Long Marston Airfield Garden Village: Sustainable Transport Viability & Feasibility Assessment

Document no: 1
Revision no: 1.3

Warwickshire County Council and Stratford-on-Avon District Council

Feasibility & Viability Assessment
May 2, 2024

Long Marston Airfield Garden Village: Sustainable Transport Viability & Feasibility Assessment

Client name:	Warwickshire County Council		
Project name:	Sustainable Transport Feasibility & Viability Assessment		
Client reference:	Warwickshire County Council	**Project no:**	B23WCS03
Document no:	1	**Project manager:**	Helen Osborne
Revision no:	1.3	**Prepared by:**	George Nock
Date:	21 March 2024	**File name:**	Long Marston Airfield Garden Village Sustainable Transport Viability & Feasibility Assessment_V1.3
Doc status:	Final		

Document history and status

Revision	Date	Description	Author	Checked	Reviewed	Approved
0	15/06/2023	WIP Draft	GN	HO	CH	HO
1.1	09/10/2023	Issue	GN	HO	CH	HO
1.2	21/03/2024	Issue	GN	HO	CH	HO
1.3	02/05/2024	Final	GN	HO	CH	HO

Distribution of copies

Revision	Issue approved	Date issued	Issued to	Comments

7th Floor, 2 Colmore Square
38 Colmore Circus, Queensway
Birmingham, B4 6BN
United Kingdom

T +44 (0)121 237 4000

Executive summary

The Stratford-on-Avon Core Strategy (Local Plan) includes an allocation of 2,100 homes at Long Marston Airfield (LMA) within the planned period up to 2031 and up to a total of 3,500 homes located some 5 miles southwest of Stratford-upon-Avon. Transport assessments to support the core strategy previously identified that growth southwest of Stratford would require a Southwest Relief Road (SWRR), triggered at 400 dwellings at LMA, as the primary necessary infrastructure to mitigate impacts in the town centre.

Through the combination of network constraints considering the historic context of Stratford-upon-Avon, a lack of route choice for river crossings and high demand, data shows there are frequent periods of congestion on the road network particularly during the AM and PM peak periods. The SWRR would function as a bypass providing an alternative route avoiding the historic and congested town centre.

There is now uncertainty over the SWRR as there is no obvious funding source. In 2022, Stratford-on-Avon District Council, working with Warwickshire County Council and Homes England, commissioned Vectos to undertake a Vision and Validate study which principally considered how LMA can come forward and be delivered in a policy compliant sustainable manner, utilising solutions that may offer alternatives to the SWRR.

The purpose of this report is to present the findings of a feasibility and viability assessment building upon the transport options identified in the recent Vectos study and work undertaken by Warwickshire County Council in 2019 which reviewed the sustainable transport requirements for LMA. This report encompasses:

- An independent review of the LMA transport Vision, in transport terms, comparing how the aspirational Vision compares to established transport principles in terms of trip making and the trip making characteristics of the site;
- An initial sifting exercise resulting in a refined list of transport options for LMA to be taken forward for further assessment utilising the principles of transport analysis guidance;
- A high-level assessment identifying any other sustainable transport or highway options which could be considered as additional or alternative options to minimise the traffic impacts on the existing road network associated with the LMA development; and,
- An assessment of the measures/ options has been undertaken identifying indicative capital costs, feasibility and viability considerations for each option. A bespoke appraisal criteria incorporating the policies and principles of the Department for Transport (DfT) Early Assessment Sifting Tool (EAST) has been developed which appraises each of the options. A summary of the results across all options has been undertaken providing conclusions on the comparative performance of options.

With emphasis on achieving higher levels of containment at LMA thereby reducing reliance on car trips, the aspirational transport Vision is underpinned by an ethos of reducing the need to travel in the first instance and offering choice in how to travel. Comparing the assumptions, strategy, and mitigation options of the aspirational transport Vision against evidentiary sources, analysis demonstrates there is significant variation in potential externalised trip making at LMA.

The principal concern would be unmitigated impacts upon congestion or unacceptable impacts upon highway safety if the Vision is not fully realised in the way it is envisaged. To mitigate against this risk, scenario-based traffic modelling assessments are recommended in accordance with the TRICS Guidance Note on the Practical Implementation of the Decide & Provide Approach.

An initial sifting exercise has been undertaken appraising the aspirational transport Vision options, refining a long list of options which have been proposed and subject to high-level analysis by Vectos. This exercise also includes the identification of any other options which may be suitable to meet the demand characteristics of LMA following a baseline review of the highway and public transport networks.

The initial objective appraisal framework sift indicates options for heavy and light rail are constrained by engineering, environmental and societal factors. The sifting exercise highlights public transport, particularly bus provision, as the primary viable mass-transit option for LMA alongside cycling options and a package of supporting micro-mobility interventions. Further viability and feasibility assessment has been taken forward appraising the refined options in more detail deriving indicative capital and operational costs for each option. Based upon the demand characteristics of LMA, the assessment focuses principally upon: -

- **Public Transport**: focused on bus services providing better integration between rail and local bus services, demand responsive transport and community transport to increase the attractiveness of public transport and provide viable and practical options for multi-modal public transport journeys for residents and visitors at LMA. This also includes analysis identifying opportunities for improving bus reliability through discrete technology interventions which are designed to expedite bus services through congested parts of the town centre;
- **Cycling**: The Greenway is an inclusive and direct link to Stratford-upon-Avon and there are opportunities to increase the attractiveness of cycling within Stratford-upon-Avon itself. A route-based assessment has been undertaken identifying opportunities and constraints for improving cycle infrastructure, better linking LMA to the town centre; and,
- **Micro-mobility**: Building upon the theme of offering transport choice for short distance trips within LMA as outlined in the aspirational transport Vision, an assessment has been undertaken of an overall package of micro-mobility options forming part of a holistic package targeting both short, and medium distance trips, as well as harnessing opportunities to increase cycling and public transport.

A bespoke appraisal criteria incorporating policies and principles of DfT EAST has been developed which appraises each of the options. A summary of the results across all options has been undertaken providing conclusions on the comparative performance of options indicating:

- Options including converting the Greenway into a heavy or light rail mass-transit offer are unlikely to be feasible based upon this high-level assessment, however it is acknowledged that a more detailed assessment may reach a different conclusion;
- Constraints within Stratford-upon-Avon limit the feasibility of partial or fully segregated BRT options and these options are unlikely to be viable;
- Underpinning the transport offer for short distance trips at LMA, is the development of an aspirational micro-mobility strategy. Refinement of this strategy should be undertaken as the scale of some of the interventions have potential viability issues;
- Cycling options have been explored; options which require the removal of on-street parking, creating a more direct route to the railway station by expanding the section of disused railway and a route through the A4390 / Rother Street / Evesham Place junction which impact the capacity of the right turn movements, are unlikely to be feasible; and,
- A south Stratford Park and Ride. The Rosebird centre is a favourable candidate for such a facility given its location and the existing supporting infrastructure, however using the site for this function would be subject to third party agreements. Alternative sites are likely to require private land acquisition. Such agreements may be beyond a reasonable planning control linked solely to development at LMA.

The option assessment indicates there are a number of options which are considered feasible and warrant further exploration: -

- Enhancement of conventional bus services, as the primary mass-transit offer at LMA, indicates a viable and feasible option to offer transport choice and mitigate impacts;
- This is linked with enhancing connections for multi-modal public transport journeys at Honeybourne and Stratford rail stations;
- There are opportunities to improve bus reliability, whilst being cognisant of the constrained streetscape of Stratford-upon-Avon, at key junctions in the town centre through the implementation of technology-based solutions. This builds upon the committed highway improvement schemes particularly the Clopton Bridge improvement package;
- E-bike schemes, Mobility hubs and Personalised Travel Planning as a package of supporting measures; and,

- The Greenway offers a unique opportunity to link LMA to Stratford-upon-Avon. Options which involve full conversion of the Greenway such as heavy or light rail options, have not historically been demonstrated to be feasible. Enhancing the cycling route on the Greenway, also presents opportunities to enhance cycling connections within the town centre.

As indicated in the Vision and Validate study, further economic assessments may assist in confirming and refining the retail and leisure offering at LMA. It is recommended that any such assessment is extended to employment and educational landuses.

In addition to the above, scenario-based traffic modelling assessments are recommended in accordance with the TRICS Guidance Note on the Practical Implementation of the Decide & Provide Approach. This would require a range of scenarios based upon the most optimistic case, where the development is fully delivered in accordance with the Vision, and scenarios which are less optimistic where the development Vision is not fully realised in transport terms. This moves away from more traditional *worst-case* modelling-based assessments. A comparison of the outputs can then be undertaken, and the impacts assessed.

An assessment of the likely associated environmental impacts of transport related to the development, particularly in relation to its proximity to environmentally sensitive areas (such as the air quality management areas or noise sensitive areas) is recommended.

Once the outputs of this assessment are available, more detailed assessment developing a comprehensive mitigation package can be advanced by site promoters and their supporting transport consultants.

Appendices

Tables

Figures

Acronyms and abbreviations

Acronym	Description
AQMA	Air Quality Management Plan
BSIP	Bus Service Improvement Plan
CS	Core Strategy
DRT	Demand Responsive Transport
DfT	Department for Transports
EAST	Early Assessment Sifting Tool
HE	Homes England
HIF	Housing Infrastructure Fund
INRIX	Company providing data
KPH	Kilometres per hour
LCWIP	Local Cycling and Walking Infrastructure Plan
LMA	Long Marston Airfield
LSOA	Lower Super Output Areas
LTN 1/20	Local Transport Note Cycle Infrastructure Design LTN
LTP	Local Transport Plan
MND	Mobile Network Data
MSOA	Middle Layer Super Output Areas
NCN	National Cycling Network
NMU	Non-Motorised User
NTS	National Travel Survey
P&R	Park & Ride
PIC	Personal Injury Collision
PTP	Personalised travel plan
SCOOT	Split Cycle Offset Optimisation Technique
SDC	Stratford-on-Avon District Council
STA	Strategic Transport Assessment
SWLP	South Warwickshire Local Plan
SWRR	South western relief road
TRACC	Accessibility planning software
TRICS	Trip Rates Information Computer System
WCC	Warwickshire County Council
WDC	Warwick District Council
WfH	Work from Home

1. Introduction

1.1 Background

The Stratford-on-Avon Core Strategy (Local Plan) includes an allocation of 2,100 homes at Long Marston Airfield (LMA) located to the southwest of Stratford-upon-Avon within the planned period up to 2031 and up to a total of 3,500 homes. LMA has Garden Village status and Homes England (HE) is supporting SDC's work. Transport assessments to support the core strategy previously identified that growth southwest of Stratford would necessitate a relief road triggered at 400 dwellings at LMA as the primary necessary infrastructure.

An initial 400 homes at LMA have secured planning permission and, as of May 2023, there are approximately 150 occupations on site. Planning applications for the remaining 3,100 homes and the Stratford South-Western Relief Road (SWRR) were submitted by CALA Homes in 2018 but remain undetermined. There is now uncertainty over the SWRR as there is no obvious funding source following an unsuccessful Housing Infrastructure Fund (HIF) bid. On this basis, LMA site promoters have stopped technical evaluation of the SWRR. Instead, a focus has been on the promotion of smaller allocated housing parcels at or close to LMA. This approach is consistent with the draft Site Allocations Plan as well as the Core Strategy which does allow the 400 homes threshold to be exceeded should traffic modelling permit.

In 2022, SDC working with Warwickshire County Council and Homes England commissioned Vectos to undertake a Vision and Validate study which principally considered how LMA could come forward in a policy compliant sustainable manner, utilising solutions that may offer alternatives to the SWRR. This primarily focused upon exploring opportunities to internalise trips through placemaking and modal shift. The study comprised a Part 1 Vision Document and a Part 2 Movement Analysis Paper. The study work quantified the residual trip demands that would impact on the highway network concluding "there is no good case for the SWRR" [Vectos, 2022] subject to traffic modelling evaluation.

1.2 Report Purpose

Jacobs have been commissioned by WCC with SDC and HE to undertake a feasibility and viability assessment. The purpose of this report is to present the outputs of this assessment building upon the transport options for LMA identified in the recent Vectos study and work undertaken by WCC in 2019. It presents an independent review of the LMA transport Vision, in transport terms, comparing how the aspirational transport Vision compares to established transport principles in terms of trip making and trip making characteristics of the site. The measures proposed to achieve the aspirational transport Vision, as outlined in the previous Vectos study, have been objectively appraised considering the viability, feasibility and deliverability of each option. An initial sifting exercise has been undertaken resulting in a refined list of transport options for LMA to be taken forward for further assessment.

The report also presents a high-level assessment identifying any other sustainable transport or highway options which could be considered as additional or alternative options to minimise the traffic impacts on the existing road network associated with the LMA development. To inform this, a baseline review of the relevant highway and public transport network has been undertaken to understand the constraints and opportunities for accommodating future growth at LMA. A more detailed assessment of the measures/ options has been undertaken identifying indicative capital costs, feasibility and viability considerations for each option. A bespoke appraisal criteria incorporating policies and principles of DfT EAST has been developed which appraises each of the options. A summary of the results across all options has been undertaken providing conclusions on the comparative performance. The reporting structure is outlined in the following section.

1.3 Report Structure

- Stage 1 [Chapters 2 – 5] - Policy Context, Baseline Review and Demand Analysis
- Stage 2 [Chapter 6] - Option Generation/ Feasibility
- Stage 3 [Chapter 7] - Assessment, Sifting and Refinement
- Stage 4 [Chapter 8] - Summary and defining next steps

2. Stage 1: Policy Context, Demand Analysis and Baseline Review

2.1 Policy and Planning Context

LMA Garden Village is allocated in the SDC Core Strategy (2011-2031) and has a significant technical evidence base supporting the site through examination and allocation in the SDS Core Strategy. Moreover, the previous and current planning context of the site is highly relevant. Given the depth of the planning context, this section briefly outlines the policy fit of LMA relevant to this current viability and feasibility assessment. For brevity, this focuses primarily upon the relevant local policy with references made to regional and national policy where relevant.

2.2 Local Policy

The relevant local policy considerations have been extracted, reviewed and summarised in the context of this assessment work. These are outlined in the table below: -

Table 2-1:- Local Policy Review

Policy	Relevant Policy Context
Stratford-on-Avon District Council Core Strategy (2011 – 2031) and Local Plan Review	• Core Strategy was adopted by SDC in July 2016 and sets out the development strategy and planning policies for Stratford-on-Avon District up to 2031. This strategy would be superseded by the South Warwickshire Local Plan once it has been adopted which is being developed by SDC and Warwick District Council (WDC). • The new South Warwickshire Local Plan covers the combined geographical area which together comprise roughly 126,390 ha, with a combined population of approximately 283,200 people. • The Plan is expected to replace the strategic policies of the existing Stratford-on-Avon District Core Strategy and Warwick District Local Plan. The South Warwickshire Local Plan will set out a long-term spatial strategy for housing, jobs, infrastructure, and climate change for both Districts. • LMA is allocated in the SDC Core Strategy as a mixed-use development which provides a range of accessible services, facilities and employment opportunities that are convenient and accessible to the community itself and the local area. The Vision for LMA is set out in the Core Strategy. • The Vision for LMA describes the site as having: - o A wide range of transport choices will be available in order for the residents to gain access to Stratford-upon-Avon and all it has to offer. o Vehicle movements into the town will be regulated in an effective way through traffic management measures. o There will also be a convenient walking and cycling route into the town using the established Greenway that runs along the western edge of the site. o Public transport services could take a number of forms, including the potential for a facility running alongside the Greenway. o The provision of a relief road running between Shipston Road (A3400) and Evesham Road (B439) on the western edge of Stratford-upon-Avon is an integral part of the proposal • The SPD sets out the broad principles to show how the policy requirements in the Core Strategy should be translated into a well-designed successful place on the ground [outlined below]. • Between 2021-2041, there is a need for 5.2ha of Office space and 166.1ha of General Industrial employment in Stratford-upon-Avon[1]. Policy Proposal LMA of the Core Strategy sets out an allocation with approximately 13 hectares of employment land, with no more than 8 hectares to be delivered in the period to 2031. It is envisaged in the policy that no less than 10% of the employment should be provided as small business units.
Long Marston Airfield Framework	• The LMA Framework Masterplan SPD was adopted in February 2018. • The SPD sets out the broad principles to show how the policy requirements in the Core Strategy

[1] Coventry & Warwickshire Housing & Economic Development Needs Assessment (HEDNA), iceni, November 2022

Policy	Relevant Policy Context
Masterplan Supplementary Planning Document (2018)	• 3.1 (Vision) of the SDP outlines the Garden village Vision [listed above in Section 2.1 of this report]. Highly relevant to transport are: - o Provide new employment opportunities through a mix of uses o Be an attractive place to live and be well served from day one and throughout its delivery o Provide a range of commercial and community uses within the local centre o Be well connected by sustainable transport to Stratford-upon-Avon and surrounding local destinations o Create a network of pedestrian and cycle networks within and beyond the site • Provide education in the form of a new secondary school and two new primary schools as well as early learning facilities • Section 3.2 (Concept) sets out the Concept for LMA. Two core principles are highly relevant to transport matters: - o A steppingstone between town and country [ensuring the necessary transport connections] o Walkable villages • Masterplan (Section 3.3 – 3.4.4): The illustrative Masterplan shows the overall layout, road/ street network, access points and connections. Relevant to transport matters is: - o Anticipated public transport loop, walking and cycling network and the potential future link to a transport hub (accessing The Greenway) o Potential Transport Hub – an area adjacent the Greenway will be set aside for a new station or other transport interchange associated with potential future uses of the Greenway corridor o Spine road characteristics including 6.1m-7.3m width (widened on bends to accommodate bus route and on street parking provided to ensure public transport vehicles are not impeded); 3m shared footway and cycle path where appropriate on each side of the road and Bus stops at regular intervals (400m). • Section 3.5 Guiding Principles for Layout and Transport. The proposed guiding principles seek to improve accessibility to local services whilst encouraging alternative means of transport (to private car use) o LT2: Development should minimise the need for travel by private car through realising the full potential of public transport, walking and cycling routes and connections. A range of options for public transport provision will be assessed. o LT3. Walking and cycling strategies should be prioritised by integrating new and existing cycle networks, such as The Greenway to the west of the site. Proposals should ensure cycle parking is safe and secure and, where appropriate, paths are safe, well-lit and have natural surveillance. Proposals should minimise the disruption of pedestrian and cycle flows through the design of movement routes. o LT4: Key day-to-day facilities such as schools, local shops, leisure and employment should be sited in locations easily accessible on foot, by bike and public transport. • Section 4.9 Transport Connectivity o The CS sets out the expectation that the scheme will deliver the SWRR. o Pedestrian and cycle route strategy, segregated from traffic, providing accesses to facilities across the site and The Greenway o E-bike provision and cycle parking o Consideration should be given to incorporating priority measures designed to give buses a competitive advantage by improving bus journey times to key destinations, including Stratford-upon-Avon town centre and the railway stations in Stratford-upon-Avon and Honeybourne o Rail: The reopening of the Stratford to Honeybourne rail line is not a constituent part or prerequisite for the delivery of development however the framework Masterplan does not prejudice future rail options. • Section 5.7: Travel Planning: the Framework SPD recognises the development has the potential to generate considerable amounts of motorised traffic, which will need to be accommodated on the surrounding highway network.

Policy	Relevant Policy Context
	• Infrastructure Delivery Plan (IDP): The infrastructure necessary to support the Garden Village is set out in the IDP

2.3 Planning Context

There are a number of consented and live planning applications which are highly relevant to the LMA site and this viability and feasibility assessment. A summary of the current planning situation is set out below: -

Table 2-2:- Relevant Planning Context

Ref / Name	Description	Status
14/03579/OUT LMA 400	Outline application (with all matters reserved (access, appearance, landscaping, layout and scale) for future determination) for the erection of up to 400 dwellings (Class C2/C3), up to 4,000m2 employment hub (Class B1(a)-(c)) and a community hub (Class A1-A5/B1(a)/C3/D1/D2). Provision of new open space including parks and amenity space. Upgrading of existing access junction and provision of new emergency access off Campden Road and associated infrastructure, engineering and landscaping works including a new pedestrian/cycle link from Campden Road to the Stratford Greenway, sustainable urban drainage systems and all ancillary enabling works including demolition of existing buildings and structures	Approved
17/03258/REM LMA 400 Phase 1 Reserved Matters	Submission of Reserved Matters (access, appearance, landscaping, layout and scale) for 400 dwellings (Class C3), including open space, drainage works, highways works and all other associated work pursuant to planning permission 14/03579/OUT (Outline application (with all matters reserved (access, appearance, landscaping, layout and scale) for future determination) for the erection of up to 400 dwellings (Class C2/C3), up to 4,000m2 employment hub (Class B1(a)-(c)) and a community hub (Class A1-A5/B1(a)/C3/D1/D2). Provision of new open space including parks and amenity space. Upgrading of existing access junction and provision of new emergency access off Campden Road and associated infrastructure, engineering and landscaping works including a new pedestrian/cycle link from Campden Road to the Stratford Greenway, sustainable urban drainage systems and all ancillary enabling works including demolition of existing buildings and structures) dated 28th February 2017	Approved
20/00606/REM LMA 400 Phase 1 Reserved Matters Community and Employment Hub	Submission of Reserved Matters (access, appearance, landscaping, layout and scale) for 400 dwellings (Class C3), including open space, drainage works, highways works and all other associated work pursuant to planning permission 14/03579/OUT (Outline application (with all matters reserved (access, appearance, landscaping, layout and scale) for future determination) for the erection of up to 400 dwellings (Class C2/C3), up to 4,000m2 employment hub (Class B1(a)-(c)) and a community hub (Class A1-A5/B1(a)/C3/D1/D2). Provision of new open space including parks and amenity space. Upgrading of existing access junction and provision of new emergency access off Campden Road and associated infrastructure, engineering and landscaping works including a new pedestrian/cycle link from Campden Road to the Stratford Greenway, sustainable urban drainage systems and all ancillary enabling works including demolition of existing buildings and structures) dated 28th February 2017	Approved
23/01223/VARY LMA 400 Variation of trigger point for Community Hub	Variation of condition 2 of Reserved Matters Application 20/00606/REM to seek approval for changes to the trigger point for the Community Hub (consisting of Retail/Convenience Store, Community Building and Nursery Building) to be constructed and made available for public use from prior to the occupancy of the 300th dwelling granted planning permission under reference 14/03579/OUT dated 28th February 2017 and any subsequent Reserved Matters applications to prior to the occupancy of the 390th dwelling granted planning permission under reference 14/03579/OUT dated 28th February 2017 and any subsequent Reserved Matters applications. Reserved Matters Application 20/00606/REM was for the following description of development: Submission of Reserved Matters (internal access, appearance, landscaping, layout and scale) for a Community Hub (containing Class E(a) (retail) and Class E(f) (Nursery) and Class F.2(b) Community Building uses), and Employment Hub (Class E(g)(i) Offices), including all	Pending

Ref / Name	Description	Status
	associated works, pursuant to planning permission 14/03579/OUT (Outline application (with all matters reserved (access, appearance, landscaping, layout and scale) for future determination) for the erection of up to 400 dwellings (Class C2/C3), up to 4,000m2 employment hub (Class B1(a)-(c)) and a community hub (Class A1-A5/B1(a)/C3/D1/D2). Provision of new open space including parks and amenity space. Upgrading of existing access junction and provision of new emergency access off Campden Road and associated infrastructure, engineering and landscaping works including a new pedestrian/cycle link from Campden Road to the Stratford Greenway, sustainable urban drainage systems and all ancillary enabling works including demolition of existing buildings and structures) dated 28th February 2017) - date of decision: 23/09/2022	
20/00608/REM LMA 400 Reserved Matters 154 dwellings	Submission of Reserved Matters (internal access, appearance, landscaping, layout and scale) for 154 dwellings (Class C3), including all associated works, pursuant to planning permission 14/03579/OUT (Outline application (with all matters reserved (access, appearance, landscaping, layout and scale) for future determination) for the erection of up to 400 dwellings (Class C2/C3), up to 4,000m2 employment hub (Class B1(a)-(c)) and a community hub (Class A1-A5/B1(a)/C3/D1/D2). Provision of new open space including parks and amenity space. Upgrading of existing access junction and provision of new emergency access off Campden Road and associated infrastructure, engineering and landscaping works including a new pedestrian/cycle link from Campden Road to the Stratford Greenway, sustainable urban drainage systems and all ancillary enabling works including demolition of existing buildings and structures) dated 28th February 2017	Approved
20/02315/FUL LMA Phase 1A 124 dwellings	Proposed development of 124 dwellings, including 43 Affordable Homes and all ancillary enabling works including demolition of an existing aircraft hanger building associated highway, drainage and landscape works and associated amendments to the area of public open space and Community Orchard as approved under application 17/03258/REM for 400 dwellings at Long Marston Airfield	Pending
18/01892/OUT LMA 3,100 dwellings	Outline application (with all matters reserved) for a phased development comprising up to 3,100 new homes (Class C2/C3), employment (Use Classes B1(a)-(c)) including a business park of approximately 5.7ha (gross) and further employment space/land within mixed-use areas, village centre comprising a range of uses (Use Classes A1-A5/B1(a)/D1/D2), plus two primary schools and one secondary school. Provision of new open space including parks and amenity space. Provision of a new access junction from Campden Road. Associated infrastructure, utilities, engineering and landscaping works including sustainable drainage systems. The proposal incorporates the demolition/removal of the runways and other hardstanding and identified existing structures.	Pending
18/01883/FUL SWRR	Construction of a southwestern relief road to Stratford-upon-Avon extending between the A3400 Shipston Road near Orchard Hill Farm and the Luddington Road/B439 Evesham Road. The proposed road incorporates: a bridge structure over the River Avon and Stratford Greenway and associated viaduct approaches and embankments; provision of new footpaths; provision of new junctions between the relief road and Luddington Road, B4632 Clifford Lane/Campden Road and A3400 Shipston Road with associated alignment alterations; provision of new accesses to Stratford-upon-Avon Racecourse and Clifford Business Park; associated infrastructure (including lighting), utilities, engineering (including drainage works) and landscaping works.	Pending
Planning Applications at the adjoining Airfield House Site		
20/02745/OUT 60 dwellings	Outline application for the erection of up to 60 dwellings with all matters reserved (appearance, landscaping, layout and scale) except access (to be determined) including demolition of existing dwelling and scrap yard buildings and associated works.	Approved
23/00138/VARY 60 dwellings variation	Variation of conditions 3, 7,8,9,13, 19 and 24 of outline planning permission 20/02745/OUT (Outline application for the erection of up to 60 dwellings with all matters reserved (appearance, landscaping, layout and scale) except access (to be determined) including demolition of existing dwelling and scrap yard buildings and associated works. - date of decision: 25/08/2021) to seek approval for changes to the approved parameters	Pending

Ref / Name	Description	Status
	plan (condition 3), changes to the parameter plan reference in existing conditions (conditions 7, 8, 9 and 13), changes to the external ambient noise levels to be adhered to (condition 19) and changes to the referenced flood risk assessment relating to surface water drainage (condition 24)	
22/03664/REM 60 dwellings Reserved Matters	Submission of Reserved Matters application (internal access, appearance, landscaping, layout and scale) for 60 Affordable dwellings, including all associated works which includes a substation, pursuant to planning permission 23/00138/VARY (Variation of conditions 3, 7,8,9,13, 19 and 24 of outline planning permission 20/02745/OUT (Outline application for the erection of up to 60 dwellings with all matters reserved (appearance, landscaping, layout and scale) except access (to be determined) including demolition of existing dwelling and scrap yard buildings and associated works. - date of decision: 25/08/2021) to seek approval for changes to the approved parameters plan (condition 3), changes to the parameter plan reference in existing conditions (conditions 7, 8, 9 and 13), changes to the external ambient noise levels to be adhered to (condition 19) and changes to the referenced flood risk assessment relating to surface water drainage (condition 24)	
Other relevant Planning Applications		
14/01186/OUT Meon Vale	Outline Planning Application (with means of access) for the development of up to 550 dwellings Use Class C3/C2 (Use Class C2 not to exceed 85 dwellings); a one-form entry Primary School (Use Class D1) with associated open space; a leisure village comprising up to 300 units of self-catering lodges and holiday homes (Use Classes C1/ C3), ancillary facilities building(s) to incorporate reception and administration facilities (Use Class B1a), entertainment areas (Use Classes D1 / D2) and retail uses (Use Classes A1 / A3/ A5), a touring caravan and camping site with up to 80 pitches and ancillary facilities building; the creation of landscaping, open space and ecological habitats; new accesses for vehicles, pedestrians and cycles; new internal highways; car and cycle parking; sustainable drainage measures, including storage ponds for surface water attenuation; provision of utilities infrastructure; earth works and all ancillary enabling works including demolition of buildings and structures and ground remediation.	Approved

2.4 Other Key Policy Considerations

Other key policy considerations relevant to this assessment also include: -

Table 2-3:- Other Key Policy Considerations

Policy	Relevant Policy Context
Council Plan WCC (2022-2027)	• The Council Plan was adopted by WCC in April 2022 and sets out the strategic priorities and areas of focus over the plan period. A key element of the identified vision of the Council Plan is to deliver improved transport options. • It emphasises the need for investment in a transport network that increases travel choices by being well-connected, in a good condition, green and safe for users. • In 2019, the Council declared a Climate Emergency. The plans will be integrated with those long-term transitions such as achieving net zero.
Stratford on-Avon Climate Change update (September 2019)	• The Council declared a 'Climate Emergency' as a pledge to take local action to contribute to national carbon neutral targets through the development of their own practices and policies, with an aim to be carbon-neutral in Stratford District by 2030.
Local Transport Plan 4 (LTP4) 2023	• Transport priorities focused around four central themes: - o **Environment** – travel choices which contribute to Carbon Net Zero and leave no negative impacts on our environment; o **Wellbeing** – a range of transport options which provide safety, comfort and health for users and those affected by transport;

Policy	Relevant Policy Context
	○ **Place** – urban and rural areas, and the connections between them, where transport choices work sustainably with the local environment; and ○ **Economy** – a modern, flexible economy which is supported and strengthened by transport options.
Draft Local Cycling and Walking Infrastructure Plan (LCWIP) 2022	• Identify cycling and walking infrastructure improvements for future investment in the short, medium and long term; • Ensure that consideration is given to cycling and walking within both local planning and transport policies and strategies; and • Make the case for future funding for walking and cycling infrastructure.
The Warwickshire Design Guide (2022)	• Large scale developments need to clearly demonstrate how they will provide and support sustainable transport infrastructure and services to enable viable alternatives to car-based journeys across the towns and villages of the borough/ district; • As households do not all have access to a car, public transport and active travel options are vital to provide access to services and facilities alongside education and employment opportunities; and • Developers should refer to Local Transport Note Cycle Infrastructure Design LTN 1/20 for guidance when designing high-quality, safe cycle infrastructure whilst considering their sustainable transport strategy.
Bus Service Improvement Plan – BSIP (2021)	• Fully integrated bus services – aiming to improve integration between buses, rail and demand responsive transport to improve accessibility for rural communities to public transport networks; • Simple multi-modal tickets – introducing contactless, multi-modal bus fares will simplify the fare structure and make it easier for a larger number of people to use buses; • Bus priority measures – delivering bus priority improvements (i.e. bus lanes and upgrading signalised junctions) along core bus route corridors into key towns to improve journey time reliability and increase the attractiveness of bus services; • High quality information for all passengers – through further investment into the dedicated public transport webpage and real time journey information; and • Better turn-up and go frequencies that keep running into the evening and weekends – analysis shows that the bus services currently serve only 27% of the population during the evenings, which are primarily focused on key urban centres. Investment into the public transport network, as well as continuing to pilot demand responsive services, will help to improve the frequency and operating hours of service.
Rail Strategy WCC (2019 – 2034)	• WCC adopted the Rail Strategy in July 2020 and sets out four key objectives to deliver the strategy, including: ○ Maximising economic, social, and environmental benefits of the rail network to Warwickshire residents and businesses; ○ Maximising opportunities for journeys within Warwickshire (and beyond) to be undertaken by rail, particularly for commuting purposes; ○ Maximise opportunities for travel demands of new developments to be met by rail; and ○ Support opportunities to transfer freight from road to rail. • Policy WRS4 seeks to ensure that new developments have good accessibility to the rail network by: ○ Encouraging measures that enable good accessibility to rail services and where appropriate, secure funding from developers towards the cost of such measures; ○ Taking into account the location of new housing and employment developments and associated highway improvements when planning new stations; and ○ Taking into account potential demand from new development when planning new rail services.

2.5 Summary

As a place, the LMA Vision seeks to create the settlement as a "steppingstone" [SPD, 2018] between town and country. The framework SPD places significant emphasis on creating a sense of place by providing a range of community facilities within the site thereby reducing the need to travel, creating a liveable community

integrating walking and cycling *everyday* modes. Moreover, as well as access to key services and amenities within LMA, policy puts emphasis upon providing employment and reducing commuter journeys.

Where external trip making is envisaged, the LMA vision seeks to respond by emphasising the use of public transport and a wide range of modes, particularly for future residents to gain access to Stratford-upon-Avon and "all it has to offer" [CS, 2016]. In policy terms, the potential of LMA to generate considerable amounts of motorised traffic, which will need to be accommodated on the surrounding highway network [SPD, 2018] is recognised. Where the policy strongly emphasises containment and the promotion of public transport, historically, evidence has demonstrated the need and "expectation" that the LMA proposal will deliver the SWRR [SPD, 2018]. Capacity constraints in Stratford-upon-Avon, particularly Clopton Bridge, are identified in policy, and indicate a requirement to ensure development does not have an unacceptable impact over Clopton Bridge and within the Stratford-upon-Avon area [SPD, 2018, Ref 5.5.2].

The SWRR also demonstrated wider benefits on the highway network within Stratford-upon-Avon assisting in reducing traffic congestion and improving operation of the Town Centre Gyratory, A3400 Bridge Foot / B4086 Tiddington Road junction, A3400 Shipston Road / A4390 Trinity Way 'Seven Meadows' roundabout and the A4300 Shipston Road / B4632 Campden Road 'Waitrose' roundabout.

The supporting IDP recognises that LMA has highly bespoke infrastructure needs which are to be built out over a specified period of time. Where significant emphasis is placed on containment, the type, quality and timing of the supporting infrastructure, particularly the education uses, are critical. Where the recent Vectos analysis puts emphasis upon interconnected placemaking and mobility components, aligned with the LMA Vision and Concept of LMA, an independent assessment of those assumptions has been undertaken for a robustness. This review is outlined in the following Section.

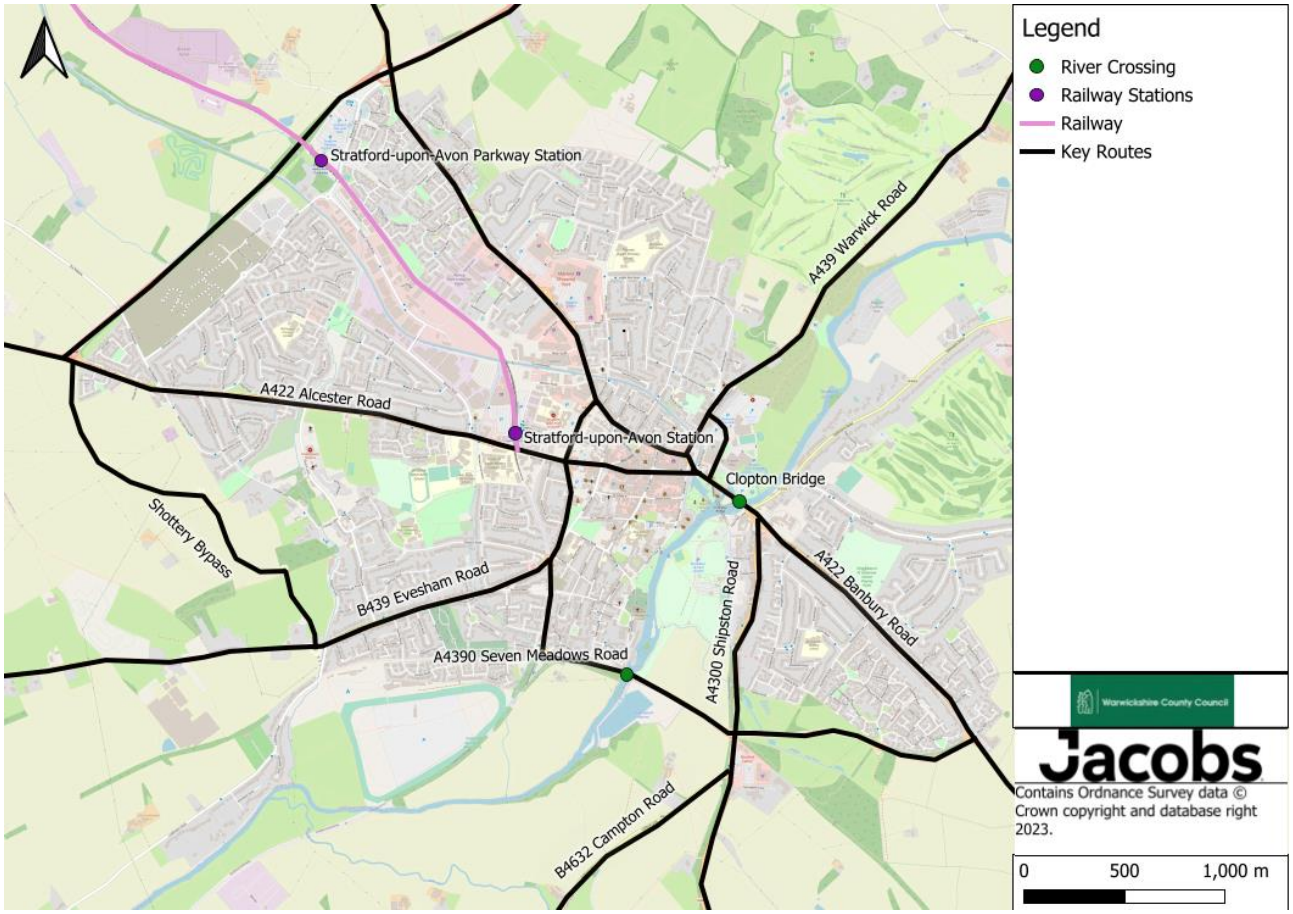

Figure 2.1:- Key Routes within Stratford-upon-Avon

3. Demand Analysis - Transport Vision Review

3.1 Introduction

This section presents the review of the LMA transport Vision[2], comprising the part 1 Vision Document and Part 2 Movement Analysis Paper, primarily in transport terms, comparing how the proposed transport Vision compares to established transport principles in terms of trip making and trip making characteristics of the site. This assessment seeks to verify the underlining principles adopted in the aspirational transport Vision and demonstrates areas where these principles could be subject to variation, quantifying the range of variability in trip making terms. The level of observed up-to-date evidence available demonstrating the variation of internalisation rates across sites is limited[3] and it has been recognised that, historically, deriving such factors/ rates has involved a degree of professional judgement when setting site-specific internalisation assumptions. Nevertheless, the transport Vision for the site and the supporting Transport Strategy emerging from it has a direct bearing on the following key parameters: -

- Internalisation Rate – key to determining internal trip rates is the quantum, mix, proximity and accessibility of other land uses, for example education, community facilities and retail (daily and higher order) that will be provided within the proposed development or area-wide plan;
- Localisation Rate – the level of external trips which are attracted to a site or defined area from the surrounding wider area, resulting in shorter, more localised trips, increasing the level of 'self-sufficiency' or 'self-containment' of an area;
- Trip Rate – the measure of total movement or activity associated with a specific land use or land uses; and,
- Mode Split – specifically the percentage (%) of active travel (walking and cycling) mode share, the % of public transport user mode share and the % of car driver (and passenger) mode share [TRICS, 2021].

