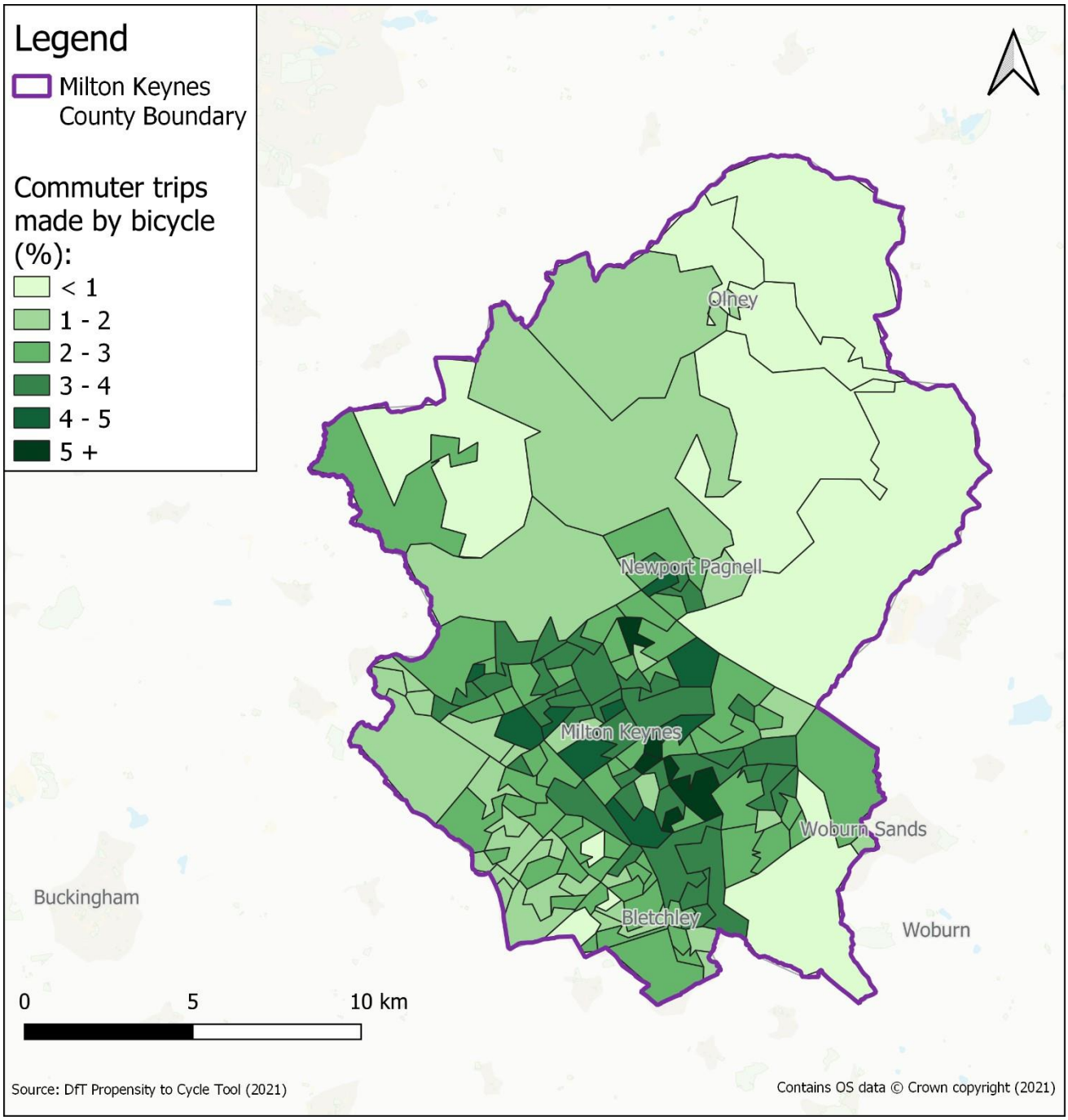


Figure 6-5: Propensity to cycle (%), Census 2011

Figure 6-6 shows the ratio of cycling to car commuter trips of less than 3.6km, the distance covered in an average 15 minute cycle. This analysis shows significant variation in cycling to work levels between the different neighbourhoods of Milton Keynes.

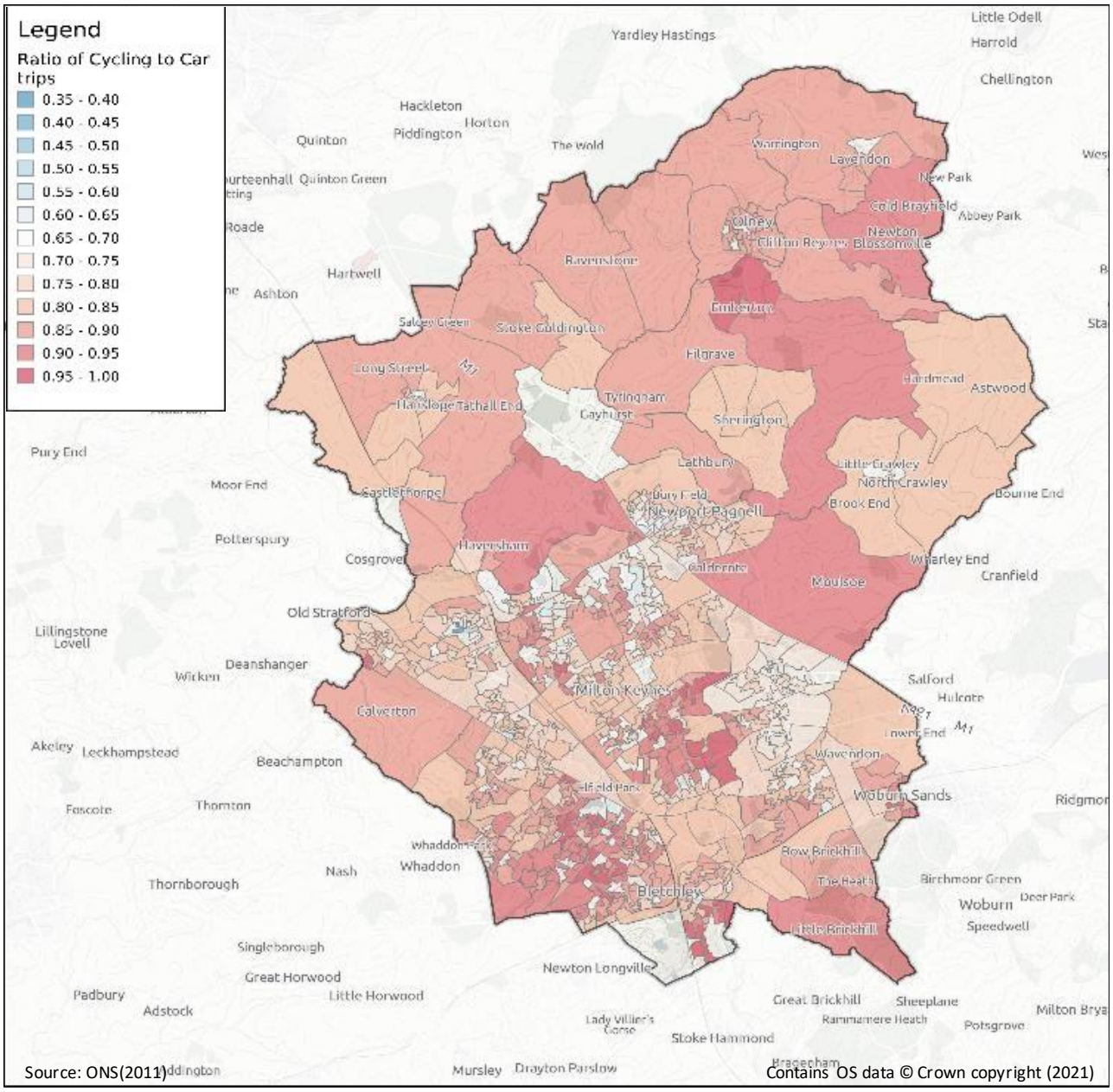
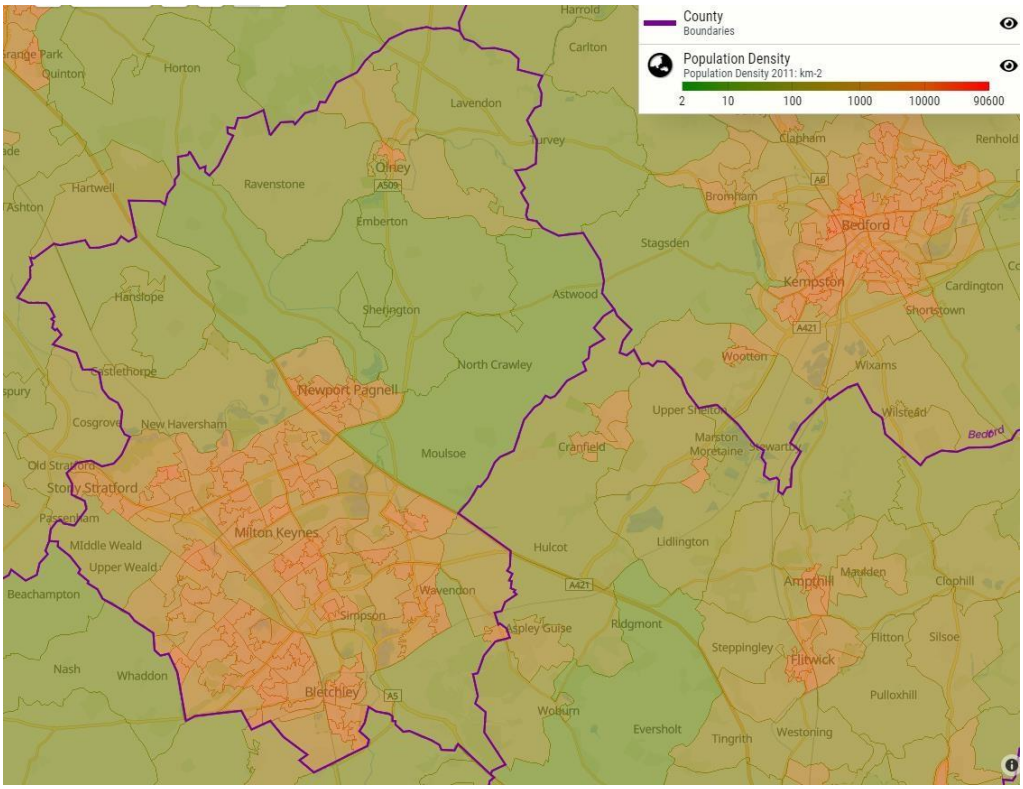


Figure 6-6: Ratio of cycling to car commuter trips of less than 3.6km (15-minute cycle) (shown at the work location)

6.3 Population Demographics

6.3.1 Population Density

The Borough's population is centred around Milton Keynes (see Figure 6-7) which has a comparatively large area for its population, this results in a relatively low population density for a town of this scale.



This data is from the 2011 Census, so likely to differ from 2021, but the overall pattern should be consistent.

The Borough is split in two with the south highly populated (denser urban area) and the north more rural with only a handful of urban hotspots.

For example historic towns of Bletchley, Newport Pagnell and Stony Stratford have high population density for their size.

Figure 6-7: Population density by LSOA (City Science Cadence Software)

6.3.2 Limiting Long Term Illness

Figure 6-8 shows the percentage of the population that is limited by a long-term illness at OA level.

This shows that the majority of the Borough has less than 20% of the population limited by some form of long-term illness.

Milton Keynes and its neighbouring towns, (e.g. Bletchley) have higher rates, with up to 49% of the population limited by a long-term illness.

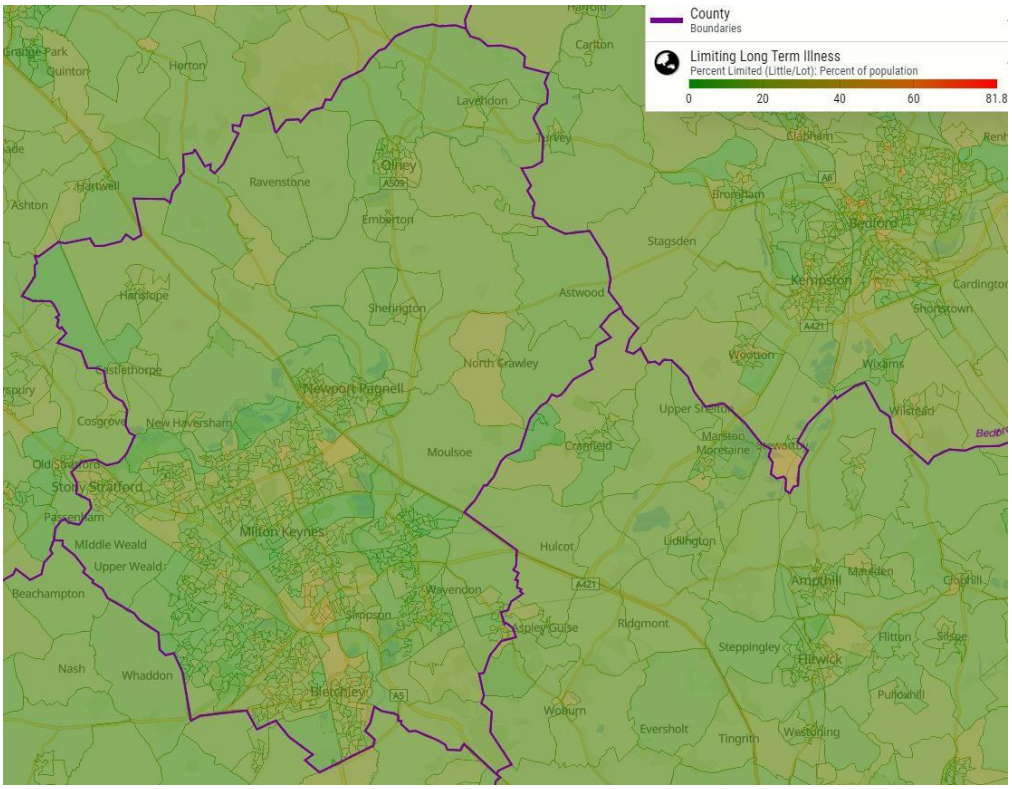


Figure 6-8: Limiting long term illness by OA (City Science Cadence Software)

6.3.3 Deprivation Index

Figure 6-9 shows the deprivation index at an LSOA level over the Borough, with decile 1 being the 10% most deprived and decile 10 being the 10% least deprived.

The northern, more rural parts of the Borough have less deprivation with indices ranging from 5 to 10. The southern, more urban areas cover the whole spectrum of deprivation indices, with the area around Coffee Hall and Netherfield being the most deprived (index of 1), whereas Great Holm and Shenley Church End are the least deprived (index of 10).

The deprivation indices are shown with the existing cycleways, the majority of which are Redways. This implies visually that there is very little correlation between deprivation and coverage of cycling infrastructure.

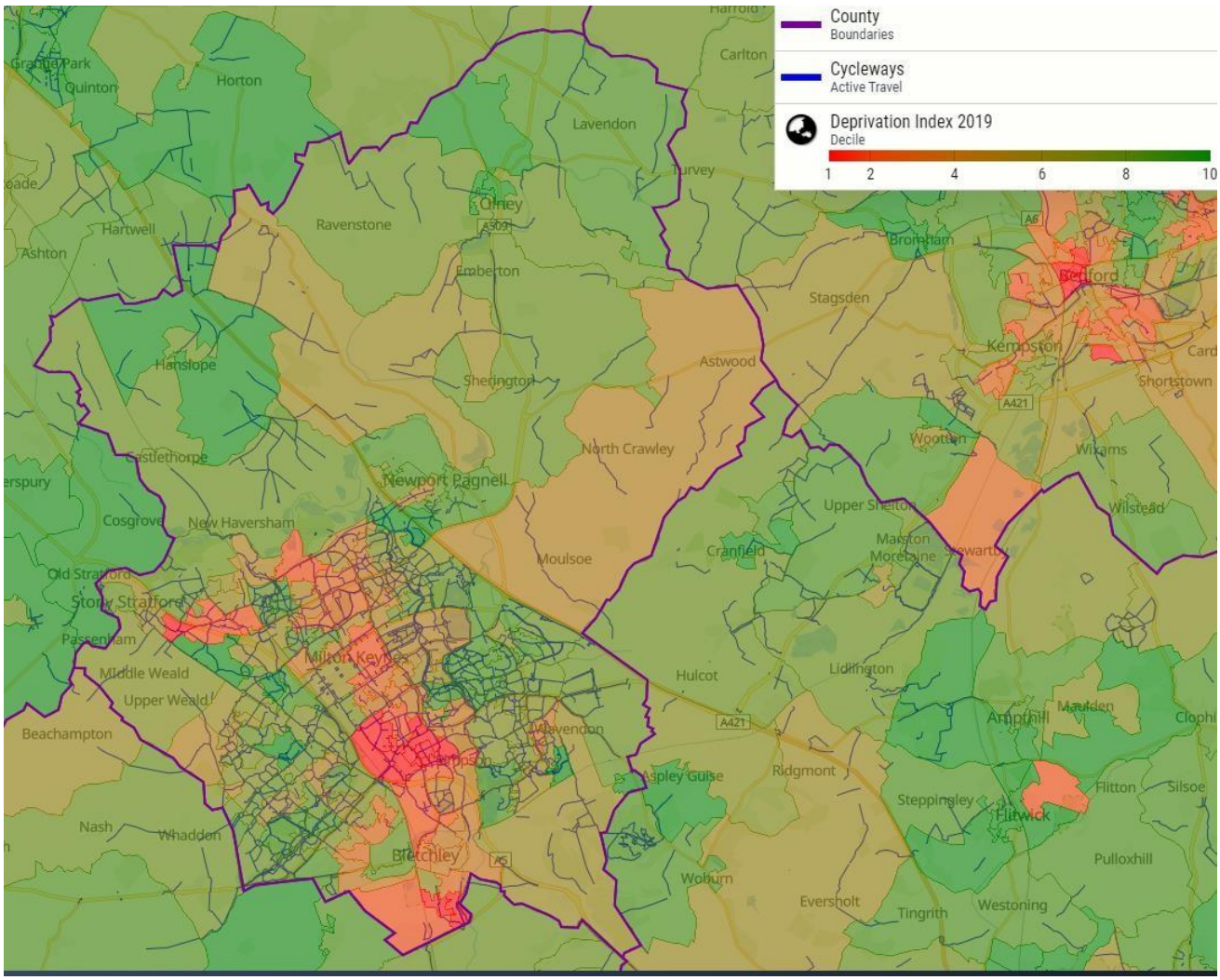


Figure 6-9: Deprivation index with cycling infrastructure (City Science Cadence Software)

6.4 Potential Active Travel Trips

Figure 6-10 shows the current distribution of active travel trips that begin(origin) and end (destination) in Milton Keynes. Zones with a higher number of active travel journeys originating inside them are located around Central Milton Keynes, whereas destinations of these active trips are more spread out within Central Milton Keynes and to the east of the town. More detailed maps of key areas within the Borough are shown in 9.3

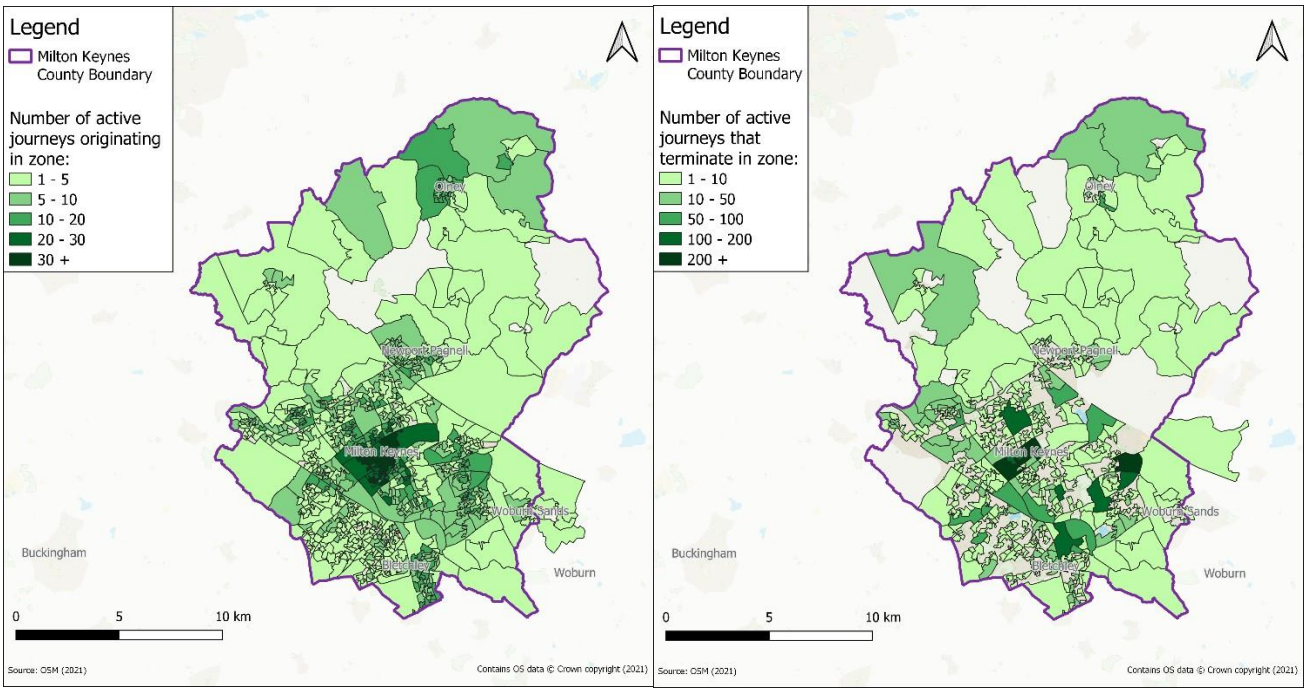


Figure 6-10: Active travel journeys of 5km or less in and around the Central Zone (Left: Origins. Right: Destinations)

Figure 6-11 shows the equivalent data but for short-distance (<5km) car journeys beginning and ending in each zone, more detailed plots of key areas within the Borough are shown in 9.4. High origin zones are around the periphery of Central Milton Keynes and in the surrounding towns, this represents the spread-out nature of Milton Keynes residential design. Destination trips are more centred on a few zones, notably in the centre of Milton Keynes as well as zones to the north and south. These represent potential active trips, particularly those near Central Milton Keynes which have access to the Redway network as well as cycling facilities in the town centre.

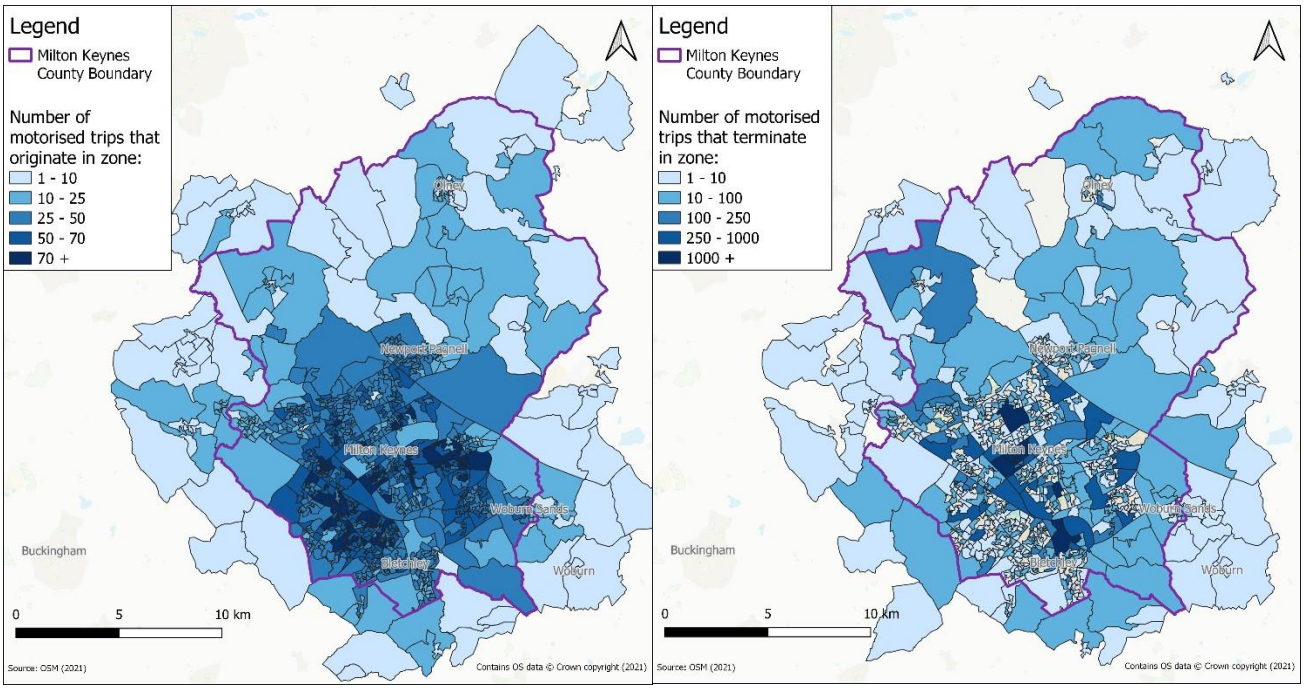


Figure 6-11: Motorised journeys of 5km or less in and around the Central Zone (Left: Origins. Right: Destinations)

Figure 6-12 goes into more detail of the trips ending in Central Milton Keynes by showing the desire lines of those who drive less than 2 miles to work within Central Milton Keynes. These trips are concentrated around the surrounding towns such as Bletchley, Newport Pagnell and Wolverton. At

less than 2 miles, that equates to around a 20-minute cycle, provided a suitable route. This shows that the most popular commuter journeys terminate in central Milton Keynes, the Industrial Estate at Tongwell, Milton Keynes University Hospital, Walton, Monkston, Bletchley, Stantonbury and Olney.

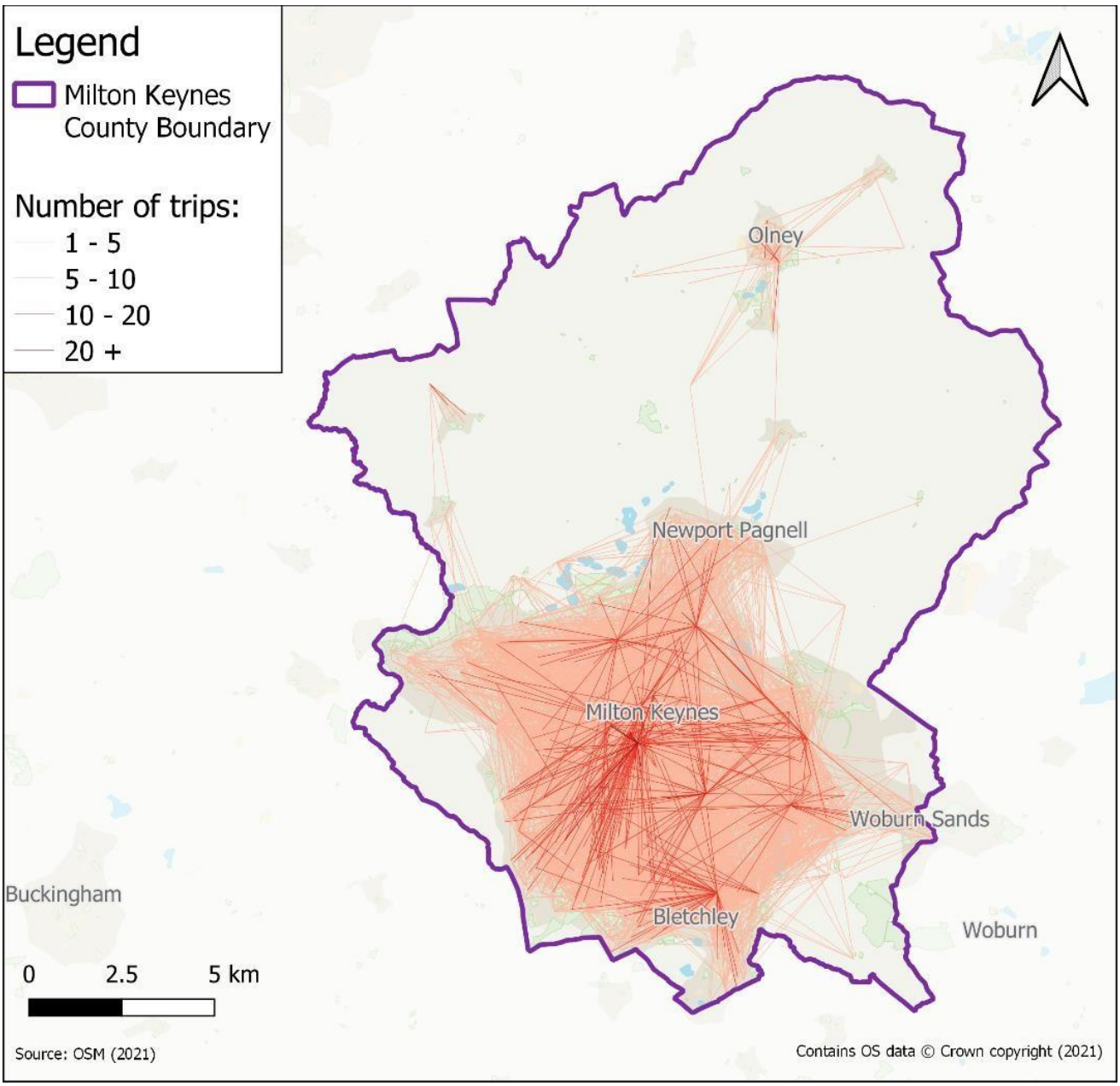


Figure 6-12: Desire lines for commuter journeys in Milton Keynes of 5km or less.