Where industry best practice recognises gaps in available data, it emphasises where the above parameters are used to derive assessment assumptions that this is done "with a high degree of clarity and transparency, drawing from evidentiary sources, where available and appropriate[4]". On this basis, the approach undertaken for this review focuses primarily on the robustness of the assumptions, variation of these assumptions and transparency.

3.2 Development Quantum

For the purposes of this assessment, the starting point for the development quantum is the same as set out in the Movement Analysis Paper (MAP) report which notes that the retail and leisure are not fixed values rather represent an optimum provision to maximise internalisation at LMA. Two core assessments have been assumed as part of this analysis; a scenario based on the Core Strategy LMA allocation, and a larger site allocation of 6,000 residential units. The larger option is an indicative figure selected to test whether this would enable more on-site infrastructure and a higher level of trip internalisation: -

Table 3-1:- Development Quantum Assumptions

Lane Use		3,500 Dwelling Option	6,000 Dwelling Option
Residential	Units	3,500	6,000
E(g) employment	sqm	53,572	91,837
E (a) Retail (Food)	sqm	1,000	1,767
E (a)/ E (b)/ E (c)	sqm	2,000	3,533

[2] Developing the Detail of the Sustainable Transport Vision [August 2022] and Movement Analysis Paper [August 2022]

[3] TRICS Guidance Note on the practical implementation of the Decide & Provide Approach [2021]

[4] TRICS Guidance Note on the practical implementation of the Decide & Provide Approach [2021]

Lane Use		3,500 Dwelling Option	6,000 Dwelling Option
Education	places	Primary 840 / Secondary 900 Further Education 181	Primary 1495 / Secondary 1050 / Further Education 210

3.3 Internalisation Benchmarking and Review

The Transport Vision for LMA principally seeks to reduce the need to travel in the first instance. It is also underpinned by the fundamental objective of providing people with a choice in how to travel, in combination with prioritising socially inclusive, environmentally friendly, high-density modes of travel including walking, cycling, and public transport ahead of the private car. These principles are aligned with the overall Vision set out within the Framework SPD and Core Strategy. Where the LMA Vision places great emphasis on containment and self-sufficiency, the Concept recognises that LMA will be a stepping-stone between Stratford-upon-Avon and the surrounding villages and rural area. The Vectos transport work is presented in two key documents: -

1. The Vision Part 2, Vectos, August 2022; and,
2. Movement Analysis Paper, Vectos, August 2022.

Starting with the principle of achieving self-sufficiency placemaking, the MAP report identifies mobility as a function of placemaking and is about accessing day-to-day facilities such as schools, shops, friends, healthcare and the workplace. In transport terms, the proposed Vision is underpinned by the LMA Mobility Strategy where, through successful implementation, the aspiration is for LMA to be an "exemplar modern development which promotes facilities and local living". This is achieved by ensuring: -

- LMA will be dominated by an active travel network, with a full and comprehensive walking and cycling network, providing priority over vehicles (it is noted that the consented cycling infrastructure does not conform with the latest guidance for cycling provision as set out in LTN 1/20);
- The assumption is that the development will include hire bikes and e-bikes, with facilities built into public and private spaces;
- An excellent range of services and facilities (shops, schools, leisure, healthcare, third place work-hubs) would be provided, together with Mobility Hubs and community concierge facilities;
- Micro-consolidation centres will be contained within these hubs for commercial and private deliveries. Houses will be designed to be work from home ready, with additional rooms to facilitate working from home and high-speed broadband infrastructure; and,
- Excellent accessibility across the development by active travel and shared travel, with constrained access, by design for private car access.

Taking into account the characteristics listed above, the transport Vision for LMA adjusts the reported current levels of home working from18.8% to 25.8%, proposes a 44% internalisation factor for employment uses, assumes a 91% internalisation rate for the education uses and the proposed leisure and retail trips at 63% and 90% internalisation respectively. Simply, where the aspirational transport Vision is achieved, 3,500 dwellings at LMA seeks to achieve the following internalisation rates: -

- **Commuting** - Cater for ≈25% homeworking
- **Commuting** - ≈44% of employment need for future residents
- **Educational** - Provide ≈91% of the educational needs
- **Retail & leisure** - Account for ≈63% of future residents' leisure needs and 90% of residents' retail needs [this is envisaged to increase to 67% and 95% for a development of 6,000 dwellings].

Noting the expectation that LMA be an "exemplar modern development" [VECTOS, MAP, 2022], each of the specific land-uses and their associated trip making characteristics have been reviewed comparing the LMA transport Vision to established transport norms as part of a robust independent review.

3.3.1 Residential Land Use Trip Rates

Residential trip rates presented in the MAP report have been derived from the TRICS database. These are presented below alongside an independent review also utilising the TRICS database. As per the assessment undertaken in the MAP report, the rates below are the total person trip rates for each land use which are then split across different transport modes such as car driver, public transport user and active travel modes such as walking and cycling: -

Table 3-2:- LMA Residential Trip Rates Review

Time Period	Person Trip Rates (per dwelling)					
	Arrivals MAP	Arrivals Independent Assessment	Departures MAP	Departures Independent Assessment	Total MAP	Total Independent Assessment
0700-0800	0.097	0.105	0.562	0.526	0.659	0.631
0800-0900	0.184	0.203	0.757	0.760	0.941	0.963
0900-1000	0.192	0.194	0.279	0.260	0.471	0.454
1600-1700	0.520	0.492	0.246	0.248	0.766	0.740
1700-1800	0.630	0.591	0.253	0.263	0.883	0.854
1800-1900	0.543	0.488	0.295	0.272	0.838	0.760

Whilst there is variation shown within the peak periods when comparing the Vision residential trip rates and the independent assessment rates, the rates proposed in the MAP report are considered reasonable.

As per the methodology as outlined in the MAP report, the 2019 National Travel Survey (NTS) has been used to obtain a breakdown of the proportion of trips per journey purpose per hour.

Table 3-3:- LMA Journey Purpose by Time Period

Time Period	Journey Purpose			
	Commuting	Education	Retail	Leisure
0700-0800	53%	20%	3%	24%
0800-0900	23%	51%	4%	22%
0900-1000	16%	10%	22%	52%
1600-1700	26%	11%	15%	48%
1700-1800	36%	5%	12%	47%
1800-1900	24%	2%	15%	59%

The levels of internalisation as outlined in the MAP report have been reviewed for each journey purpose (Commuting, Education and Retail and Leisure).

Commuting: Working-from-Home [WFH]

Since the outbreak of COVID-19, it is noted that WFH levels increased significantly during the pandemic (as illustrated in Table 6 below). While some businesses are adapting towards agile working and seeking to adopt flexible working models longer term, including the examples cited in the MAP Report such as HSBC, Lloyds Banking Group and a survey of City of London workers, it is reasonable that levels of WFH will, to a degree, remain higher in the post-COVID periods compared to pre-COVID levels.

The MAP report cites the Welsh Government's[5] long-term ambition to achieve a 30% working from or near home rate post pandemic. The aspirational transport Vision indicates that the 30% target should be considered

[5] https://www.cipd.co.uk/about/media/press/home-working-increases

as the starting point with aspirations for achieving "considerably higher levels of homeworking at purpose built new settlements" [Vectos, MAP, 2022]. Vectos have developed a tool to collate data on pre-COVID (2019) levels of working from home at the LA District level and then estimate both variation in working from home according to area classification within Districts as well as to estimate future (2022+) working from home rates by district and area classification. This tool indicates an uplift from the pre COVID-19 18.8% of people who worked from home on an average weekday to a forecast 25.8% post COVID. For this exercise, the tool has not been reviewed however, it is noted that the underlying assumptions presented in the MAP report to achieve this include: -

- It is likely that many people will work from home 2 to 3 days a week post COVID-19, spread across the week;
- Complementary to the employment facilities proposed on-site, the hypothesis is that 'work-hubs' are offered which will be 'coffee shop' type premises to encourage remote working, yet in a social environment – 'third-place' working; and,
- Houses will be designed to be work from home ready, with additional rooms to facilitate working from home and high-speed broadband infrastructure.

Whilst the current levels of WFH 18.8% cited in the MAP report has not been able to be replicated, it is noted that research undertaken by the Chartered Institute of Personnel and Development (CIPD) suggest that "the proportion of people working from home on a regular basis once the crisis is over will increase to 37% compared to 18% before the pandemic"[6]. When comparing levels of homeworking in 2011 and 2021 (during the pandemic) in Stratford-on-Avon, the data shows significant increases in home working during the pandemic compared to pre-pandemic levels. Whilst limited weight can be attributed to the 2021 data as being indicative of future working patterns, as this was recorded during the pandemic, it does offer an insight into the upper bounds of home-working when many businesses were actively encouraging home working practices: -

Table 3-4:- Stratford-upon-Avon Home working 2011 Census and 2021 Census

Stratford-on-Avon [MSOA]	Working From Home [2011 Census]	Working From Home [2021 Census]	Difference
Stratford-on-Avon 001	13%	44%	31%
Stratford-on-Avon 002	12%	44%	32%
Stratford-on-Avon 003	5%	26%	21%
Stratford-on-Avon 004	6%	35%	29%
Stratford-on-Avon 005	11%	43%	32%
Stratford-on-Avon 006	7%	18%	11%
Stratford-on-Avon 007	13%	44%	31%
Stratford-on-Avon 008	10%	41%	31%
Stratford-on-Avon 009	6%	34%	28%
Stratford-on-Avon 010	11%	47%	36%
Stratford-on-Avon 011	9%	41%	32%
Stratford-on-Avon 012	10%	38%	28%
Stratford-on-Avon 013	12%	44%	32%
Stratford-on-Avon 014	13%	42%	29%
Stratford-on-Avon 015	13%	40%	27%

The feasibility of 'work-hubs' where it is stated that the "hypothesis" is these are developed as part of the LMA proposals, this would need to be agreed with the Local Planning Authority/ Site Promoters with guarantees

[6] https://www.gov.wales/aim-30-welsh-workforce-work-remotely

that these facilities will be provided. Moreover, necessary planning mechanisms would be required to ensure that homes described as being "ready" with additional rooms to facilitate working from home do so and are maintained in perpetuity.

Whilst new and emerging home working habits provide an unprecedented prospect to evaluate changes in the key factors that influence travel, evidence does not yet exist to conclusively determine between transient (reversible) and deterministic trends. However, where a reasonable level of assurance can be provided and planning controls are reasonable, the proposed uplift for WFH on the average day set out in the MAP report are not unreasonable assumptions based on the realisation of the transport Vision. Where assurances are provided over the delivery of the transport Vision in respect to the 'work-hubs' and rooms in private housing which are designated as home office and are maintained in perpetuity, a greater level of confidence of the uplift in the Vision Case can be adopted over time. These components are not unreasonable requirements of a planning consent subject to agreement with the local planning authority.

On this basis, the adjusted uplift to account for increased levels of WFH as set out in the transport Vision are maintained for this analysis.

Commuting

The Vectos Vision Part 2 document proposes an internalisation rate of 44% for home-based-work trip making (commuting off-site). This rate has been derived from a bespoke LMA model and "reasonable adjustments". The MAP report notes that the 44% employment internalisation is similar to existing built-up areas indicated through the 2011 Census as tabulated below:-

Table 3-5:- Employment internalisation 2011 Census Data presented in the Vectos Vision Part 2

Area	Employment Internalisation
Stratford-upon-Avon	55.17%
Evesham	43.54%
Warwick	44.96%
Coventry	69.25%
Leamington Spa	38.84%
Banbury	63.13%
Wellesbourne	25.32%
Moreton-in-Marsh	43.83%
Shipston-on-Stour	34.60%
Chipping Campden	47.37%

As part of this review, the aspirational 44% rate has been compared to selected locations using LSOA level data from the 2011 Census comparing areas with similar populations to LMA. It is recognised that it will always be difficult to select directly comparable locations. Therefore, a broad and reasonable range of large villages/ small towns from several locations, including those close to Stratford-upon-Avon, have been selected with the aim of comparing the aspirations and opportunities of the proposed Vision with existing locations. These locations have been selected to form a range of sizes around both the 3,500 and 6,000 housing level: -

Table 3-6:- LMA size and proximity to next town

Location	Houses	Proximity to next settling	Commuting Internalisation	Notes (Population figures round to nears thousand – Census 2011)
Wellesbourne, Warwickshire	2,378	8 Miles (Stratford-upon-Avon)	23%	Local to area, similar size and distance to Stratford-upon-Avon. Population of Wellesbourne is 6,000. Population of Stratford-upon-Avon is 28,000.
LMA	**3,500 and 6,000**	**5 Miles (Stratford-upon-Avon)**	**44%**	-
Atherstone, Warwickshire	3,557	9 Miles (Nuneaton)	22%	Similar size and distance to nearby town. Population of Atherstone is 11,000. Population of Nuneaton is 93,000.
Alcester, Warwickshire	3,591	8 Miles (Stratford-upon-Avon)	17%	Local to area, similar size and distance to nearby town. Population of Alcester is 7,000.
Bourne, Lincolnshire	4,456	10 Miles (Spalding)	34%	Similar size and distance to nearby town. Population of Bourne is 14,000. Population of Spalding is 32,000.
Oakham, Rutland	4,524	9 Miles (Melton Mowbray)	37%	Similar size and distance to nearby town. Population of Oakham is 11,000. Population of Melton Mowbray is 27,000.
Matlock, Derbyshire	5,275	8 Miles (Belper)	31%	Similar size and distance to nearby town. Population of Matlock is 15,000. Population of Belper is 23,000.
Shepshed, Leicestershire	5,423	4 Miles (Loughborough)	40%	Similar size and distance to nearby town. Population of Shepshed is14,000. Population of Loughborough is 60,000.
Carterton, Oxfordshire	6,626	8 Miles (Witney)	46%	Similar size and distance to nearby town. RAF barracks located at Carterton means this selection is only suitable as a reference. Population of Carterton is 16,000. Population of Witney is 29,000.
Skipton, North Yorkshire	6,708	12 Miles (Bingley and Keighley)	51%	Similar size and distance to nearby town. Much larger levels of employment means this selection is only suitable as a reference. Population of Skipton is 15,000. Population of Bingley is 22,000 and population of Keighley is 53,000.

It is notable that the proposed LMA Vision has a significantly higher commuter internalisation rate than comparable local sites of a similar scale. The only sites from those selected where the internalisation is greater than the 44% proposed are Carterton (46%) and Skipton (51%). It is observed that these two sites have significantly greater levels of employment than the proposal at LMA with Carterton being connected to a RAF barracks and Skipton having a larger local employment offer whilst being further away than LMA from other employment areas and therefore more isolated.

Looking at the locations geographically closer to the site, it can be observed that the level of employment proposed at LMA is lower than these locations. For instance, at Wellesbourne there is circa 125,000 m^2 of none retail and employment land at Wellesbourne distribution park. This is significantly more than the ≈ 53,000 m^2 (3,500 dwellings) and ≈ 91,837 m^2 (6,000 dwellings) for LMA, although it is acknowledged that there are some

existing and emerging employment opportunities in the wider vicinity of LMA, for example at Meon Vale and Long Marston Rail Innovation Centre.

Access to employment services is also a key factor. Leamington Spa has the highest number of offices within the south Warwickshire area. In addition, Stratford-upon-Avon, Alcester, Warwick and Kenilworth also have good availability of office space. Offices across South Warwickshire are primarily concentrated in larger urban areas.

Key destinations within the region include Warwick, Kenilworth, Alcester, and Stratford-upon-Avon; although many residents may also travel to Birmingham, Coventry, Evesham, Redditch and Worcester. It is recognised there will be some degree of cross boundary trips for all journey purposes to locations beyond the south Warwickshire area shown in the figure below. The high-level analysis undertaken below which indicates the demand characteristics for differing journey purposes, as shown in figures 3.7, 3.8 and 3.9, takes these areas into account. Future traffic modelling assessment for LMA will also further refine the demand and trip distribution profiles of the site.

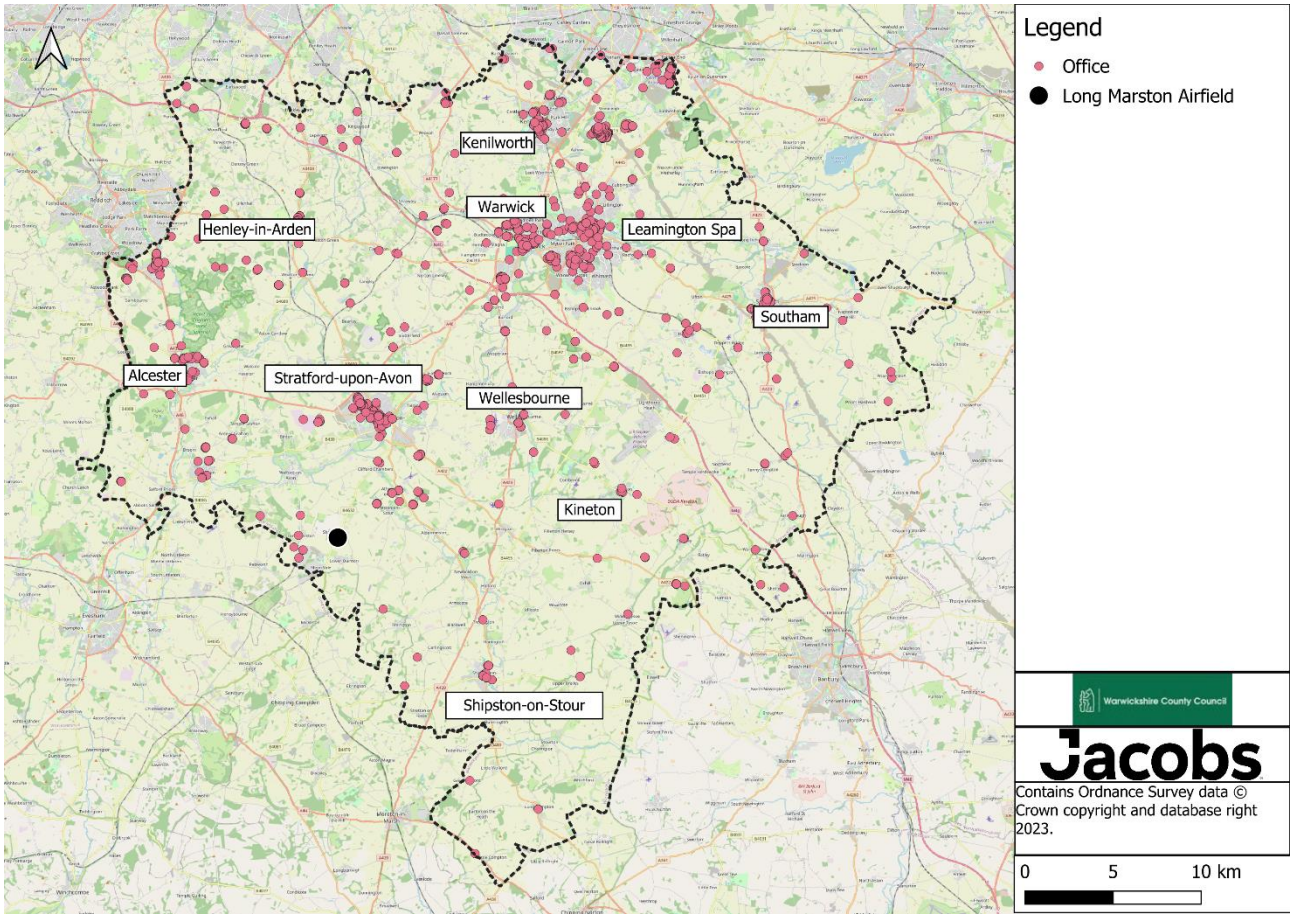

Figure 3.1:- Access to Offices across South Warwickshire

The graph below shows the relationship between internalising home-based-work (commuting) trips and the effect this has upon external trip making at LMA: -

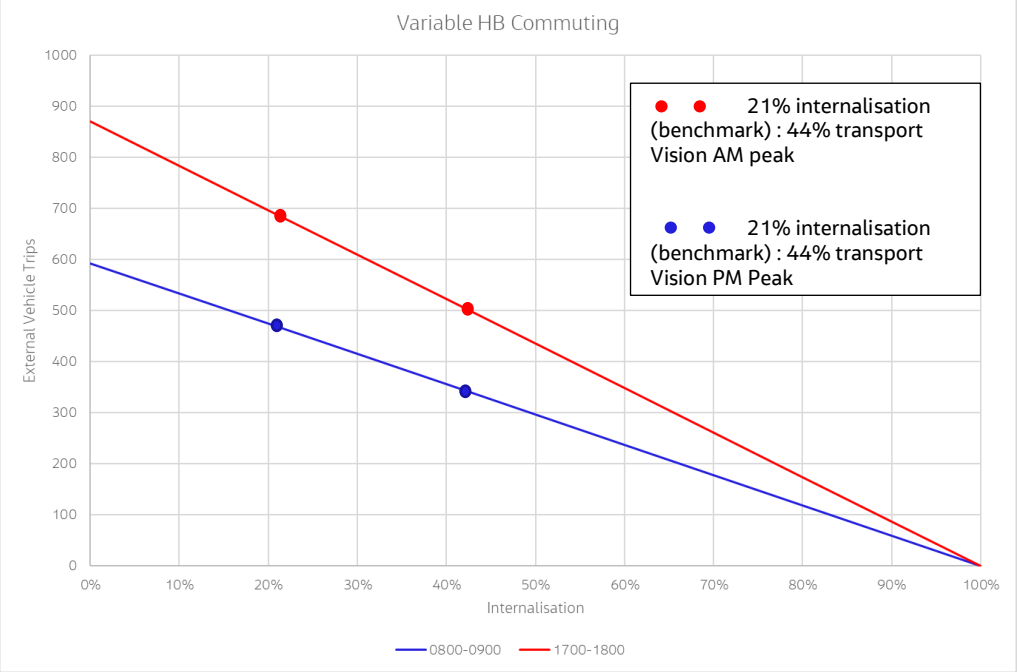

Figure 3.2:- Commuting Internalisation and External Trip Making Relationship for LMA

The range between higher and lower levels of internalisation for commuting has a significant impact upon externalised trip making. This is indicated on the graph above by higher external vehicle trips and lower levels of internalisation. As the rate of internalisation increases, the number of external vehicle trips decreases. Where the transport Vision proposes to achieve the aspirational 44% compared with the average commuting internalisation of Atherstone and Wellesbourne of 21% for the 3,500 dwellings scenario, the difference in external trip making is approximately 100 vehicles in the AM peak and 200 vehicle trips in the PM peak. Whilst recognising the aspiration for LMA to be an exemplar site, there is not considered a reasonable level of evidence to fully justify the 44% commuter internalisation rate at this time. To justify the aspirational 44% requires further examination to look at other comparable towns and labour markets.

For the 6,000-dwelling scenario, given that Carterton and Skipton are observed to have a much larger draw for local employment than the proposed offer at LMA, an average of the commuter internalisation of these locations have been taken. On this basis, for the 6,000-dwelling scenario, 44% is considered reasonable. It is also important to draw back to the proposed Concept for LMA, where LMA is a *stepping-stone* between town and country, and where particularly employment is not provided at LMA, then it is acknowledged that future residents will travel further afield beyond the LMA area for employment need particularly towards Warwick which would result in car trips travelling through Stratford-upon-Avon towards the A46.

As part of this exercise, areas with greater levels of observed commuter internalisation have been considered which are of a similar scale to LMA. It is evident that most of the areas are in remote locations that force higher levels of commuter internalisation. The characteristics of these sites may be of limited relevance to LMA: -

Table 3-7:- Sites with higher levels of Employment Internalisation

MSOA	Ward	Internalisation	MSOA size (km2)	Population (persons)	Rural/Urban Type	Closest Town/City (crow-fly distance km)
South Hams 007	Dartmouth & East Dart	62%	8.0	5734	Rural town and fringe	Paignton (10 km)
Northumberland 001	Berwick East	60%	7.9	9613	Urban city and town in a sparse setting	Musselburgh (69km)
County Durham 066	Barnard Castle East	57%	9.1	7020	Rural town and fringe	Bishop Auckland (21km)
West Somerset 001	Minehead Central	52%	3.9	7286	Urban city and town in a sparse setting	Burnham-on-Sea (34km)
Eden 003	Penrith South	51%	4.8	7123	Urban city and town in a sparse setting	Carlisle (27km)
Ceredigion 002	Aberystwyth Bronglais	51%	6.0	9827	Urban city and town in a sparse setting	Llanelli (83km)
West Oxfordshire 014	Carterton South	49%	2.5	7017	Urban city and town	Witney (8km)
North Norfolk 011	Lancaster South	48%	9.0	7632	Rural town and fringe in a sparse setting	Dereham (19km)

By way of comparison, a selection of development sites has been extracted from planning portals illustrating the range of accepted rates of internalisation for commuting for mixed use developments of a similar scale and nature to LMA: -

Table 3-8:- Planning Application Employment Internalisation Review

Site Name	Planning Reference	Planning Authority	Description	Employment provision	Internalisation
Land North Of Innsworth Lane	15/00749/OUT	Tewkesbury Borough Council	A mixed use development comprising demolition of existing buildings, up to 1,300 dwellings and 8.31 hectares of land for employment generating uses comprising a neighbourhood centre of 4.23ha (A1, A2, A3, A4, A5, D1, D2, B1), office park of 1.31ha (B1) and business park of 2.77ha (B1 and B8 uses), primary school.	15,184sm2 GFA of B1 Office 3,696sqm2 GFA B8 employment	10%
Land At Perryfields	16/0335	Bromsgrove District Council	Outline application for the phased development of up to	20,000sqm GFA employment (Use	7%

Site Name	Planning Reference	Planning Authority	Description	Employment provision	Internalisation
			1,300 dwellings (C3); up to 200 unit extra care facility (C2/C3); up to 5HA employment (B1); mixed use local centre with retail and community facilities (A1, A2, A3, A4, A5, D1) and First School.	Class B1(a) and B1(c)	
Rushden SUE	20/01453/OUT	East Northamptonshire	Sustainable Urban Extension comprising residential development of up to 2,200 dwellings (Class C3), residential institution (Class C2), up to 110,000 square metres of employment development (Classes B2 (General Industrial), B8 (Storage and Distribution), E(comprising Office, Research and Development of Products or Processes and Industrial Processes)), two local centres, two primary schools, one secondary school	110,000 sqm metres of employment development (Classes B2 (General Industrial), B8 (Storage and Distribution), E(comprising Office, Research and Development of Products or Processes and Industrial Processes)	6%
Bourn Airfield SUE	S/3440/18/O	South Cambridge District Council	Outline planning permission for a new mixed use village comprising residential development of approximately 3500 dwellings mixed uses comprising employment, 2 primary schools and secondary school	Up to 1,500 sq.m GEA of employment uses comprising offices, research and development and light industry only (Class B1a, b and c uses)	12%

Whilst only a snapshot, once again, the examples above show the extent of variation for the commuter internalisation rates for mixed-use sites. For the scenario testing set out in this report, only a single internalisation rate for commuter trips is considered justified and supported by a reasonable evidence basis: -

Table 3-9:- LMA Commuter Internalisation

Internalisation	3,500 Houses	6,000 Houses
Commuting Internalisation	21%	36%

To derive the anticipated mode split for external commuting trips within the MAP report, 2011 Census data has been used. Adjustments have then been made to the observed census data, to reflect a "reasonable mode split for the LMA development considering the proposed mobility strategy". The starting point for the mode splits are set out under the assessment assumption: -

Table 3-10:- Commuter Mode Split LMA transport Vision Review

Mode	Census 2011	LMA	Assessment assumption
Sustainable Travel Modes	8%	20%	8%
Taxi	0%	0%	0%
Motorcycle, Scooter or Moped	1%	1%	1%
Driving a Car or Van	86%	64%	86%
Passenger in a Car or Van	5%	15%	5%
Other Method of Travel	0%	0%	0%
Total	100%	100%	100%

When adjusting the sustainable travel mode to reflect the various components of the Mobility Strategy, the number of external commuting trips anticipated to be undertaken by sustainable transport modes is some 2.5 times greater than 2011 Census data. Moreover, further adjustments have been made to the car passenger splits to reflect the delivery of an effective travel plan including carpooling schemes. Further consideration is given to the Mobility Strategy in this report, however the adjustments made are aspirational and not considered to be borne out by robust nor observed evidence for this journey purpose at this time.

Education

Providing education in the form of a new secondary school and two new primary schools as well as early learning facilities is an integral part of the LMA Vision policy [Framework SPD, 2018) and is also a policy requirement set out in the adopted Long Marston Airfield Framework Masterplan Supplementary Planning Document. The MAP report recognises that the education facilities at LMA are trip attractors in their own right however notes that the majority of trips will be drawn from within the new LMA settlement.

The MAP report cites that the proposed internalisation rates for LMA have been derived from the 'Developers' Guide to Contributions for Education and Early Years Provision (August 2019). Moreover, based upon education statistics for Warwickshire, approximately 91% of students attend 'state funded' schools, with the other 9% attending 'independent' or 'special schools'. Therefore, 91% of primary, secondary and further education (sixth form) students have been internalised to account for those using the recommended on-site education facilities.

Educational trip making forms a significant portion of the overall trip composition during the AM peak hour (0800-0900) but less so during the PM peak (1700-1800). The table below shows the journey purposes by time period: -

Table 3-11:- AM and PM peak Journey Purpose Composition

Time Period	Commuting	Education	Retail	Leisure
0800-0900	23%	**51%**	3%	24%
1700-1800	36%	**5%**	12%	47%

Recognised as being demand generators in their own right, particularly the secondary school, there is a significant difference in external trip making between achieving the proposed 91% aspirational internalisation and lesser levels of internalisation. The graph below shows the relationship between internalising home-based educational trips and the effect this has upon external trip making at LMA: -

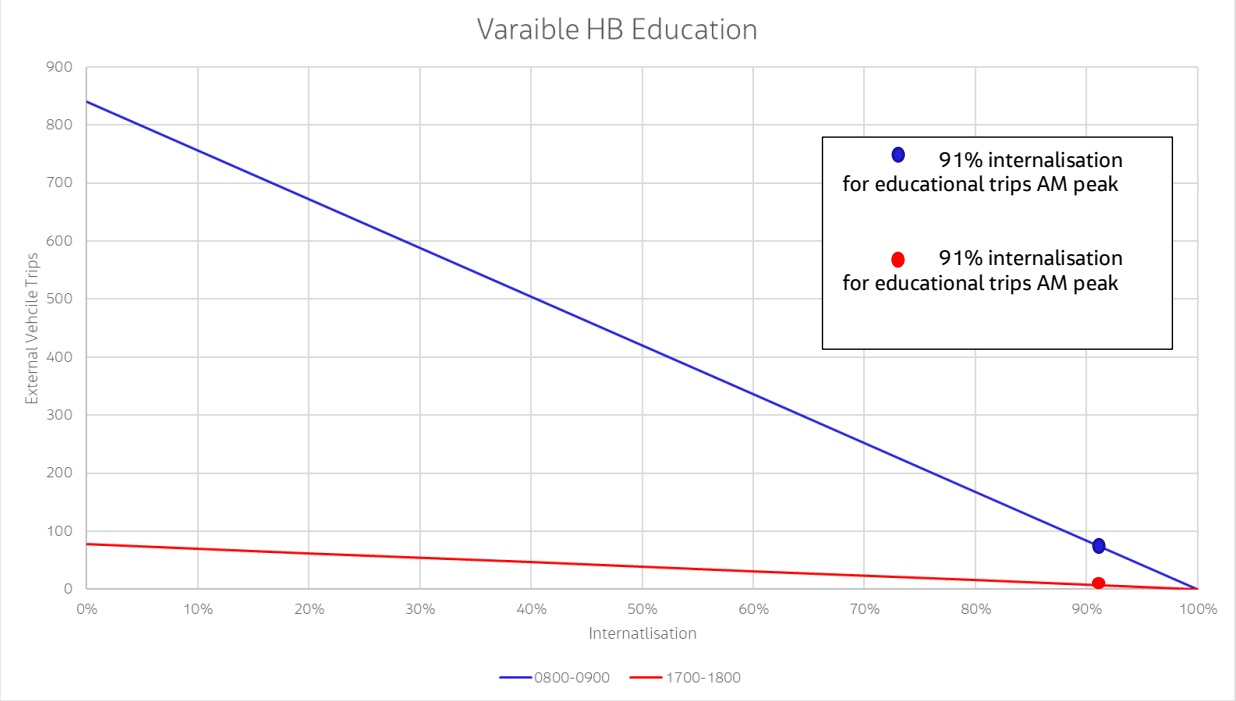

Figure 3.3:- Education Internalisation and External Trip Making Relationship for LMA [Note the above is based upon current Mode Splits taken from 2011 Census]

When considering the aspirational 91% internalisation rate against comparative sites, due to a general absence of monitoring, there is a lack of observed data capturing levels of internalisation for educational provision on mixed use sites. However, by way of comparison, a selection of developments has been used to demonstrate the range of accepted rates of internalisation for educational provision at mixed use developments: -

Table 3-12:- Planning Application Education Internalisation Review

Site Name	Planning Reference	Planning Authority	Description	Educational provision	Internalisation
Land North Of Innsworth Lane	15/00749/OUT	Tewkesbury Borough Council	A mixed use development comprising demolition of existing buildings, up to 1,300 dwellings and 8.31 hectares of land for employment generating uses comprising a neighbourhood centre of 4.23ha (A1, A2, A3, A4, A5, D1, D2, B1), office park of 1.31ha (B1) and business park of 2.77ha (B1 and B8 uses), primary school.	2FE Primary School	75% Primary
Land At Eaton Leys Galley Lane Little Brickhill	15/01533/OUTEIS	Milton Keynes	Mixed use development including up to 1,800 dwellings, land reserved for a one 1 form of entry primary school and one 2 forms of entry primary school,	1F2 Primary School 2FE Primary School	73% Primary
Land At Perryfields	16/0335	Bromsgrove District Council	Outline application for the phased development of up to 1,300 dwellings (C3); up to 200 unit extra care facility (C2/C3); up to 5HA employment (B1); mixed use local centre with retail and community facilities (A1, A2, A3, A4, A5, D1) and First School.	2FE Primary School	73% Primary
Rushden SUE	20/01453/OUT		Sustainable Urban Extension comprising residential development of up to 2,200 dwellings (Class C3), residential institution	2 x 2FE Primary Schools	90% Primary 50% Secondary

Site Name	Planning Reference	Planning Authority	Description	Educational provision	Internalisation
			(Class C2), up to 110,000 square metres of employment development (Classes B2 (General Industrial), B8 (Storage and Distribution), E(comprising Office, Research and Development of Products or Processes and Industrial Processes)), two local centres, two primary schools, one secondary school	7FE Secondary School	
Bourn Airfield SUE	S/3440/18/O	South Cambridge District Council	Outline planning permission for a new mixed use village comprising residential development of approximately 3500 dwellings mixed uses comprising employment, 2 primary schools and secondary school	2x 1FE Primary Schools 3FE Secondary School	85% Primary 85% Secondary
Waterbeach New Town	S/0559/17/OL	South Cambridge District Council	Outline Planning Application for up to 6500 dwellings (including up to 600 residential institutional units) business retail community leisure and sports uses a hotel new primary and secondary schools	3,310 School Places	47% Total

Even where a catchment area of the school is defined, these are often large and locations are widely dispersed, moreover there are a number of matters beyond the control of planning that affect choice in schooling. These include religious denomination, preference for private schools, Grammar schools, as well as preferences based on existing community ties. Such factors, particularly parental choice, are more difficult to predict. Such factors for LMA include Grammar Schools (Alcester, Stratford-upon-Avon, Birmingham), private schools and the well subscribed Chipping Campden School.

To demonstrate these factors, a Travel Plan[7] has been provided by WCC for the Kenilworth School and Sixth form. Postcode data has been provided by the school showing areas where pupil trips are attracted from: -

Table 3-13:- Kenilworth School Pupil Postcode data

Area	Pupils	%
Kenilworth Area	1152	74%
Southam	2	0%
Warwick	86	6%
Knowle	13	1%
Coventry	233	15%
Rugby	3	0%
Bedworth	5	0%
Henley-in-Arden	55	4%
TOTAL	1,549	100%

[7] The Kenilworth Multi Academy Trust, Framework Travel Plan [KSSF-ARUP-RP-YT-0002], April 2019

Table 3-14:- Kenilworth School Pupil Postcode data Summary

Area	Pupils	%
Within Kenilworth Area	1152	74
Outside of Kenilworth Area	397	26%
TOTAL	1549	100%

The example within Warwickshire demonstrates the attraction potential of a school and the inherent variation within such land uses; a matter also illustrated by the six sites selected above which demonstrate internalisation rates for secondary schools could vary between 50% and 85%. Home postcode data for staff, supplied by Kenilworth School and sixth form, shows that 70% of staff travel from a postcode that is not in Kenilworth.

To account for the uncertainty and following discussions with WCC, SDC and HE, the following scenarios have been analysed for this assessment and includes, for sensitivity purposes, a scenario in which no secondary school is provided. The two-way nature of trips associated with this land use with both potential staff and student arrivals from external areas, as well as internalisation of existing trips, has been considered in the trip making summary set out in section 3.4.

Table 3-15:- LMA Conventional Case Educational Internalisation

Internalisation	3,500 Houses	6,000 Houses
LMA Trips to Primary Education Internalisation	91%	91%
Overall LMA Trips to Secondary and Higher Education Internalisation	0% as no secondary school assumed on site	0% as no secondary school assumed on site

Table 3-16:- LMA Middle Case Educational Internalisation

Internalisation	3,500 Houses	6,000 Houses
LMA Trips to Primary Education Internalisation	91%	91%
Overall LMA Trips to Secondary and Higher Education Internalisation	68%	68%

Table 3-17:- LMA Optimistic Case Educational Internalisation

Internalisation	3,500 Houses	6,000 Houses
LMA Trips to Primary Education Internalisation	91%	91%
Overall LMA Trips to Secondary and Higher Education Internalisation	91%	91%

The external mode split of education trips as set out in the MAP report is based on NTS data regarding method of travel to school for journeys exceeding 5 miles and removing 'other', as education trips outside of LMA will have to travel over 5 miles to reach the nearest locations: -

Table 3-18:- Educational External Mode Split (NTS Data)

Mode	Primary Education	Secondary Education	Further Education
Walking	0%	0%	0%
Cycling	0%	0%	0%
Car or Van	81%	40%	50%
Bus	19%	60%	50%

Mode	Primary Education	Secondary Education	Further Education
Total	100%	100%	100%

This is considered a reasonable assumption and has been maintained as part of this analysis.