The prevalence of commuting by bicycle in Milton Keynes is displayed by desire lines in Figure 6-13. The majority of movements are within the urban area, however there is demand for the longer distance journeys from Olney, Church End and Woburn Sands. Some long-distance desire lines along the rail line may represent a proportion of commuters that make multi-modal journeys using rail and cycling. This provides a borough-wide picture, but this data will be used for each local centre to understand trip origins and destinations, informing potential desire lines.

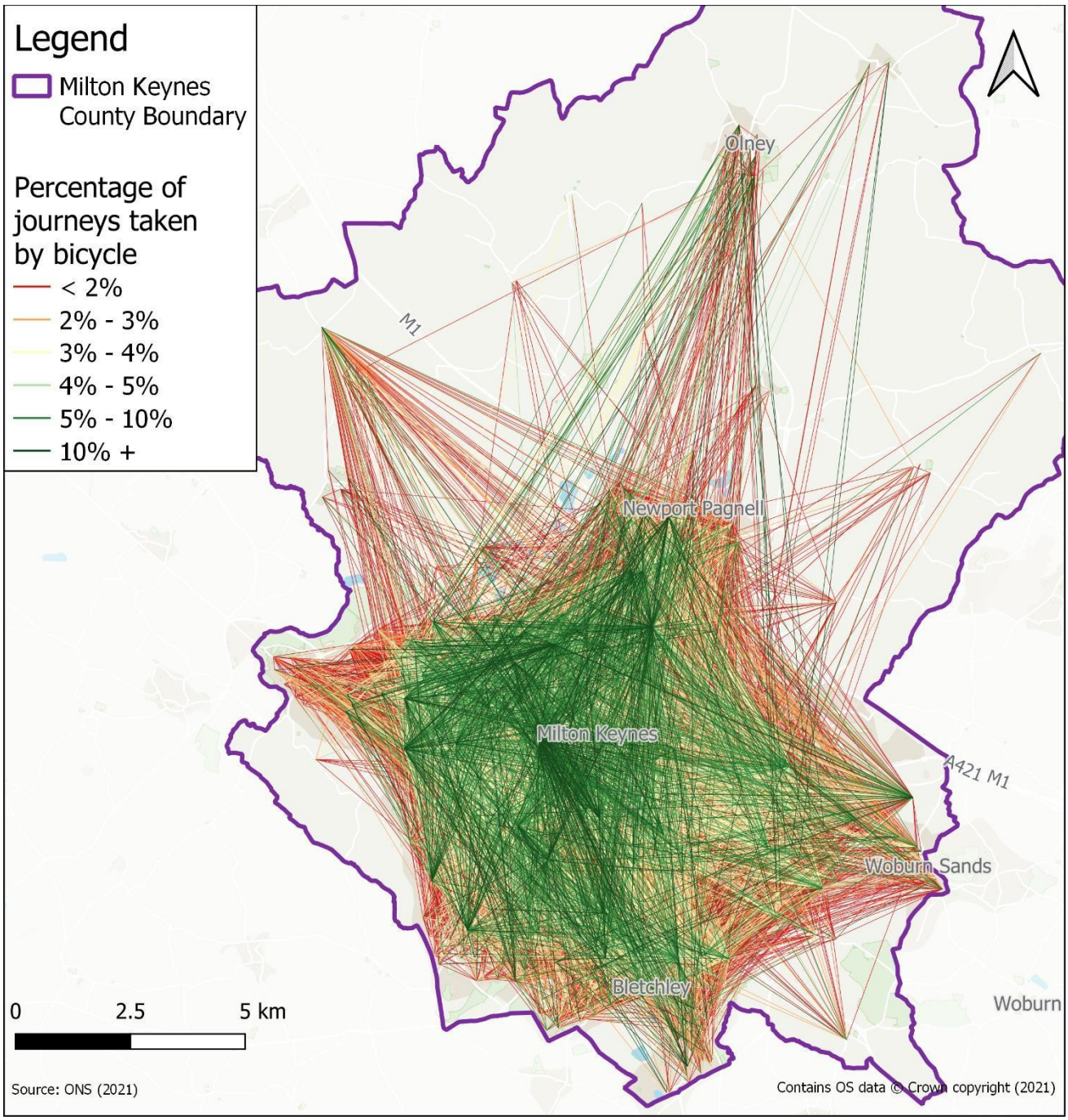


Figure 6-13 - Desire lines for commuter journeys in Milton Keynes with percentage completed by bike displayed.

6.5 Future Demand

The National Trip End Model (NTEM) uses a long-term planning model with the growth in households and jobs at a district level. This growth for 2021-26 is shown in Figure 6-14. Its predictions for cycling trips are well below the UK Governments target to double cycling, but it does highlight that the currently rural zones have the highest predicted increases in households, jobs and therefore trips, which mostly aligns with the location of the development sites.

Planned future developments within the Borough are also shown in Figure 6-15. Notable sites are to the east of the M1, to the east of Milton Keynes and to the north near Olney and Hartwell. This data will have a greater role to play as we investigate future demand in more detail as a result of mode shift and population growth.

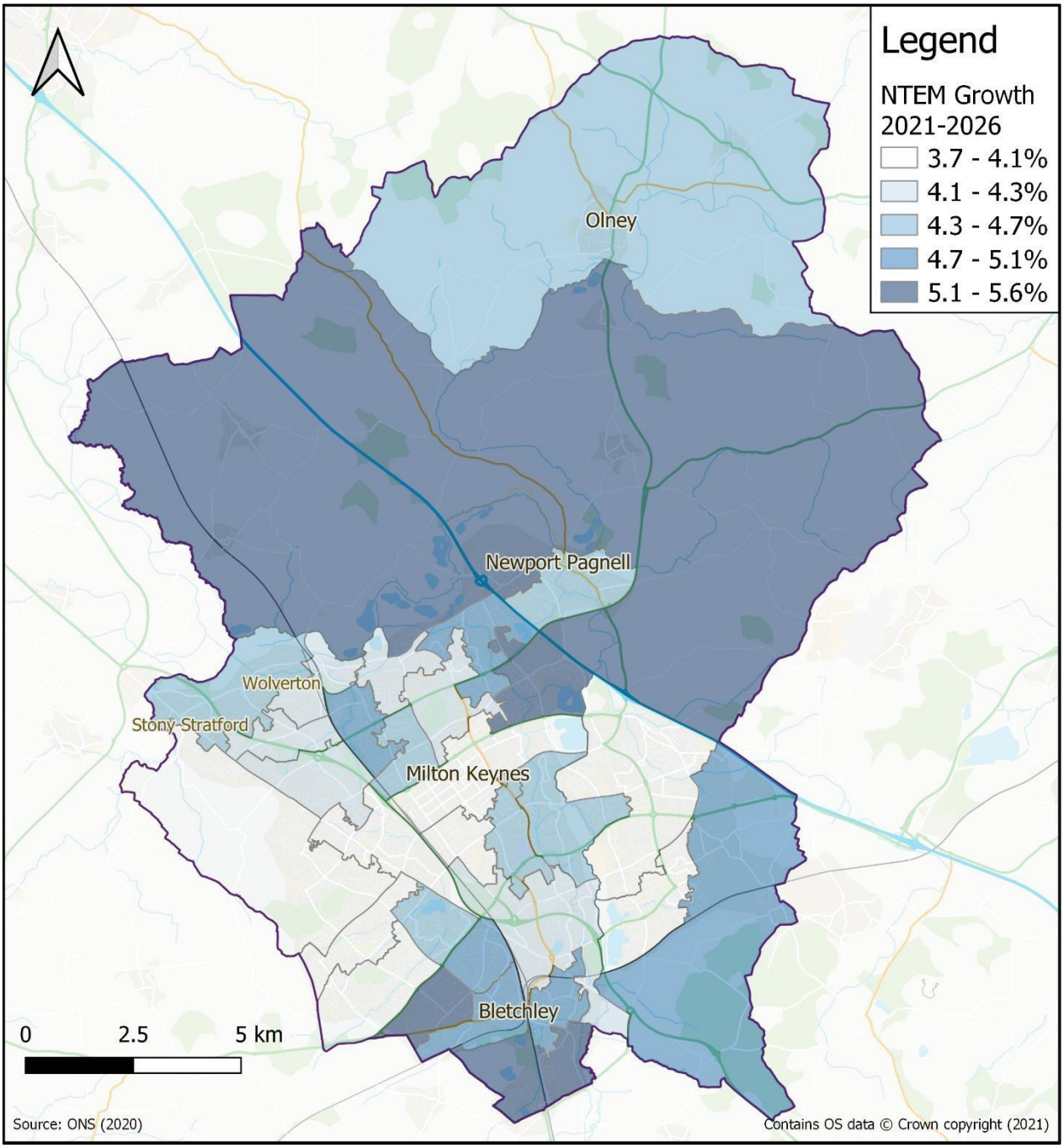


Figure 6-14: Future demand within Milton Keynes from NTEM

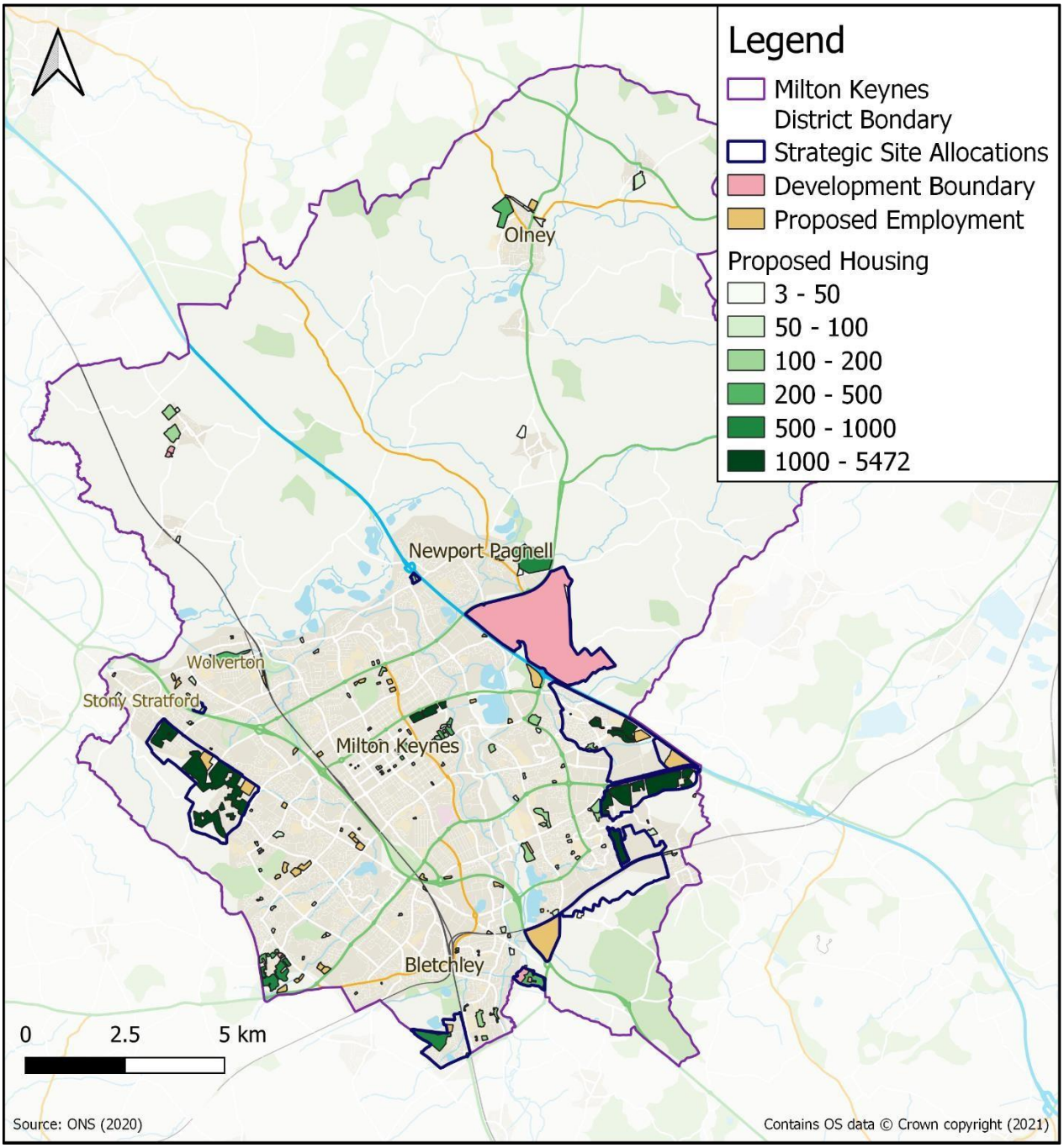


Figure 6-15: Proposed future developments within Milton Keynes

7 Next Steps

This Baseline Report provides the core evidence for the Milton Keynes LCWIP. It is a living document and will evolve throughout the project. As we progress into further stakeholder engagement and network planning, these data sets will be applied to specific situation and geographies, in order to provide insights into local walking and cycling.

The next step in this LCWIP will be Stages 3 & 4 to conduct Network Planning for Walking and Cycling.

This will include :

- Further detailed mapping of specific trip origin and destination points to identify and classify desire lines

- Identifying and auditing Core Walking Zones and Routes and the barriers and funnels on those routes
- Establishing network density and cycling infrastructure improvements
- Establishing walking infrastructure improvements

The output will be a long list of infrastructure improvements, including those suggested by stakeholders which are backed by evidence, to inform Stage 5.