Retail and Leisure

To derive the levels of internalisation for the retail uses, the MAP report outlines that a combination of NTS data and "reasonable adjustments" [VECTOS, MAP, 2022] have been made resulting in a 90% internalisation rate for retail and 63% for leisure uses. It is not known at this time what the exact provision for retail or leisure are and The Vision- Part 2 report acknowledges that economic assessments will be required to confirm and refine the leisure offering at LMA. Analysis shows that the variation in retail and leisure internalisation is significant. This degree of variation is particularly important when considering the trip making composition at peak times, particularly for leisure, where it makes up 47% of PM peak journeys.

As a starting point, the consented 2014 planning application had an agreed internalisation rate for retail and leisure of 6% under an assumption that 6% of trips are within a 1-mile radius derived from NTS data. The figure below shows the level of variation between the previous assumption of 6% and the aspirational Vision internalisation rate. A review of planning application data reveals similar significant levels of variation for internalisation rates for retail and leisure trip making: -

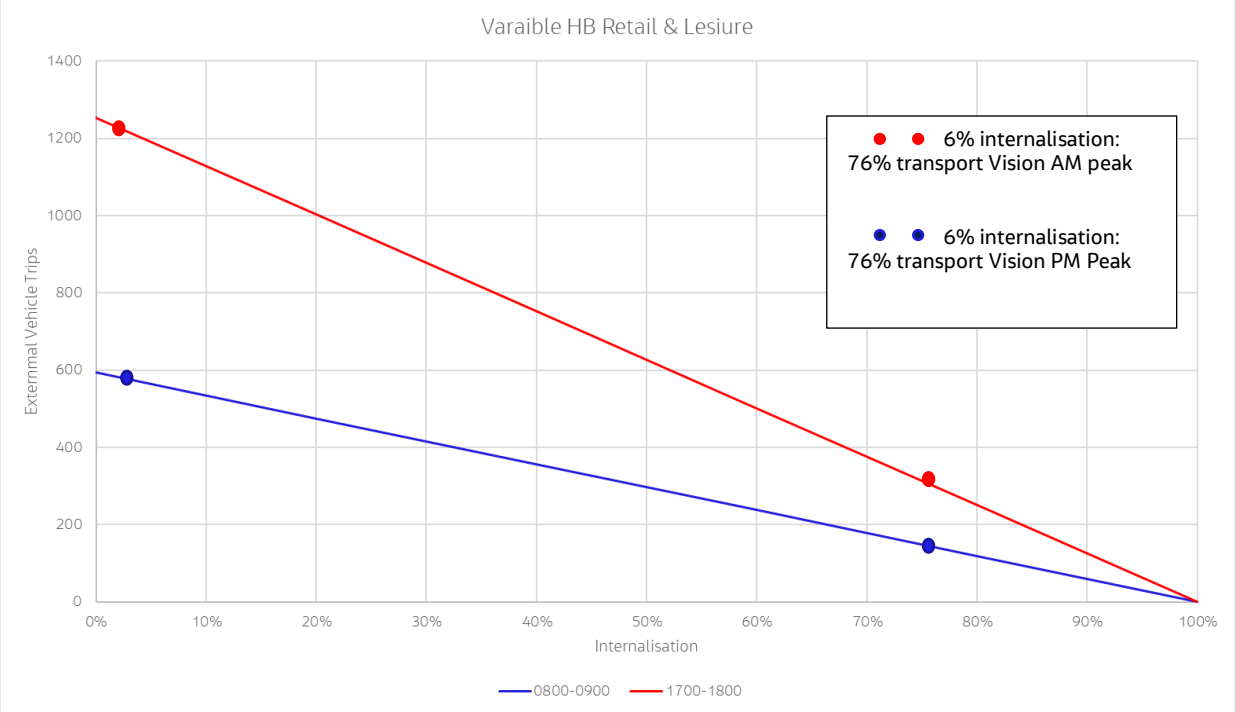

Figure 3.4:- Retail and Leisure Internalisation and External Trip Making Relationship for LMA

At this stage, as recognised in The Vision- Part 2, a more detailed assessment of what the retail and leisure opportunities look like within LMA would be needed to understand the viability of these much higher containment values. As a proxy for the levels of retail provided at LMA, the food retail from large and medium sized supermarkets has been taken for the observed locations to use as a comparison: -

Table 3-19:- Housing and Food Retail Comparison

Location	Houses	Total Larger Scale Food Retail (m2)
Wellesbourne	2,378	2,500
LMA (Proposed)	**3,500**	**1,000**
Atherstone	3,557	3,700
Alcester	3,591	2,700
Bourne	4,456	8,000
Oakham	4,524	7,000
Matlock	5,275	4,000
Shepshed	5,423	3,000
LMA (Proposed)	6,000	1,767
Carterton	6,626	7,000
Skipton	6,708	12,500

The total proposed food retail for LMA is significantly lower than all comparable locations selected. This raises the question of whether sufficient food retail would be provided for the levels of households within LMA. If this is not the case, it is highly likely that the trips to meet these food retail needs would become external trips and the aims of 90% internalisation may not be fulfilled.

Access to retail facilities is also a key consideration. Stratford-upon-Avon, as well as Wellesbourne, Alcester, and Kenilworth, have good access to retail provision. Stratford-upon-Avon in particular has an abundance of retail provision relevant to LMA. It is noted there will be a degree of cross-boundary trip making beyond the south Warwickshire area shown in the figure below which will be refined as part of any future traffic modelling exercise: -

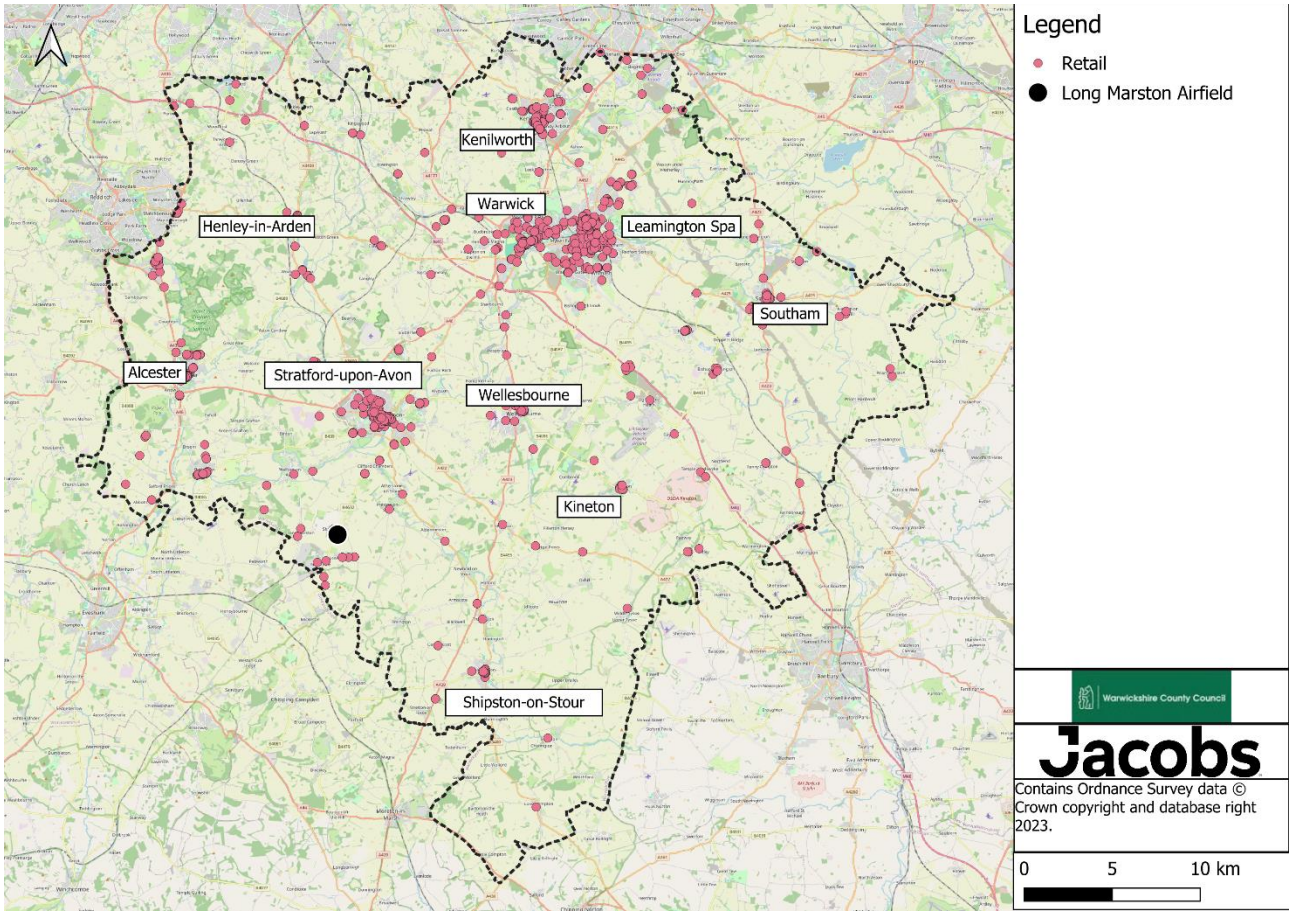

Figure 3.5:- Access to retail across South Warwickshire

The assumption of 90% internalisation for the retail provision set out in the transport Vision, assumes an average trip length of 3.9 miles for all retail purposes, based upon NTS data: -

Table 3-20:- Retail Internalisation as set out in MAP Report

Journey Purpose	Proportion	Ave Distance (miles)	Internalisation	
			Expected	Total
Shopping	100%	3.9	90%	90%
Total	**100%**	**-**	**-**	**90%**

When using the assumed 3.9-mile average distance, as set out in the MAP report, for retail trips combined with an internalised trip length of 1 mile or less, reflecting the extent of the LMA development area, we can then calculate an average distance for external trips: -

Average Trip Length (3.9 miles) = (Internalisation 90%) * Internal Trip Length (1 mile) + (Externalised trips 10%) * External Trip Length

$$\therefore 3.9 \text{ miles} = 90\% * 1 \text{ mile} + 10\% * \text{External Trip Length}$$
$$\therefore 3.9 \text{ miles} = 0.9 \text{ miles} + 0.1 * \text{External Trip Length}$$
$$\therefore \text{External Trip Length} = 10 * (3.9 - 0.9) \text{ miles} = 30 \text{ miles}$$

This calculation results in an average distance of at least 30 miles for all external retail trips. This does not seem reasonable for LMA with consideration to its proximity to Stratford-upon-Avon and other centres. Since the implication of the assumptions do not appear reasonable, the assumptions themselves (90% internalisation with an average distance of 3.9 miles) appear to be unlikely as well.

Access to local leisure amenities from LMA is a key consideration. Stratford-upon-Avon has good access to leisure facilities. The CS classifies Stratford-upon-Avon as a "strategic centre" with access to a good quality retail offer given its size and a wide range of other commercial and leisure uses [CS, 2016]. The local economy of Warwick and Stratford-upon-Avon are diverse and include well-established and one-off tourism events, such as food and drink events, music festivals, running events, and town markets, as well as a growing number of professional business services and high-value engineering and manufacturing employment. This aligns with the LMA Vision to link LMA to Stratford-upon-Avon and "all it has to offer" [CS, 2016]. As noted above, there will be a degree of cross-boundary trip making beyond the south Warwickshire area shown in the figure below.

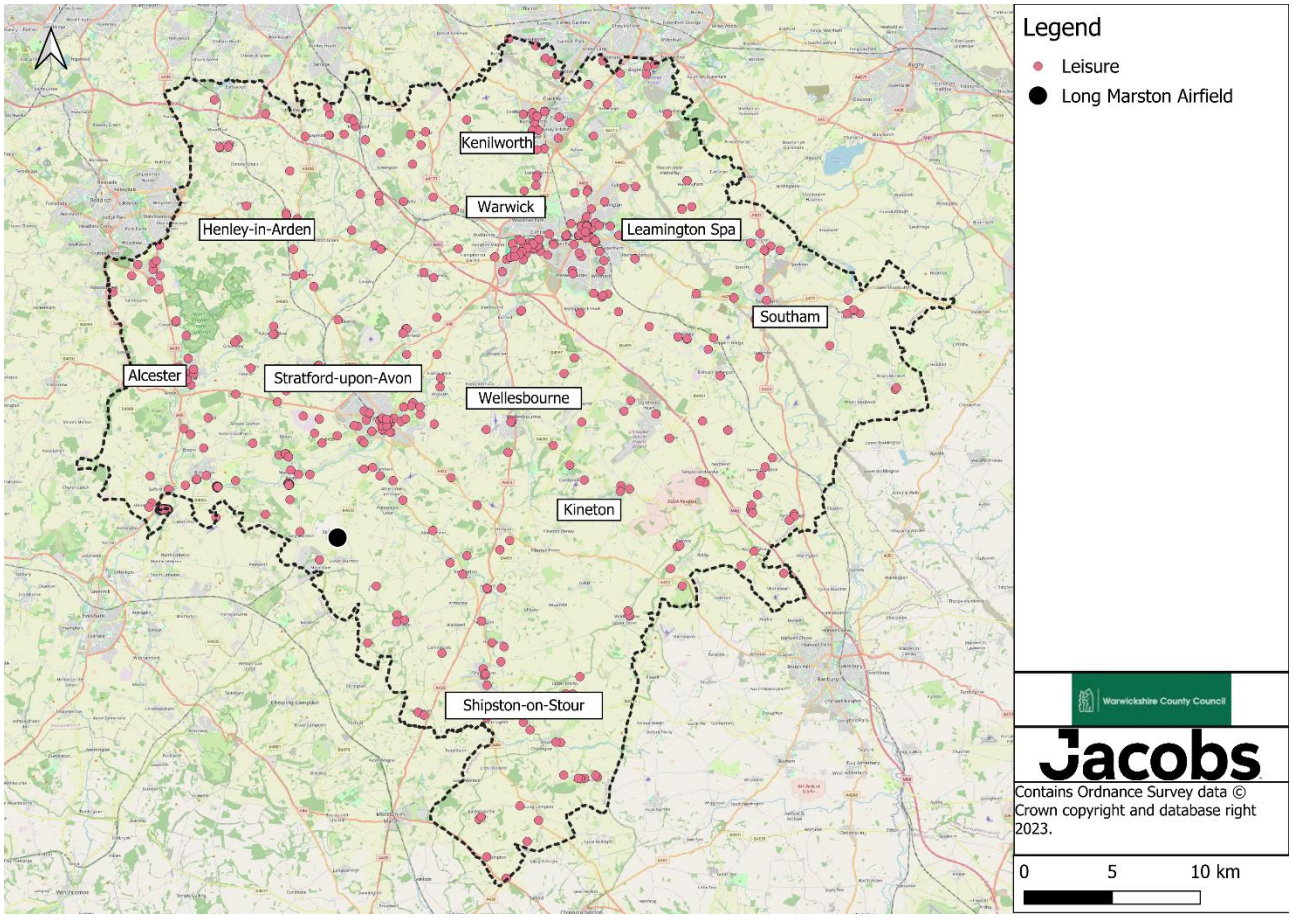

Figure 3.6:- Access to Leisure across South Warwickshire

It is noted that at 7.6miles, the average distance for leisure purposes set out in the MAP report is greater than the 3.9 miles for retail purposes. Logically, this would suggest that it is highly unlikely for these trips to have a higher internalisation rate compared to the retail uses. Whilst this is noted to be the case in the MAP report with a proposed internalisation of 63% for leisure purposes, a robust procedure for evidencing this should be established given the out-of-town nature of LMA. It is noted that there is a leisure centre at Meon Vale which will accommodate a proportion of the leisure demands of the overall population.

Noting the lack of available observed data for retail and leisure uses for mixed-use sites as a proxy for internalisation, the use of NTS data is reasonable however it should be applied critically. To account for this and uncertainty around the exact provision of these land-uses to be provided, the likely locations LMA trips will travel by distance for all purposes has been extracted from the NTS data and analysed taking into account access to local services.

This analysis has been undertaken using Town/City centres and the road network to calculate the distance between LMA and the nearest Town/City centres. These distances have then been weighted using the population of each Town/City with the assumption the larger the Town/City the greater the pull from LMA: -

Table 3-21:- Car/Van Journey by distance (Trip Length %) NTS 2019

Table NTSQ01019	Table NTSQ01019 Car/van journeys by distance: England, 2016-2020							
	Trip length (percentage)							
Year	Under 1 mile	1 to under 2 miles	2 to under 5 miles	5 to under 10 miles	10 to under 25 miles	25 miles +	All lengths	Unweighted sample size (trips '000s)
2016	6	17	34	21	16	6	100	113
2017	6	17	33	21	16	6	100	102
2018	7	17	33	21	16	6	100	104
2019	7	17	33	20	16	6	100	101
2020	6	18	34	20	16	6	100	36

Using the 2019 NTS data, destinations for all trips from LMA have been categorised into an Optimistic and Conventional case to generate the potential range of trip distribution from the site. This is tabulated below:-

Table 3-22:- Distribution of trips for Optimistic and Conventional Scenarios

Distance in Miles	Proportion (%)	Optimistic Case: Trips Travelling to	Conventional Case: Trips Travelling to
0-1	7	Within LMA	Within LMA
1-2	17	Within LMA	Within LMA
2-5	33	80% within LMA & 20% Stratford-upon-Avon	Stratford-upon-Avon
5-10	20	Stratford-upon-Avon	Stratford-upon-Avon
10-25	16	Weight by population, reduce by distance	
25+	6	Weight by population, reduce by distance	

On the basis of the size and location of the site, proposed land uses, focus on micro-mobility transport and limited services and amenities in nearby villages, it is considered reasonable to assume trips with an average distance of 1-2 miles will either occur on site or within the local uncongested network.

It can be seen from the above, as an optimistic-case scenario, 80% of trips with an average distance of 2-5 miles could now stay within the LMA area where the facilities are provided on site for those trip purposes for short distances such as retail/ leisure. As a worst or conventional case, 100% of trips with an average distance of 2-5 miles could travel towards Stratford-upon-Avon. For both scenarios, trips with an average distance of 5-10 miles are assumed to travel to Stratford-upon Avon and trips with an average distance of 10-25 and greater than 25 miles, are calculated by the weight of population and relative distance from LMA. Using the above data, a Conventional, Middle-case and Optimistic Case have been derived.

Using this methodology, the figure below shows in the Conventional-Case scenario that 24% of all trips from LMA will stay within LMA and 53% are forecast to travel to Stratford-upon-Avon. Figure 3.8 shows the Optimistic-Case scenario that 50% of trips from LMA will stay within LMA which reduces the need to travel to Stratford-upon-Avon which has a pull of 27%. It is noted that the assumptions used for this analysis are subject to variation, therefore a Middle-Case scenario has been developed. The Middle-Case, as shown in Figure 3.9, is an average of the Optimistic Case and the Conventional Case. This shows the largest movement will be trips to Stratford-upon-Avon at 40% and internal LMA trips will be 37%.

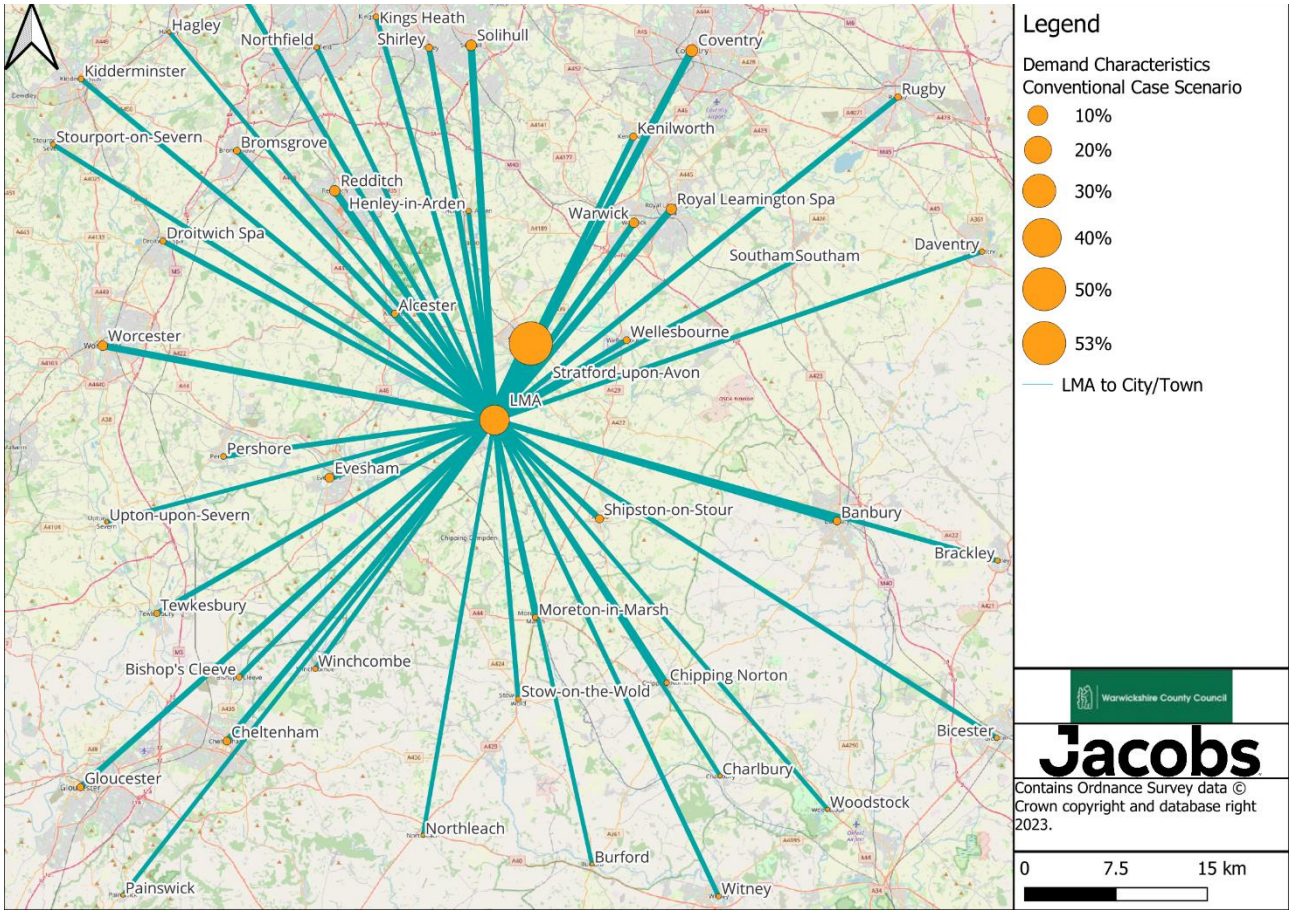

Figure 3.7:- Demand Characteristics – Conventional Case Scenario

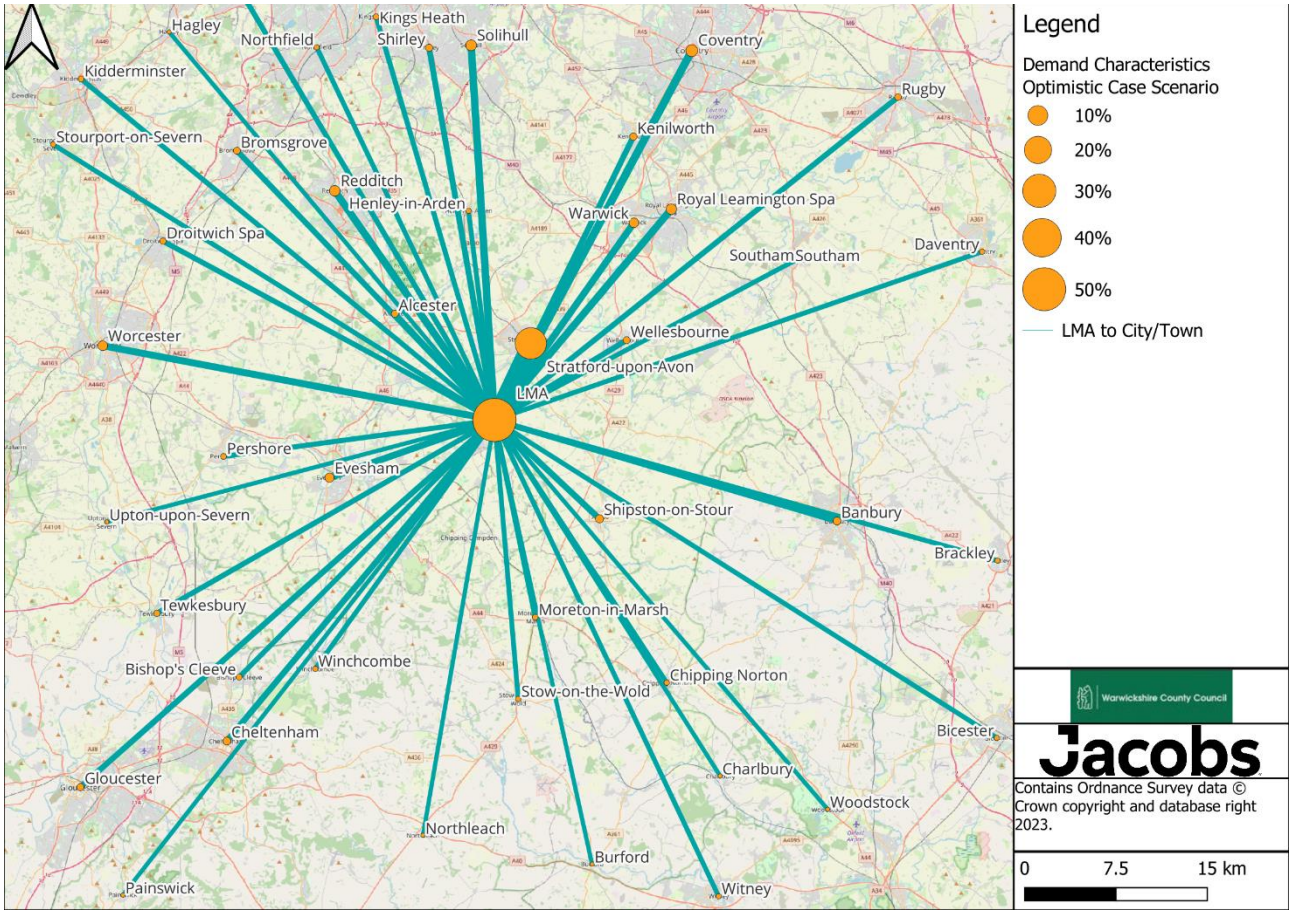

Figure 3.8:- Demand Characteristics – Optimistic Case Scenario

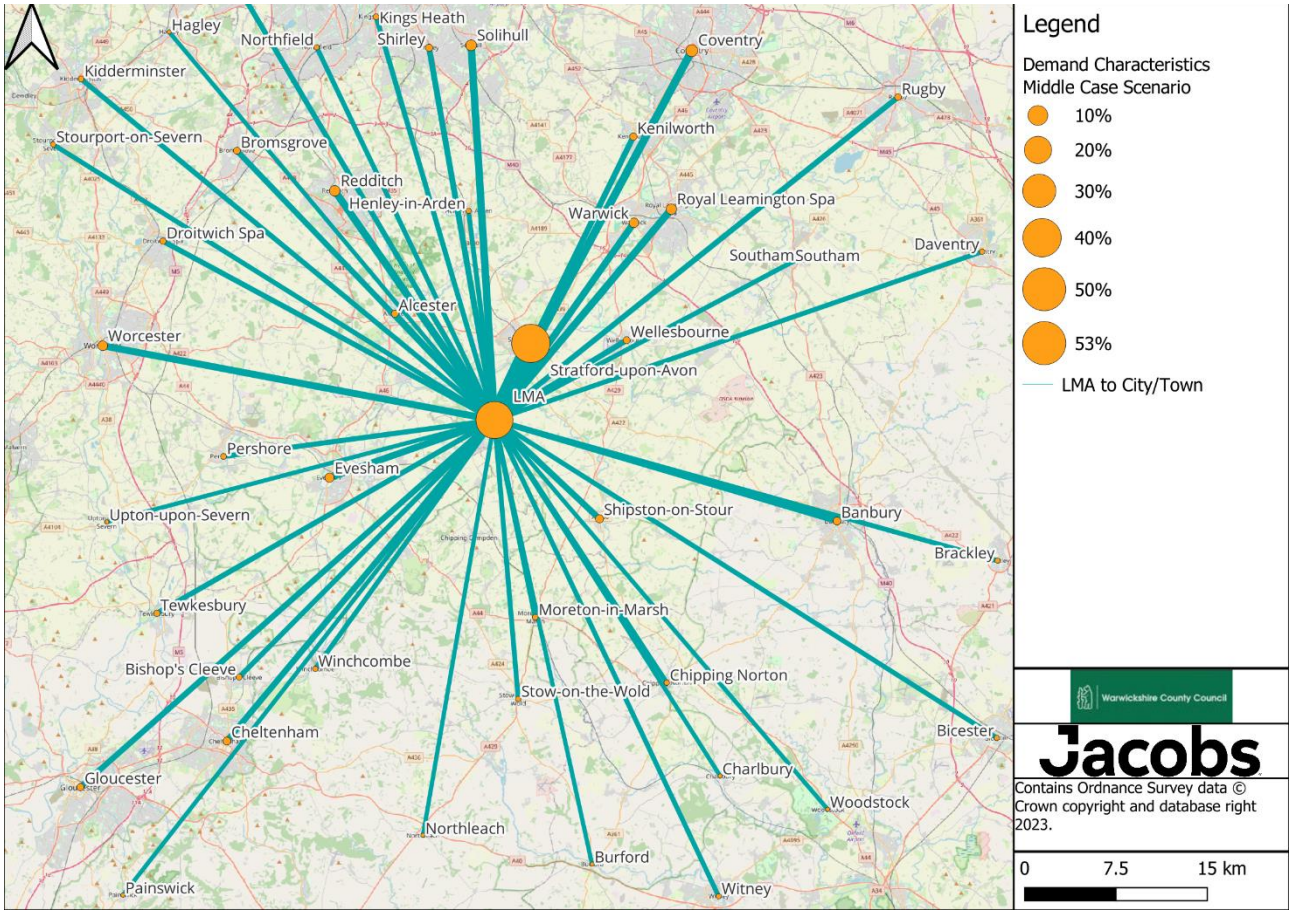

Figure 3.9:- Demand Characteristics – Middle Case Scenario

Using this demand characteristics assessment, the final internalisation rates for retail and leisure for the three scenarios is shown in Table 3-23. For the purposes of this assessment, the retail and leisure uses have been grouped as a single source of data (NTS) and has been used to inform the trip making characteristics. It is anticipated that more detailed assessment would be undertaken as part of future traffic modelling analysis with segmentation of the internalisation rates for these journey purposes.

Table 3-23:- LMA Internalisation by type for each Scenario for retail and leisure

Internalisation (3,500 and 6,000 houses)	Conventional Case	Middle Case	Optimistic Scenario
LMA Trips to Retail Internalisation	24%	37%	50%
LMA Trips to Leisure Internalisation	24%	37%	50%

As outlined in the MAP report, the mode split for the external retail trips has been based on the 2011 Census data (Stratford-on-Avon 014 MSOA). The MAP Report notes trip rates for these uses typically have a high number of car-users, and therefore, compared to the commuting mode split, VECTOS reduced the sustainable travel modes but increased car passengers to account for families doing their weekly food shop. As noted above, at this time, the adjustments made to the sustainable travel mode for commuting uses as outline in the MAP report are not considered robust, however the adjustment made for retail uses for sustainable travel modes (1% increase) and increases in car passengers are considered reasonable.

Table 3-24:- External Retail Trips External Mode Split (Census Data)

Mode	Census	LMA MAP	Assessment Assumption
Sustainable Travel Modes	8%	9%	9%
Taxi	0%	0%	0%
Motorcycle, Scooter or Moped	1%	1%	1%
Driving a Car or Van	86%	60%	60%
Passenger in a Car or Van	5%	30%	30%
Other Method of Travel	0%	0%	0%
Total	100%	100%	100%

As outlined in the MAP report, the mode split for external leisure trips has been based upon Census data and some manual adjustments have also been applied. The envisioned 7% uplift as outlined in the MAP report for sustainable modes has been applied to the car driver splits uplifting this from 64% to 71% which is noted to be lower than 2011 Census data. This adjustment is considered reasonable.

Table 3-25:- External Leisure Trips Mode Split (Census Data)

Mode	Census	LMA MAP	Assessment Assumption
Sustainable Travel Modes	8%	15%	8%
Taxi	0%	0%	0%
Motorcycle, Scooter or Moped	1%	1%	1%
Driving a Car or Van	86%	64%	71%
Passenger in a Car or Van	5%	20%	20%
Other Method of Travel	0%	0%	0%
Total	**100%**	**100%**	**100%**

3.3.2 Employment Land Use Trip Rates

The MAP report acknowledges the employment, retail and leisure uses provided at LMA will attract trips in their own right. In order to determine the likely trip generation, the proposed employment uses assumed *offices* as a worst-case example. As per the assessment undertaken in the MAP report, the rates below are the total person trip rates for each land use which are then split across different transport modes such as car driver, public transport user and active travel modes such as walking and cycling. These are presented below alongside an independent review of the TRICS database: -

Table 3-26:- LMA Employment Trip Rates Review

Time Period	Person Trip Rates (Employment per 100sqm)					
	Arrivals MAP	Arrivals Independent Assessment	Departures MAP	Departures Independent Assessment	Total MAP	Total Independent Assessment
0700-0800	0.536	0.681	0.048	0.061	0.584	0.742
0800-0900	2.435	1.935	0.188	0.176	2.623	2.111
0900-1000	1.815	1.089	0.428	0.344	2.243	1.433
1600-1700	0.424	0.243	1.229	1.048	1.653	1.291
1700-1800	0.204	0.134	2.253	1.537	2.457	1.671
1800-1900	0.049	0.075	0.916	0.508	0.965	0.583

Whilst there is variation shown within the peak period trip rates when comparing the Vision employment trip rates and the independent assessment rates, the rates proposed in the MAP report are considered robust.

As outlined in the MAP report, the mode split of external employment trips has been based upon the Census data and manual adjustments have been applied. This is summarised below: -

Table 3-27:- External Employment Trips Mode Splits Review

Mode	Census	LMA MAP	Jacobs Assumption
Sustainable Travel Modes	6%	18%	6%
Taxi	0%	0%	0
Motorcycle, Scooter or Moped	1%	1%	1%
Driving a Car or Van	80%	62%	80%
Passenger in a Car or Van	13%	20%	13%
Other Method of Travel	0%	0%	0
Total	**100%**	**100%**	**100%**

As noted above, when considering the adjustments made for the commuting journey purposes, the adjustments made to the sustainable travel modes as set out in the MAP report is some 3 times greater than 2011 Census data. The adjustments made are aspirational and not considered to be borne out by observed evidence for this journey purpose at this time.

To account for the internalisation of commuting trips, trips to employment uses have been decreased by the rate of internal commuting trips as determined by the internalisation previously developed for home-based trips. This insures no double counting of internal trips and consistency between the internalisation for commuting trips and the associated impact on employment trips.

3.3.3 Retail and Leisure Land Use Trip Rates

For the food retail element, trip rates presented in the MAP report have been derived from the TRICS database and compared against independent rates also extracted from TRICS: -

Table 3-28:- LMA Food Retail Land Use Trip Rate Review

Time Period	Person Trip Rates (Food Retail per 100sqm)					
	Arrivals MAP	Arrivals Independent Assessment	Departures MAP	Departures Independent Assessment	Total MAP	Total Independent Assessment
0700-0800	1.484	1.596	1.020	1.179	2.504	2.748.
0800-0900	2.811	2.430	2.185	1.919	4.996	4.349
0900-1000	3.759	3.423	2.854	2.807	6.613	6.230
1600-1700	4.583	3.744	4.570	4.129	9.153	7.873
1700-1800	4.473	3.298	4.843	3.678	9.316	6.976
1800-1900	3.973	2.824	4.560	3.282	8.533	6.106

Whilst there is some variation shown within the peak periods when comparing the Vision food retail trip rates and the independent assessment rates, the rates proposed in the MAP report are considered robust.

For the local shop element, trip rates presented in the MAP report have been derived from the TRICS database and considered against independent rates also extracted from TRICS: -

Table 3-29:- LMA Local Shop Food Retail Land Use Trip Rate Review

Time Period	Person Trip Rates (Local Shop Food Retail per 100sqm)					
	Arrivals MAP	Arrivals Independent Assessment	Departures MAP	Departures Independent Assessment	Total MAP	Total Independent Assessment
0700-0800	6.993	6.993	5.888	5.888	12.881	12.881
0800-0900	12.844	12.844	12.880	12.880	25.724	25.724
0900-1000	11.522	11.522	9.982	9.982	21.504	21.504
1600-1700	11.848	11.848	11.341	11.341	23.189	23.189
1700-1800	11.105	11.105	12.663	12.663	23.768	23.768
1800-1900	12.536	12.536	12.591	12.591	25.127	25.127

The proposed mode share for the retail and leisure landuses are considered reasonable. It is noted for the Local Shop Food Retail that the sample size available in TRICS is very low, hence the identical values tabulated above.

In line with the methodology as set out in the MAP report, the internal retail trips generated by the residential land use have then been removed from the total retail trip generation based on the floor areas, with the remaining trips considered external.

Whilst it would be reasonable to expect a degree of trip linking, for a more robust assessment, no assumptions have been made to account for linked and pass-by trips associated with the retail and leisure land uses. With a trip linkage, there would be an expected initial decrease in the overall number of trips particularly associated with the retail uses.

For this linkage to occur, the retail and leisure uses within the development would have to be complimentary, diverse, and expansive enough for individuals to use multiple locations for a single trip. This could have a potential downside of making the development more attractive to individuals from outside of LMA resulting in a higher number of external trips. Further analysis of trip linking could be undertaken as part of the future assessment and more detailed understanding of the retail and leisure offer at LMA.

3.3.4 Educational Land Use Trip Rates

To account for demand generated by the schools and attracting trips from outside the LMA area, the MAP Report notes that the TRICS database has been interrogated for the primary, secondary and further education facilities at LMA. An independent review of these assumptions has been undertaken and compared against the TRICS database. Based upon this assessment, the trip rates outlined in the MAP Report for the primary school are considered robust.

Table 3-30:- LMA Primary School Land Use Trip Rate Review

Time Period	Primary School Trip Rate (per student)					
	Arrivals MAP	Arrivals Independent Assessment	Departures	Departures Independent Assessment	Total	Total Independent Assessment
0700-0800	0.116	0.110	0.036	0.022	0.152	0.132
0800-0900	1.228	1.197	0.281	0.291	1.509	1.488
0900-1000	0.081	0.058	0.114	0.061	0.195	0.199
1600-1700	0.098	0.055	0.311	0.213	0.409	0.268

1700-1800	0.023	0.011	0.076	0.055	0.099	0.066
1800-1900	0.016	0.007	0.023	0.012	0.039	0.019
Daily	2.119	1.1922	2.090	1.1913	4.209	3.835

The same exercise has been conducted for secondary school trip making and the trip rates outlined in the MAP Report are considered reasonable: -

Table 3-31:- LMA Secondary School Land Use Trip Rate Review

Time Period	Secondary School Trip Rate (per student)					
	Arrivals MAP	Arrivals Independent Assessment	Departures	Departures Independent Assessment	Total	Total Independent Assessment
0700-0800	0.089	0.075	0.009	0.007	0.098	0.082
0800-0900	0.808	0.894	0.093	0.130	0.901	1.024
0900-1000	0.046	0.045	0.014	0.015	0.060	0.060
1600-1700	0.036	0.034	0.202	0.191	0.238	0.225
1700-1800	0.106	0.101	0.069	0.063	0.175	0.164
1800-1900	0.106	0.089	0.074	0.059	0.180	0.148
Daily	1.409	1.457	1.315	1.1364	2.724	2.821

Finally, the exercise has been repeated for the higher education provision and the rates outlined in the MAP report are considered robust: -

Table 3-32:- LMA Higher Education School Land Use Trip Rate Review

Time Period	Higher Education Trip Rate (per student)					
	Arrivals MAP	Arrivals Independent Assessment	Departures	Departures Independent Assessment	Total	Total Independent Assessment
0700-0800	0.022	0.019	0.006	0.005	0.028	0.024
0800-0900	0.108	0.101	0.029	0.023	0.137	1.024
0900-1000	0.070	0.056	0.029	0.020	0.099	0.076
1600-1700	0.031	0.026	0.068	0.064	0.099	0.090
1700-1800	0.031	0.022	0.066	0.059	0.097	0.081
1800-1900	0.028	0.028	0.033	0.059	0.061	0.051
Daily	0.588	0.479	0.585	0.475	1.173	0.954

The proposed mode split for the educational land uses as outlined in the MAP report are considered reasonable.

3.4 Summary of External and Internal Trip Making

3.4.1 3,500 Dwelling Scenario

A spreadsheet model has been developed to calculate the number of external trips using the internalisation assumptions and trip making characteristics described above. The results of each of the three scenarios are detailed in the tables below. A summary of these outputs is set out in section 3.4.4 below: -

Table 3-33:- Trip Rates for LMA (Conventional Case) 3,500 dwellings scenario

3,500 dwellings scenario Conventional Case	AM Peak Hour	PM Peak Hour	Daily
Internal Trips	1208	730	7815
External Vehicle Trips	2675	2851	25952
External Non-Vehicle Trips	749	924	9215
Total Trips	4632	4505	42983
Internalisation %	26%	16%	18%
External %	74%	84%	82%
External Vehicle %	58%	63%	60%

Table 3-34:- Trip Rates for LMA (Middle Case) 3,500 dwellings scenario

3,500 dwellings scenario Middle Case	AM Peak Hour	PM Peak Hour	Daily
Internal Trips	1823	1013	11518
External Vehicle Trips	2562	2679	24041
External Non-Vehicle Trips	923	874	8814
Total Trips	5308	4567	44373
Internalisation %	34%	22%	26%
External %	66%	78%	74%
External Vehicle %	48%	59%	54%

Table 3-35:- Trip Rates for LMA (Optimistic Case) 3,500 dwellings scenario

3,500 dwellings scenario Optimistic Case	AM Peak Hour	PM Peak Hour	Daily
Internal Trips	2102	1266	14262
External Vehicle Trips	2352	2470	21768
External Non-Vehicle Trips	791	764	7586
Total Trips	5245	4500	43616
Internalisation %	40%	28%	33%
External %	60%	72%	67%
External Vehicle %	45%	55%	50%

The graph below shows the total AM and PM peak externalised trip making for the three cases. In addition, it also shows the total anticipated rates as outlined in the MAP report and total anticipated trip making of the consented 2014 and live 2018 planning applications (totalling 3,500 dwellings). The Y axis shows the external vehicle trip making whilst the X axis shows the assessment cases: -

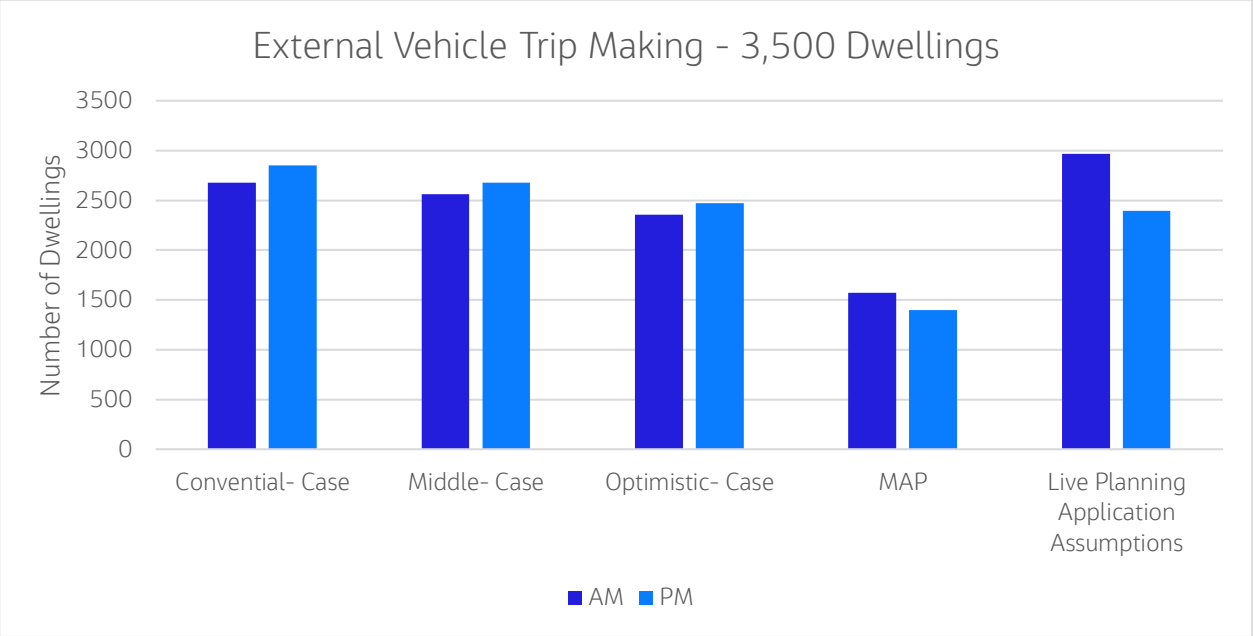

Figure 3.10:- External Vehicle Trip Making Summary (3,500 dwellings)

3.4.2 6,000 Dwelling Scenario

The results of each of the three scenarios are detailed in the tables below for the 6,000-dwelling scenario. A summary of these outputs is set out in section 3.4.4 below: -

Table 3-36:- Trip Rates for LMA (Conventional Case) 6,000 dwellings scenario

6,00 dwellings scenario Conventional Case	AM Peak Hour	PM Peak Hour	Daily
Internal Trips	2248	1513	14854
External Vehicle Trips	4376	4476	42513
External Non-Vehicle Trips	1272	1518	15617
Total Trips	7896	7507	72984
Internalisation %	28%	20%	20%
External %	72%	80%	80%
External Vehicle %	55%	60%	58%

Table 3-37:-Trip Rates for LMA (Middle Case) 6,000 dwellings scenario

6,000 dwellings scenario Middle Case	AM Peak Hour	PM Peak Hour	Daily
Internal Trips	3303	1999	21202
External Vehicle Trips	3917	4126	38397
External Non-Vehicle Trips	1172	1351	13672
Total Trips	8391	7475	73271
Internalisation %	39%	27%	29%
External %	61%	73%	71%

6,000 dwellings scenario Middle Case	AM Peak Hour	PM Peak Hour	Daily
External Vehicle %	47%	55%	52%

Table 3-38:- Trip Rates for LMA (Optimistic Case) 6,000 dwellings scenario

6,000 dwellings scenario Optimistic Case	AM Peak Hour	PM Peak Hour	Daily
Internal Trips	3781	2431	25906
External Vehicle Trips	3735	3804	35053
External Non-Vehicle Trips	1212	1216	12395
Total Trips	8728	7452	73354
Internalisation %	43%	33%	35%
External %	57%	67%	65%
External Vehicle %	43%	51%	48%

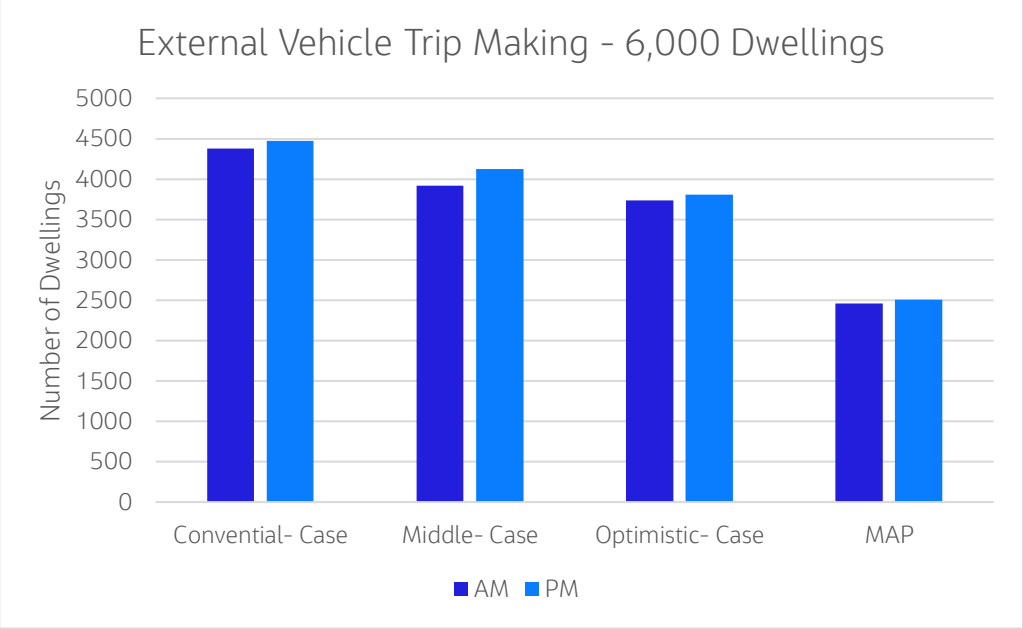

Figure 3.11:- External Vehicle Trip Making Summary (6,000 dwellings)

3.4.3 Higher Growth Options

A quantified assessment of two growth options has been considered as part of this assessment (3,000 and 6,000 dwellings). It is recommended that scenario-based traffic modelling assessments are undertaken in accordance with the TRICS Guidance Note on the Practical Implementation of the Decide & Provide Approach (outlined below in Section 8.3). It is also recommended that growth options, including higher growth options, at LMA are considered as part of wider growth aspirations in South Warwickshire and considered holistically as part of the emerging South Warwickshire Local Plan Review.

3.4.4 Summary

Following the review of each of the underlying assumptions in terms of land use and their trip making potential, for both scenarios, there is a significant difference in potential externalised trip making in the most optimistic case when compared to the assumptions adopted in the aspirational transport Vision. The tables below show a summary of the internal, external and external vehicle trip rates for LMA based upon the range of scenarios analysed: -

Table 3-39:- Daily Trip Rates for LMA Summary

Daily	Internal Trips	External Trips	External Vehicle Trips
3,500 dwellings scenario Conventional Case	7815	35167	25952
3,500 dwellings scenario Middle Case	11518	32855	24041
3,500 dwellings scenario Optimistic Case	14262	29354	21768
6,000 dwellings scenario Conventional Case	14854	58130	42513
6,000 dwellings scenario Middle Case	21202	52069	38397
6,000 dwellings scenario Optimistic Case	25906	47448	35053

Table 3-40:- AM Peak Hour Trip Rates for LMA Summary

AM Peak Hour	Internal Trips	External Trips	External Vehicle Trips
3,500 dwellings scenario Conventional Case	1208	3424	2675
3,500 dwellings scenario Middle Case	1823	3485	2562
3,500 dwellings scenario Optimistic Case	2102	3143	2352
6,000 dwellings scenario Conventional Case	2248	5648	4376
6,000 dwellings scenario Middle Case	3303	5089	3917
6,000 dwellings scenario Optimistic Case	3781	4947	3735

Table 3-41:- PM Peak Hour Trip Rates for LMA Summary

PM Peak Hour	Internal Trips	External Trips	External Vehicle Trips
3,500 dwellings scenario Conventional Case	730	3775	2851
3,500 dwellings scenario Middle Case	1013	3553	2679
3,500 dwellings scenario Optimistic Case	1266	3234	2470
6,000 dwellings scenario Conventional Case	1513	5994	4476
6,000 dwellings scenario Middle Case	1999	5477	4126
6,000 dwellings scenario Optimistic Case	2431	5020	3804

For both the 3,500 and 6,000 dwelling scenarios, the total potential peak hour external trip making is greater in the Middle-Case than the Conventional Case despite the Middle Case allowing for greater levels of internalisation. This is due to the assumption regarding the secondary school where there is no secondary school provided in the Conventional Case sensitivity analysis and consequently all the secondary school need is met off-site.

Once again, the analysis demonstrates the degree of variation inherent in judgements applied to trip making characteristics. The principal concern would be unmitigated impacts upon congestion or unacceptable impacts upon highway safety if the Vision is not fully realised in the way it is envisaged.

Many of the underlying objectives adopted within the MAP and Vision Part 2 reports are commendable, particularly where a positive case of how LMA can be developed in an exemplar manner through the provision of a range of high-quality facilities and focus upon micro-mobility offering residents a safe and convenient

alternative to car use on site, the more aspirational judgements regarding modal shift and internalisation rates, must draw from evidentiary sources, where available and appropriate.

Using the three scenarios, the next stage of analysis focuses upon the measures required to support the LMA transport proposals harnessing the positive sustainable direction outlined in the MAP and Vision Part 2 reports.

It should be noted that this assessment offers a broad range of assumptions, particularly for levels of potential internalisation for the associated landuses at LMA. Further refinement and detailed analysis of the land-use composition, quantum, mix, proximity and accessibility of other land uses, for example education, community facilities and retail, may result in further refinement to trip making as outlined in this assessment.

4. Baseline Review

This section sets out a baseline review of the existing relevant highway network to LMA, public transport provision and walking/ cycling network.

4.1 Highway Network – Accessibility and Key Routes

This figure shows journey times to key destinations from LMA assuming free-flow traffic conditions: -

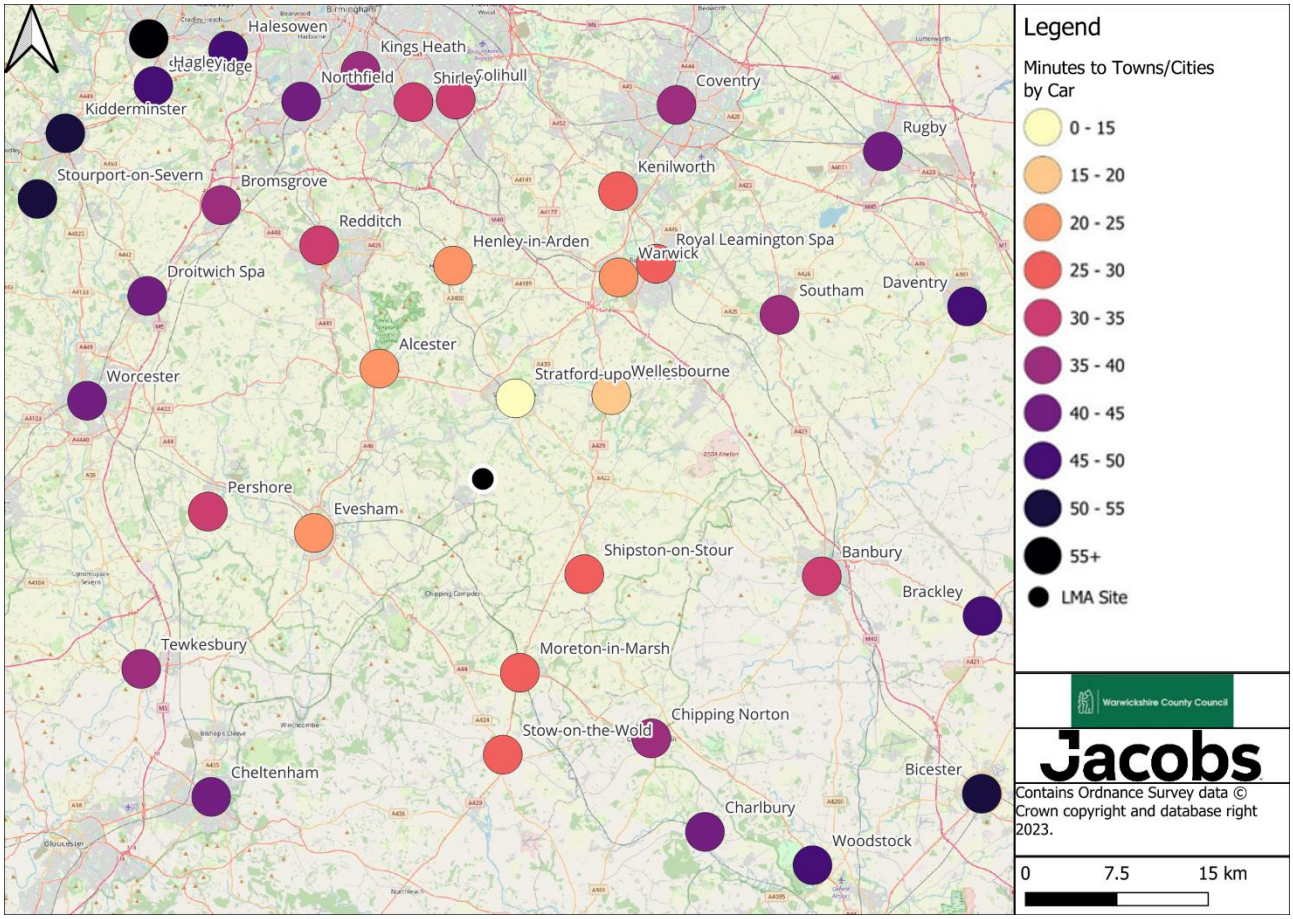

Figure 4.1:- LMA to nearest Town/Cities Journey time by Car (TRACC)

The figure below shows the key routes into Stratford-upon-Avon town centre: -

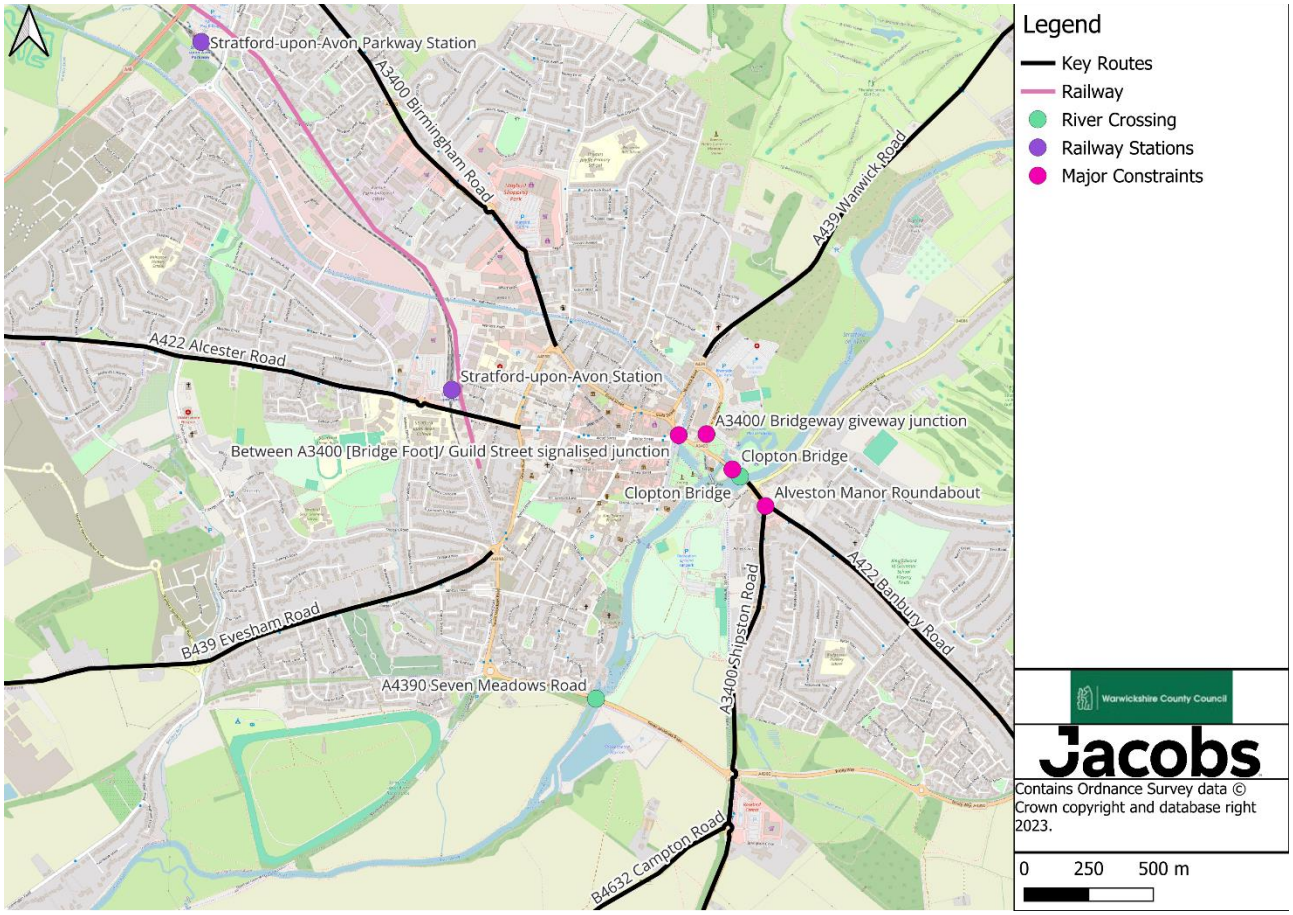

Figure 4.2:- Key Routes into Stratford-upon-Avon Town Centre

4.2 Highway Network – Congestion

To assess the baseline network conditions, DfT INRIX data has been analysed that includes the average speed (in KPH) in the average AM (08:00-0:900) and PM (17:00-18:00) peaks on links (roads) within the Stratford-upon-Avon and Warwickshire Local Authority District areas. The supplied data covers a period in November 2022 where it is anticipated that traffic levels are more reflective of typical conditions following the COVID-19 pandemic. This data can provide an overview of where capacity constraints affect journeys both to and through Stratford-upon-Avon. The figure below shows the average AM peak hour speeds on links in Stratford-upon-Avon.

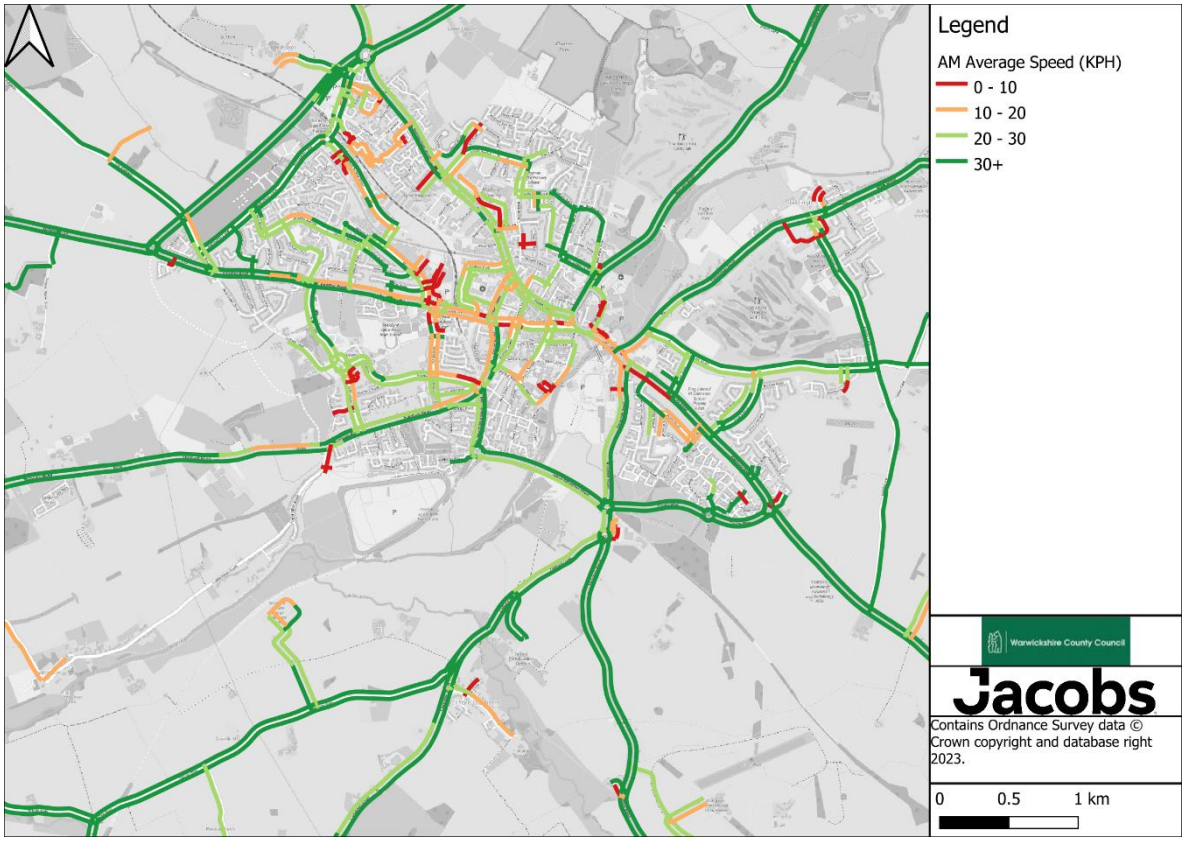

Figure 4.3:- AM Peak Hour (08:00-09:00) Avg. Speed Data [INRIX]

The figure below shows the average PM peak hour speeds on links in Stratford-upon-Avon: -

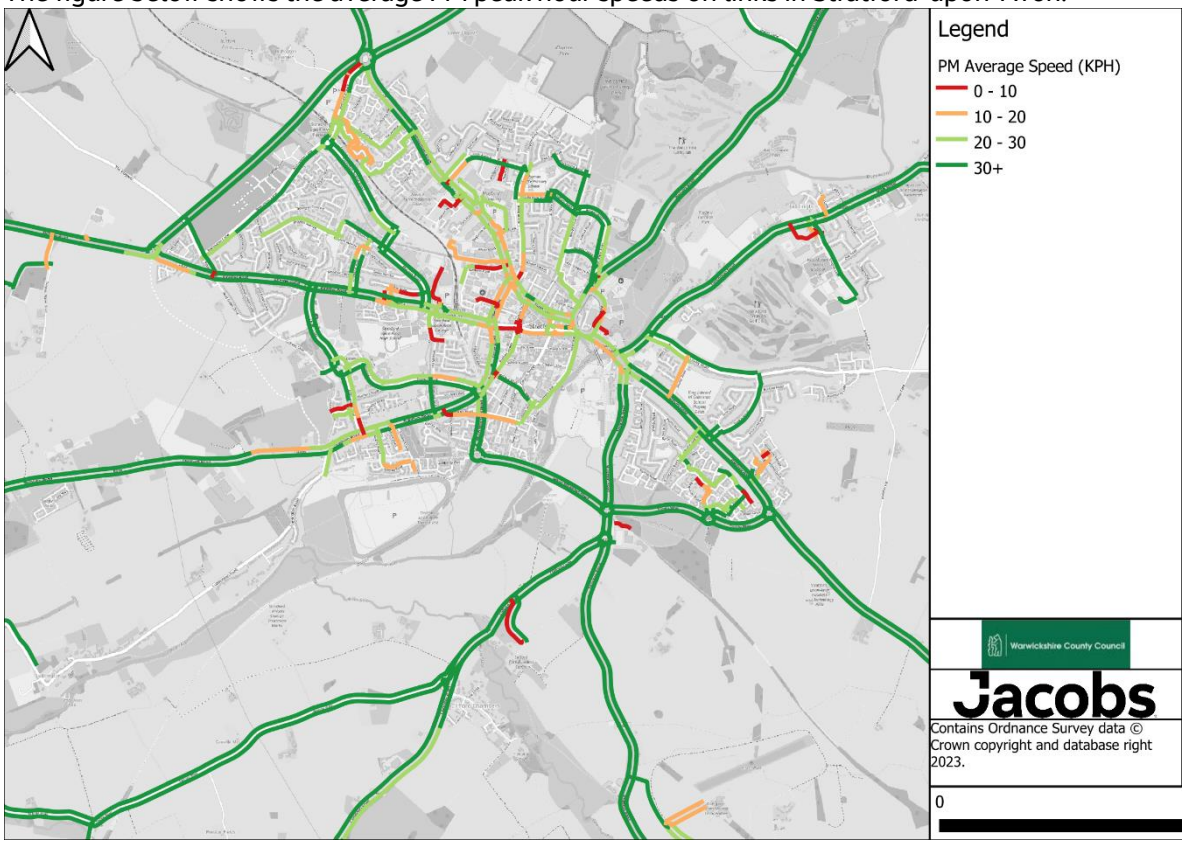

Figure 4.4:- PM Peak Hour (17:00-18:00) Avg. Speed Data [INRIX]

The data shows the average vehicles speed in the AM peak (08:00) is typically slower throughout the network than the PM peak (17:00) on routes through Stratford-upon-Avon. The major constraint in both peak periods is between A3400 [Bridge Foot]/ Guild Street signalised junction, A3400/ Bridgeway giveway junction, Clopton Bridge and Alveston Manor Roundabout.

The combination of network constraints, particularly the historic context of Clopton Bridge (Grade one listed, and a Scheduled Ancient Monument) that currently provides a substandard single carriageway over the river Avon, a lack of route choice with Seven Meadows Road being the other realistic alternative for crossing the river, and high demand, results in a rolling queue on the A3400 along Clopton Bridge blocking back along Shipston Road. Disruption to traffic flow is further compounded by the frequency of pedestrian crossing calls. Site observations undertaken in July 2023, observed queueing extending back from the Town Centre to Shipston Road (approx. 650m back from the giveway line at Alveston Manor Roundabout to the toucan crossing) on Shipston Road.

The Stratford-upon-Avon Transport Area Strategy (2018) highlights that the A3400 Shipston Road, A422 Banbury Road and B4086 Tiddington Road approaches to the bridge are congested, with average speeds across the morning and evening peak hours being generally less than 20mph. It also identifies that Clopton Bridge carries over 23,000 vehicle movements per day, including a large number of HGVs. Whilst WCC have confirmed that traffic levels on Clopton Bridge remain less than pre-pandemic levels, the recent INRIX data shows that areas of previously identified congestion remain with vehicle speeds of less than 20mph through this key route.

Capacity constraints are also evident at the Shipston Road/ Clifford Lane/ Waitrose junction roundabout particularly on the Clifford Lane (B4632) single lane approach with queuing observed to occur during the AM peak. In light of the number of HGVs routing via Clopton Bridge and the noted constraints, there could be a case for a strategic HGV routing intervention which would need to be considered in the context of freight routing across the County.

4.3 Highway Network – Traffic Flow Analysis

This section sets out the key strategic traffic movements across Stratford-upon-Avon (i.e. trips with origins/ destinations outside of Stratford-upon-Avon that pass through the town centre), with particular focus on the routing of traffic through the town centre, during the AM Peak and PM Peak hours. Traffic flows have been extracted from the Vectos Paramics 2017 base model.

The origin and destinations have been extracted and the path through the network has been manipulated using GIS for the fastest route. This data does not necessarily reflect the exact conditions through Stratford-upon-Avon but does serve as an indication of which entries and exits have the highest flow. The figures below show the average 2017 traffic flows through Stratford-upon-Avon during the AM and PM peaks for the external-to-external movements.

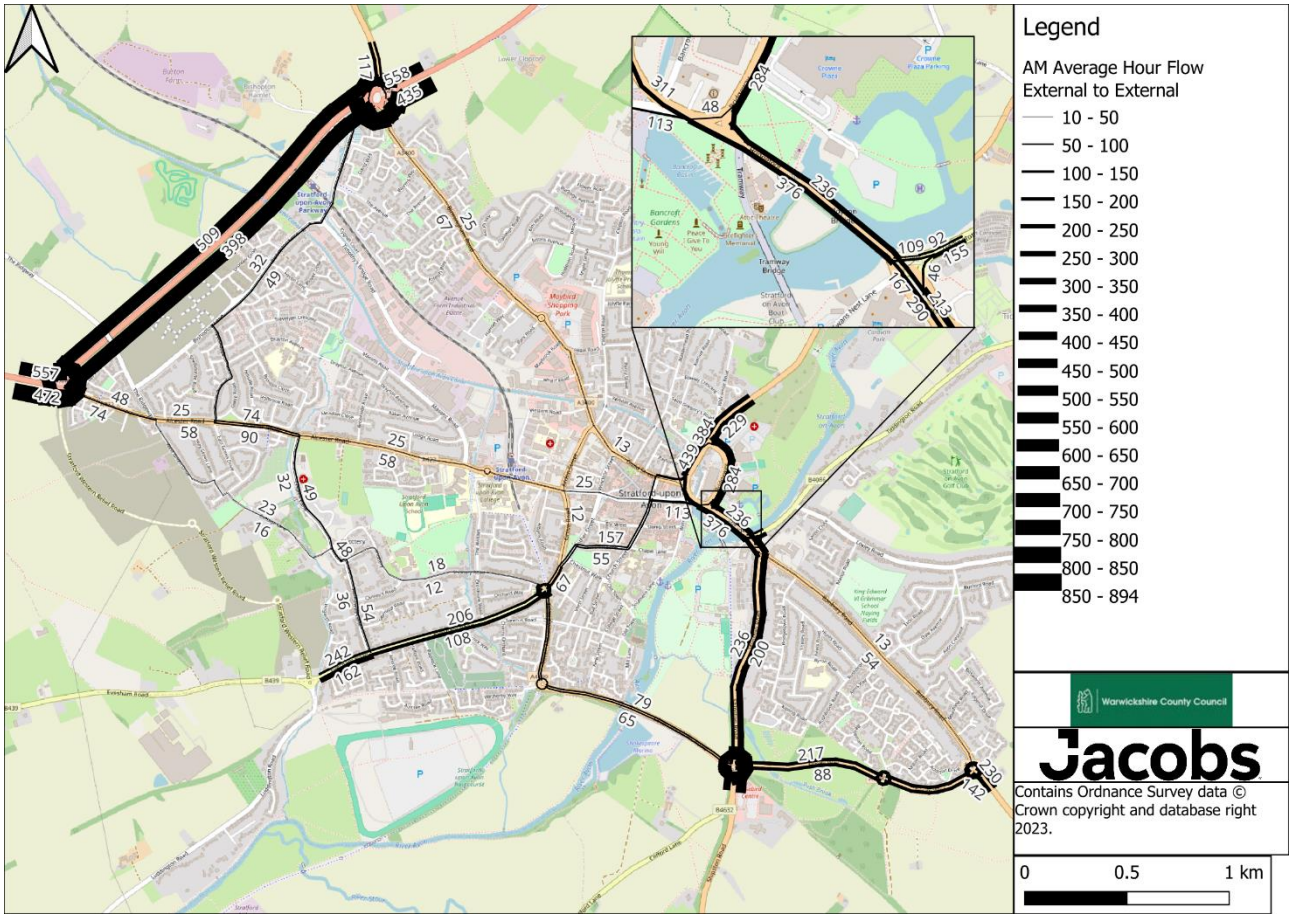

Figure 4.5:- 2017 AM Peak Average traffic flows through Stratford-upon-Avon (External to External Trips)

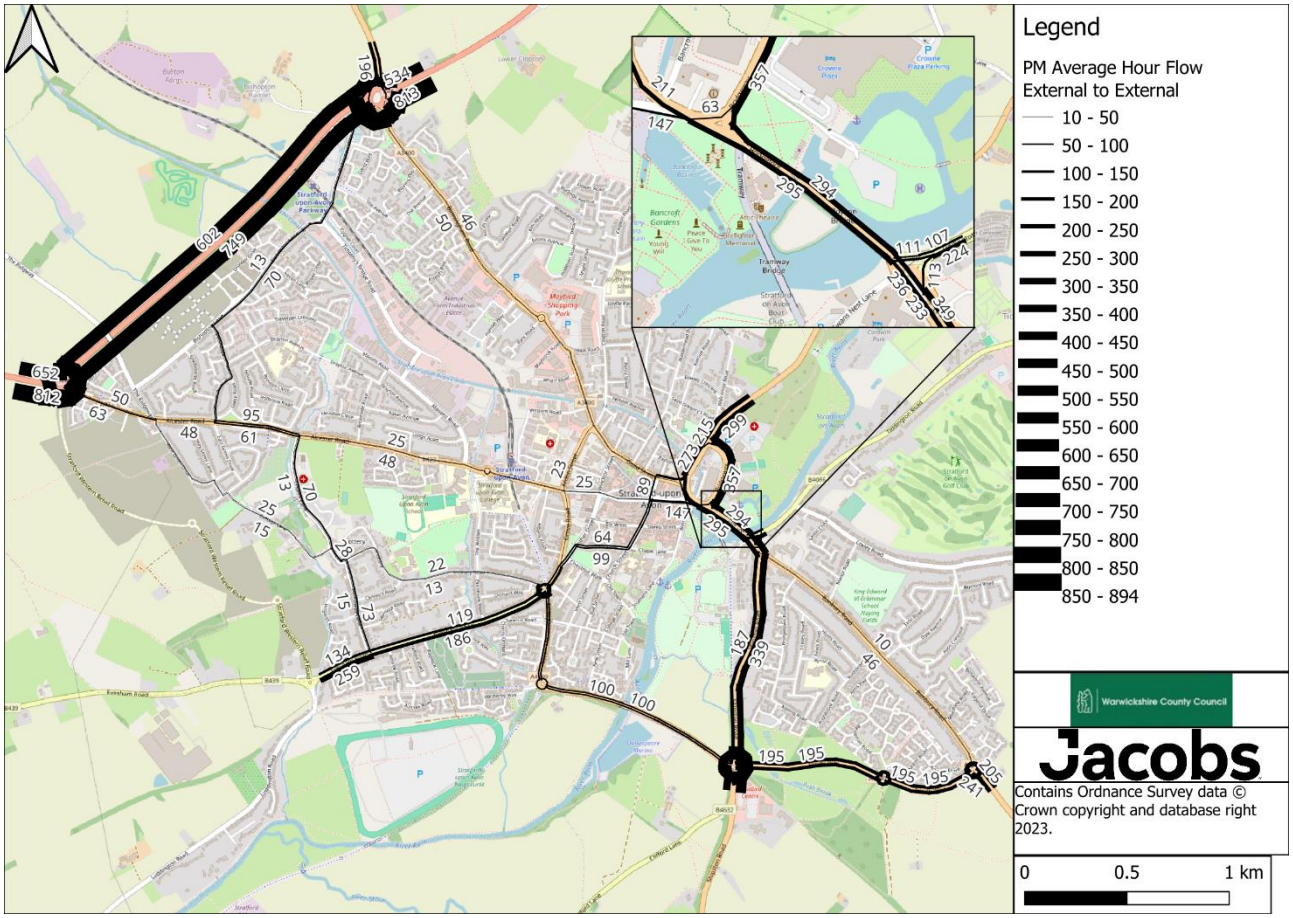

Figure 4.6:- 2017 PM Peak Average traffic flows through Stratford-upon-Avon (External to External Trips)

This data shows in the AM peak the route between A46 Alcester Road and the A46 to the north-east of A3400 Birmingham Road/ Bishopton Road roundabout represented the largest flow, which is likely to be associated with commuter traffic travelling to the M40 corridor. In the PM peak, the opposite direction of travel between the A3400 Birmingham Road/ Bishopton Road and A46 Alcester Road represents the greatest traffic flows; once again this is also likely to be associated with commuter traffic travelling between the M40 corridor and towns to the west of Stratford-upon-Avon.