In parallel, we will continue Stage 2a to conduct Stakeholder/Public/Community Engagement, to introduce the LCWIP, get feedback on existing and planned infrastructure and create a relationship which improves the success of any proposed work from the LCWIP.

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9 Appendix A – Detailed Plots

9.1 Mesh Density

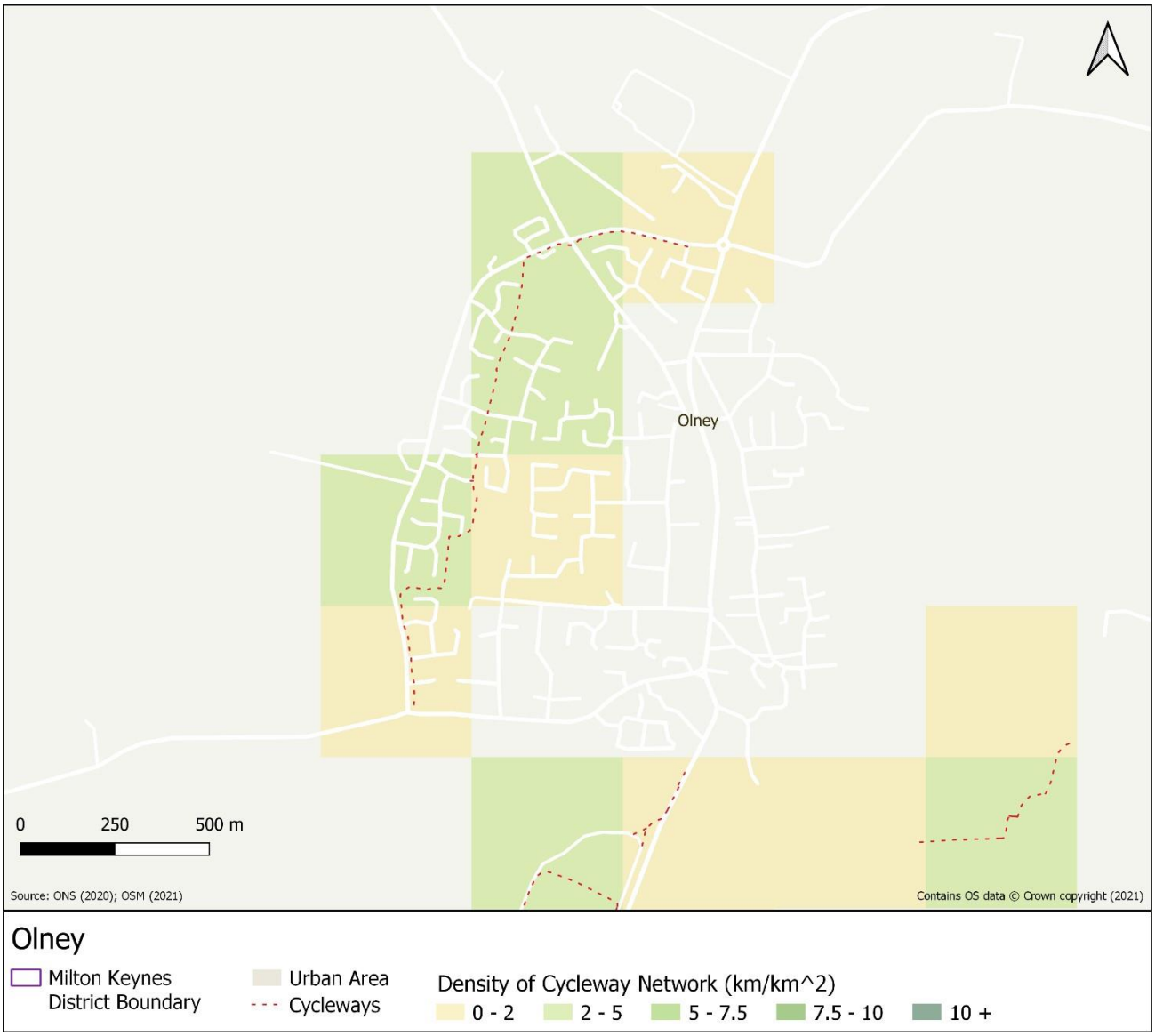

Figure 9-1: Mesh Density Analysis for Olney

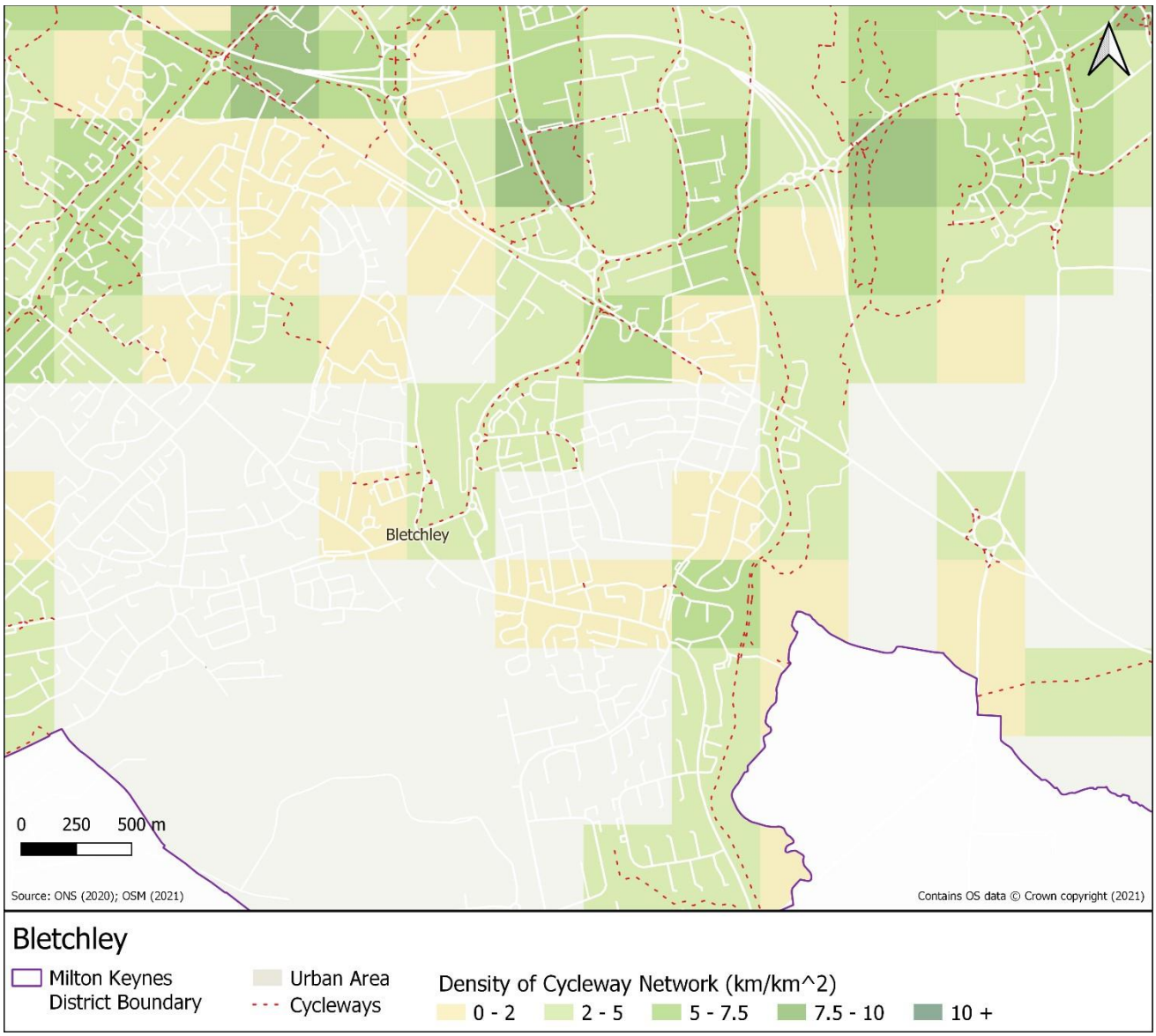

Figure 9-2: Mesh Density Analysis for Bletchley

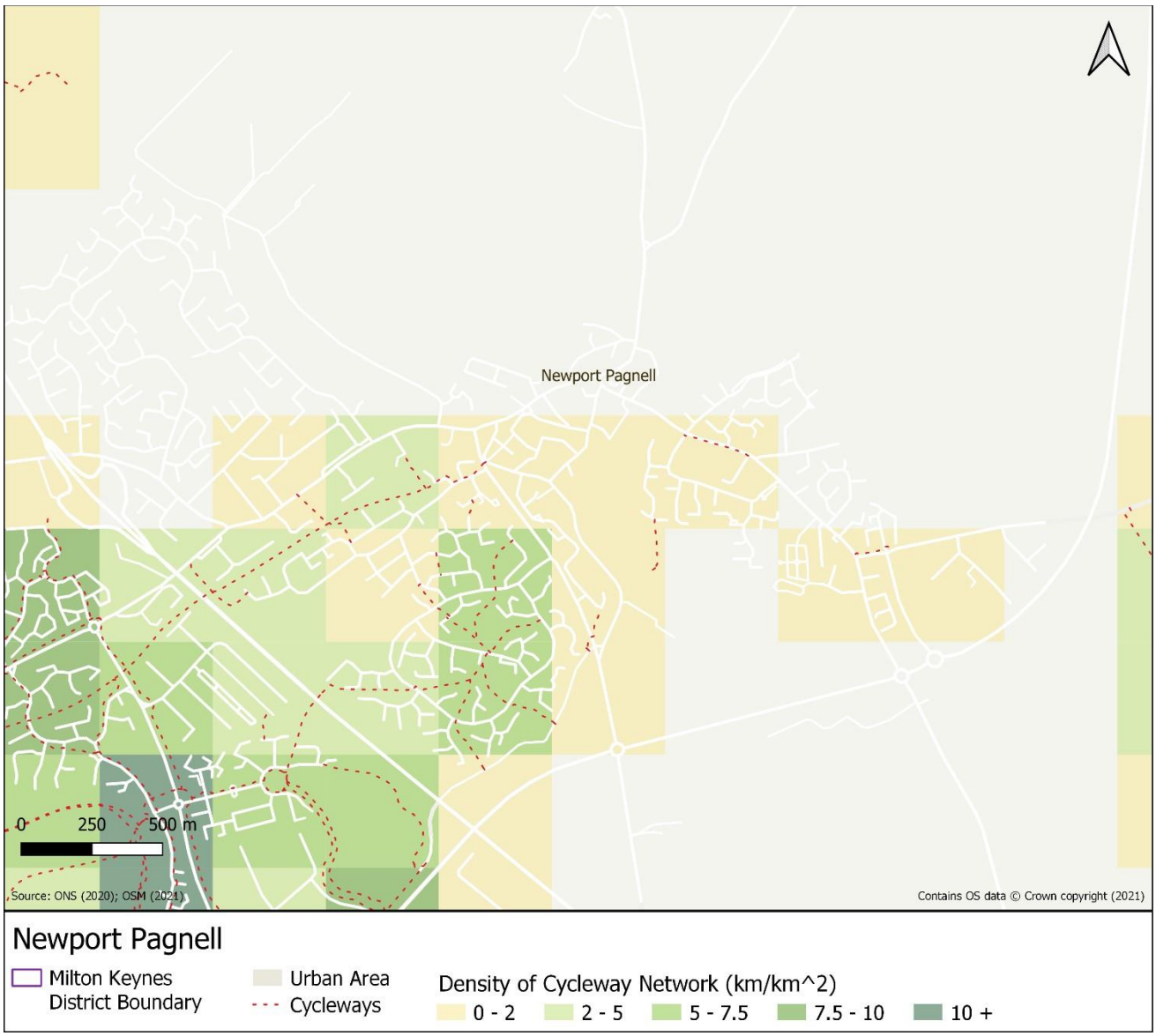

Figure 9-3: Mesh Density Analysis for Newport Pagnell

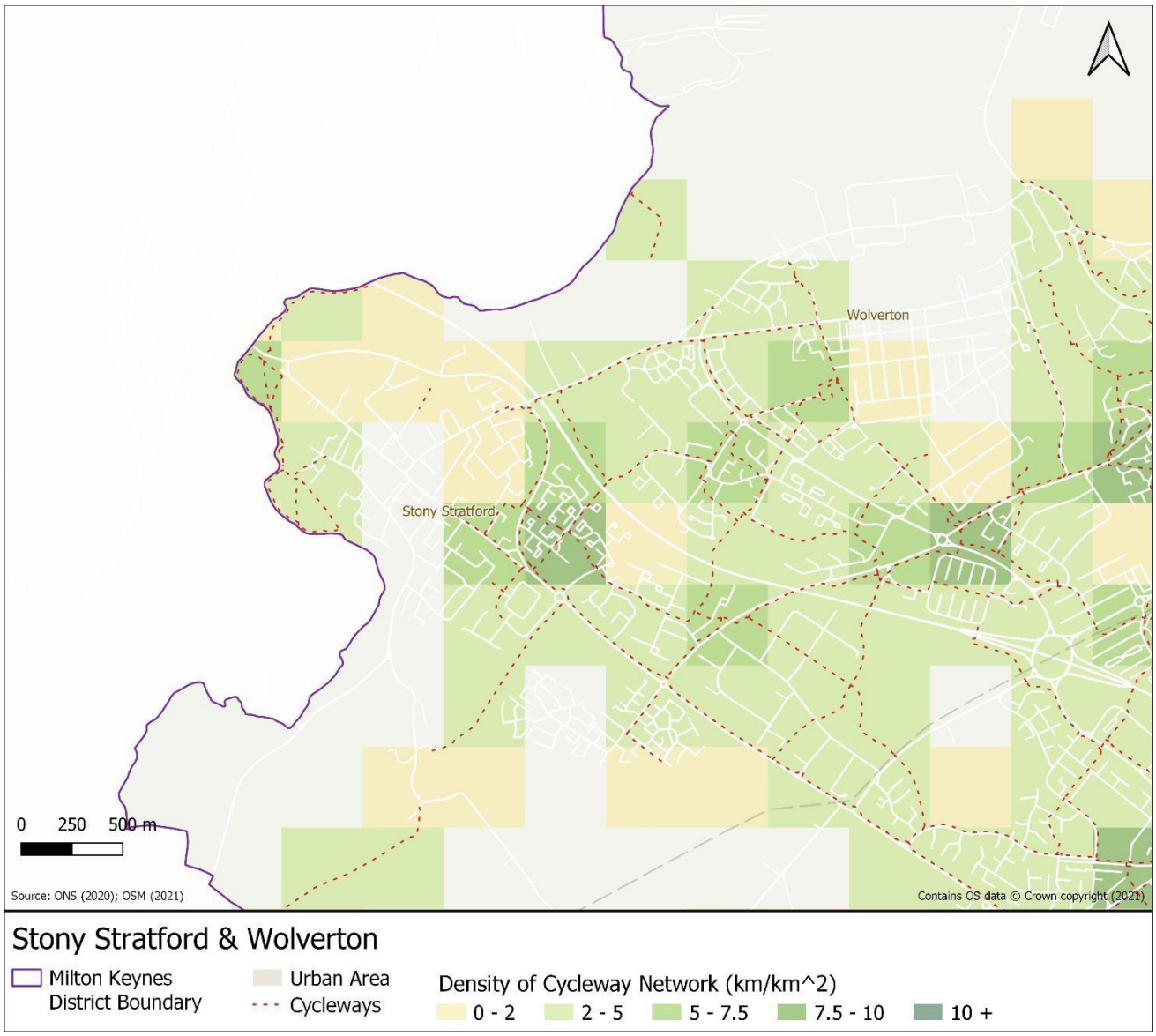

Figure 9-4: Mesh Density Analysis for Stony Stratford and Wolverton

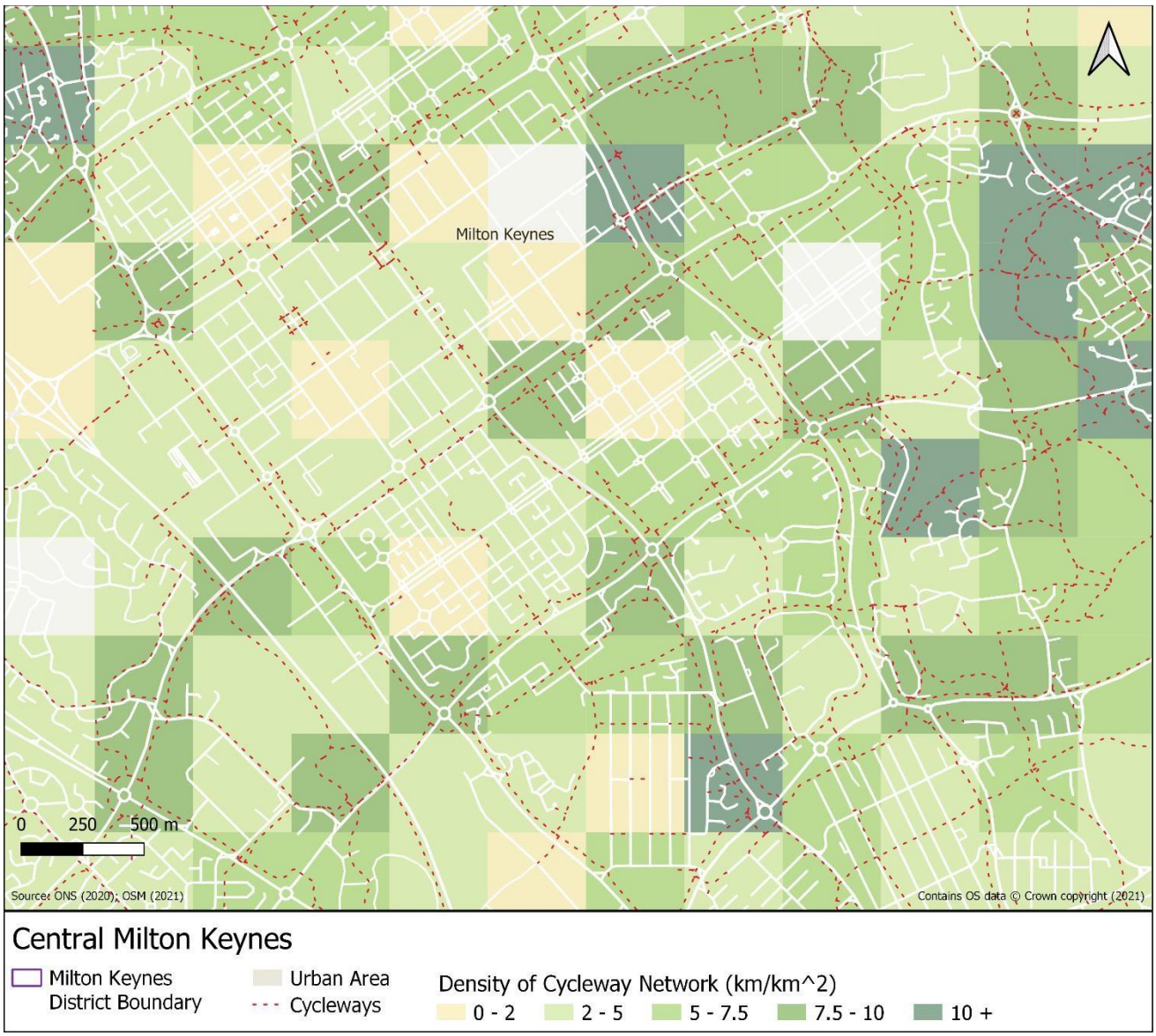

Figure 9-5: Mesh Density Analysis for Central Milton Keynes

9.2 Porosity Analysis

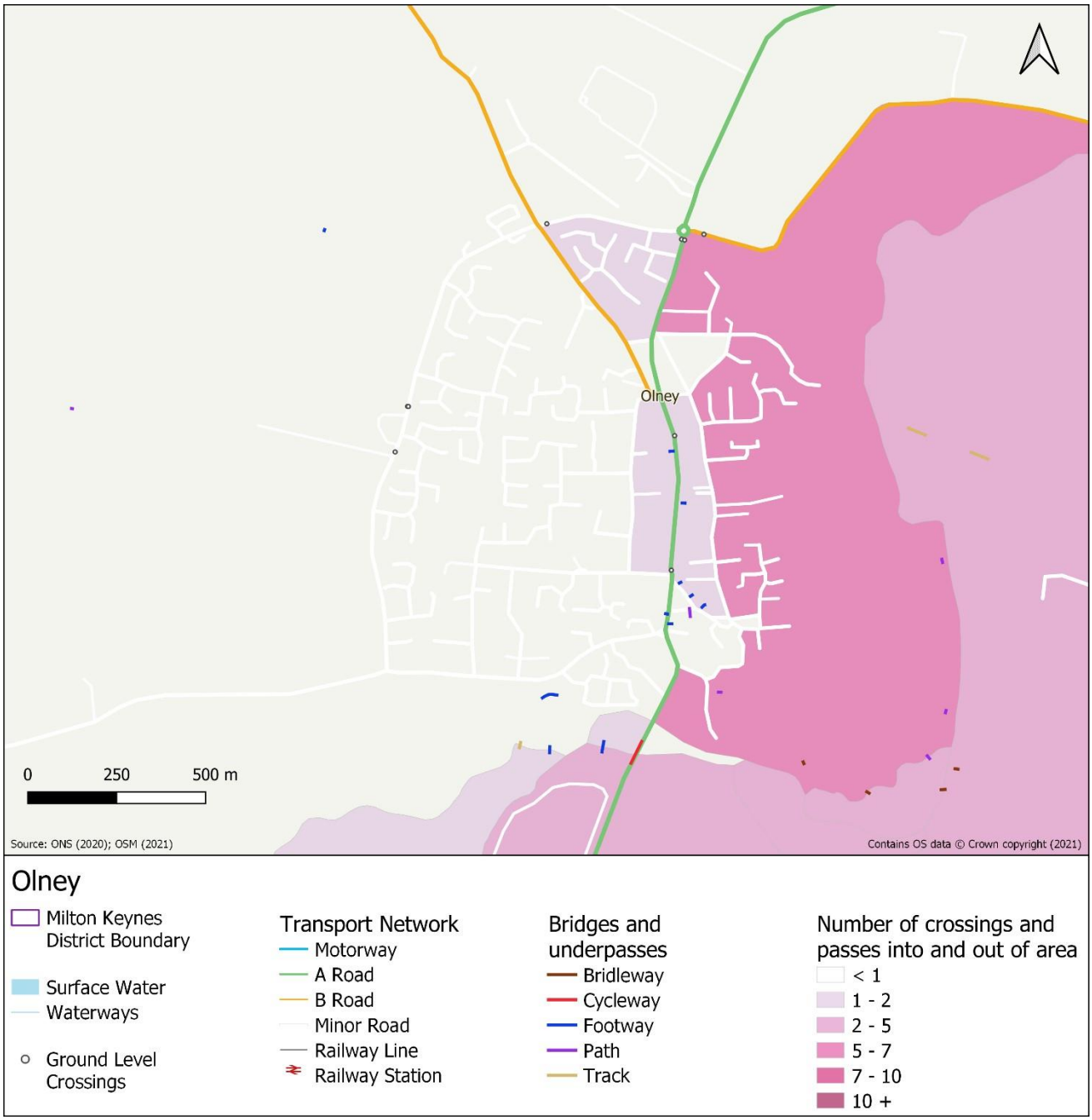

Figure 9-6: Porosity (Barrier) analysis for Olney