In the AM peak, the majority of traffic from the south-east of Stratford-upon-Avon routed via Clopton Bridge and A3400 Bridge Foot to travel to A439 Warwick Road. From the south-west, traffic routed via Rother Street, Wood Street, Bridge Street and A3400 Bridge Foot to travel to A439 Warwick Road. Once again, there is symmetry in the PM peak with a significant volume of trips routing in the opposing direction from Warwick Road along Clopton Bridge.

The existing traffic signal network within Stratford-upon-Avon, with the exception of standalone pedestrian crossings, operates on dynamic Split Cycle Offset Optimisation Technique (SCOOT) control. The current traffic signal network is congested during peak hours and large queues form on the A3400, which means that the benefits of SCOOT are constrained due to blocking back between junctions. Where trips are attracted from LMA to Stratford-upon-Avon and towards the Strategic Road Network (SRN), routing through the town centre is inevitable and particularly via Clopton Bridge and associated junctions where there is existing congestion due to the limited number of routes between the LMA area and the SRN.

4.4 Mobile Network Data

Mobile Network Data (MND) has been supplied by WCC. This data has been used as a high-level proxy to derive distributions for journeys from LMA. To do this, the following LSOAs have been used as they represent areas of high concentration of residential land uses (reflective of the proposals at LMA). The LSOAs have been mapped in Figure 4.7 which shows journey flows from the LSOA containing LMA to other LSOAs: -

- Stratford-on-Avon 008C (Wellesbourne);
- Stratford-on-Avon 008D (Wellesbourne);
- Stratford-on-Avon 008G (Wellesbourne);
- Stratford-on-Avon 012D (Bidford-on-Avon);
- Stratford-on-Avon 012E (Welford-on-Avon);
- Stratford-on-Avon 014A (Ettington);
- Stratford-on-Avon 012E (Long Marston); and,
- Stratford-on-Avon 014D (Newbold on Stour).

The MND data was selected to represent the following: -

- Peak Period (AM 06:00 – 09:00);
- Average Weekday;
- All Months;
- All modes; and
- Direction of Travel from Selected LSOAs.

An initial analysis of this data showed a number of anomalies with some intrazonal trips being 10s of kilometres in median length. It seems possible that these are trips that would have travelled elsewhere and returned without being split into two separate trips however the aggregated nature of the data set makes any attempt to fix issues within the data impracticable.

To account for these issues observed with the short distance trips, any trips from the LSOAs selected that travel to another LSOA within the same MSOA (for instance trips from 008C to 008D) have been removed from this analysis. What remains from this are the trips from the selected LSOAs to external LSOAs and represents a distribution of external trips from the zones.

The figure below shows all trip proportions in the AM peak period from the selected zones: -

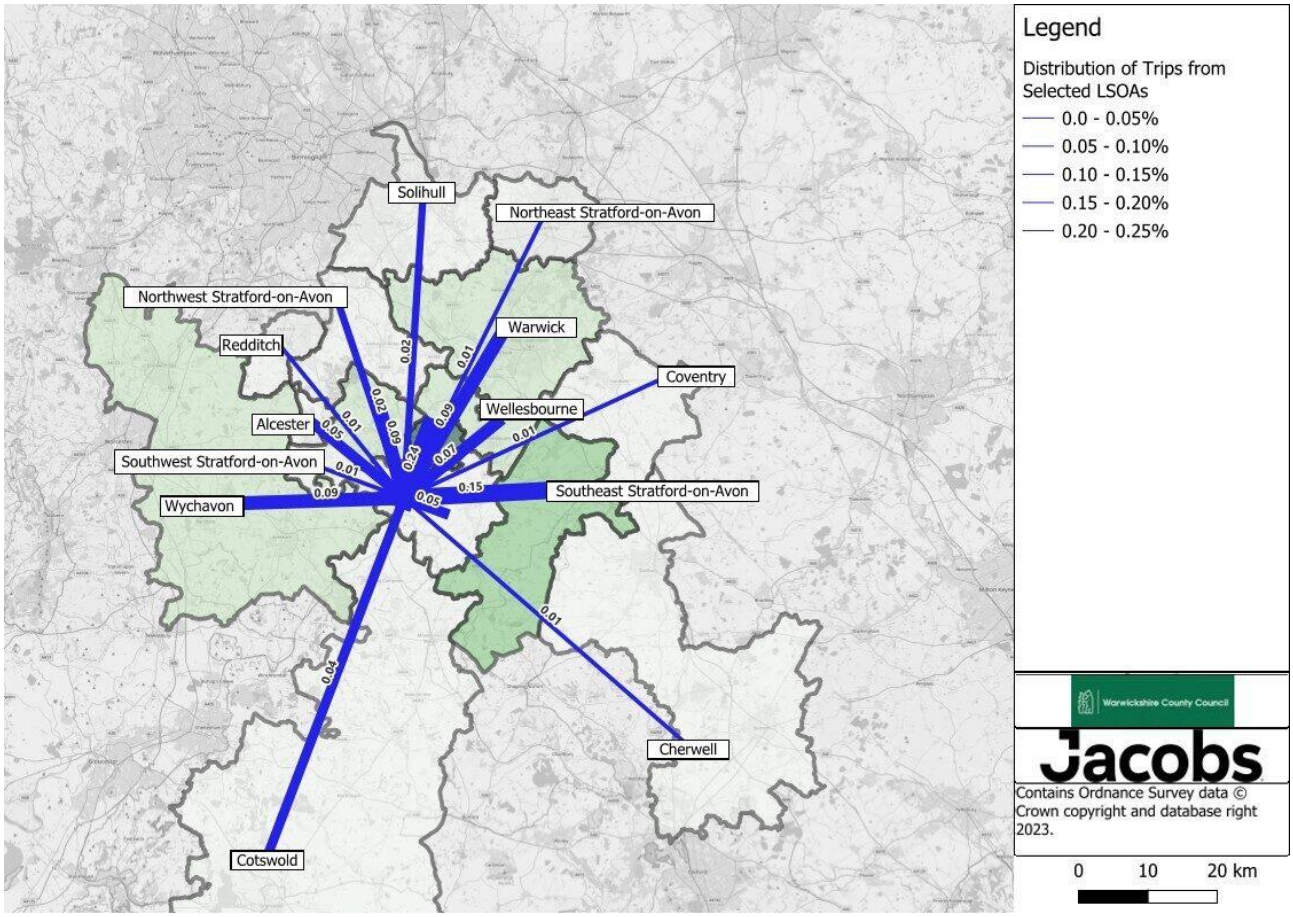

Figure 4.7:- Distribution of trips from Selected LSOAs

The MND indicates the notable movements are: -

- 24% of trips travel to Stratford-upon-Avon during the AM peak;
- 46% of trips travel elsewhere within Stratford-on-Avon District;
    - 15% Southeast Stratford-on-Avon
    - 9% Wilmcote & Great Alne
    - 7% Wellesbourne
    - 5% Alcester
    - 5% Other South Stratford-on-Avon
    - 2% Northwest Stratford-on-Avon
    - 2% Northeast Stratford-on-Avon
    - 1% Other Southwest Stratford-on-Avon
- 9% travel west towards Wychavon (Evesham); and,
- 9% travel towards Warwick.
- 12% Elsewhere including neighbouring Cotswolds, Worcestershire and Solihull.

It is noted there are some associated limitations when using MND to derive trip distributions and calculating average trip lengths. Due to the nature of MND, historically, there is a tendency to underestimate short distance trips. Moreover, an average trip length may not be truly representative of the trip movements as there is a large potential for a significant positive skew in the distribution with a small number of people travelling well beyond the average trip lengths. Further assessment work will need to be undertaken as part of future traffic modelling analysis to determine the modelled distribution for LMA.

4.5 Highway Network – Committed and Identified Improvements

In line with the SPD, the first 400 dwellings at LMA have been granted planning consent. Historically, the evidence has demonstrated the SWRR is triggered at no more than 400 dwellings [CS,2018]. Additional smaller housing numbers have come forward and gained consent, where the forecast levels of growth are lower than originally anticipated. Moreover, other relevant developments sites in the local area have received planning consent subject to improvements to the local road network secured via planning condition/ or s106 obligation.

Based upon the current live and consented planning applications, the following necessary highway interventions/ infrastructure requirements have been secured: -

Table 4-1:- Committed and Identified Improvements

Ref	Description	Status as of 2023[8]
14/03579/OUT [400 dwellings at LMA Phase 1]	B4632 Campden Site access works	Delivered under s278.
	B4632 Campden Road footway	Delivered under s278. The link provides a connection to Station Road where the existing facility continues to Main Road, Lower Quinton.
	Bus Service improvement	A contribution of £295,849 secured for bus service improvements between the site and Stratford-upon Avon town Centre, Meon Vale and Lower Quinton with the provision of a Friday evening and Sunday service operating on an hourly basis
	Greenway contribution	Contribution of £244,000.00 has been secured via s106. Further opportunities to upgrade the Greenway route are considered in this assessment.
	NC5 upgrade	Secured and delivered. A high quality sealed and lit Active Travel Corridor running on the southern boundary of the LMA from Campden Road to the Greenway
	Junction works at: - 1. Banbury Road/ Clopton Bridge/ Shipston Road (Alveston Manor Roundabout) 2. Bridge Foot Gyratory and Tiddington Road/ Banbury Road/ Swans Nest Lane/ Clopton Bridge 3. Shipston Road/ Trinity Way junction/ Seven Meadows 4. Shipston Road/ Clifford Lane/ Waitrose junction	It is understood the status of the schemes are: - • Currently being considered and reviewed as part of the Clopton Bridge improvements package. Signalisation has been identified. • As above • To be delivered: expected July 2024 • To be delivered: expected July 2024
	Safety improvement works at B4632/ Freshfields Nursey	An improvement has been identified and WCC has approved an additional £100,000.00 for the delivery of the improvement scheme including right-turn ghost island and speed limit change.
14/01186/OUT [Meon Vale]	Junction works at: - 1. Shipston Road/ Trinity Way junction/ Seven Meadows 2. Shipston Road/ Clifford Lane/ Waitrose junction	1. To be delivered: expected July 2024 2. To be delivered: expected July 2024 Signalisation identified
15/03262/VARY [Stratford Garden Centre}	Improvement at the access arrangement on the B4632 Campden Road including ghost right-turn lane	Completed (it is noted that a safety scheme was also identified as part of 14/03579/OUT)

[8] https://www.warwickshire.gov.uk/major-transport-construction-projects/section-278-s278-programmes/4

Ref	Description	Status as of 2023[8]
14/00262/OUT (Arden Heath Farm)	Bridge Foot Gyratory	Currently being considered and reviewed as part of the Clopton Bridge improvements package. Signalisation has been identified.
09/02196/OUT and APP/J3720/A/11/2163206 (Land at West Shottery)	Shottery Link Road	In the process of being delivered.

The Stratford-upon-Avon Area Transport Strategy (2018) outlines the key themes of the strategy for improving local transport issues. Some proposed improvements to existing highway infrastructure are:

- **A46 / A422 Alcester Rd roundabout –** a fourth arm is being provided for the connection to the west of Shottery Relief Road. The timing for this infrastructure is still to be confirmed;
- **A46/ A3400 Birmingham Road/ Bishopton Road Roundabout and Marraway Roundabout –** still to be upgraded. It is noted that the A46 plays a vital strategic role as one of the country's most important trade routes and makes a significant contribution to the national, regional, and local economies.

  As such, the County and District Councils are working with Midlands Connect, National Highways and other partners to secure major capital investment in the A46 corridor. A two-stage strategic study of the corridor undertaken by Midlands Connect identified a 20-year improvement plan for the A46 which includes potential interventions near Stratford-upon-Avon and the upgrading of the Alcester to Warwick section to a dual carriageway standard as schemes requiring further investigation. National Highways is currently undertaking a concept viability study on the A46 Evesham – Stratford – M40 to support decision making about future work and next steps. The study is considering the type of potential intervention that could be appropriate as part of an A46 corridor improvement strategy;
- **Bridgeway Gyratory, Tiddington Road/ Banbury Road/ Swans Nest Lane/ Clopton Bridge and Banbury Road/ Clopton Bridge/ Shipston Road (Alveston Manor Roundabout) –** improvements expected to form part of the Clopton Bridge improvement package currently under review by WCC. Signalisation has been identified for all but the Alvaston Manor Roundabout; and,
- **A4390 Evesham Place/ Seven Meadows Road/ B439 Evesham Road/ Shottery Road roundabout –** a high-level signalisation scheme has been identified as part of the IDP.

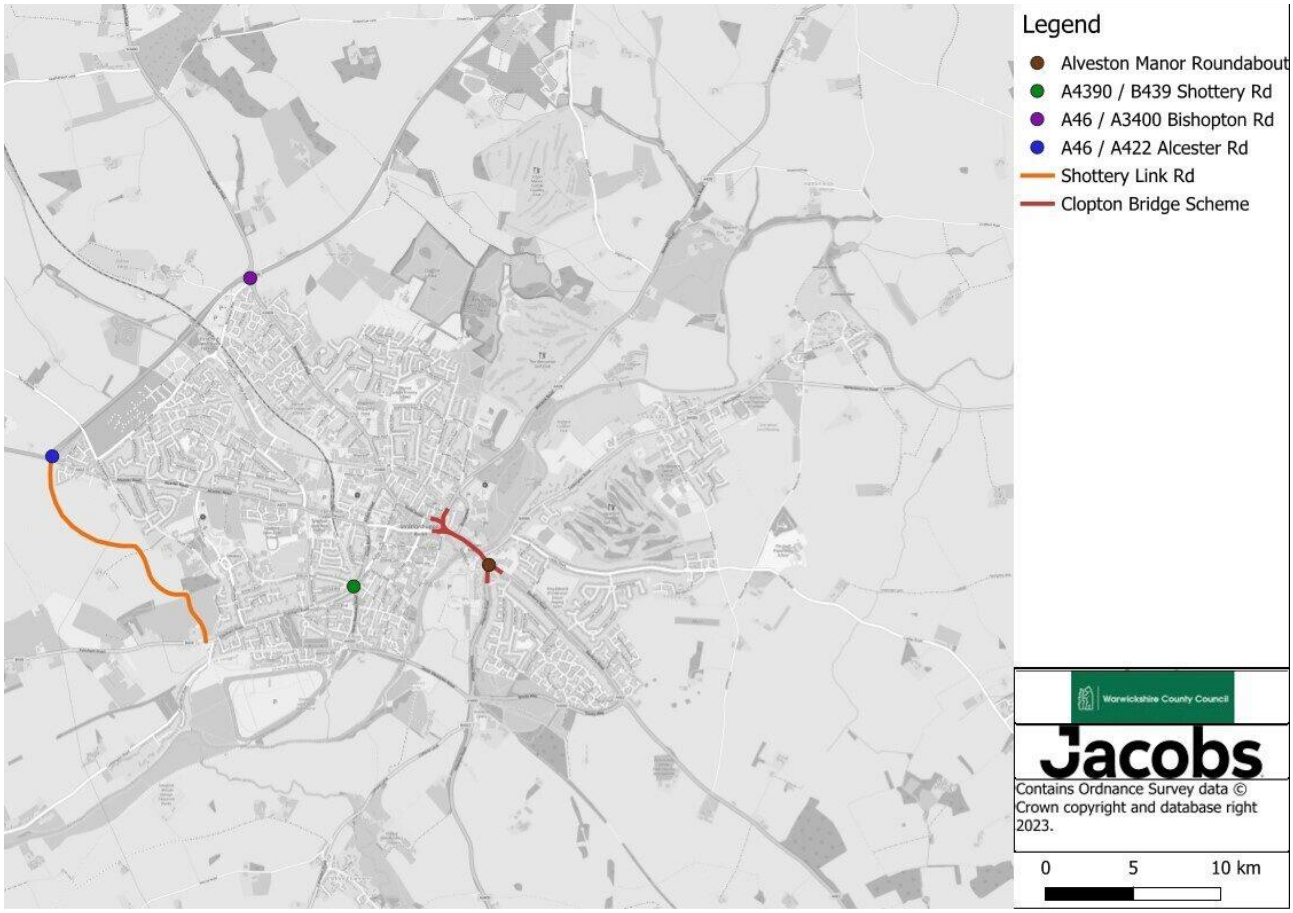

Figure 4.8:- Identified Improvements

4.6 Highway Network – AQMA

For Stratford-on-Avon, the main source of air pollution is emissions from road traffic. The air quality annual mean objective for nitrogen dioxide was identified as being exceeded in areas dominated by traffic in Stratford-upon-Avon and Studley. This led to the declaration of two AQMAs: 1. Studley and 2. Stratford-upon-Avon.

4.7 Highway Network – Personal Injury Collision data

Personal Injury Collision (PIC) data has been provided by WCC covering a period between 2013 – 2023. Due to the impacts on travel behaviour as a result of the pandemic, particularly where mandated travel restrictions where in place between 2020-2022, the entire 10-year data set has been analysed. The area of analysis extends from the site access from Campden Road towards Stratford-upon-Avon Town Centre including A4390 Seven Meadows Road, A3400 Clopton Bridge and A3400 Shipston Road. The data shows that over the most recent 10-year period, there were a total of 77 collisions of which 63 were classified as slight and 14 as serious. There were no recorded fatalities in the study area. The table below shows the year-on-year trend of all collisions over the 10-year period: -

Table 4-2:- Total PICS (2013-2023)

Severity	Year											
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total
Slight	4	16	12	5	7	1	3	2	4	7	2	63
Serious	0	2	1	4	1	1	0	0	3	1	1	14
Fatal	0	0	0	0	0	0	0	0	0	0	0	0
Total	**4**	**18**	**13**	**9**	**8**	**2**	**3**	**2**	**7**	**8**	**3**	**77**

The data does not indicate a year-on-year trend of increased frequency of collisions although there is a notable spike in slight collisions in 2014 and 2015 with 16 and 12 collisions respectively compared to an average of 6 collisions per year over the 10-year period. There were a total of five cluster locations identified; a cluster has been defined as a location with five or more recorded PICs within 50m. The figure below shows the location of all collisions by severity and the cluster locations: -

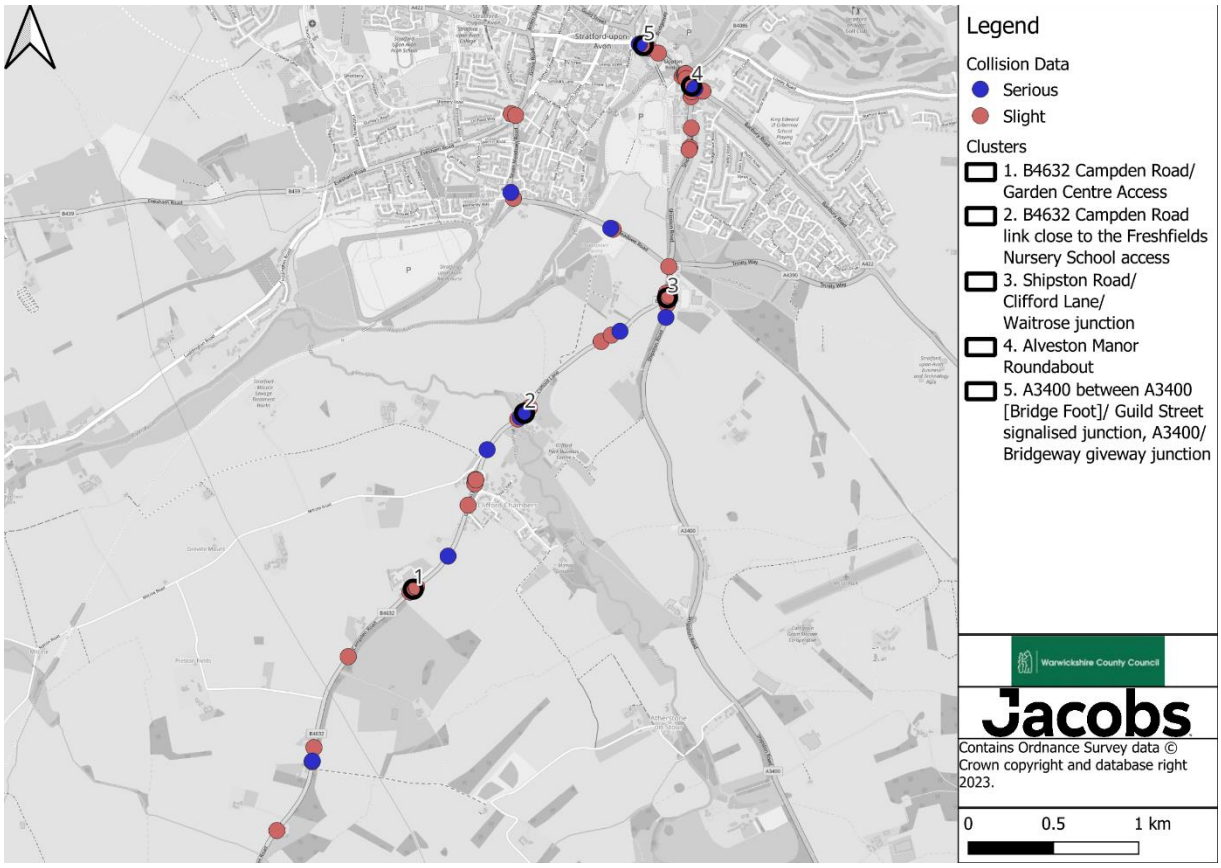

Figure 4.9:- PICs by Severity and Cluster Locations (2013-2023)

The cluster locations were identified as: -

- **(1)** BB4632 Campden Road/ Garden Centre access;
- **(2)** B4632 Campden Road link close to the Freshfields Nursery School access;
- **(3)** Shipston Road/ Clifford Lane/ Waitrose junction;
- **(4)** Alveston Manor Roundabout; and,
- **(5)** A3400 between A3400 [Bridge Foot]/ Guild Street signalised junction, A3400/ Bridgeway giveway junction.

The table below shows the year-on-year trend of all collisions over the 10-year period at each of the cluster locations: -

Table 4-3:- Total PICS (2013-2023) at cluster locations

Cluster	Severity Total			Year										
	Slight	Serious	Fatal	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
1	9	0	0	1	1	0	1	1	0	0	0	1	3	1
2	7	4	0	1	4	2	2	2	0	0	0	0	0	0
3	8	0	0	0	3	3	0	1	0	0	0	0	0	1
4	4	1	0	0	1	0	0	0	0	1	1	1	1	0
5	5	1	0	0	1	1	1	0	0	1	0	1	1	0

The data does not indicate a year-on-year trend of increased frequency of collisions at the identified cluster locations. It is noted that the B4632 Campden Road/ Garden Centre Access has recently been upgraded to a ghost-right turn arrangement and the B4632 Campden Road link close to the Freshfields Nursery School access has a scheme identified to improve highway safety. Of the total 77 recorded collisions, 22 involved non-motorised users (including pedestrians and cyclists). 18 of these were recorded as slight and 4 as serious. Of the 2 serious collisions, 2 included pedestrians and 2 cyclists. The figure below shows the location of the collisions involving pedestrians and cyclists: -

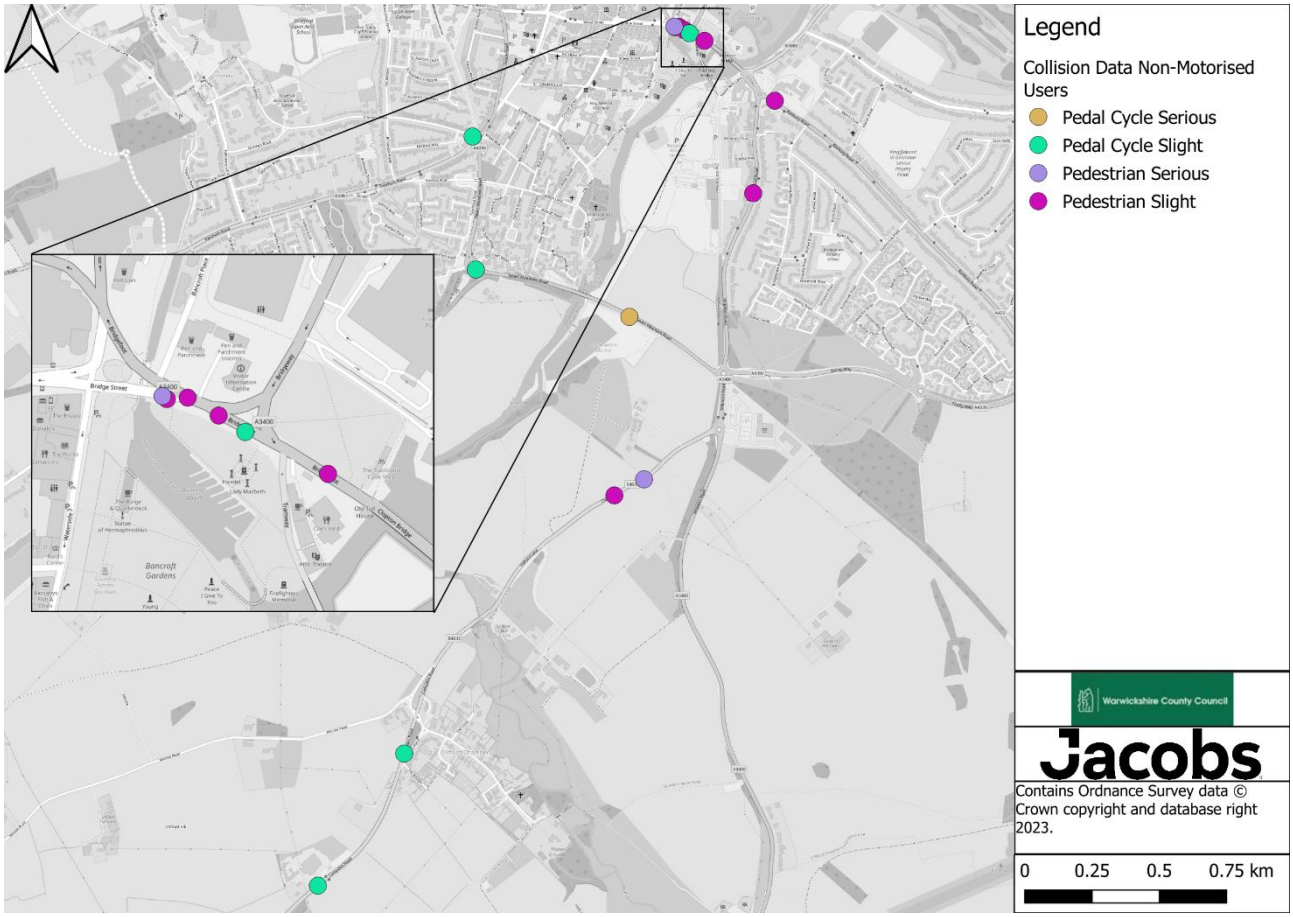

Figure 4.10:- PICs by Severity and Cluster Locations (2013-2023) for NMUs

4.8 Public Transport – Bus Accessibility and Services

To understand the level of connectivity at the LMA site, the public transport journey times have been mapped. The figure below shows the journey times from LMA to surrounding towns and cities using public transport using TRACC data (all public transport modes) between the hours of 07:00 and 10:00.

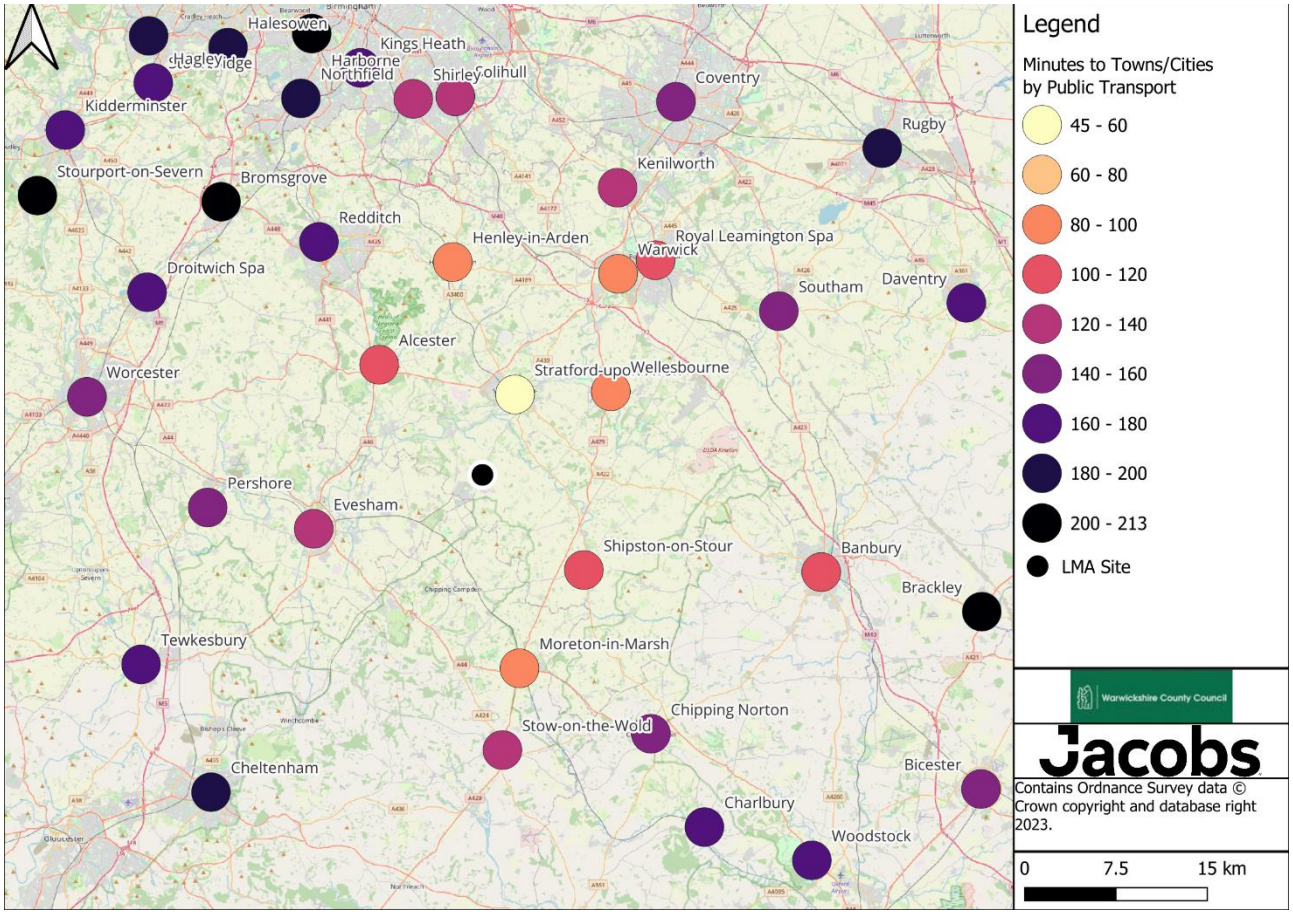

Figure 4.11:- Journey times from LMA to surrounding towns and cities using public transport using TRACC data between the hours of 07:00 and 10:00.

Table 4-4 provides a summary of all bus services, including their route and frequency as of July 2023, extracted from TRACC data: -

Table 4-4:- Stratford-Upon-Avon Bus Services

Service	Route Description	Operator	Days of Operation	Daytime Frequency
1	Stratford - Moreton - in - Marsh	Stagecoach Midlands	Mon-Sat	2 Per Day
1A	Stratford - Moreton - in - Marsh	Stagecoach Midlands	Mon-Sat	1 Per Day
2	Stratford - Moreton - in - Marsh	Stagecoach Midlands	Mon-Fri	3 Per Day
2A	Stratford - Moreton - in - Marsh	Stagecoach Midlands	Mon-Fri	4 Per Day
3	Stratford, Clifford Chambers, Meon Vale, Lower Quinton	Stagecoach Midlands	Mon-Sat	6 Per Day
3A	Stratford, Clifford Chambers, Meon Vale, Lower Quinton	Stagecoach Midlands	Mon-Sat	2 Per Day
4	Stratford, Trinity Mead	Stagecoach Midlands	Mon-Fri	6 Per Day
5	Stratford Railway Station, Stratford, Justins Avenue, Stratford Tesco	Stagecoach Midlands	Mon-Fri	4 Per Day
15	Leamington Spa, Leamington Rail Station, Leamington Shopping Park, Heathcote Hospital, Warwick Gates, Warwick Technology Park, Warwick,	Stagecoach Midlands	Mon-Fri	15 Per Day

Service	Route Description	Operator	Days of Operation	Daytime Frequency
	Forbes Estate, Chase Meadow, Barford, Wasperton, Charlecote, Wellesbourne, Alveston, Tiddington, Stratford, Stratford Railway Station, Stratford Morrisons, West Green Drive			
X16	Stratford-On-Avon - Kenilworth Abbey & Arden	Stagecoach Midlands	Mon-Fri	1 Per Day
18	Leamington Spa - Stratford	Stagecoach Midlands	Mon-Fri	1 Per Day
X18	Coventry, Leamington Spa, Leamington Rail Station, Warwick, Forbes Estate, Stratford	Stagecoach Midlands	Mon-Fri	31 Per Day
19	Stratford, Stratford Railway Station, Stratford Morrisons, West Green Drive	Stagecoach Midlands	Mon-Fri	13 Per Day
X19	Stratford, Stratford Railway Station, Haselor, Great Alne, Alcester, Coughton, Studley, Alexandra Hospital, Crabbs Cross, Redditch	Stagecoach Midlands	Mon-Fri	14 Per Day
X20	Solihull, Shirley, Blythe Valley Business Park, Hockley Heath, Henley In Arden, Wootton Wawen, Bearley, Stratford Railway Station, Stratford	Stagecoach Midlands	Mon-Fri	14 Per Day
27	Stratford, Luddington, Welford On Avon, Long Marston, Pebworth, Long Marston, Welford On Avon, Luddington, Stratford	Stagecoach Midlands	Mon-Fri	7 Per Day
28	Evesham, Harvington, Iron Cross, Salford Priors, Bidford, Welford On Avon, Dodwell, Stratford	Stagecoach Midlands	Mon-Fri	15 Per Day
50	Stratford, Preston On Stour, Wimpstone, Alderminster, Newbold On Stour, Halford, Tredington, Shipston On Stour, Brailes, Long Compton, Over Norton, Chipping Norton	Stagecoach Midlands	Mon-Sat	10 Per Day
51	Stratford, Preston On Stour, Alderminster, Newbold On Stour, Tredington, Ilmington, Shipston On Stour, Stretton On Fosse, Todenham, Great Wolford, Moreton In Marsh	Pulhams Coaches	Mon-Sat	7 Per Day
75	Stratford, Ettington, Pillerton Priors, Halford, Shipston On Stour, Brailes, Sibford Ferris, Tadmarton, Banbury	Stagecoach Midlands	Mon-Fri	2 Per Day
75A	Stratford, Shipston, Brailes, Banbury (via Meon Vale)	Stagecoach Midlands	Mon-Fri	5 Per Day
75B	Stratford, Shipston, Banbury (and operates via Alderminster)	Stagecoach Midlands	Mon-Fri	1 Per Day
76	Stratford, Ettington, Kineton, Ratley, Tysoe, Shenington, Wroxton, Banbury	Stagecoach Midlands	Mon-Fri	5 Per Day
76A	Stratford, Ettington, Kineton, Ratley, Tysoe, Shenington, Wroxton, Banbury	Stagecoach Midlands	Mon-Sat	2 Per Day
76X	Stratford, Ettington, Kineton, Ratley, Tysoe, Shenington, Wroxton, Banbury	Stagecoach Midlands	Mon-Fri	3 Per Day
77	Leamington Spa, Leamington Rail Station, Leamington Shopping Park, Warwick Gates, Bishops Tachbrook, Lighthorne Heath, Gaydon, Kineton, Wellesbourne, Loxley, Stratford	Stagecoach Midlands	Mon-Fri	17 Per Day
77B	Stratford - Banbury	Stagecoach Midlands	Mon-Fri	1 Per Day
77S	Stratford - Ettington	Stagecoach Midlands	Mon-Fri	1 Per Day
229	Stratford, Wilmcote, Aston Cantlow, Bearley, Snitterfield, Stratford	Stagecoach Midlands	Mon-Fri	6 Per Day

Service	Route Description	Operator	Days of Operation	Daytime Frequency
239	Studley - Warkscol	Stagecoach Midlands	Mon-Fri	2 Per Day
511	Olton, Widney Manor, Bentley Heath, Lapworth Station, Shrewley, Claverdon, Norton Lindsey, Snitterfield, Stratford-upon-Avon (available to the general public)	The Green Bus Company Limited	Mon-Fri	1 Per Day
512	Meriden - Stratford Schools	The Green Bus Company Limited	Mon-Fri	1 Per Day
PR	Stratford Park & Ride	Stagecoach Midlands	Mon-Sun	41 Per Day

Of the services identified within Table 4-4, only the 1A, 2, 2A, 3, 3A and 75A services run past LMA. Services between Lower Quinton and Stratford-upon-Avon are available as shown within Figure 4.12. Once combined, these services provide a headway of approximately 30 minutes throughout a typical weekday.