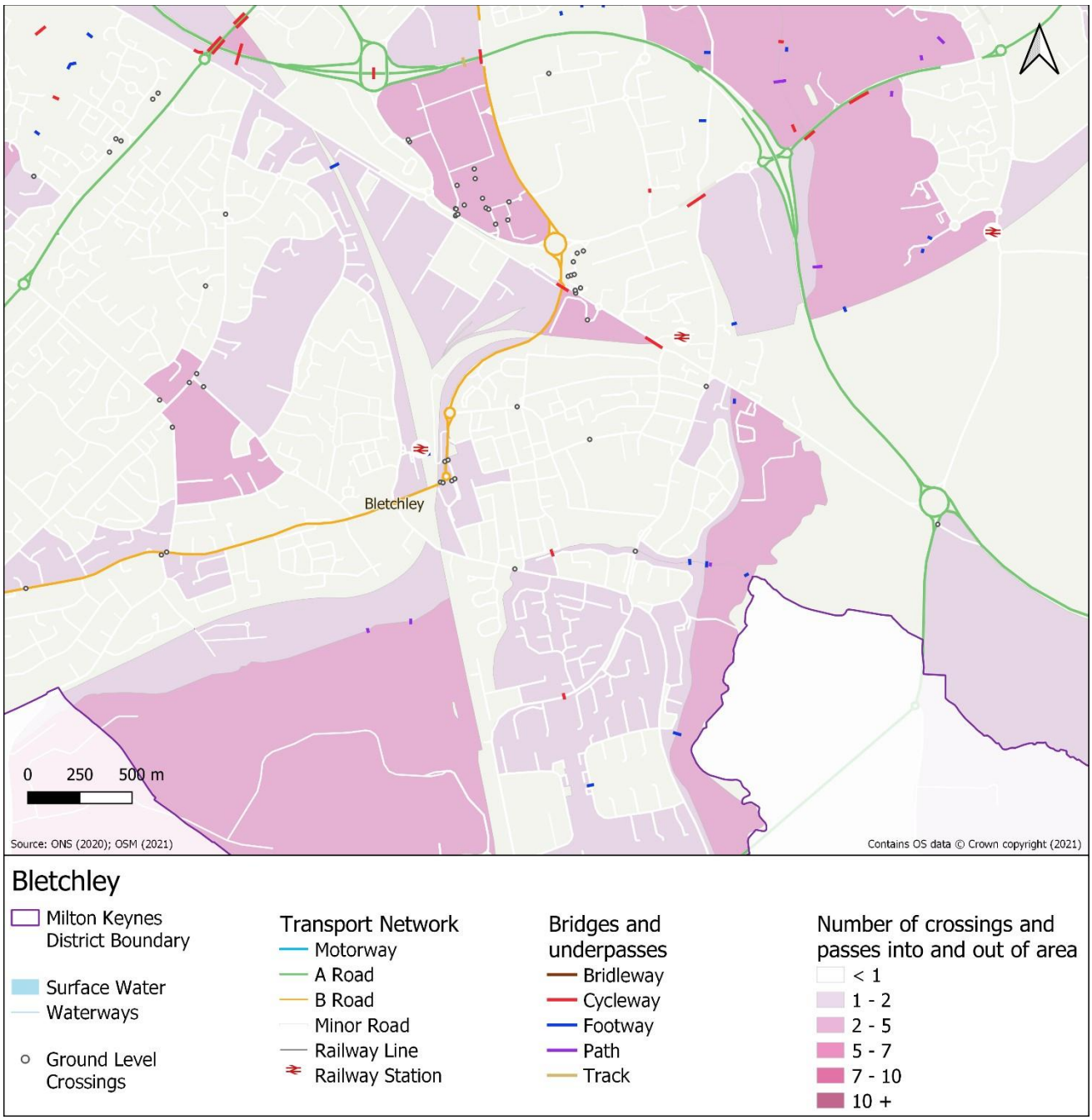

Figure 9-7: Porosity (Barrier) analysis for Bletchley

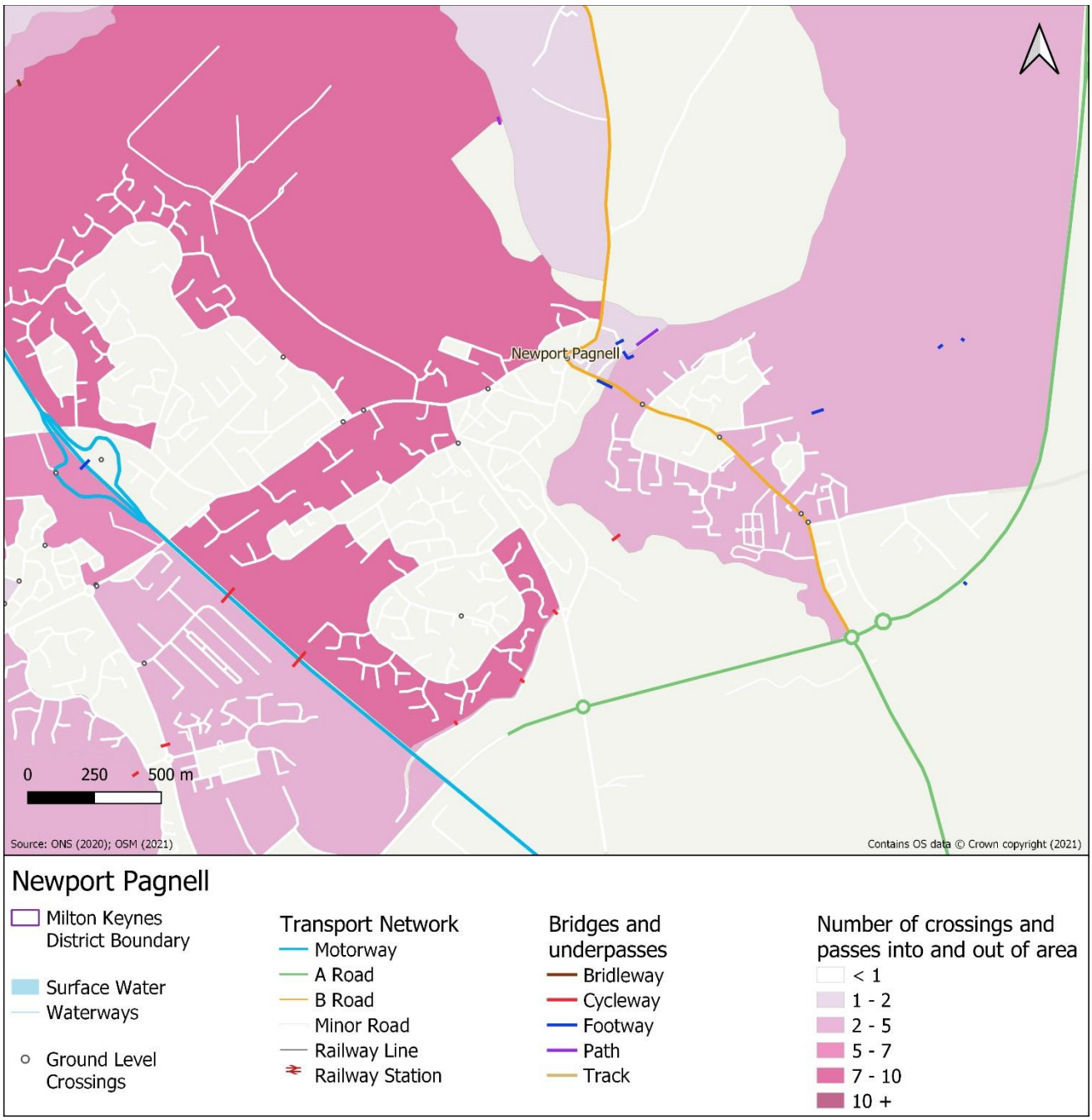

Figure 9-8: Porosity (Barrier) analysis for Newport Pagnell

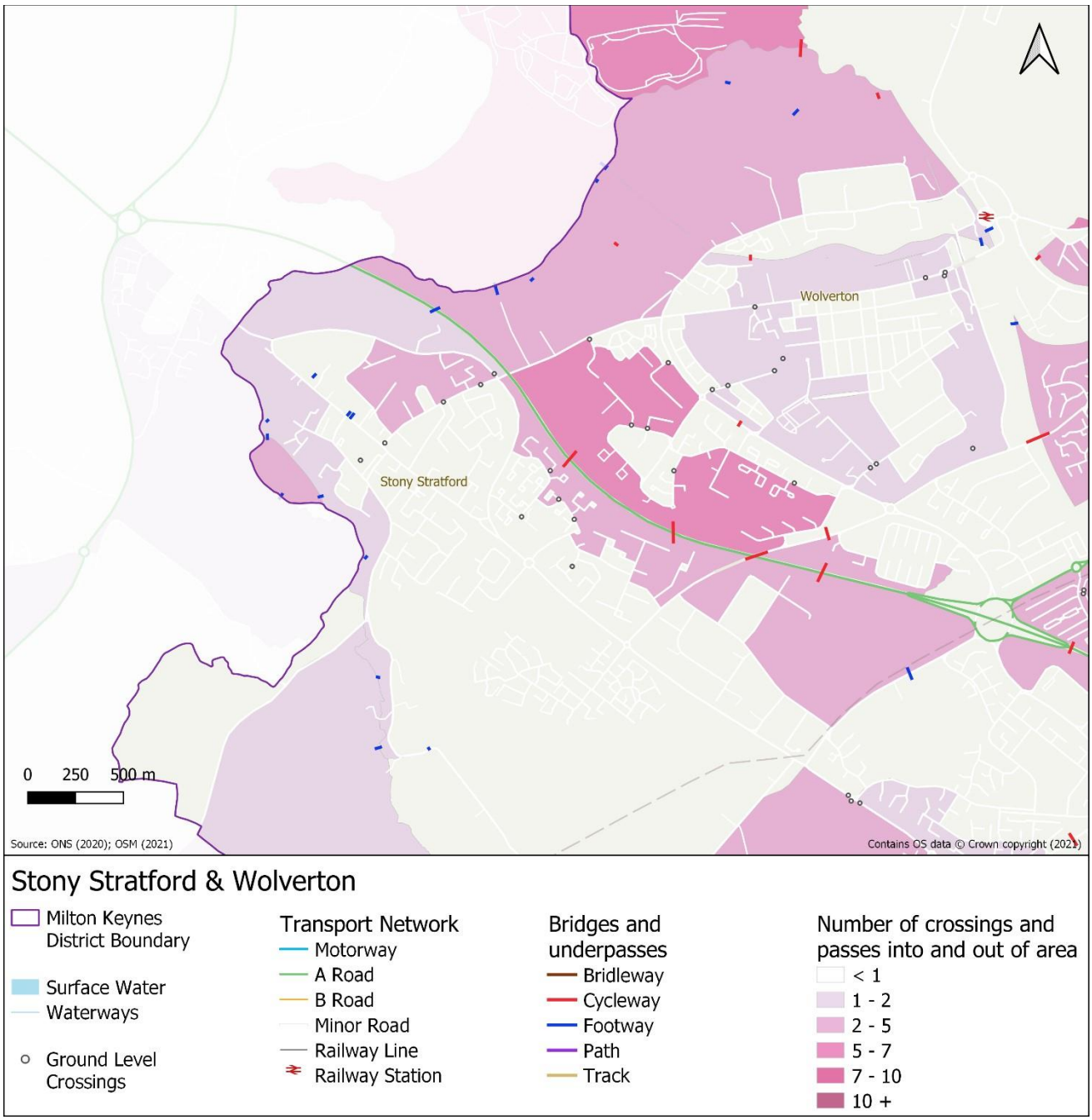

Figure 9-9: Porosity (Barrier) analysis for Stony Stratford and Wolverton

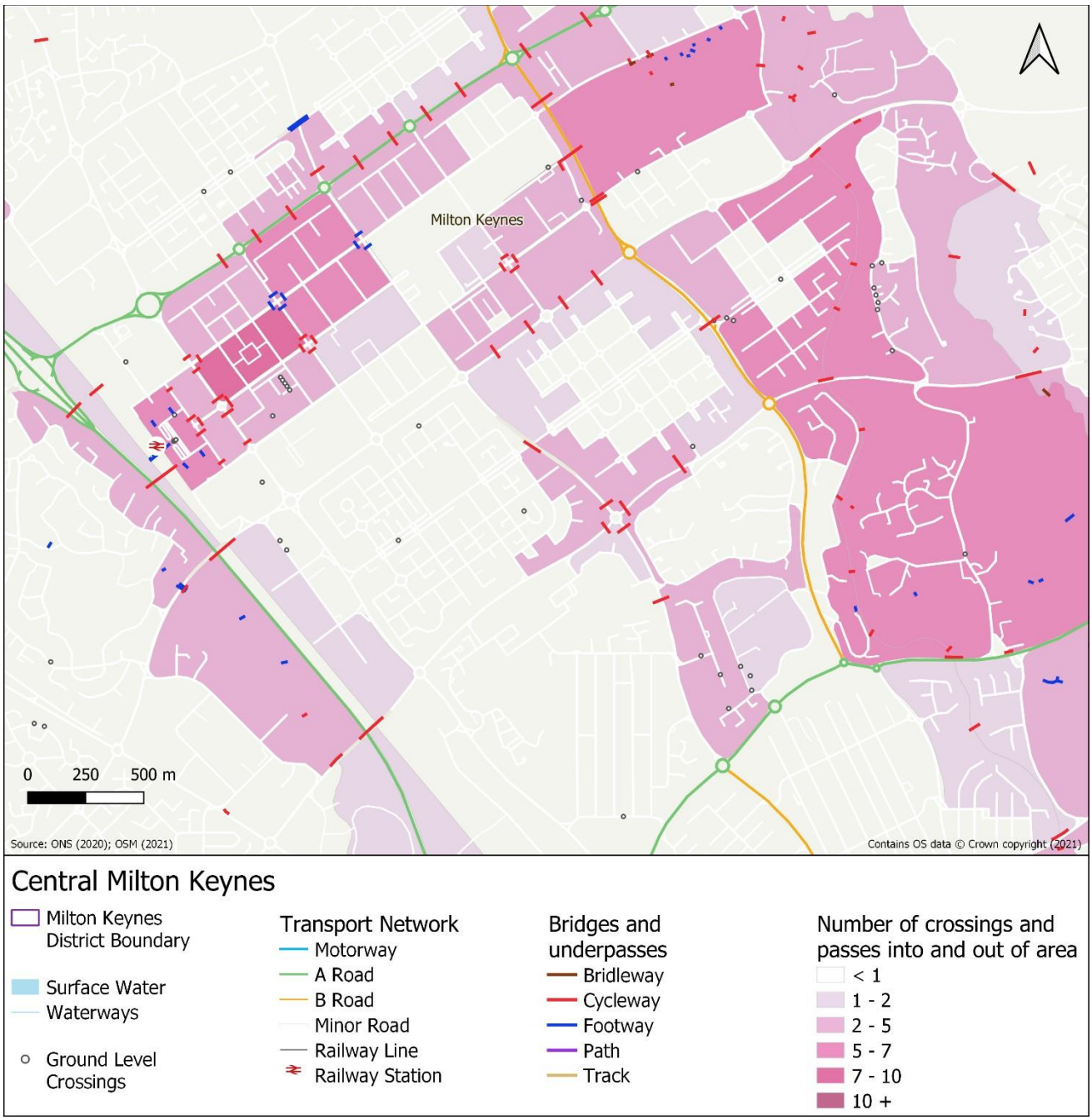

Figure 9-10: Porosity (Barrier) analysis for Central Milton Keynes

9.3 Active Travel Trips