Table 4-5 shows the baseline frequency of services that route via the LMA site (timetable data correct for 2023 Q3). This timetable data shows that the AM and PM peak have an hourly service to and from Stratford-upon-Avon and almost a 30-minute service in the IP: -

Table 4-5:- Baseline Frequency of services routing past LMA

Service No.	0400-0659	07:00-08:59	09:00-15:59	16:00-17:59	18:00-23:59
1 ,1A, 2, 2A, 3, 3A (to Stratford)	1	1	11	2	1
1 ,1A, 2, 2A, 3, 3A (from Stratford)	0	1	12	2	1
75A (to Stratford)	0	1	1	0	0
75A (from Stratford)	0	1	0	1	1
Total	**1**	**4**	**24**	**5**	**3**

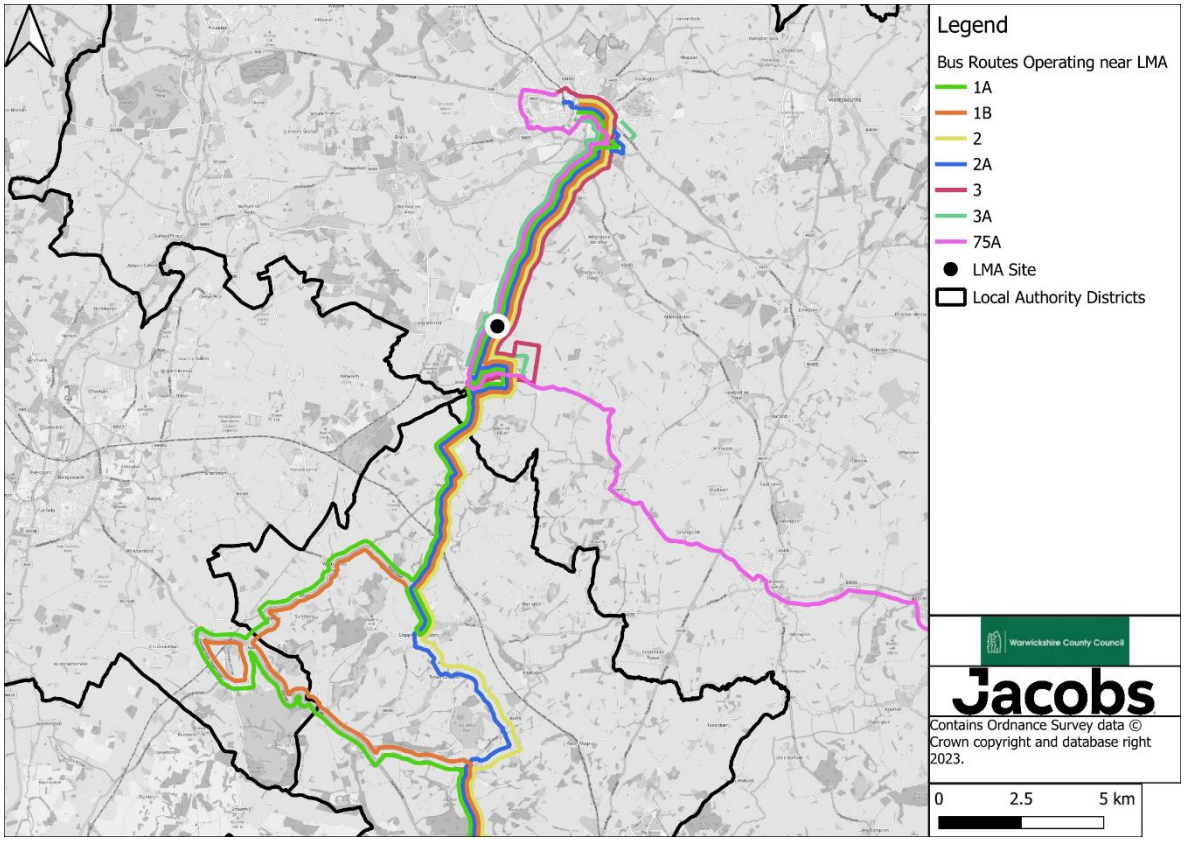

Figure 4.12:- Baseline Bus Routes Operating Past LMA

4.9 Public Transport – Rail

The figure below shows the railway network across the West Midlands[9]. The West Midlands Rail Investment Strategy sets out the long-term strategic planning at both the regional and national level. It sets out an aspiration to increase the number of services travelling south to Stratford-upon-Avon, which will increase the number of services travelling through Henley-in-Arden. Recognising that some travel behaviours have changed as a result of the COVID-19 pandemic, in particular, increased levels of working-from-home and hybrid working patterns, future rail investments strategies may continue to evolve in light of changing travel habits.

[9] West Midlands Railway: Our Network, (West Midlands Railway, 2023). URL: https://www.westmidlandsrailway.co.uk/travel-information/journey-planning/network-maps Last accessed 10/05/2023

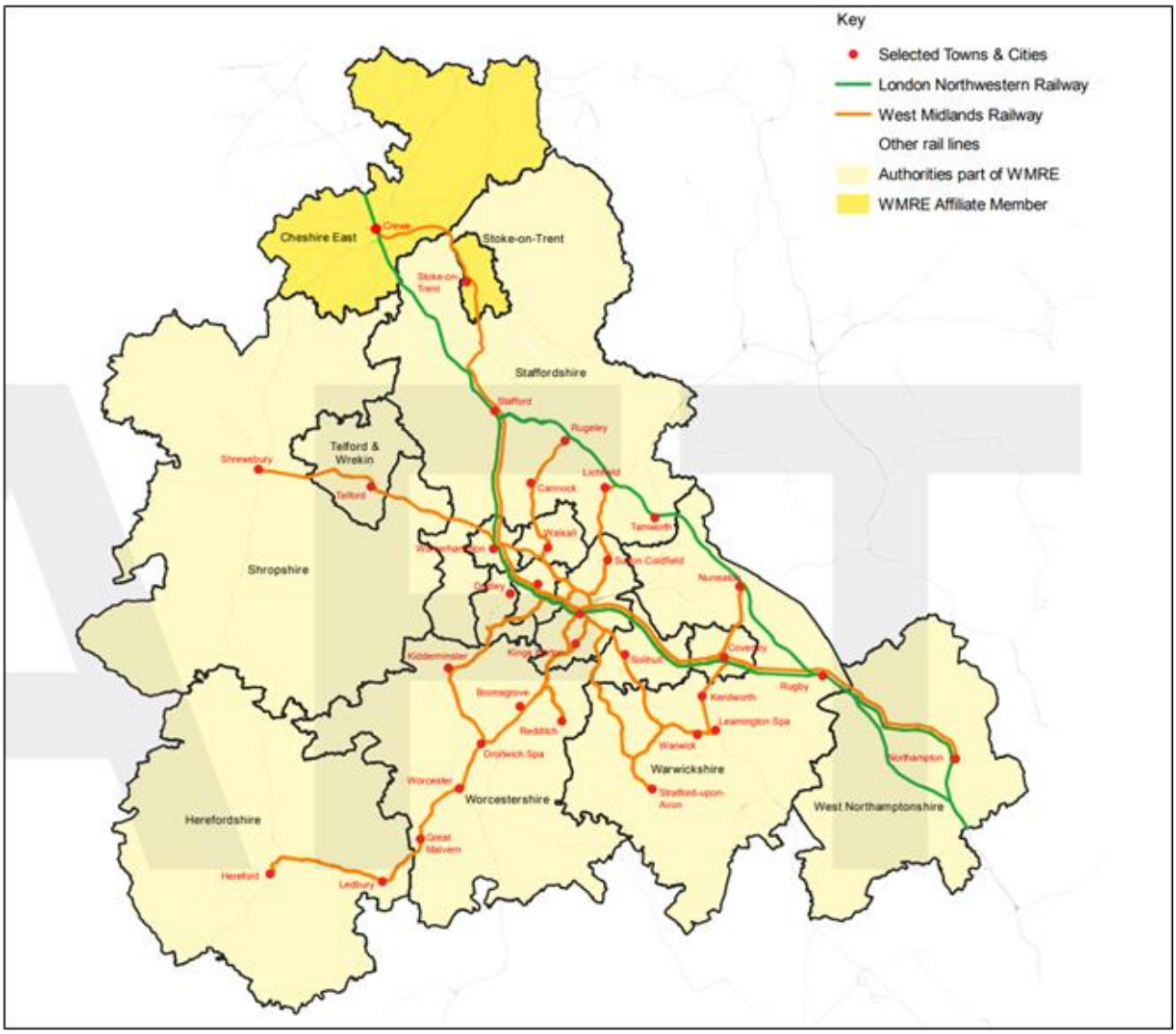

Figure 4.13:- West Midlands Railway Network Plan

Stratford-upon-Avon has two railway stations: Stratford-upon-Avon Station, located in the town centre, and Stratford-upon-Avon Parkway Station, which is located adjacent to Bishopton Park & Ride on the edge of the town by the A46. There are two trains per hour between Stratford-upon-Avon and Stratford-upon-Avon Parkway. Both stations are managed by West Midlands Railway and provide regular services to destinations such as Birmingham, Stourbridge and Kidderminster. In addition, Chiltern Railways operates a two-hourly service from Stratford-upon-Avon to Leamington Spa, serving both stations, with some services continuing beyond Leamington Spa to London Marylebone.

Honeybourne station is located approximately 10km from LMA in neighbouring Worcestershire and is managed by Great Western Railway. Honeybourne train station sits on the Cotswold Line between Evesham and Moreton-in-Marsh. Services are available to Worcester Foregate Street and London Paddington. Monday to Friday, 12 trains stop at Honeybourne station enroute to Worcester Foregate Street; the fastest journey time for this route is 29 minutes. A regular daily service is available to London Paddington, services stop every day of the week and the journey time for this route is around 2 hours. A business case has been submitted by the North Cotswold Line Taskforce to Government for a proposal to upgrade the line to allow a half-hourly service to be operated between Worcester and London. The proposal is designed to be compatible with the longer-term aspiration for passenger services to use the current freight-only branch between Honeybourne and Long

Marston. Approval from the DfT for the project to progress to the next stage of development has still to be secured, therefore it cannot currently be considered a committed scheme.

4.10 Public Transport – Park & Ride

Bishopton Park & Ride is located to the north-west of Stratford-upon-Avon and adjacent to the A46. Access to the Park & Ride is provided via Bishopton Lane, which directly connects with the A46/ A3400 Birmingham Road roundabout. The table below provides the number of parking spaces and the times of the first and last services.

Table 4-6:- Bishopton Park & Ride capacity and first/ last service times.

Parking Capacity (Spaces)				First Service	Last Service
Total	Motorcycle	Blue Badge	EV		
720	0	29	4	07:30	19:28

Car parking spaces at the Park & Ride could reduce in the future in response to WCC promoting development opportunities on part of the site. It may be possible to replace these spaces in the future should demand increase by providing additional parking decks.

The Park & Ride bus service operates Monday to Saturday, and Bank Holidays between Easter and the end of September. Regular bus services provide access to Stratford-upon-Avon town centre via Timothy's Bridge Road, Masons Road and A422 Alcester Road to avoid congestion on the A3400 Birmingham Road, which helps to maintain a 15-minute frequency. Park & Ride users can also travel to the town centre via Stratford-upon-Avon Parkway Railway Station, which provides two services per hour to Stratford-upon-Avon Railway Station.

WCC have previously confirmed that users of the Park & Ride generally comprise of three groups: 1. Park & Ride users, who want to travel into Stratford-upon-Avon town centre; 2. Rail users, who use Stratford Parkway Railway Station to travel out of Stratford-upon-Avon; and 3. Additional parking for businesses located along Timothy's Bridge Road.

The table below provides the bus service frequency for the AM (07:30 – 09:00), IP (09:00 – 16:00) and PM (16:00 – 19:00) periods.

Table 4-7:- Bishopton Park & Ride capacity and bus service frequency by peak.

Frequency (Mon to Fri – School Days)			Frequency (Mon to Fri, School Holidays and Saturdays)			Frequency (Bank Holiday Mondays)		
AM	IP	PM	AM	IP	PM	AM	IP	PM
Every 30 minutes	Every 15 minutes*	Every 15 minutes	Every 30 minutes	Every 15 minutes	Every 15 minutes	Every 15 minutes**	Every 15 minutes	Every 15 minutes

* Buses before 9am, and Monday – Friday during school term time between 14:55 and 16:45pm, run every 30 minutes. Buses do not run-on winter bank holidays, and for other bank holidays the first bus is at 10:00**

Bishopton Park and Stride offers a scenic walking route via the canal tow path (the route towards the town centre is approximately 2.8km) and forms part of the National Cycle Network Route 5.

4.11 Walking and Cycling Network

Stratford-upon-Avon benefits from many active travel routes, including a number of cycle lanes on key roads out of the town centre, as well as traffic-free paths, canal towpaths, bridleways and a pedestrianised town

centre. The A3400 Birmingham Road, A3400 Shipston Road, A422 Alcester Road and A4390 Trinity Way have shared footways for pedestrians and cyclists along large sections. The town centre has four Pelican/ Puffin crossings on the A3400 (Guild Street, Bridge Foot and Bridgeway area) and one Zebra crossing on Wood Street.

There are two National Cycle Network (NCN) routes that run through Stratford upon Avon; NCN Route 5 and NCN Route 41. NCN Route 5 runs north to south, connecting Bishopton and Long Marston through Stratford-upon-Avon, continuing north-west towards Redditch and Bromsgrove. Large sections of NCN Route 5 between Long Marston, Stratford-upon-Avon and Wilmcote are traffic free routes. Between Long Marston and Stratford-upon-Avon, NCN Route 5 uses the Stratford Greenway before joining a shared footway along A4390 Seven Meadows Road into the town centre. This route then travels along Masons Road and joins the canal at Timothy's Bridge Road to continue north-west to Wilmcote.

NCN Route 41 runs from Honeybourne to the south-west of Stratford-upon-Avon to Rugby in the north-east. The majority of the route is on-road but uses existing public rights of way such as Stratford Greenway between Long Marston and Stratford-upon-Avon. Between Stratford-upon-Avon and Royal Leamington Spa, the route travels via Loxley, which is mostly on-road and uses minor/ unclassified roads. While there is some limited capacity for pedestrians to cross the river via the Stratford Chain Ferry, which operates between Recreation Ground and Waterside (north of its junction with The Paddocks), pedestrian/ cyclist provision over the two vehicular crossing points is limited.

At Clopton Bridge, there is a narrow footway located on the north-east side of the bridge. Cyclists who cross Clopton Bridge have to use the road, which is congested and narrow and creates an intimidating environment for cyclists. Tramway Bridge (a non-motorised user bridge) is located to the south of Clopton Bridge, which provides a link from Swans Nest to A3400 Bridge Foot. The bridge is narrow and often congested with pedestrians during peak periods and periodical events. Although this bridge forms part of NCN Route 41, there is a local byelaw that requires cyclists to dismount and walk across the bridge.

The crossing via A4390 Seven Meadows Road has no footway provision and cyclists are required to use the road, which has a 50mph speed limit, to cross the river. Lucy's Mill Bridge, which is a non-motorised user bridge located north of the A4390 Seven Meadows Road crossing, is only accessible from the towpaths either side of the river Avon and not directly from A4390 Seven Meadows Road. Furthermore, the bridge is accessed via steps making it inaccessible to cyclists.

The B4632 is a rural single carriageway road that is subject to a 50mph speed limit, which provides a link between Stratford-upon-Avon, Clifford Chambers, Long Marston and other settlements to the south-west. Due to the distance between LMA from Stratford-upon-Avon and the high-speed rural nature of the B4632 Campden Road, there is limited prospect of the B4632 becoming an environment conducive for inclusive cycling. The Stratford Greenway is a facility suitable for cyclists and the NC5 improvement secured and delivered as part of consented phase 1 development 1(4/03579/OUT) provides an opportunity for traffic-free connection to Stratford-upon-Avon from LMA. The unsealed surface of the Greenway means during winter months it can be less attractive and the lack of lighting, and limited natural surveillance, may mean the link is not accessible for all.

Within LMA itself, as developed as part of the Phase 1 Reserved Matters planning application, the internal roadways are of sufficient width to accommodate buses on site. Moreover, the main internal roadway is abutted by greenspace and a landscaped corridor, creating separation between motorised and non-motorised users. All proposed adopted roads are abutted by footways and/ or a shared foot/cycleway and there are complimentary footpaths through the public open space throughout the site. As noted above, there is a high-quality active travel corridor from the site access to the Greenway.

Internally within the site, there is a well-established connectivity hierarchy which in the first instance places great emphasis on the needs of pedestrians, cyclists, and public transport provision.

5. Initial Review of proposed options

5.1 Introduction

The Vision Part 2 Report outlines the aspirational transport strategy recognising that the LMA proposals will generate externalised trips acknowledging LMA's proximity to Stratford-upon-Avon (as recognised in the LMA Concept). The analysis as outlined in the Vision Part 2 report predominately focuses upon providing a range of transport options with the ambition to offer future residents travel choice, a focus upon micro-mobility solutions and offers a high-level review of mass transport options.

This section sets out an initial sift of these options. It identifies where analysis which considers viability and feasibility of options in further detail through an assessment framework will be undertaken and outlined in this report.

As part of the initial sift, the following components have been considered: -

- Assessment against problems;
- Assessment against objectives;
- Feasibility, viability, and deliverability; and,
- Sifting criteria and sifting.

At this stage, this initial sifting assessment does not quantify the potential for modal shift of each option which is considered in greater detail as part of the Stage 2 analysis set out in chapter 6 of this report. This section offers a high-level sift of the mass transit and micro-mobility solutions outlined in the Vision Part 2 report and the LMA Sustainable Transport Requirements Options Assessment 2019 report. In addition, other potential alternative options based upon this review and baseline analysis, set out above, have been considered.

5.2 Options

A summary of the options considered previously, and new options based upon the baseline review are listed below: -

Mass Transit Solutions (as outlined in the Vision Part 2 report)

1. **Bus Option 1 - Retention of existing bus services with improved frequencies** - Option 1 would involve the rerouting of existing bus services (services 1, 2 and 3) into the site, following the amalgamation of bus routes with Bishopston Park & Ride. This bus option 1 includes the following enhancement of service 3:
    - A 1km diversion into the LMA site and a loop around to the Stratford-upon-Avon P&R site providing access to the Maybird Shopping Centre and Stratford-upon-Avon Parkway Rail Station; and,
    - Honeybourne Rail Station to Stratford-upon-Avon Rail Station (LMA to Honeybourne Rail Station as a bespoke service has also been assessed).
2. **Bus Option 2 - On-carriageway BRT -** Option 2 would fulfil the reliability aspect of making a bus service more attractive, and is essentially an additional improvement to Option 1, with the standard bus services operating at a 15-minute frequency and serving stops that will be provided within the site. Option 2 would be delivered in addition to Option 1. Auxiliary junction improvements at three of the central junctions within Stratford-upon-Avon would be required. These junctions are:
    - Greenhill Street/Arden Street/Alcester Road (A422)/Grove Road;
    - Alcester Road (A422)/Western Road; and
    - Alcester Road (A422)/Masons Road.
3. **Bus Option 3- Part-Segregated BRT (Seven Meadows Road to Evesham Road) -** Option 3 would deliver a segregated bus route between Seven Meadows Road and Evesham Road. The 2019 assessment

considered this option in the context of the SWRR. No detailed further assessment was undertaken as part of the Vectos study work of this option.

4. **Bus Option 4- Part-Segregated BRT (Shipston Road to Clopton Bridge) -** Option 4 would deliver a segregated bus route between Shipston Road and Clopton Bridge via the old tramway. No detailed further assessment was undertaken as part of the Vectos study work of this option.

5. **Bus Option 5- Guided Bus on the Greenway -** This option would provide segregated bus only infrastructure along the Stratford Greenway, which is traffic free, allowing for shorter journey times in comparison to the private car. This would comprise a guided busway system, similar to that seen in Bristol (Long Ashton Park & Ride to Cumberland Road).

6. **Bus Option 6- Electric Vehicles-** Option 6 relates to the provision of electric buses on routes to and from LMA.

7. **Rail Option 1- Shuttle service from LMA to Honeybourne -** Option 1 would involve the introduction of shuttle rail services between LMA station and Honeybourne station. The station at LMA would be located to the southwest of the site alongside the current Greenway. On the current masterplan this is shown as a potential mobility hub and land is safeguarded for this purpose in the Core Strategy, along with the route alignment in order to facilitate reopening.

8. **Rail Option 2- Re-opening Stratford-upon-Avon to Honeybourne -** Option 2 proposes the complete reopening of the Honeybourne to Stratford-upon-Avon line, routing via a new railway station at LMA. Land has been safeguarded between Stratford-upon-Avon and Honeybourne for a number of years to allow for the reopening of the railway line, which would provide a stop at LMA. This land routes along the Greenway active travel corridor.

9. **Light Rail Option - Use of Light Rail/Tram -** A light rail option could operate from LMA along the Greenway, connecting with the Seven Meadows roundabout beyond the Greenway, where there is potential that it could operate as a tram system and route towards the centre of Stratford-upon-Avon

10. **Automated Shuttle Service-** Shuttle buses operating along the Greenway. An alternative high-capacity travel option to bus and rail is an automated shuttle service to serve LMA along the Greenway. These innovative shuttles are emerging as an efficient and useful technology in transporting moderately sized numbers of people between key destinations and comprise small automated and electric shuttles which typically accommodate up to 10 passengers at any time.

Micro-mobility Solutions (as outlined in the Vision Part 2 report)

11. **Car Club-** Provision of 78 car club vehicles, initial membership provided by development – The cost of one car club vehicle is in the region of £10,000 per year with minimal annual costs, and the potential to include membership fees within the base cost. CoMoUK New Development Guidance (2022) suggests that an edge of town development of 500 units would require up to 11 car club vehicles (1 vehicle per 45 dwellings), which would allow for a reduction of 100 car parking spaces. Based on a development of 3,500 dwellings and a ratio of 1 vehicle per 45 dwellings, 78 car club vehicles could be provided, which could facilitate the reduction of 700 car parking spaces. Delivery of 78 vehicles at LMA could therefore cost in the region of £780,000 per year (subject to discussion with a service provider).

12. **Bike & E-Bike Sharing- Fleet of 48 e-bikes -** Based on a development of 3,500 dwellings, a fleet of 48 e-bikes is anticipated to meet initial demand. The costs were identified to be between £140,000 - £400,000.

13. **E-Cargo Bike Sharing- Fleet of 60 e-cargo bikes -** There is the potential for the development to provide E-cargo bikes for hire on short-term rentals by future residents, staff and visitors to the site. Similarly, to the bike and e-bike schemes aforementioned, the rentals could be controlled by an app system.

14. **Scooter Sharing- Fleet of 50 scooters (potentially up to 1,000 based off demand) -** A fleet of 50 scooters is likely to be sufficient upon first occupation of the development and the fleet size could be increased to anything up to 1,000 scooters if demand dictates. These e-scooters can be geographically ringfenced in order to keep them close to the development and whilst this will limit journeys to shorter distances, it will be more convenient for prospective users to hire an e-scooter

15. **Mobility Hubs- Two Mobility Hubs Provided** - To encourage active travel and to provide a central location in which micro-mobility modes can be accessed. The hypothesis is that a primary mobility hub will be provided within a focal point of the development, supported by secondary hubs at additional key locations, with smaller tertiary mobility hubs distributed elsewhere within the site to ensure there are no gaps in provision and all residents and workers can access a hub within walking distance. A secondary hub is anticipated to be located adjacent to the Greenway.

Other Options

16. **Travel Planning (as outlined in the LMA Sustainable Transport Requirements 2019) –** sustainable travel packs for each dwelling have been secured as part of the first consented 400 dwellings (14/001186). As part of the 2019 review, PTP was identified as a relatively low-cost option of £22,550 per annum, £30,000 start-up costs and on-going annual budget of £20,000. In addition, sustainable travel packs for each dwelling at a total of £75 per dwelling. This option would form part of the overall package of options primarily centred on mass-transit with the micro-mobility package forming part of a holistic package targeting both short, and longer/ medium distance trips. This is discussed further in the next chapter.

17. **Enhanced cycling connections within Stratford-upon-Avon Town Centre and the Greenway (as outlined in the LMA Sustainable Transport Requirements)** - As part of the 2019 WCC study, a series of cycle network improvements were identified including upgrading the Greenway to an all-weather surface, The Greenway to Lucy's Mill Bridge and Lucy's Mill Bridge to the NCN on Avonmeadow Close at an approximate cost of £1,933,400.

    Further connectivity improvements were also identified at the eastern end of The Greenway at Seven Meadows Road and destinations within the central area of Stratford-upon-Avon via Alcester Road at an estimated cost of £309,000.

    The 2019 study identified enhancements to cycling connectivity as a priority for the LMA site if it is to achieve the desired modal shift away from private car usage and achieve the objectives of being a Garden Village. Where heavy and light rail options have been assessed, which involve a substantial conversion of the Greenway corridor, this option focuses upon maximising the Greenway as an asset where cycling enhancements may be more viable compared to other options.

18. **Demand Responsive Transport (DRT) -** Opportunities to integrate DRT services offering a flexible transport solution in addition to traditional bus services. Further analysis will be undertaken to explore opportunities for DRT as part of this assessment where initial analysis indicates connections to Honeybourne and Stratford Rail stations may offer a more flexible offer in parallel with classic bus intervention, aligning with the more agile characteristics of LMA.

19. **Enhancement of bus priority corridors in line with the BSIP -** with incorporated technologies at town centre junctions for improvements for public transport users to access Stratford-upon-Avon at points where delay is currently experienced in peak periods.

    Further analysis will be undertaken to explore opportunities for bus priority routes as part of this assessment to improve reliability. Improvements on Birmingham Road, Alcester Road, Rother Street and B439 were identified as part of the BSIP which indicated costs of £1,550,000. Such technology-based interventions are more compatible with the constrained streetscape of Stratford-upon-Avon particularly where the urban extents reduce the available road space for segregated bus options. This option will be considered as part of the supporting measures focused upon bus transport-based mass transit options. In the context of this option, references to Bus Rapid Transport (BRT) introduces a selection of discrete technology interventions which are designed to expedite bus services through congested parts of the town centre network.

20. **South Stratford Park & Ride –** It is noted that historically there has been limited demand for a Park & Ride in the south of Stratford-upon-Avon. A Park & Ride service operated from the Rosebird Centre at the junction of Shipston Road and Clifford Lane between 2012 and 2015 funded through a planning condition/ obligation on the Rosebird site. The 2019 WCC study considered this high-level option on land acquired as part of the SWRR. Given the uncertainty over the SWRR, land availability and acquisition being a major factor, this option considers the viability and feasibility of reinstating the Rosebird Park & Ride.

5.3 Initial Sift against Problems and Objectives

Several key problems and issues within Stratford-upon-Avon have been identified as part of the baseline review work. The key identified problems are as follows: -

1. Lack of alternative routes through Stratford-upon-Avon in light of the limited and constrained river crossings;
2. Peak hour traffic speeds significantly below free flow speeds - analysis of INRIX data shows that peak hour traffic speeds are reduced through the congested town centre;
3. Impact upon townscape, landscape and historic nature of Stratford-upon-Avon;
4. Lack of alternative to car mode; and,
5. Locations with a poor historic safety record which have recently or are soon to be improved.

These problems are likely to be exacerbated in the future due to forecast increased traffic flow. Based on these identified problems and issues, a series of objectives have been identified. These are:

1. Alignment with local, regional and national policy;
2. Avoid, mitigate and compensate for potential impacts upon the built, natural and historic environment;
3. Encourage a self-sufficient ethos by maximising opportunities and provide maximum opportunities for micro-mobility;
4. Avoid, mitigate and compensate for potential impacts upon the highway network; and,
5. Offer viable and realistic alternatives to single occupancy car trips.

Each of the potential options identified have been inputted into the initial sifting spreadsheet. Each option has been assessed against how it may help to resolve the identified problems and help achieve the defined objectives. The assessment is based on a 5-point scale as illustrated below: -

		Problems						Objectives					
	Options	1	2	3	4	5	Total	1	2	3	4	5	Total
No	**Mass Transit Options**												
1	Bus Option 1- Retention of existing bus services with improved frequencies	0	1	0	1	0	2	2	1	0	1	2	6
2	Bus Option 2- On-carriageway BRT	0	1	0	2	0	3	2	1	0	1	2	6
3	Bus Option 3- Part-Segregated BRT (Severn Meadows Road to Evesham Road)	0	2	-1	2	0	3	2	1	0	1	2	6
4	Bus Option 4- Part-Segregated BRT (Shipston Road to Clopton Bridge)	0	2	-1	2	0	3	2	1	0	1	2	6
5	Bus Option 5- Guided Bus on the Greenway	0	0	-2	1	0	-1	2	-2	0	1	2	3
6	Bus Option 6- Electric Vehicles	0	0	0	1	0	1	2	1	0	1	2	6
7	Rail Option 1- Shuttle service from LMA to Honeybourne	2	2	-2	2	0	4	1	-2	0	1	1	1
8	Rail Option 2- Re-opening Stratford-upon-Avon to Honeybourne	2	2	0	2	0	6	1	-1	0	2	1	3
9	Light Rail & Tran Option- Use of Light Rail/Tram for Honeybourne to Stratford	2	2	-2	2	0	4	1	-2	0	2	1	2
10	Automated Shuttle Service- Shuttle buses operating along the greenway	0	0	-2	2	0	0	1	-2	0	2	1	2
	Micro-mobility Options												
11	Car Club- Provision of 78 car club vehicles, initial membership provide by development	0	0	0	1	0	1	1	0	2	0	1	4
12	Bike & E-Bike Sharing- Fleet of 48 e-bikes	1	1	0	1	0	3	1	0	2	0	1	4
13	E-Cargo Bike Sharing- Fleet of 60 e-cargo bikes	0	0	0	0	0	0	1	0	2	0	1	4
14	Scooter Sharing- Fleet of 50 scooters (potentially up to 1,000 based off demand)	1	1	0	1	0	3	1	0	2	0	1	4
15	Mobility Hubs- Two Mobility Hubs Provided	1	1	0	1	0	3	1	0	2	0	1	4
	Initial Sift Other Options												
16	Travel Planning (as outlined in the LMA Sustainable Transport Requirements 2019)	0	1	0	1	0	2	1	0	1	0	1	3
17	Enhanced cycling connections within Stratford Town Centre and the Greenway (as outlined in the LMA Sustainable	1	1	1	1	0	4	2	1	0	1	1	5
18	Demand Responsive Transport (DRT)	1	1	0	1	0	3	2	1	0	1	2	6
19	Enhancement of bus priority corridors (BSIP)	0	0	1	1	0	2	2	1	0	1	1	5
20	South Stratford Park and Ride / Stride (via the Tramway)	0	2	1	1	0	4	0	0	0	1	1	2

Problems
Large Beneficial Impact (2)
Beneficial Impact (1)
Neutral/Marginal Impact (0)
Adverse Impact (-1)
Large Adverse Impact (-2)

Objectives
Large Beneficial Impact (2)
Beneficial Impact (1)
Neutral/Marginal Impact (0)
Adverse Impact (-1)
Large Adverse Impact (-2)

The resulting assessment provides an understanding of the benefits that could be delivered by each of the potential interventions.

5.4 Initial sift against Feasibility & Viability / Deliverability

The next stage assesses each of the potential interventions against key feasibility, viability and deliverability criteria. The following considerations have been used to inform the criteria: -

- Preliminary assessment of the feasibility of construction or implementation and operation based upon information presented in the background documentation and baseline review;
- Land ownership / availability;
- Physical constraints consideration of whether the option is technically feasible;
- Acceptability considering if there are any significant environmental impacts for the option under consideration and the level of support there is likely to be from the public for the option under consideration;
- Initial operational and implementation costs considering whether there are likely to be significant costs which prohibit the option under consideration; and,
- Funding likelihood considering what are the likely funding sources.

Each of the potential options has been assessed against a three-point scale as illustrated below: -

Option		Feasibility	Deliverability
	Mass Transit Options		
1	Bus Option 1- Retention of existing bus services with improved frequencies	Feasible in theory	Deliverable in theory
2	Bus Option 2- On-carriageway BRT	Feasible but the challenges	Deliverable but with challenges
3	Bus Option 3- Part-Segregated BRT (Severn Meadows Road to Evesham Road)	Feasible but the challenges	Deliverable but with challenges
4	Bus Option 4- Part-Segregated BRT (Shipston Road to Clopton Bridge)	Feasible but the challenges	Deliverable but with challenges
5	Bus Option 5- Guided Bus on the Greenway	Significant challenges	Very difficult to deliver
6	Bus Option 6- Electric Vehicles	Feasible in theory	Deliverable in theory
7	Rail Option 1- Shuttle service from LMA to Honeybourne	Significant challenges	Very difficult to deliver
8	Rail Option 2- Re-opening Stratford-upon-Avon to Honeybourne	Significant challenges	Very difficult to deliver
9	Light Rail & Tran Option- Use of Light Rail/Tram for Honeybourne to Stratford	Significant challenges	Very difficult to deliver
10	Automated Shuttle Service- Shuttle buses operating along the greenway	Significant challenges	Very difficult to deliver
	Micro-mobility Options		
11	Car Club- Provision of 78 car club vehicles, initial membership provide by development	Feasible in theory	Deliverable in theory
12	Bike & E-Bike Sharing- Fleet of 48 e-bikes	Feasible in theory	Deliverable in theory
13	E-Cargo Bike Sharing- Fleet of 60 e-cargo bikes	Feasible in theory	Deliverable in theory
14	Scooter Sharing- Fleet of 50 scooters (potentially up to 1,000 based off demand)	Feasible in theory	Deliverable in theory
15	Mobility Hubs- Two Mobility Hubs Provided	Feasible in theory	Deliverable in theory
	Initial Sift Other Options		
16	Travel Planning (as outlined in the LMA Sustainable Transport Requirements 2019)	Feasible in theory	Deliverable in theory
17	Enhanced cycling connections within Stratford Town Centre and the Greenway (as outlined in the LMA Sustainable Transport Requirements)	Feasible in theory	Deliverable in theory
18	Demand Responsive Transport (DRT)	Feasible in theory	Deliverable in theory
19	Enhancement of bus priority corridors (BSIP)	Feasible but the challenges	Deliverable but with challenges
20	South Stratford Park and Ride / Stride (via the Tramway)	Feasible but the challenges	Deliverable but with challenges

Feasible in theory	Deliverable in theory
Feasible but with challenges	Deliverable but with challenges
Significant challenges	Very difficult to deliver

5.5 Initial sift sifting criteria

A set of sifting criteria has been developed to sift-out potential interventions that are unlikely to provide a significant contribution to the identified problems and defined objectives or are considered unlikely to be deliverable, viable or feasible.

Where the option does not meet all four sifting criteria it is considered to perform poorly from the outset and there is limited realistic prospect of the scheme being realised. As such no further assessment work is undertaken. Where the option meets all four sifting criteria, the option should be analysed as part of the further detailed assessment however the initial sift indicates immediate barriers and constraints with varying complexity. Each option must meet the following sifting criteria to be considered further as part of this assessment: -

- Overall moderate impact against identified problems (Appraisal score > 0)
- Overall moderate fit to objectives (Appraisal score > 0)
- Likely to be feasible in theory
- Likely to be deliverable in theory

						Sifting Criteria	
			Problem	Objective		Feasible/ Viable	Deliverable
No	**Rank**	**Mass Transit Options**			**Total**		
2	**1**	Bus Option 2- On-carriageway BRT	3	6	9	Y	Y
3	**2**	Bus Option 3- Part-Segregated BRT (Severn Meadows Road to Evesham Road)	3	6	9	Y	Y
4	**3**	Bus Option 4- Part-Segregated BRT (Shipston Road to Clopton Bridge)	3	6	9	Y	Y
8	**4**	Rail Option 2- Re-opening Stratford-upon-Avon to Honeybourne	6	3	9	N	N
1	**5**	Bus Option 1- Retention of existing bus services with improved frequencies	2	6	8	Y	Y
6	**6**	Bus Option 6- Electric Vehicles	1	6	7	Y	Y
9	**7**	Light Rail & Tran Option- Use of Light Rail/Tram for Honeybourne to Stratford	4	2	6	N	N
7	**8**	Rail Option 1- Shuttle service from LMA to Honeybourne	4	1	5	N	N
5	**9**	Bus Option 5- Guided Bus on the Greenway	-1	3	2	N	N
10	**10**	Automated Shuttle Service- Shuttle buses operating along the greenway	0	2	2	N	N
		Micro-mobility Options	**1**	**2**	**Total**		
12	**1**	Bike & E-Bike Sharing- Fleet of 48 e-bikes	3	4	7	Y	Y
14	**2**	Scooter Sharing- Fleet of 50 scooters (potentially up to 1,000 based off demand)	3	4	7	Y	Y
15	**3**	Mobility Hubs- Two Mobility Hubs Provided	3	4	7	Y	Y
11	**4**	Car Club- Provision of 78 car club vehicles, initial membership provide by developm	1	4	5	Y	Y
13	**5**	E-Cargo Bike Sharing- Fleet of 60 e-cargo bikes	0	4	4	Y	Y
		Initial Sift Other Options	**1**	**2**	**Total**		
17	**1**	Enhanced cycling connections within Stratford Town Centre and the Greenway (as outlined in the LMA Sustainable Transport Requirements 2019)	4	5	9	Y	Y
18	**2**	Demand Responsive Transport (DRT)	3	6	9	Y	Y
19	**3**	Enhancement of bus priority corridors (BSIP)	2	5	7	Y	Y
20	**4**	South Stratford Park and Ride / Stride (via the Tramway)	4	2	6	Y	Y
16	**5**	Travel Planning (as outlined in the LMA Sustainable Transport Requirements 2019)	2	3	5	Y	Y

5.6 De-selected options

Where options have not been taken forward for further assessment, a summary of the key considerations of the initial assessment are set out below: -

5.6.1 Bus Option 5- Guided Bus on the Greenway

The guided bus option seeks to directly address the problem of providing an alternative to car travel for future residents travelling to Stratford-upon-Avon. A guided bus option has been considered as part of the Vision Part 2 and 2019 assessment work. The 2019 assessment concluded that the level of capital investment (£51m) required to deliver a guided busway was not available from the LMA promoters and there was no identified current source of public funding for a scheme of this scale in light of the proposed delivery of the SWRR at that time.