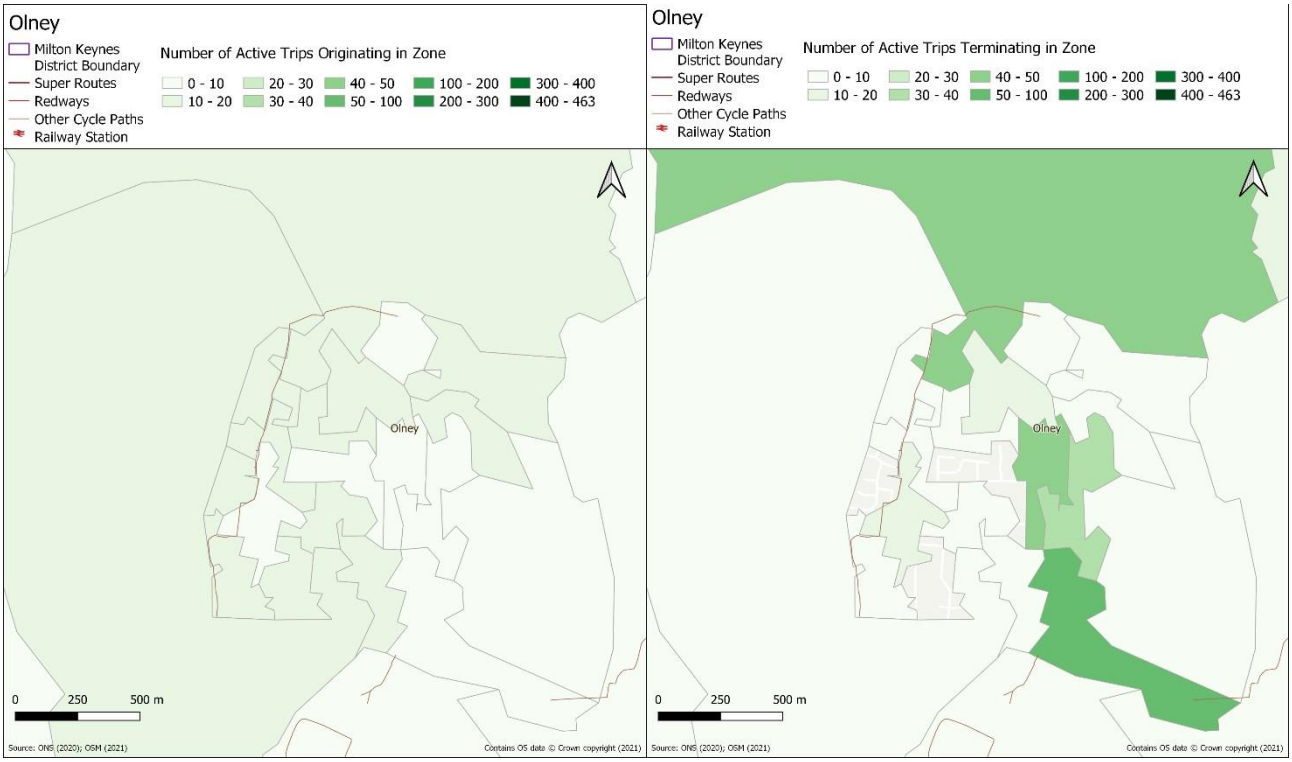

Figure 9-11: Active Travel Trip Origins and Destinations, Olney

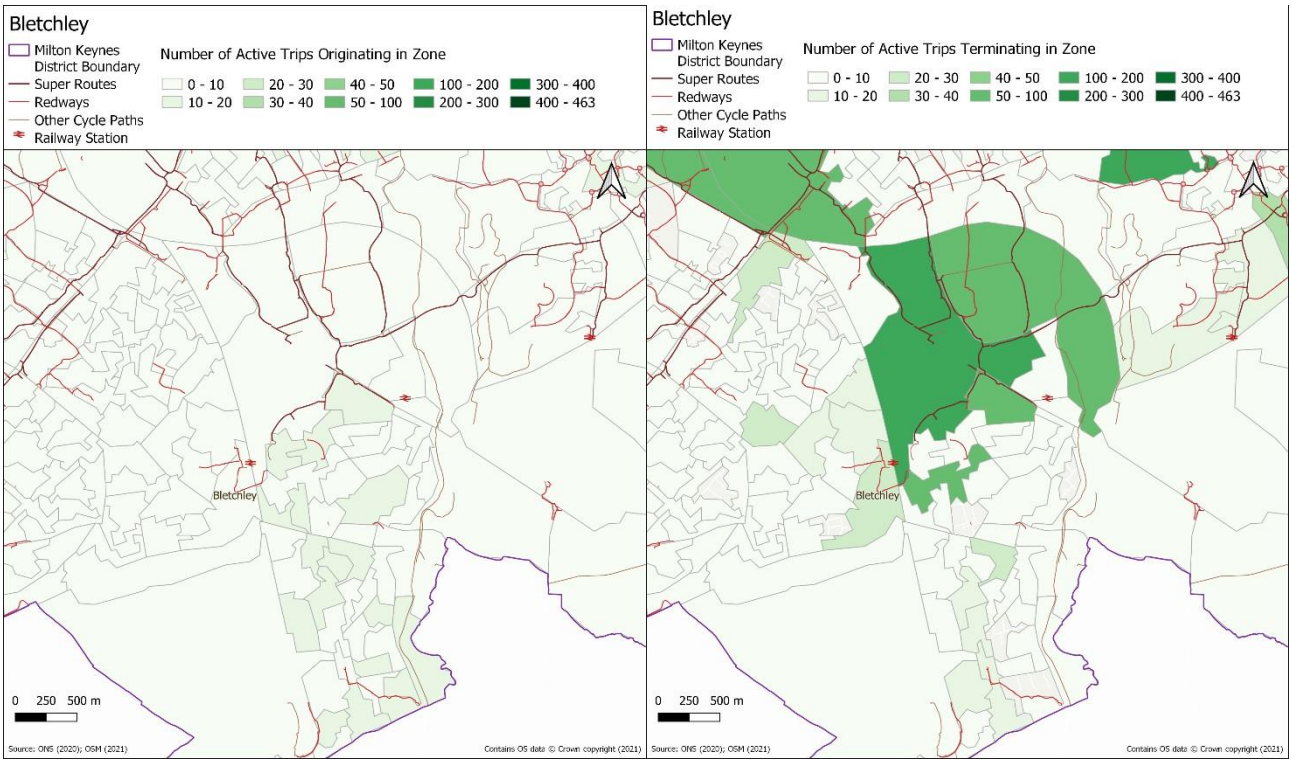

Figure 9-12: Active Travel Trip Origins and Destinations, Bletchley

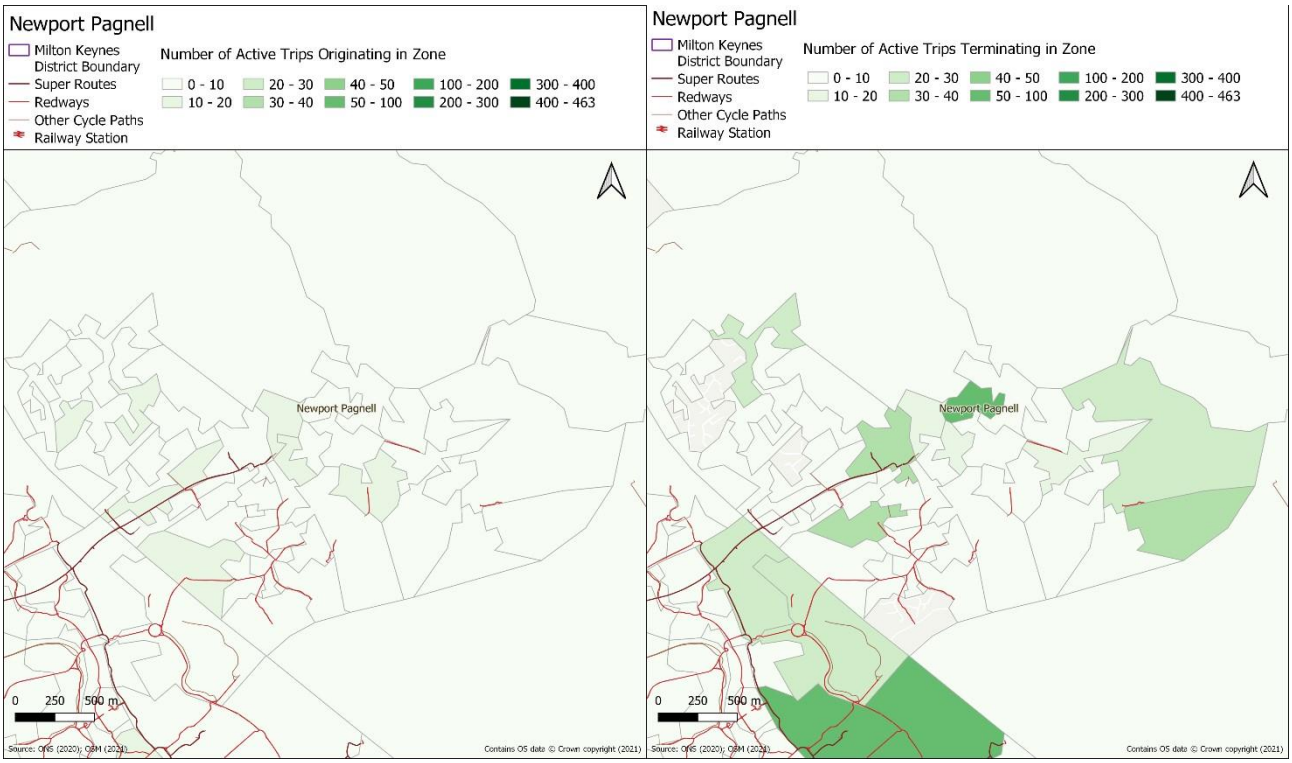

Figure 9-13: Active Travel Trip Origins and Destinations, Newport Pagnell

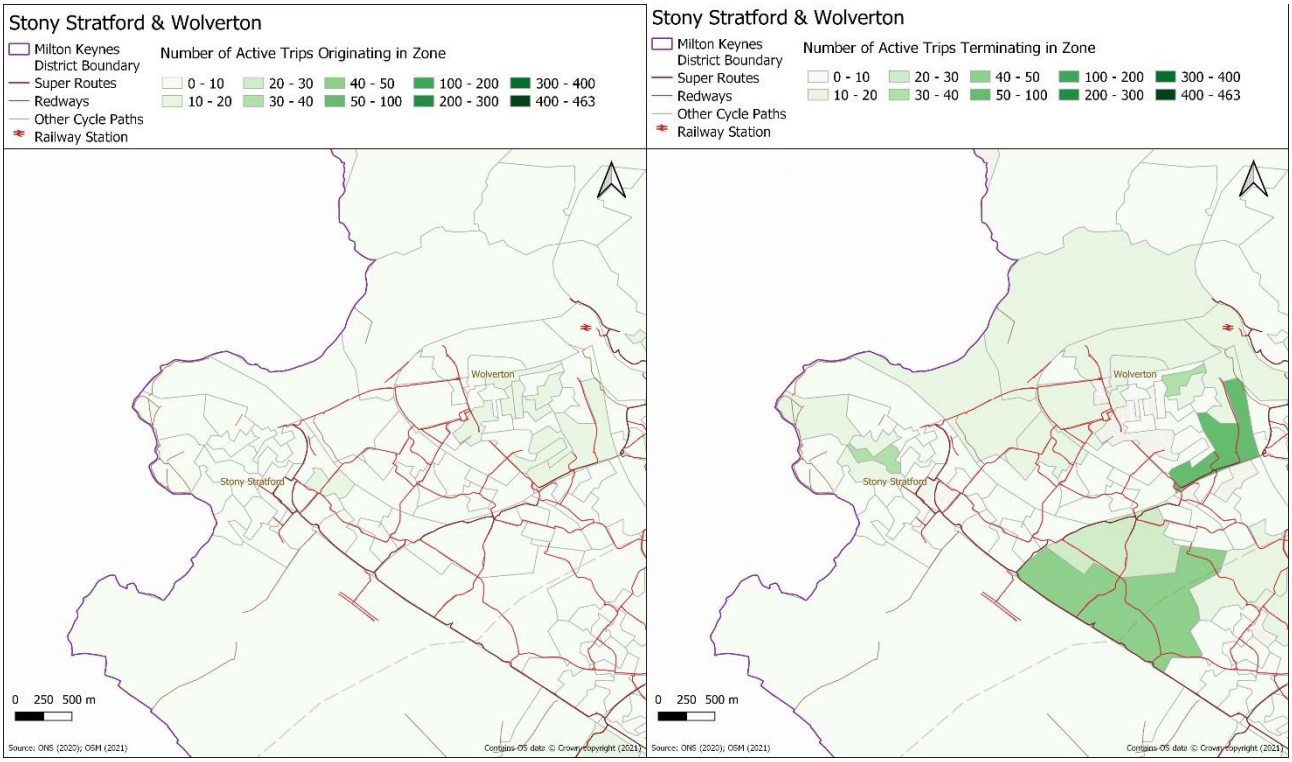

Figure 9-14: Active Travel Trip Origins and Destinations, Stony Stratford and Wolverton