As part of this current study, an option to introduce an unguided (driver-based) system along the Greenway has also been assessed. Based upon this initial assessment, this option could be more cost effective than a guided system which would have to be doubled track. It is envisaged a single track with passing places and

signal control measures would be sufficient infrastructure. Using an adjustment to the Cambridge Guided bus outturn and converting to 2023 prices, the estimated cost of this option is £48m. This option would have an advantage in seeking to retain as much of the route alongside the Greenway for all active travel users. This could then be used by the Automated system, as outlined in the previous study work, when the technology is proven. The disadvantage would be the limited service frequency possible through capacity limitations of single lane operation.

Buses could pick up passengers at LMA (including Quinton and Meon Vale to expand patronage) access the Greenway corridor and re-enter the existing highway network at the Seven Meadows Road roundabout. A distinct advantage of a busway as opposed to a rail option is the treatment required at the Greenway Road crossing at Milton and the three farm-track crossings (standard at-grade traffic signals would be required).

In addition, a full road-based option has also been considered which would involve converting the entirety of the Greenway into a road running parallel with the B4632. This would in theory provide an alternative access point to Stratford-upon-Avon thereby bypassing the two existing congested bridges and enabling a higher frequency of operation and potentially for other traffic (eg 2+). Using outturn costs of the Bexhill to Hastings link road (partly on former rail alignment) and converting to 2023 prices, the estimated cost of this option is £120m. This would be a potential sub option to be looked at as part of any scheme development, rather than a full option in its own right.

In consideration of all options reviewed, there are significant engineering constraints present on the Greenway, not least the major pinch point at Stannells Bridge crossing. There are also other material considerations such as environmental issues with the Greenway being a green space and natural habitat, and the value of the Greenway as a local asset and attraction in its own right.

On this basis, whilst the options are feasible in theory, the deliverability of the options are significantly constrained by these factors.

5.6.2 Rail Option 1- Shuttle service from LMA to Honeybourne

Rail option 1 would involve the introduction of shuttle rail services between LMA station and Honeybourne station. The station at LMA would be located to the southwest of the site alongside the current Greenway. On the current masterplan this is shown as a potential mobility hub with land safeguarded for its provision as well as the safeguarding of the route alignment at the former Long Marston station site and crossing of Station Road.

Based upon this initial assessment and the previous work undertaken, the initial costing for this option has been estimated at £37.5m[10]. The existing track which would be used for the majority of this journey is used by freight trains, which are far heavier than passenger trains, therefore the amount of track renovation could be diminished. A potential option could also use the freight siding, cross Station Road and over fields into the LMA development area. This would make the option more attractive shortening the access times. Operational costs would be approximately £0.5 - £1.0m per annum which are unlikely to be met by the anticipated demand of primarily London journeys generated by the development.

The 2019 assessment concluded that the level of capital investment required to deliver a heavy rail option was not available from the LMA promoters and there was no identified current source of public funding for a scheme of this scale. Based upon this initial review, the conclusion formed as part of the 2019 assessment remains relevant, however this does not necessarily rule out a more detailed study reaching a different conclusion. The Vision Part 2 paper analysed the potential modal shift of this option identifying that this option was unlikely to significantly increase the number of rail passengers and therefore the option was unlikely to indicate sufficient high levels of modal shift to justify the cost of the scheme.

An alternative scheme of re-opening the existing line only as far as the former Long Marston station site (south of Station Road) has not been specifically considered in this study. Whilst doing so would negate the need to cross Station Road, land would need to be acquired for a station platform. There is also the question of the attractiveness of such a service to a rail operator as per option 1 and users. It is understood that further work independent of this study is being undertaken to explore this sub-option in greater detail.

[10] Provision of a rail shuttle service between Honeybourne Station and Long Marston Airfield, ARUP, May 2018

5.6.3 Rail Option 2- Re-opening of Stratford-upon-Avon to Honeybourne line

Costing undertaken as part of the previous assessment work, indicated the costs of the rail line reinstatement to be greater than £130m[11]. Noting the costs identified and the constraints on the Greenway, this option is significantly constrained in terms of its viability and feasibility, and deliverability. Such investment may form part of a national rail strategy however there is no certainty this would come forward within the timescales compatible with development at LMA.

As a possible alternative, the partial reopening between LMA and Stratford-upon-Avon to Severn Meadows Roundabout could be a single track with two tracks at the termini and retain the Greenway alongside. It would have the disadvantage of requiring a walk of around 1km to reach the town centre. This could make the rail shuttle unattractive compared to the more direct door-to-door option provided by bus services, although in contrast, a rail option would have the attraction of running faster on a congestion free route.

5.6.4 Light Rail Option - Use of Light Rail/Tram

A light rail option could operate from the LMA development along the Greenway, connecting with the Seven Meadows roundabout. Beyond the Greenway, there is potential that it could operate as a tram system and route towards the centre of Stratford-upon-Avon. An estimated cost of £125m was derived as part of the previous study work.

Such systems are lighter and usually operate at a higher frequency than heavy rail so the option would likely require a double track and overhead electrification. The environmental and asset-value considerations of the Greenway are highly relevant to this option, where an additional major constraint would be the high cost of the street-running section through the town centre which would likely have a major impact upon utilities. On this basis, this option would be very difficult to deliver.

5.6.5 Automated Shuttle Service- Shuttle buses operating along the Greenway

An alternative high-capacity travel option to bus and rail is an automated shuttle service to serve LMA along the Greenway. As part of the previous high-level assessment, it was noted that such systems are in their infancy in the UK. No cost estimates have been provided as part of the previous study nor detailed assessment of constraints.

Notwithstanding the environmental considerations and impact upon the asset value of the Greenway as noted above, it is noted that such systems operate in heavily controlled environments with restricted access. Such provision could in theory be made on the Greenway, however the previous study noted the potential for the automated shuttle service to continue beyond Seven Meadows roundabout towards the town centre.

The constrained and historic nature of Stratford-upon-Avon is not considered conducive to automated services which follow fixed routes. For example, the automated bus stagecoach bus AB1 which operates between Ferrytoll Park & Ride and Edinburgh Park Interchange follows a route which is made up of A-roads, motorways, bus lanes and private land. Whilst this system includes complex traffic manoeuvres, these are not comparable to the more restricted streetscape of Stratford-upon-Avon.

The feasibility and deliverability of such a system are significantly constrained by engineering, environmental and societal factors. There is no evidence that these systems could operate safely in Stratford-upon-Avon town centre and cannot therefore be relied upon to deliver the suggested benefits in the planned period.

5.7 Summary

As part of the sifting exercise and baseline review, the assessment work indicates that public transport, particularly bus provision, as the primary mass-transit option for LMA. In addition to this, cycling options and a package of supporting micro-mobility interventions will be assessed in a greater level of detail determining feasibility and viability. Options involving major infrastructure provision for heavy and light rail are significantly constrained by engineering, environmental and societal factors and have not been taken forward for further assessment as part of this study. This high-level assessment has concluded that the business case has not been

[11] Stratford-upon-Avon - Honeybourne rail reinstatement: indicative funding appraisal, ARUP, April 2019

made for heavy or light rail, but this does not rule out future studies reaching a different conclusion. It is also worth noting that funding from LMA promoters had been previously assigned to the SWRR, as this intervention is now no longer being pursued, development funding may be available for other transport measures.

An assessment of the indicative capital and operational costs of the options is presented in the following section and a further appraisal criterion incorporating policies and principles of DfT EAST has been developed which appraises each of the options. A summary of the results across all options has been undertaken providing conclusions on the comparative performance of options.

6. Stage 2: Option Generation/ Feasibility

6.1 Introduction

Stage 2 presents the more detailed assessment of the options taken through the previous sifting exercise. The options are composed of two components: -

1. Mass-transit options; aimed at the movement of high volumes of people catering predominantly for short, medium, and longer distance trips using public transport; and,
2. Micro-mobility: options which are underpinned by alternatives to car for short distance trips encouraging mode shift to sustainable and active modes and promoting healthy lifestyles.

Other options have also been developed as part of this viability and feasibility assessment. Some of these options fall within the above categories, with additional standalone options including exploring enhanced cycling measures on the Greenway and routes towards Stratford-upon-Avon town centre, as well as a high-level assessment of a South Stratford Park-and-Ride/ Stride.

All costs provided in this section are indicative and have been rounded to the nearest £1,000.

6.2 Option Overview

6.2.1 Mass-transit

Public Transport (Conventional Bus)

Following the baseline review and assessment of the previous options, the options are primarily focused on bus services providing better integration between rail services and local bus services, demand responsive transport and community transport to increase the attractiveness of public transport and provide viable and practical options for multi-modal public transport journeys for residents and visitors.

Building upon the bus options previously analysed as part of the Vision Part 2 and 2019 study, the bus options are centred around the following: -

- Improved frequency and servicing (supported by Demand Responsive Transport);
- The possibility of bus segregation to improve reliability and bus priority measures aligned with BSIP objectives; and,
- Electric buses: The WCC BSIP notes that the average age of the bus fleet is 8.9 years old. 57% of buses have Euro VI diesel engines noting a phased approach, aligned with decarbonisation, towards bus priority corridors and cleaner vehicles. The BSIP also notes an investment in programmes to reduce engine idling and deliver green infrastructure such as solar energy solutions at key bus stops. On this basis, the core assumption for the public transport option will include electric buses as part of this feasibility and viability assessment.

Demand Responsive Transport (DRT)

Aligned with the WCC BCIP objectives, there are opportunities to integrate DRT options alongside the conventual bus offer to improve the attractiveness and reliability of bus services to and from LMA. This option offers additional flexibility in combination with *fixed-timetable* services as supplementary services aligning with the promotion of agile and flexible future working habits of residents.

Bus Priority and supporting measures

Partial and full bus segregation has been considered as part of the previous study work. As part of the 2019 work led by WCC, bus option 2 considered integrating on-carriageway BRT improvements. Bus option 3 considered a part-segregated BRT route between Seven Meadows Road and Evesham Road, however this was considered in the context of the SWRR. Bus option 4 considered a part-segregated BRT route between Shipston Road to Clopton Bridge via the old tramway. Whilst these options have been historically considered to be significantly constrained, the BSIP targets bus priority between Stratford – Warwick – Leamington – Kenilworth,

as part of the goal to make public transport faster and more reliable. Aligned to this principal, further analysis has been undertaken to explore opportunities for bus priority routes as part of this assessment. Improvements on Birmingham Road, Alcester Road, Rother Street and the B439 were identified as part of the BSIP with indicative costs of £1,550,000. Such technology-based interventions are more compatible with the constrained streetscape of Stratford-upon-Avon particularly where the urban extents reduce the available road space for segregated bus options. In the context of this option, reference to BRT introduces a selection of discrete technology interventions which are designed to expedite bus services through congested parts of the town centre network.

6.2.2 Micro-mobility

This option would form part of the overall package of options primarily centred on mass-transit with the micro-mobility package forming part of a holistic package targeting both short, and medium distance trips. These include: -

- Car clubs
- Bike and e-bike sharing
- E-cargo bikes
- E-scooter sharing
- Travel planning
- Mobility hubs

6.2.3 Other Options

Cycling

As part of the initial sifting criteria, options which involved significant conversion of the Greenway are constrained by engineering and deliverability challenges. The Greenway, as an inclusive link for all users, clearly offers an opportunity for LMA building up the high-quality connection delivered as part of the first 400 dwellings.

Investment in high quality cycling infrastructure can have significant and positive impacts on local house prices[12]. At a neighbourhood level, the provision of pleasant, attractive streets that encourage walking and cycling improves local connectivity and liveability to an extent that new development may be unlocked[13].

The 2019 study identified enhancements to cycling connectivity as a priority for the LMA site if it is to achieve the desired modal shift away from private car usage and achieve the objectives of being a Garden Village. The analysis presented below builds upon the previous assessment work.

South Stratford Park & Ride/ Stride

It is noted that historically there has been limited demand for a Park & Ride in the south of Stratford-upon-Avon. A Park & Ride service operated from the Rosebird Centre at the junction of Shipston Road and Clifford Lane on the southern side of Stratford between 2012 and 2015. The 2019 WCC study considered this high-level option on land acquired as part of the SWRR. Given the uncertainty over the SWRR, land availability and acquisition being a major factor, this option considers the viability and feasibility of reinstating the Rosebird Park & Ride.

[12] Liu, J. & Shi, W., 2017. Impact of Bike Facilities on Residential Property Prices. *Transportation Research Record: Journal of the Transportation Research Board,* 2662(1), pp. 50-58.
[13] Transport for London, 2017. *Cycling and the housing market*. Available at: https://content.tfl.gov.uk/cycling-housing-market.pdf

6.3 Option Assessment

6.3.1 Public Transport

The proposals to improve the road based public transport offer for LMA is based predominantly on enhancing the existing frequency of the Stagecoach bus service 3, where this increases the existing frequency of the baseline route to every 15 minutes. The remaining bus services which access the site offering links elsewhere remain unchanged.

The assessed route options have been created to increase the frequency of services but also amend and enhance the availability of routing options when the service reaches Stratford-upon-Avon.

A series of indicative costs have been calculated to reflect these changes and using a Bus Operating Cost Model (BOCM) the one-way distance of the route and the frequency are amended to reflect these changes.

From this, the total weekly cost is calculated using one-way route distances (which are then x by 2 to reflect the return journey), a generalised vehicle speed used to operate the route, propose enhancements based on 'buses per hour' using a 15-minute frequency an identified 'live' costs per bus hour. The operating costs per vehicle KM equates to £2.14[14] and this weekly cost is multiplied by the number of weeks in a year to present the total annual cost.

Where the route has been adapted or enhanced from a previous route headway or frequency, the indicative cost presented is the difference in the existing service cost compared to the cost of the enhancement. This is to reflect an indicative cost which only presents the additional cost of the new route enhancement, not for the existing service provision.

It is important to reflect that the output is a calculated output which presents the enhancement to the service. The data which has been represented in each graph has been developed to understand the revenue implications of high-level calculated demand and to understand the point at which services may attain a level of commercial viability and the length of time a service may require subsidy. No assessment has been made of composite trips or penalties applied to interchanges.

6.3.2 Indicative Revenue Calculations

High-level revenue calculations have been created using the development timescale for the 3,500 dwelling scenario.

Additionally, Census and NTS data have been used to approximate the number of residential demand movements with annual passengers using bus services for either employment, leisure, shopping and education trips and the number of trips as created from the employment facilities. The assumptions used have been listed below: -

- The phasing for the housing and employment trajectory has been adjusted from the February 2018 Framework Masterplan and informed by the current build out rate supplied by SDC;
- All trips are one-way;
- The number of residents per dwellings is 2.3;
- Stratford-on-Avon age structure taken from 2021 Census data;
- Stratford-on-Avon Working Age 16-64 (5801). Total population 9,606 and is based on a 60% working age;
- 1.23% bus mode share to work taken from 2011 census data for Stratford-upon-Avon;
- 69% of existing Stratford-upon-Avon residents in employment;
- 190 days in a school year and 19% of education trips undertaken by bus (https://www.gov.uk/government/statistical-data-sets/nts06-age-gender-and-modal-breakdown);
- 220 working days in a year. Average daily demand assumes operation on 304 days a year, excluding Sundays and Bank Holidays;

[14] Value from DfT 'Costs, fares and revenue for local bus services: at current prices (not adjusted for inflation)' tab BUS04gi_km for an English non-metropolitan area for the year 2018/19.

- These calculations are developed on the basis of two fare structures; the fare cap price (which is currently set at £2 per adult single rising to £2.50) and the fare cap price removed and the reintroduction of the previous £2.90 price to resume. Both fares have been displayed as there is uncertainty when the fare cap will end; and,
- No existing patronage data has been available to inform this assessment.

The output from this calculation indicates the amount of subsidy required to support the route each year that can be used to compare the cost of each bus option over the span of the LMA development period.

These revenue calculations and statistical assumptions are for the Stratford-upon-Avon area and for the LMA site demand only. This means the demand that would be generated at other points along the corridors (such as Lower Quinton and Stratford-upon-Avon) does not get accounted for in these calculations. If available patronage information was forthcoming from the bus operator in the future, then a sensitivity assessment could be undertaken to understand whether the proposed level of demand would match the aspirations of the proposed service enhancement at key points along the route.

Therefore, it is recommended that these revenue values should not be used solely to inform any commercial viability for the proposed enhancement and that further quantification would be required if bus passenger data is forthcoming from the operator. These values only offer a high-level indication into how the operational cost impacts the revenue for the demand created from the LMA site only. The outputs are based upon the assumptions listed above and a subject to change/ variation.

From the introduction of the enhancements to the existing services there is likely a requirement for subsidy to support the proposed level of operational change. It is anticipated that a point in the future the enhancement to the proposed services with attain a level of commerciality. A re-assessment of build out rates and the timing for other landuses at LMA should be undertaken and further refinement of the assessment should be undertaken using available patronage data.

6.3.2.1 Bus Route 3 Additions and diversions

In addition to the routing changes of the bus service 3 as part of this assessment, the frequency of this service has been adjusted so there is a bus passing the LMA site every 15 minutes in the peaks. This means there are 32 trips per day from Monday to Friday and 12 trips on Saturday. It is acknowledged that a Sunday service will operate at a reduced frequency in comparison to Monday-Saturday to support some work and leisure trips. It is also recognised that this would require a level of subsidy.

The table below shows the weekday baseline frequency and the bus route 3 frequency increases. This shows that there are 8 buses in both the AM and PM peak making the service frequency every 15 minutes. There is also an increase of the pre-AM peak and post-PM peak.

Table 6-1:- Bus route 3 frequency increases

Service No.	0400-0659	07:00-08:59	09:00-15:59	16:00-17:59	18:00-23:59
Baseline Frequency (two-way trips) (all services passing the LMA site)	1	4	24	5	3
Bus route 3 increased frequency (two-way trips)	2	13	2	13	2
Total frequency (two-way trips)	3	17	26	18	5

6.3.2.2 PT1: Loop around Stratford-upon-Avon Rail station

PT1 proposes that the frequency of the 3 Service is increased to a 15-minute frequency but that the route also includes a loop serving Stratford-upon-Avon railway station.

Table 6-2:- PT1 Loop around Stratford-upon-Avon Rail Station

Reference	Name	Description	Rationale	Indicative Costs	Indicative High-Level Revenue Cost
PT1	Loop around Stratford-upon-Avon Rail station (Figure 6.1)	A variant of the existing 3 service that diverts into LMA (1km added to the route length) and loops around the Stratford-upon-Avon Rail station, providing a multi-modal transport option.	This service will make up the gap in the timetable to supply a bus route every 15 minutes past LMA to Stratford railway station. The addition of the loop in this service compensates for a lack of turning facility at the rail station. By increasing the frequency to 15 minutes, the bus will be closer to operating at a 'turn up and go' level, allowing the bus to be a more obvious choice with less journey planning required. In addition, the option is compatible with the introduction of multi-operator bus fares, contactless payment options, and simpler fare structures more generally will make it easier for a larger number of people to use buses in Warwickshire aligned with the BCIP.	For this option, the Indicative Total annual cost (NTS statistics): £164,000 Total subsidy required (Fare-Cap): £1,242,000	The high-level analysis indicates potential commercial viability for the bus route after 2035 based upon the assumptions listed above in section 6.3.2.

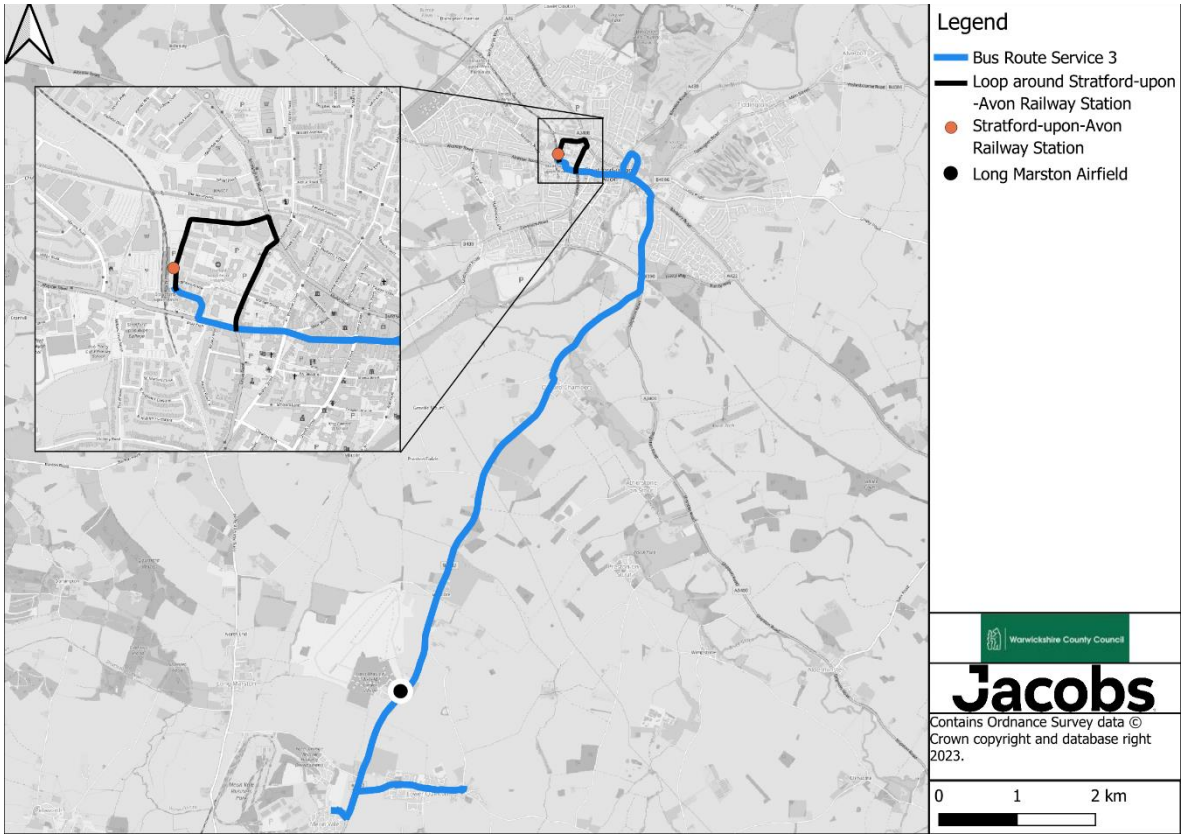

Figure 6.1:- Route 3 – Loop around Stratford-upon-Avon Railway Station

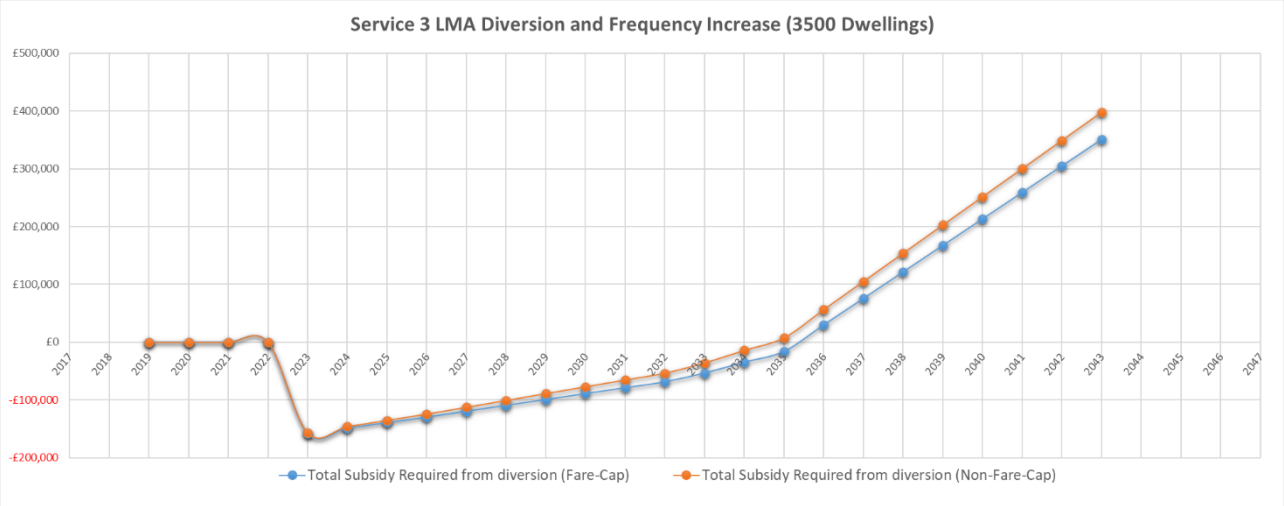

Figure 6.2:- Loop around Stratford-upon-Avon Parkway Railway Station Revenue Calculations with 3500 Dwellings

Figure 6.2 shows two lines spanning the timeline of the development for this public transport option. These lines show the total subsidy required with the Fare-cap (£2.50) and without Fare-Cap (£2.90): The cost of the diverted service compared to the revenue generated from users at the Long Marston development per year. This is with the £2.50 fare cap. Subsidies will stop being needed after 2034.

6.3.2.3 PT2: Loop around the Stratford-upon-Avon Parkway Station

PT2 proposes that the frequency of the 3 Service is increased to a 15-minute frequency but that the route also adds a 1km diversion to include Stratford-upon-Avon Parkway Station.

Table 6-3:- PT2 Loop around Stratford-upon-Avon Parkway station Revenue Calculations with 3500 Dwellings

Reference	Name	Description	Rationale	Indicative Costs	Indicative High-Level Revenue Cost
PT2	Loop around the Stratford-upon-Avon Parkway Station (Figure 6.3)	A 1km diversion added to the 3 service to go in and out of the LMA site and a loop around to the Stratford-upon-Avon P&R site	This service will make up the gap in the timetable to supply a bus route every 15 minutes past the site to key locations and connect to both rail stations in Stratford-upon-Avon centre. Along with serving the residents in Lower Quinton and LMA, P&R users can also benefit from this service.	For this option, the Indicative Total annual cost (NTS statistics): £202,000 Total subsidy required (Fare-Cap): £1,746,000	The high-level analysis indicates potential commercial viability after 2037 for the bus route based upon the assumptions listed above in section 6.3.2.

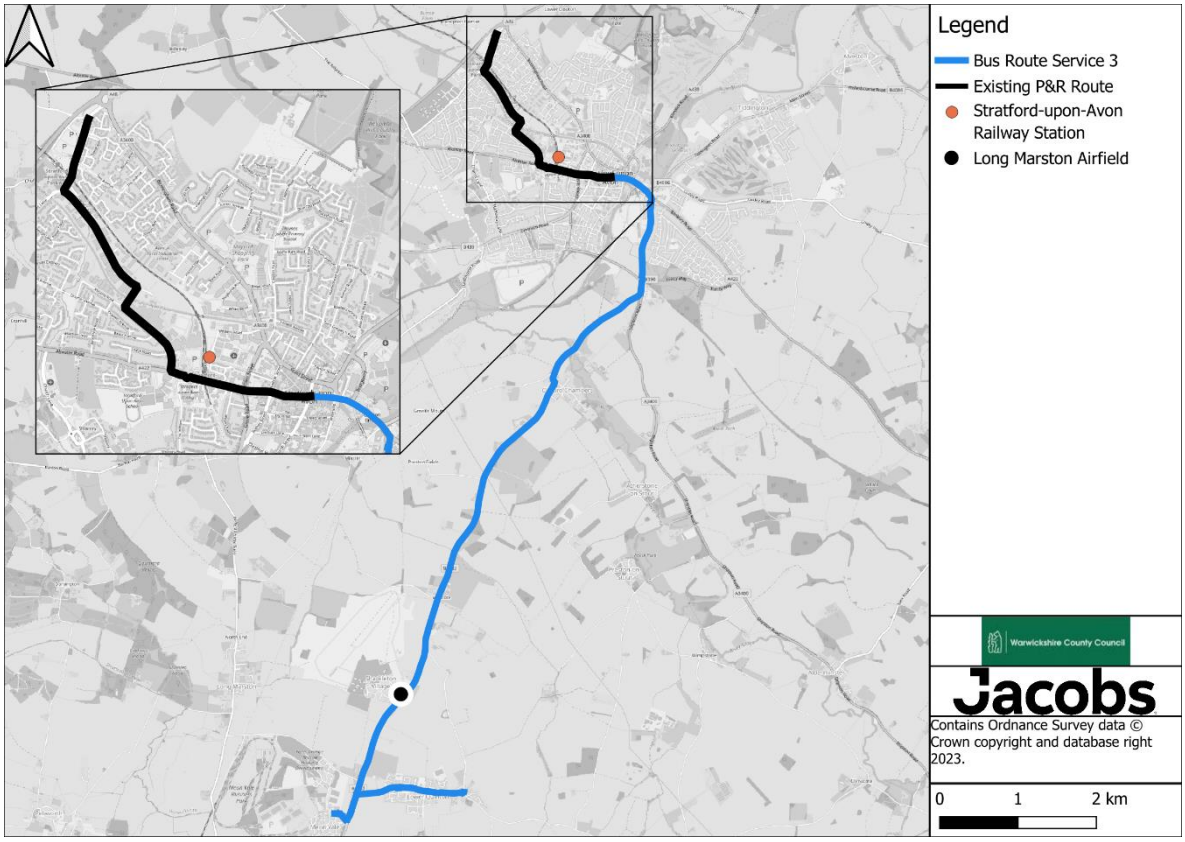

Figure 6.3:- Route 3 – Loop around Stratford-upon-Avon Parkway Railway Station

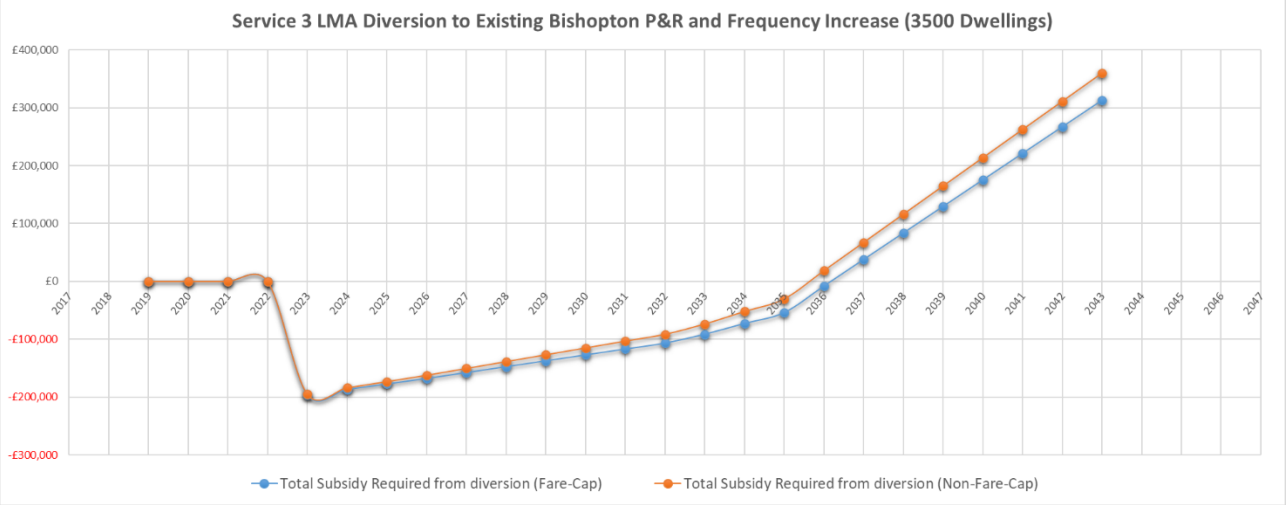

Figure 6.4 Loop around Stratford-upon-Avon Parkway Railway Station Revenue Calculations with 3500 Dwellings

Figure 6.4 shows two lines spanning the timeline of the development for this public transport option. These lines show the total subsidy required with the Fare-cap (£2.50) and without Fare-Cap (£2.90): The cost of the diverted service compared to the revenue generated from users at the Long Marston development per year. This is with the £2.50 fare cap. Subsidies will stop being needed after 2035.

6.3.2.4 PT3: Rosebird centre Loop

PT3 proposes that the frequency of the 3 Service is increased to a 15-minute frequency but that the route also adds a 1km diversion to include the Rosebird centre site.

Table 6-4:- PT 3 Rosebird centre loop

Reference	Name	Description and Source	Rationale	Indicative Costs)	Indicative High-Level Revenue Cost
PT3	Rosebird Centre loop (Figure 6.5)	A 1km diversion added to the 3 service to go in and out of the LMA site and an in and out at the Rosebird centre site via Seven Meadows Road.	This route improvement will serve the LMA site while also acting as a loop service. This would, similarly to the above, provide a key link into Stratford-upon-Avon, as well as bolster the existing Park & Ride centre.	For this option, the Indicative Total annual cost (NTS statistics): £232,000 Total subsidy required (Fare-Cap): £2,163,000	The high-level analysis indicates potential commercial viability after 2037 and based upon the assumptions listed above in section 6.3.2.

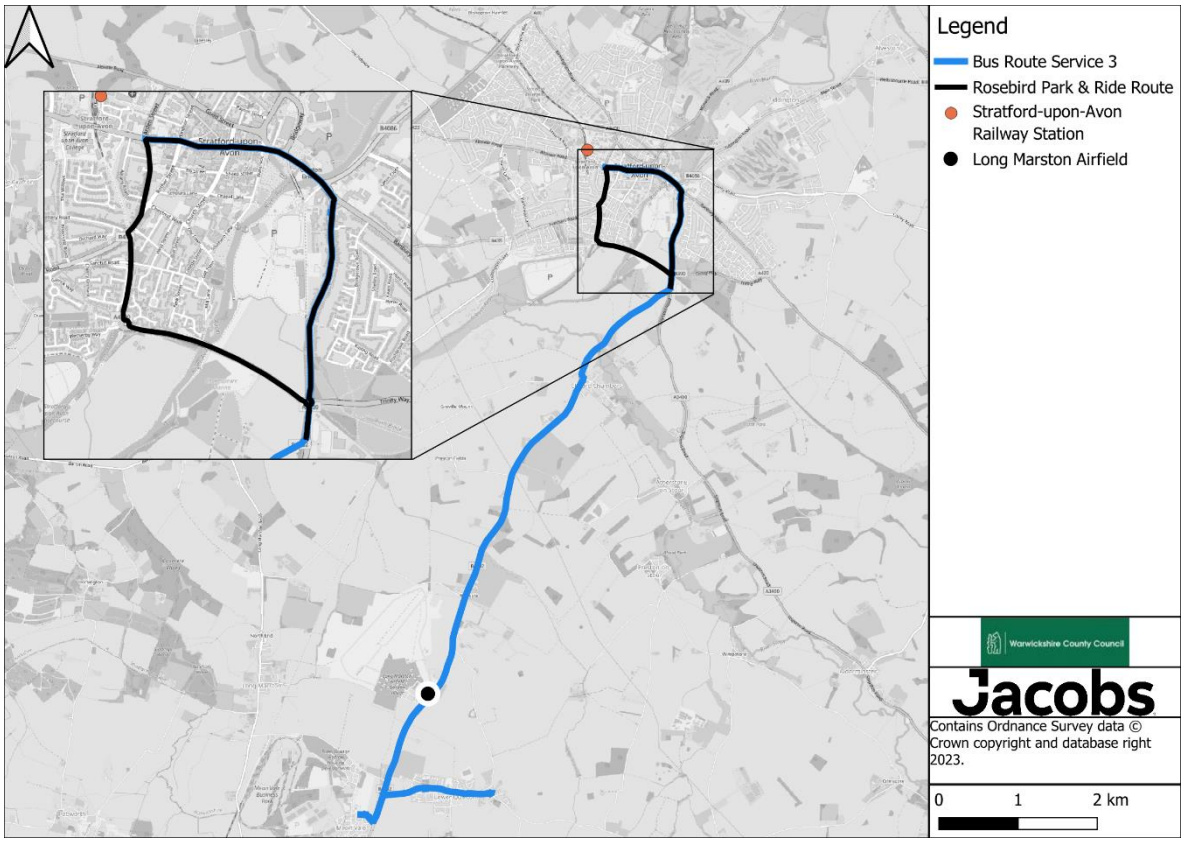

Figure 6.5:- Rosebird Centre Loop

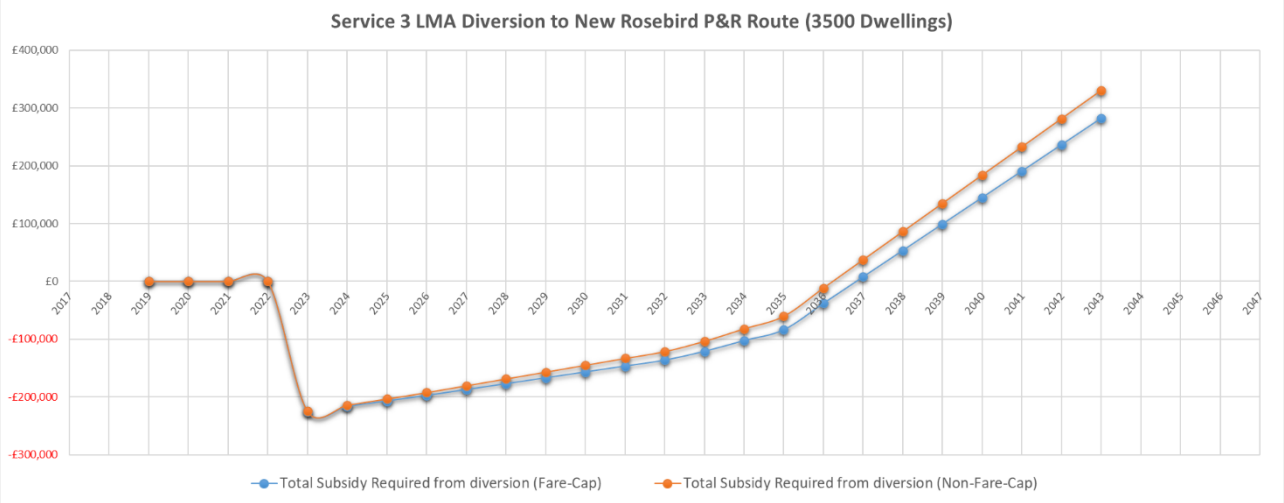

Figure 6.6:- Service 3 operating Rosebird Centre Loop Revenue Calculations with 3500 Dwellings

Figure 6.6 shows two lines spanning the timeline of the development for this public transport option. These lines show the total subsidy required with the Fare-cap (£2.50) and without Fare-Cap (£2.90): The cost of the diverted service compared to the revenue generated from users at the Long Marston development per year. This is with the £2.50 fare cap. Subsidies will stop being needed after 2036.

6.3.2.5 PT4: Honeybourne and Stratford-upon-Avon Rail Link

PT4 proposes that a new service is added to the peak period providing a link between Honeybourne and Stratford-upon-Avon Rail Stations. The purpose of this is to connect the Birmingham to Stratford line and the Cotswold Line giving LMA access to Birmingham and Coventry to the north and Evesham and Oxford to the south.