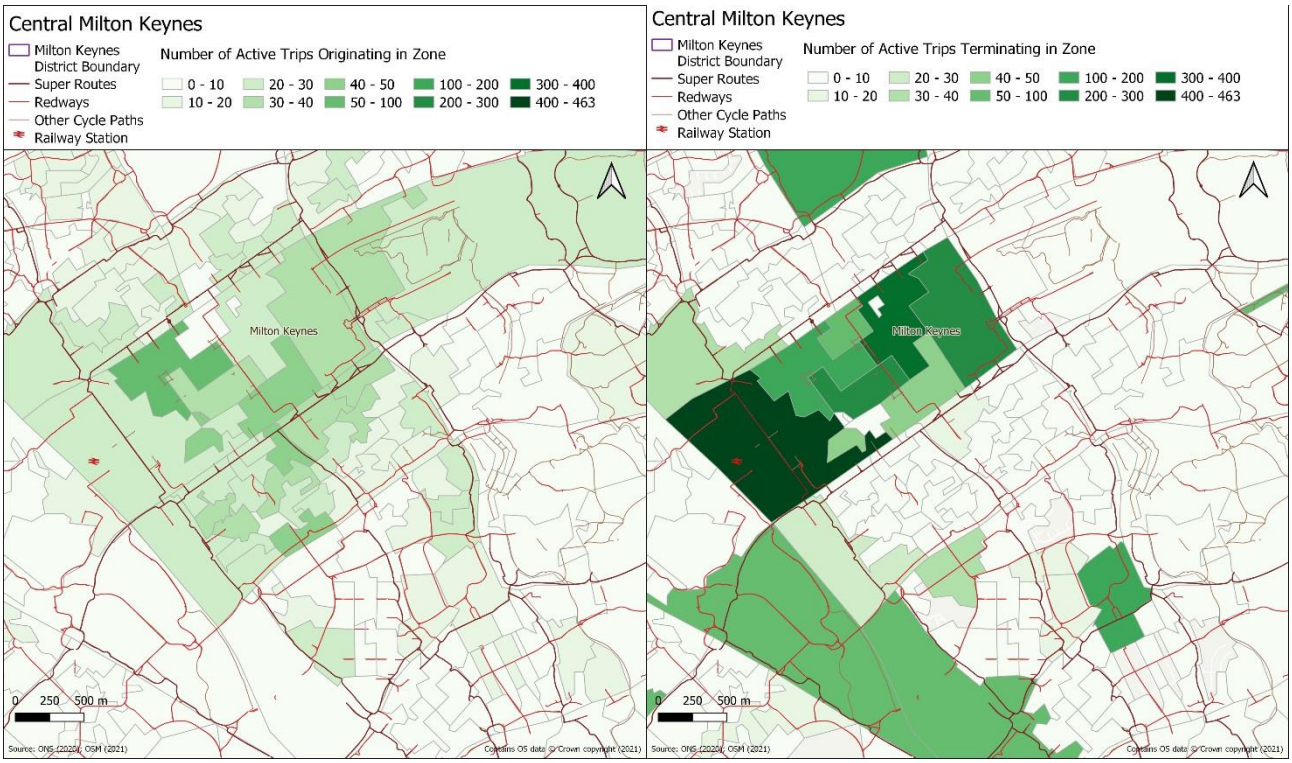

Figure 9-15: Active Travel Trip Origins and Destinations, Central Milton Keynes

9.4 Motorised Trips

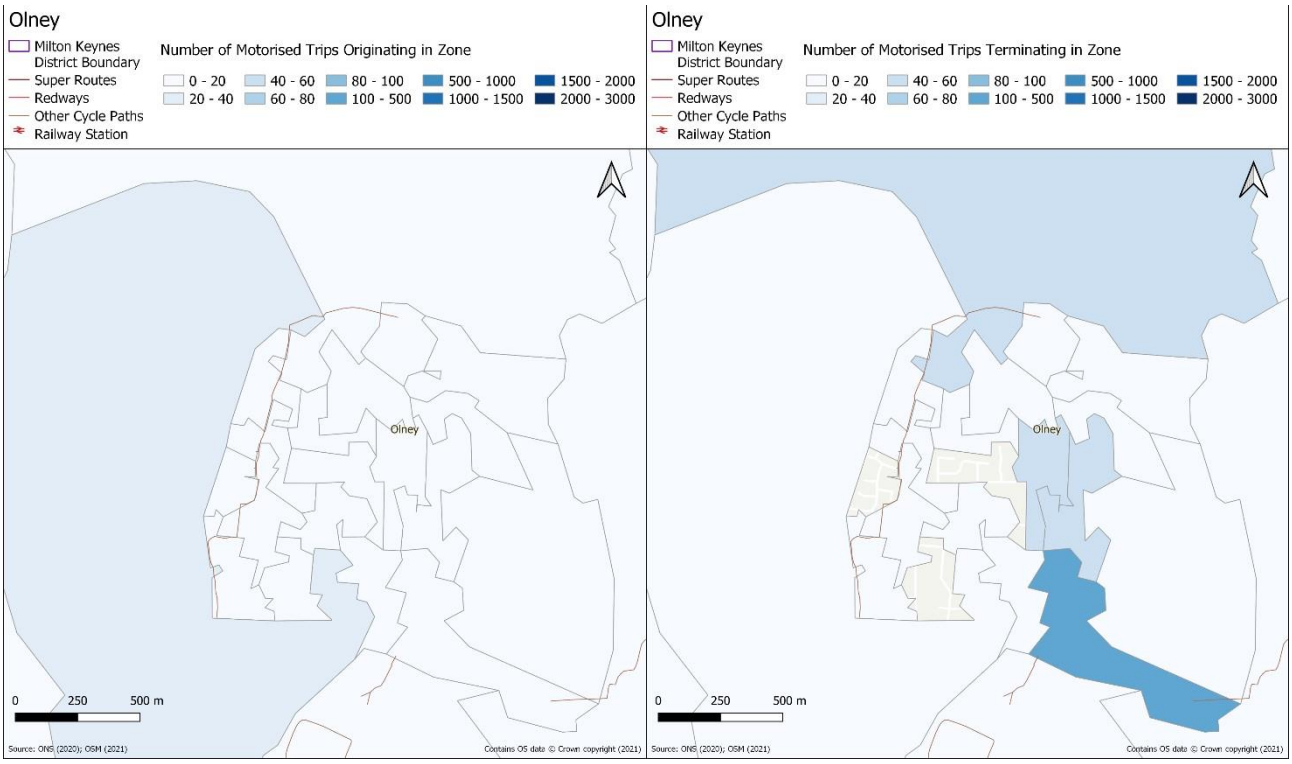

Figure 9-16: Motorised Trips Origin and Destinations, Olney

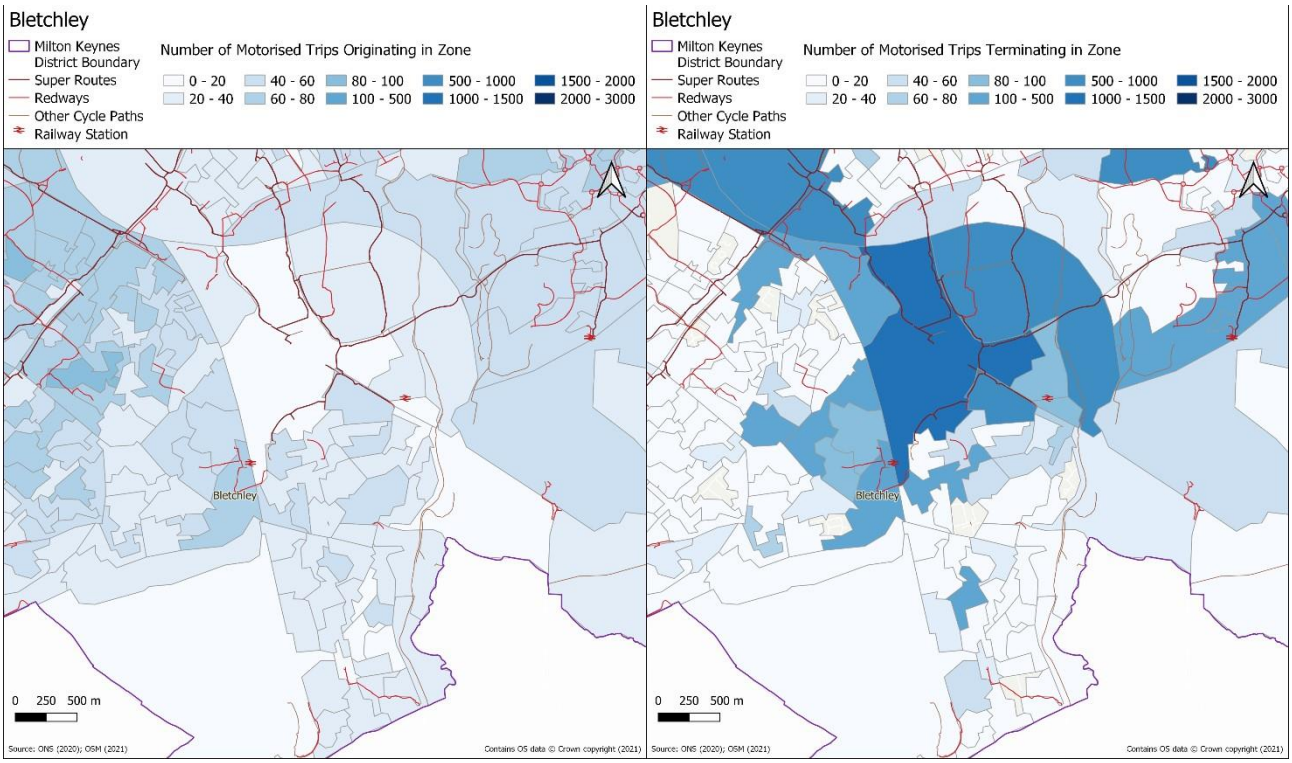

Figure 9-17: Motorised Trips Origin and Destinations, Bletchley

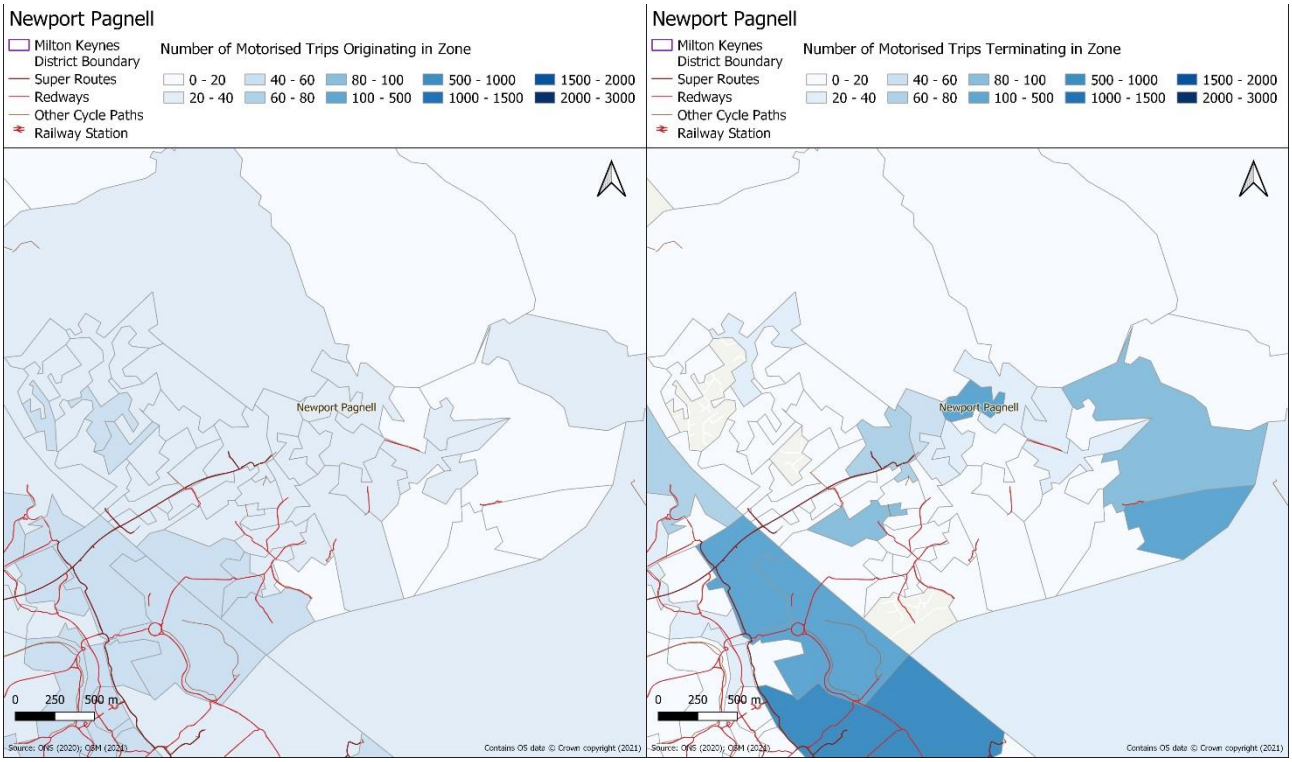

Figure 9-18: Motorised Trips Origin and Destinations, Newport Pagnell

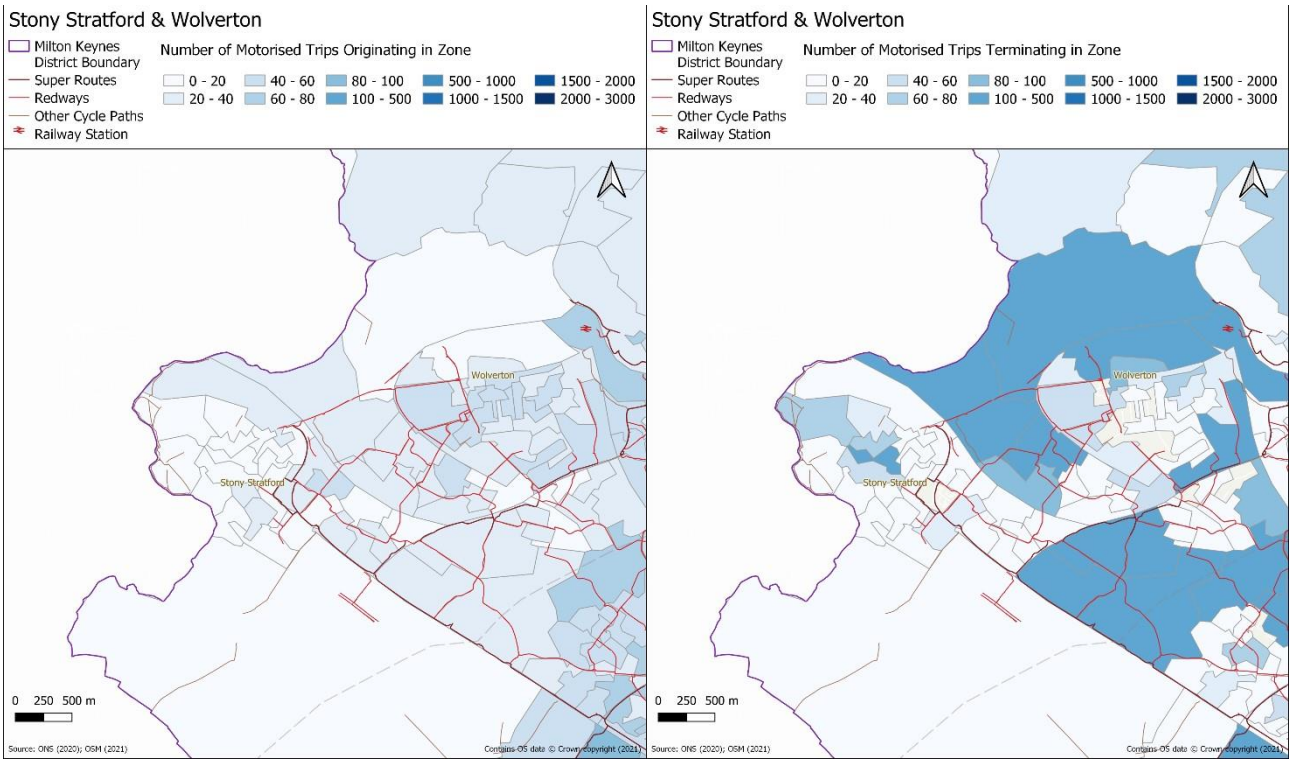

Figure 9-19: Motorised Trips Origin and Destinations, Stony Stratford and Wovlerton

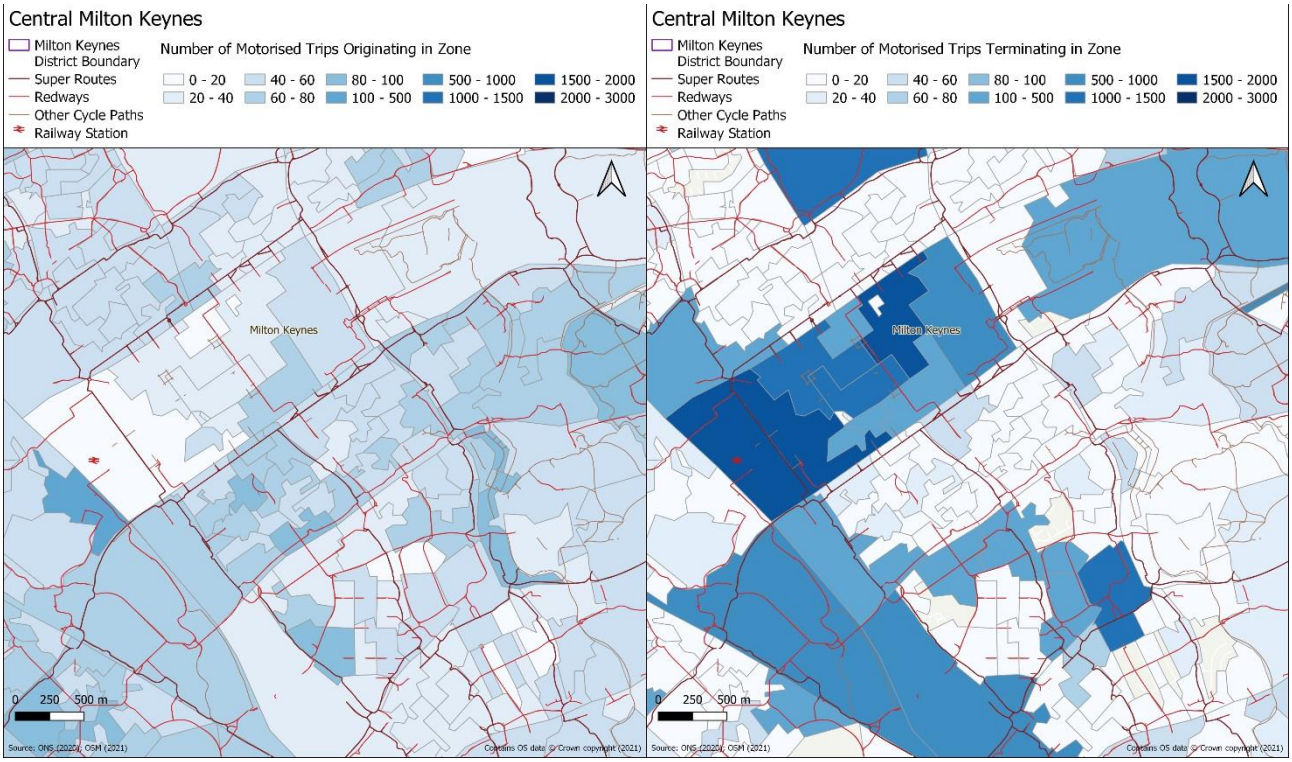

Figure 9-20: Motorised Trips Origin and Destinations, Central Milton Keynes