Table 6-5:- PT 4 Service 3 diverted to Honeybourne and Stratford-upon-Avon Rail link

Reference	Name	Description and Source	Rationale	Indicative Costs	Indicative High-Level Revenue Cost
PT4	Honeybourne and Stratford-upon-Avon rail Link (Figure 6.7)	A service connecting Honeybourne Rail Station to Stratford-upon-Avon rail Station A variant of the existing 3 service that instead of ending in Lower Quinton, continues to Honeybourne Rail station.	This would connect the Birmingham to Stratford line and the Cotswold Line giving LMA access to Birmingham and Coventry to the north and Evesham and Oxford to the south. The purpose of this route is to significantly broaden the distance that can be covered by public transport in a reasonable time. In addition, the option is compatible with the introduction of multi-operator bus fares, contactless payment options, and simpler fare structures more generally will make it easier for a larger number of people to use buses in Warwickshire aligned with the BCIP. A location for the bus to turn around at Honeybourne Station will need to be created.	For this option, the Indicative Total annual cost (NTS statistics): £395,000 Total subsidy required (Fare-Cap): £4,800,000	The high-level analysis indicates potential commercial viability after 2040 based upon the assumptions listed above in section 6.3.2.

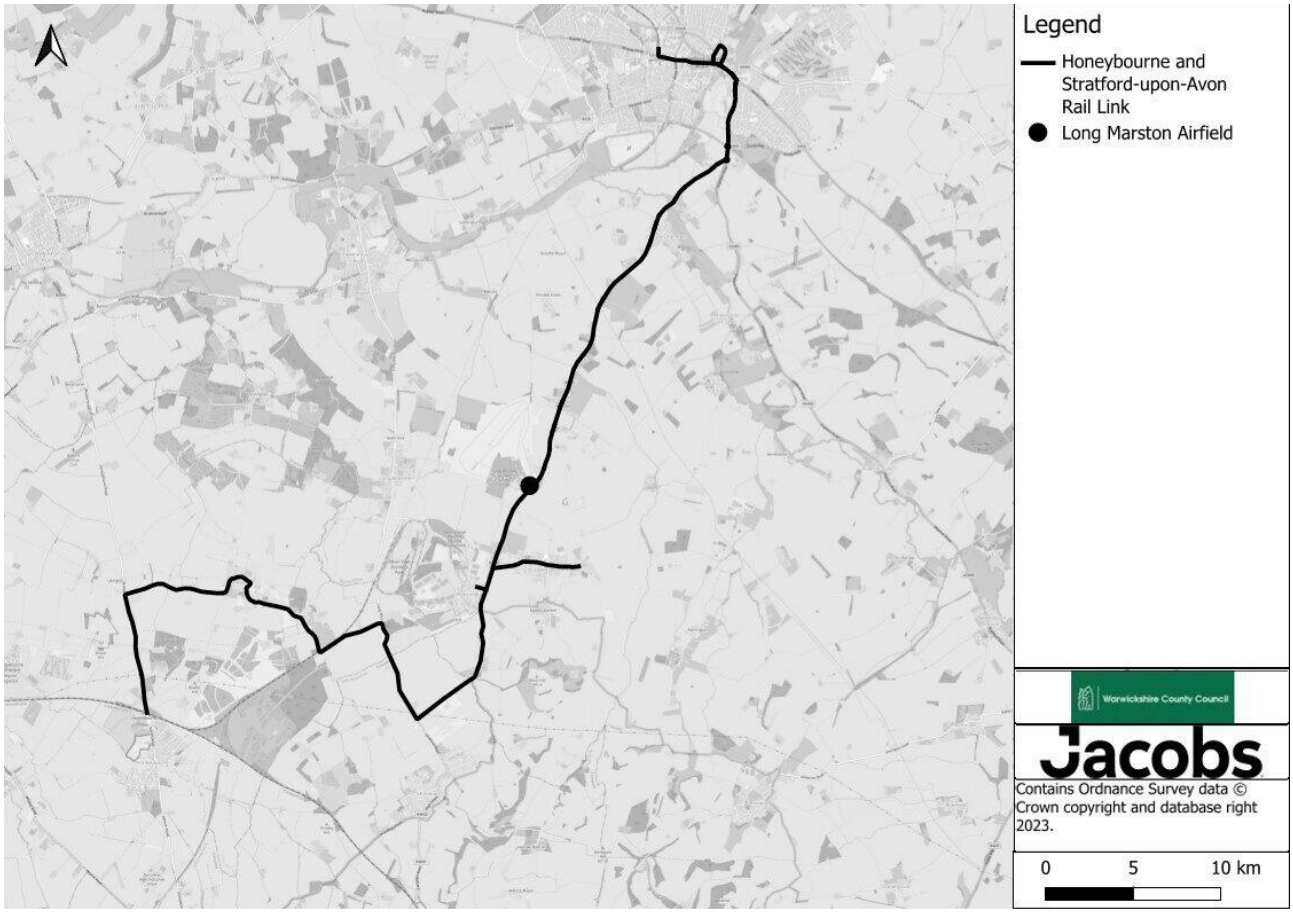

Figure 6.7:- Honeybourne Rail Station to Stratford-upon-Avon rail Station

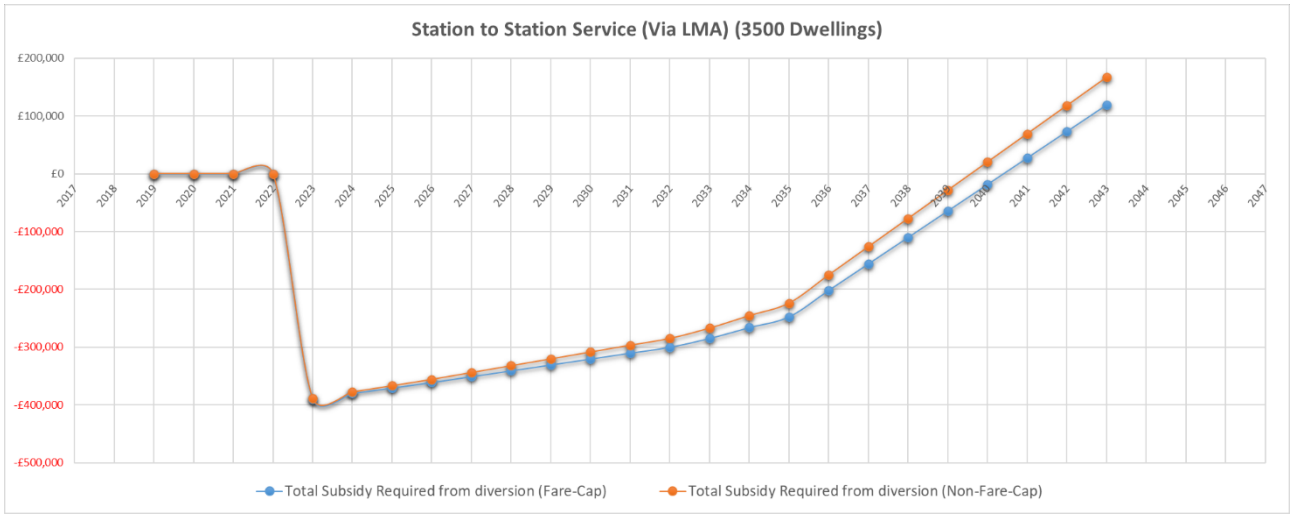

Figure 6.8:- Service 3 operating from Honeybourne Station to Stratford-upon-Avon Station Revenue Calculations with 3500 Dwellings

Figure 6.8 shows two lines spanning the timeline of the development for this public transport option. These lines show the total subsidy required with the Fare-cap (£2.50) and without Fare-Cap (£2.90): The cost of the diverted service compared to the revenue generated from users at the Long Marston development per year. This is with the £2.50 fare cap. Subsidies will stop being needed after 2039.

6.3.3 Bespoke Routes

Bespoke route options have been considered which incorporate extending bus services between the LMA site and Honeybourne (to link with services on the Cotswold Rail line to London) to provide a multi-modal transport option. The bespoke route below has 26 trips per day between Monday and Friday and 12 trips on Saturday. This is expected to be a sufficient frequency to connect residents at LMA to Honeybourne railway station.

Table 6-6:- LMA to Honeybourne Proposed Frequency

Service No.	0400-0659	07:00-08:59	09:00-15:59	16:00-17:59	18:00-23:59
0	2	4	14	4	2

The table below details the number of trains in the London direction (West) and Hereford direction (East). This data has helped inform the frequency of the LMA to Honeybourne Service.

Table 6-7:- Number of trains in each direction in each time period for a weekday

Service No.	0400-0659	07:00-08:59	09:00-15:59	16:00-17:59	18:00-23:59
East West Movement	1	3	6	2	6
West East Movement	2	3	6	3	5
Total	**3**	**6**	**12**	**5**	**11**

Table 6-8:- PT Option LMA to Honeybourne

Reference	Name	Description and Source	Rationale	Indicative Costs	Indicative High-Level Revenue Cost
PT5	LMA to Honeybourne Rail Station (Figure 6.9)	Honeybourne and Stratford-upon-Avon Rail Link extension leg connecting LMA to Honeybourne Rail Station	Honeybourne and Stratford-upon-Avon rail Link route into the bespoke section and the existing 3 service. This would connect the Birmingham to Stratford line and the Cotswold Line giving LMA access to Birmingham and Coventry to the north and Evesham and Oxford to the south. The lack of available turning at Honeybourne Station is a major constraint. The more feasible route for a service	For this option, the Indicative Total annual cost (NTS statistics): £203,000 Total subsidy required (Fare-Cap): £1,759,000 This could be a more beneficial route in the Inter-Peak and as a DRT service offering a more agile service for residents. The demand and revenue calculations of a bespoke/ enhanced DRT service would need to be considered as part of the further expansion of the UBUS Stratford DRT.	The high-level analysis indicates potential commercial viability after 2036 based upon the assumption listed above in section 6.3.2.

Reference	Name	Description and Source	Rationale	Indicative Costs	Indicative High-Level Revenue Cost
			would be the 553 route via Stratford Road, Westbourne and Dudley Road.		

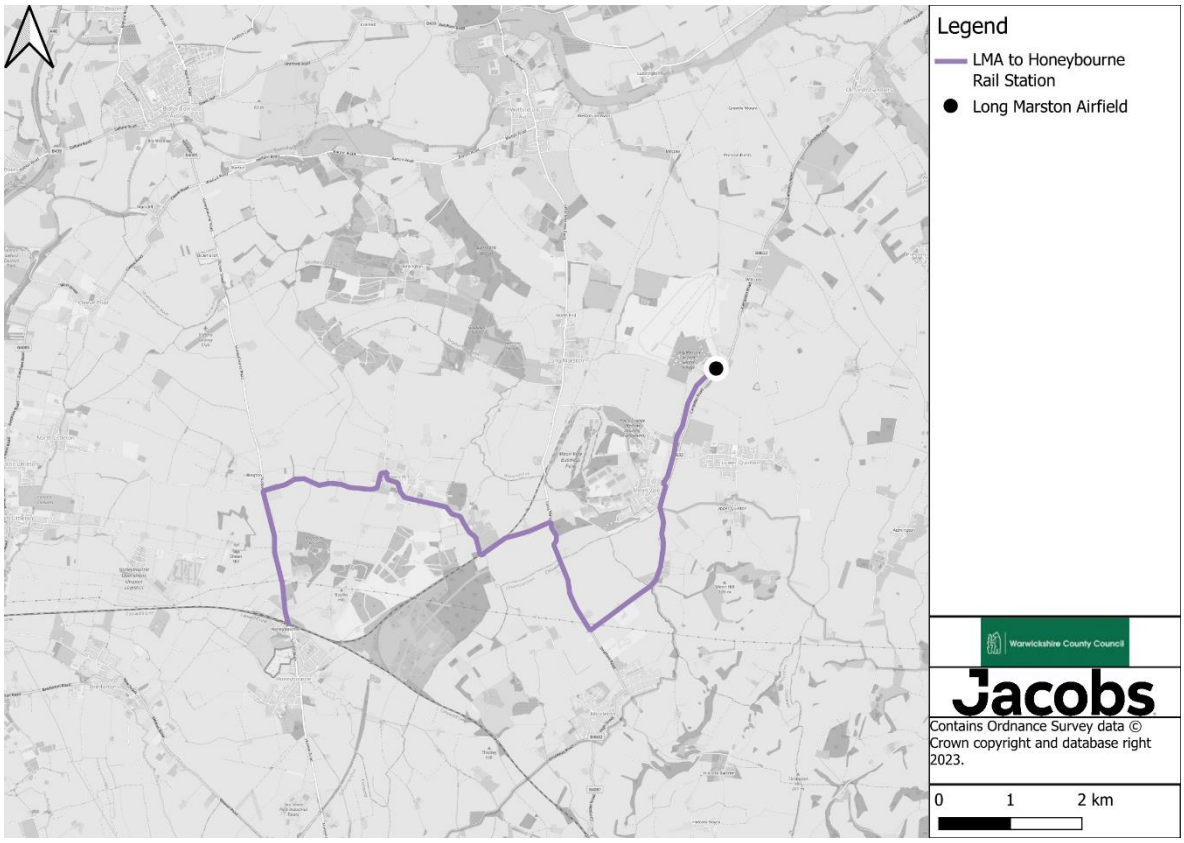

Figure 6.9:- LMA site to Honeybourne Rail Station

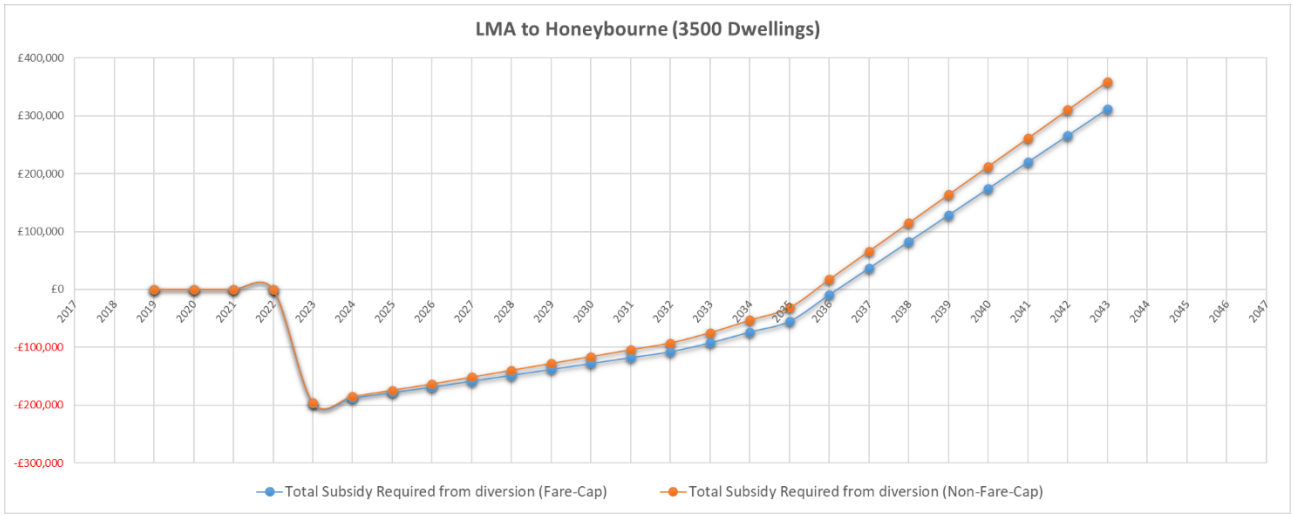

Figure 6.10:- LMA Site to Honeybourne Station Revenue Calculations with 3500 Dwellings

Figure 6.10 shows two lines spanning the timeline of the development for this public transport option. These lines show the total subsidy required with the Fare-cap (£2.50) and without Fare-Cap (£2.90): The cost of the diverted service compared to the revenue generated from users at the Long Marston development per year. This is with the £2.50 fare cap. Subsidies will stop being needed after 2035.

6.3.4 BRT Options

As outlined above, partial and full bus segregation has been considered as part of the previous study work undertaken by WCC and, more recently, Vectos. Whilst these options have been historically considered to be significantly constrained, the BSIP targets bus priority between Stratford -Warwick- Leamington – Kenilworth, as part of the ambition to make public transport faster and more reliable across the County.

The reference to BRT in this context is the introduction of a series of discrete technology-based solutions on traffic signals across each of the corridors into Stratford-upon-Avon. This is to expedite services which will operate at enhanced frequencies between the site and the town centre.

A route-based option assessment has been undertaken exploring opportunities to enhance bus priority: -

1. **BRT 1 Shipston Road to Clopton Bridge**: - This route is from the Shipston Road/ Trinity Way/ Seven Meadows Road roundabout along Shipston Road to Banbury Road/ Clopton Bridge/ Shipston Road (Alveston Manor Roundabout). The route analysis continues to the Tiddington Road/ Banbury Road/ Swans Nest Lane/ Clopton Bridge junction and then over Clopton Bridge. The analysis also includes a review of the Bridge Foot gyratory which includes the A3400/ Bridgeway priority junction, the Bridge Street/ Bridge Foot signalised junction and the Bridge Foot/ Guild Street junction.

   In light of identified / committed improvements, as set out in section 4.5, it has been assumed that the following junctions have been improved: -

   - Alveston Manor Roundabout capacity improvements;
   - Tiddington Road/ Banbury Road/ Swans Nest Lane/ Clopton Bridge junction signalisation; and,
   - All junctions forming part of the Bridge Foot gyratory signalisation (as part of the Clopton Bridge improvements package).

   The route is shown in black in figure 6.11 below. In the context of this option, reference to BRT introduces a selection of discrete technology interventions which are designed to expedite bus services through congested parts of the town centre network.

2. **BRT 2 Shipston road to Clopton Bridge via Old Tramway**: - This option was considered as part of the 2019 WCC study. The option includes the provision of a fully segregated unidirectional bus route via the Old Tramway. The route is shown in dark blue in figure 6.11 below.

3. **BRT 3 Seven Meadows Road to Evesham Road**: - A part-segregated BRT option was considered as part of the Vectos study work, however no precise route was detailed in the assessment [Vectos, Vision Part 2, 2022]. This route is from the Shipston Road/ Trinity Way/ Seven Meadows Road roundabout to Seven Meadows Road /A390 roundabout, and it includes the A4390 Evesham Place/ Seven Meadows Road/ B439 Evesham Road/ Shottery Road roundabout and A4390/ Greenhill Street/ Arden Street/ Alcester Road signalised crossroads. The route is shown in pink in figure 6.11 below.

   The analysis takes into account the identified signalisation of the A4390 Evesham Place/ Seven Meadows Road/ B439 Evesham Road/ Shottery Road roundabout.

   In the context of this option, reference to BRT introduces a selection of discrete technology interventions which are designed to expedite bus services through congested parts of the town centre network.

4. **BRT 4 Existing Park & Ride Route**: - The route analysis follows the existing Bishopton Park & Ride service. The route includes the junctions of Timothy's Bridge Road/ Mason Road priority junction, Mason Road/ Alcester Road signalised junction, Alcester Road/ Brunel Way (Station Approach) signalised junction, A4390/ Greenhill Street/ Arden Street/ Alcester Road signalised crossroads, Greenhill Street/ Rother Street/ Windsor Street signalised crossroads. The route is shown in blue in figure 6.11 below.

As noted above, in the context of this option, reference to BRT introduces a selection of discrete technology interventions which are designed to expedite bus services through congested parts of the town centre network.

5. **BRT 5 Birmingham Road and Guild Street**: - This route analysis includes the junctions of Birmingham Road/ Arden Road/ Clopton Road signalised crossroads and Hamlet Way/ Birmingham Road signalised junction. In the context of this option, reference to BRT introduces a selection of discrete technology interventions which are designed to expedite bus services through congested parts of the town centre network. The route is shown in green in figure 6.11 below.

All cost estimates of the BRT options are calculated based on the 2021 Spons Civil Engineering Price Book and benchmark costs based upon comparative schemes analysed by Jacobs. Capital costs provided are indicative and subject to refinement through more detailed assessment but are sufficiently robust for this comparative analysis of options.

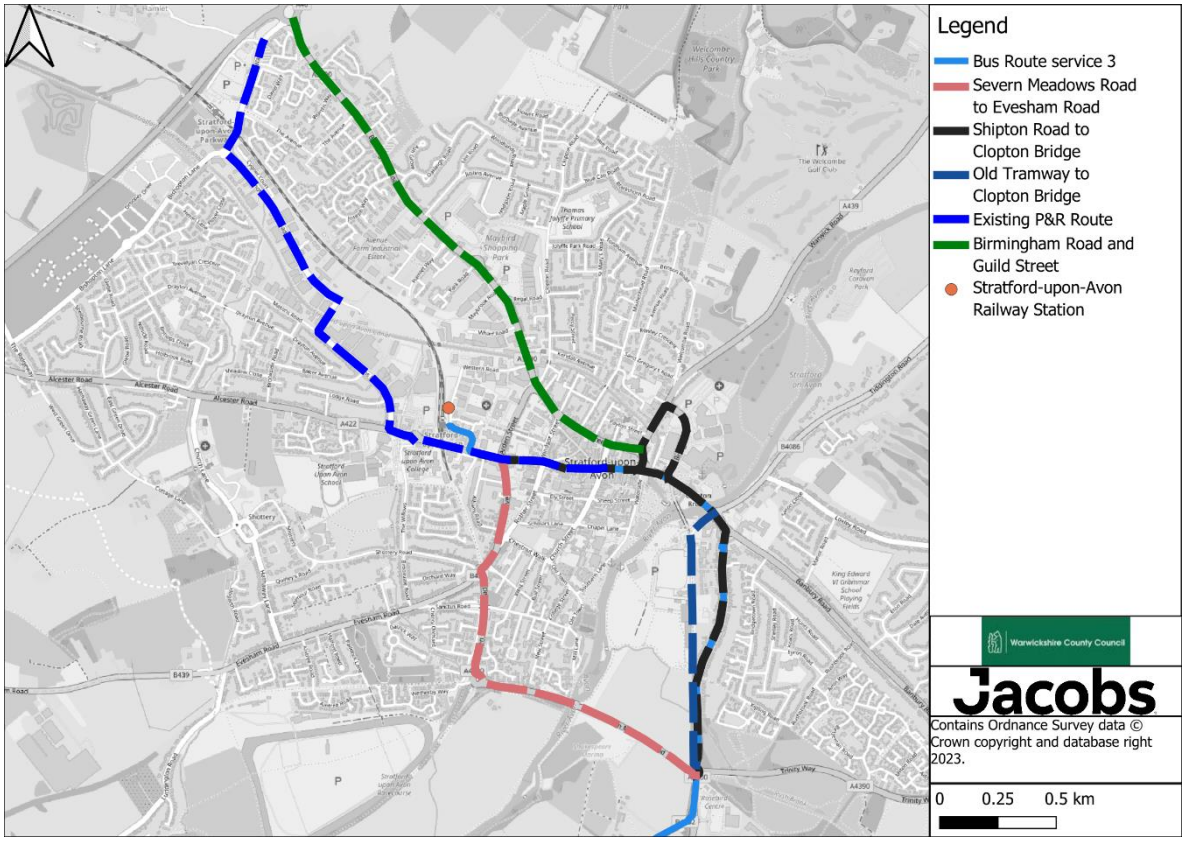

Figure 6.11:- BRT Stratford-upon-Avon Centre Routes

Table 6-9:- BRT Options

Reference	Name	Description and Source	Rationale/ Constraints	High level capital cost
BRT1	Shipston Road to Clopton Bridge	Scheme – retrofit MOVA and select vehicle detection on two signalised junctions on the Clopton Bridge Scheme. At the A3400/ Bridge Foot retrofit SVD only as committed scheme includes MOVA. The route has also been identified due to significant engineering constraints identified on the segregated parallel route via the Old Tramway (BRT 2)	This is the route the existing 1, 2, 3 and 75 services take. Scheme – Retrofit MOVA to operate alongside SCOOT and install Select Vehicle Detection for bus priority as part of the Clopton Bridge Scheme. There are significant land constraints within the constrained urban network and costs could vary depending on interventions at junctions with proposed traffic signal upgrades. To provide bus priority at the signals the provision of select vehicle detection to be implemented however this would require buses to be installed with transponder for detection.	**Total £110,000** • Bridge Steet/ Bridge Foot signalised junction • Tiddington Road/ Banbury Road/ Swans Nest Lane/ Clopton Bridge junction signalisation Costs include a MOVA unit, new IN, X and stop-line detectors cut into the road, controller configuration, SVD unit, refurbishment of equipment – cost £50,000 per junction. • A3400/Bridge Foot junction SVD unit and configuration required – cost £10,000.
BRT2	Shipston road to Clopton Bridge (Via the old Tramway)	This route is along the old Tramway and is an alternative to routing along Shipston Road. Scheme- Widen old Tramway to accommodate single inbound bus lane about 1 km long	This route takes buses off Shipston Road and along a segregated bus lane and out at the Banbury Road/Bridge Foot junction. Scheme- Widen old Tramway to accommodate a single inbound bus lane approximately 1 km long. There are major constraints identified along this route. Significant engineering works would be required at the Shipston Road/ Trinity Way junction/ Seven Meadows and the egress section near Swans Nest. In addition, the conversion of the existing route to a roadway would require significant engineering works. There are further constraints along the route in terms of ecology and the bridge structure. The option would also involve the loss of the Old Tramway as a walking/ cycling route adjacent the recreational grounds.	**Total £750,000** Costs assume no remediation works required on the bridge and no major works required in the design of the Seven Meadows roundabout to accommodate a fifth arm for inbound bus lane along the old Tramway as cost estimates would require design work to inform cost estimates. As a result, costs are likely to be significantly higher that stated above.
BRT3	Seven Meadows Road to Evesham Road	This route is an alternative to Clopton Bridge currently part of the 75B service route. Scheme – incorporate MOVA and select vehicle detection to IDP Scheme at Shottery Road roundabout.	Scheme – retrofit MOVA and select vehicle detection to IDP Scheme at Shottery Road roundabout. A scheme to modify the A4390 Evesham Place/ Seven Meadows Road/ B439 Evesham Road/ Shottery Road roundabout to traffic signals identified in IDP, Scheme costs and public acceptability may be a constraint. Provide bus priority at the proposed traffic signals with the provision of select vehicle detection, buses would need a transponder for detection.	**Total £850,000** • A4390 Evesham Place/ Seven Meadows Road/ B439 Evesham Road/ Shottery Road roundabout conversion to signalisation £800,000 £50,000 to include the MOVA, new IN, X and stop-line detectors, the controller configuration, SVD unit, refurbishment of equipment)

Reference	Name	Description and Source	Rationale/ Constraints	High level capital cost
BRT4	Existing P&R Route	This route is to improve the existing P&R route. Scheme – retrofit MOVA and select vehicle detection on four signalised junctions on the A422 and Clopton Bridge Scheme.	Install select vehicle detection on all traffic signals for bus priority and add MOVA to existing SCOOT system for increased performance. Cost and additional maintenance may be a constraint. The proposed route outside the main core of the urban area operates on less congested roads.	Total £150,000 • Mason Road/ Alcester Road signalised junction, Alcester Road/ Brunel Way (Station Approach) signalised junction • A4390/ Greenhill Street/ Arden Street/ Alcester Road signalised crossroads • Greenhill Street/ Rother Street/ Windsor Street signalised crossroads Costs include a MOVA unit, new IN, X and stop-line detectors cut into the road, controller configuration, SVD unit, refurbishment of equipment – cost £50,000 per junction. .
BRT5	Birmingham Road and Guild Street	Scheme – retrofit MOVA and select vehicle detection on four signalised junctions on the A422, two signalised junctions on Birmingham Road and Clopton Bridge Scheme.	Install select vehicle detection on all traffic signals for bus priority and add MOVA to existing SCOOT system for increased performance.	Total £410,000 • Mason Road/ Alcester Road signalised junction, Alcester Road/ Brunel Way (Station Approach) signalised junction • A4390/ Greenhill Street/ Arden Street/ Alcester Road signalised crossroads • Greenhill Street/ Rother Street/ Windsor Street signalised crossroads • Birmingham Road/ Arden Road/ Clopton Road signalised crossroads • Hamlet Way/ Birmingham Road signalised junction • Bridge Steet/ Bridge Foot signalised junction • Bridge Foot/ Guild Street junction: Costs include a MOVA unit, new IN, X and stop-line detectors cut into the road, controller configuration, SVD unit, refurbishment of equipment) – cost £50,000 per junction. • A3400/Bridge Foot Junction SVD unit and configuration required – cost £10,000.)

Notes: It is assumed all Clopton Bridge schemes are committed; the cost provided are for technology enhancements. The baseline cost for the Shottery Road roundabout has been taken from the Stratford-on-Avon District Council Core Strategy (2011 – 2031) and Local Plan Review IDP

6.3.5 Micro-mobility

The assessment of the micro-mobility options is outlined below in the following table: -

Table 6-10:- Micro-mobility options

Reference	Name	Description and source	Rationale/ Constraints	Indicative Capital and Operational Cost
MM- 01	Car Club	Research undertaken by VECTOS identified the need for 1 vehicle per every 45 dwellings. For the 3,500-dwelling scenario, this would require a 78 vehicle car club. For the 6,000-dwelling scenario, this would require a 133-vehicle car club. **Source:** LMA Sustainable Transport Requirements 2019 WCC, Vision Part 2 2022 VECTOS and MAP 2022 VECTOS	The key drivers for the car club initiatives are to encourage sustainable travel behaviour by promoting car sharing. This also provides future residents an alternative to owning a private car with the view that car sharing clubs would reduce car ownership, thereby reducing levels of required parking. The Vision Part 2 report notes the potential for a car club to displace 6.1 private vehicles [CoMoUK,2018]. On this basis, its noted in the Vision Part 2 report that the provision of a 78-vehicle car sharing fleet would allow for a reduction of 700 car park spaces at LMA. Applying this for the 6,000-dwelling scenario, a car club with a fleet of 133 vehicles would reduce car parking requirements by some 1,200 spaces. This is a significant reduction in parking provision and would need to be balanced against the parking standards as set out in SDC's parking standards. Supporting policies would be required to support car sharing initiatives such as the promotion of liveable neighbourhoods and controlled parking zones. Such initiatives would also need to be considered alongside the implications of potentially failing to provide adequate levels of parking resulting in the proliferation of vehicles parking on-street, impacts upon the streetscape, causing obstruction to the highway and/ or resulting in increased maintenance liabilities for the local highway authority. Where bus routes are identified, particular care and attention should be applied where parking provision must be designed so as not to cause detriment to bus service operational efficiency. The adjustments made to mode splits for each land use and trip purpose as set out in the MAP report have been reviewed as part of this assessment. For retail and leisure purposes, and land-uses, adjustments to car sharing mode splits are considered reasonable where the vision for LMA is fully realised. However, the level of adjustment made to car-sharing for commuting and employment trips was not considered justified based upon the available evidence. However, the promotion of car clubs in parallel with a comprehensive package of personal travel planning measures promoted through a monitored travel plan and central mobility hubs on site could effectively promote car sharing for non-employment-based trips. In addition, other digital solutions which promote car-sharing for employment/ commuter trips, such as *liftshare*, could also be promoted. The 2019 WCC study noted that a car club would be feasible and could be promoted via a commercial supplier and the membership of the club should cover the operating costs of the scheme. Such measures would need to be considered alongside the promotion of active travel and public transport options. It is also noted that the previous study work undertaken by WCC and VECTOS concluded that a car club should be provided early on in the development phasing. Car clubs also offer the opportunity to actively promote the use of EV and EV capability, and therefore any car-club initiative would need to be considered alongside the roll out of EV infrastructure at LMA.	78 vehicle car club: £780,000 per annum 133 Vehicle car club: £1,330,000 per annum **Source:** LMA Sustainable Transport Requirements 2019 WCC, Vision Part 2 2022 VECTOS and MAP 2022 VECTOS

Reference	Name	Description and source	Rationale/ Constraints	Indicative Capital and Operational Cost
MM-02	Bike and e-bike sharing	Research undertaken by VECTOS identified a fleet of 48 e-bikes to meet the initial demand of 3,500 dwellings. For the 6,000-dwelling scenario, a fleet of 83 e-bikes would be required to meet initial demand. **Source:** Vision Part 2 2022 VECTOS and MAP 2022 VECTOS Research undertaken by WCC in 2019, explored a more comprehensive public cycle scheme across Stratford-upon-Avon. The study identified the requirement for 1 bike per 100 residents, equating to 100 bikes for the 3,500 dwelling full build out. **Source:** LMA Sustainable Transport Requirements 2019 WCC.	Bike and e-bike schemes offer the choice of cycling modes without the necessity of owning a bike. The Greenway offers a direct link from LMA to Stratford-upon-Avon town centre, with the vast majority of the link being free of vehicle interaction (with the exception of the one road crossing at Milton and farm track crossings). Building upon the high quality sealed and lit Active Travel Corridor running on the southern boundary of LMA from Campden Road to the Greenway, and consideration of additional enhancements on the Greenway and within the town centre (detailed in this assessment), cycling offers a viable alternative for future residents when travelling to Stratford for leisure and commuting purposes. Desirable locations for shared cycle parking were identified as part of the WCC 2019 study and a high-level assessment of these locations has been undertaken as part of this current review work: - • LMA site – located primarily at the mobility hubs and across the site. This is land within the Promoters control. • The Greenway Car Park- located south of Seven Meadows roundabout connecting into NCR41. It is understood this land is owned and operated by WCC. • Church Street- this route forms part of the NCR41 where cycle parking could be provided within the public highway. • Waterside / Swans Nest- this route forms part of the NCR41 where the Recreational Ground car park is operated by SDC. • Leisure Centre- the leisure centre car park is owned and operated by SDC. • Waterside (RSC)- this route forms part of NCR41 where cycle parking could be provided within the highway boundary. • The Willows- cycle parking could be provided within the highway boundary particularly where the route connects to the Strafford-upon-Avon college and other local schools. • Stratford Rail Station- cycle parking could be provided within the highway boundary on Brunel Way adjacent to the rail station. • Stratford Parkway Rail Station- Bishopton Park & Ride/ Stride is under the jurisdiction of WCC and cycle parking could be provided within land under the control of the local highway authority. • Maybird retail park- there are shared foot-cycleways on Birmingham Road adjacent to the Maybird retail centre, were cycle parking could be provided. Based upon this desktop review, land should be available at the locations listed above. There may also be opportunities to explore additional locations and opportunities with 3rd parties. Aligned with the objectives of the LCWIP and LMA SDP Vision, cycling presents a opportunity to offer mode choice for short/ medium distance trip making to Stratford-upon-Avon town centre from LMA. It is envisioned that the strategy would need to be delivered early on in the phasing to offer travel choice.	Initial capital costs for bikes £140,000 - £400,000 excluding maintenance and upkeep costs. **Source:** Vision Part 2 2022 VECTOS and MAP 2022 VECTOS Initial capital costs for bikes between £1500 - £2500 per bike. 150 bikes would equate to £375,000 Operating costs per annum range between £600 - £1000 per bike equating to £100,000 [not taking into account user fees and subscription revenue] **Source:** LMA Sustainable Transport Requirements 2019 WCC.

Reference	Name	Description and source	Rationale/ Constraints	Indicative Capital and Operational Cost
MM-03	E-Cargo bike	Research undertaken by VECTOS identified 1 cargo bike per 140 residents resulting in a fleet of 60 for the 3,500-dwelling scenario. For the 6,000 dwelling scenario, this would equate to 107 e-cargo bikes. **Source:** Vision Part 2 2022 VECTOS and MAP 2022 VECTOS	E-cargo bikes have been identified to form part of the bike and e-bike sharing scheme detailed above, with particular focus on "first" or "last mile" trips targeting local trips within LMA particularly for retail purposes. It is noted in the Vision part 2 document, that such measures are not anticipated to have a material impact upon external trip making. Costs were not identified as part of the VECTOS study although the Vision Part 2 report states the scheme would be a "relatively low cost". Moreover, it is noted to ensure maximum take up, membership and subscriptions should be contributed towards by the developer, and the scheme itself would be funded for a minimum of 5-years. Research undertaken as part of this assessment, identified the unit cost per bike to range between £2,000 - £8,000. It is envisioned that the strategy would need to be delivered early on in the phasing of development to offer travel choice.	Initial capital costs for bikes between £2,000 - £8,000 per bike. 60 bikes would equate to £120,000. 107 bikes would equate to £856,000. Operating costs per annum range between £600 - £1000 per bike equating to £60,000 for 60 bikes and £107,000 for a fleet of 107 bikes [not taking into account user fees and subscription revenue] **Source:** LMA Sustainable Transport Requirements 2019 WCC
MM-04	Scooter sharing scheme	Research undertaken by VECTOS identified a fleet of 50 e-scooters for the first occupation with up to 1,000 e-scooter being provided. **Source:** Vision Part 2 2022 VECTOS and MAP 2022 VECTOS	An E-scooter hire scheme would be incorporated into the bike and e-bike scheme. The Vision Part 2 document notes the e-scooter scheme would focus on very short distance trips within LMA between the residential, employment and retail land-uses and have no material impact upon external trip making.	Initial capital costs for 50 e-scooters £40,000 and up to £800,000.00 for 1000 e-scooters. Operating costs per annum of £90,000 for 50 e-scooters up to £1,800,000 for 1000 e-scooters [not taking into account user fees and subscription revenue] **Source:** Vision Part 2 2022 VECTOS and MAP 2022 VECTOS
MM-05	PTP	Provision of personalised travel planning to all new	Personalised travel planning would support all new residents, the employment elements, new business and the educational land uses on site by providing promotional tools and monitoring measures to encourage the use of sustainable transport and achieve modal shift.	For the 3,500 dwelling scenario PTP was identified as a relatively low-cost option at £23,000 per annum

Reference	Name	Description and source	Rationale/ Constraints	Indicative Capital and Operational Cost
		residents to encourage residents to make sustainable travel choices. This would include distribution of Sustainable Travel Packs to all new residents.	Monitoring and managing the impacts of development and the success of sustainable transport options is essential and a site wide PTP would be managed via a travel plan coordinator. Where sustainable travel targets are set, monitoring and enforcement would form a critical part of the LMA travel plan, in light of the significant emphasis placed upon internalisation, mode-shift and delivering the aspirational transport Vision. Monitoring and enforcement of the PTP at LMA would require a collaborative working partnership with the LPA, WCC and site promoters. Section 106 agreements and a suitable suite of planning conditions would need to be developed alongside the PTP to ensure that set targets are achieved. This would form part of a larger suite of necessary planning controls to deliver other key elements of the proposed Vision including parking controls, EV charging and mechanisms to ensure working from home targets are met.	for a travel plan coordinator, £30,000 start-up costs and an on-gong annual budget of £20,000 In addition, sustainable travel packs for each dwelling at a total of £75 per dwelling (£263,000) **Source:** LMA Sustainable Transport Requirements 2019 WCC To derive indicative costs for the 6,000 dwelling scenario, costs have been doubled resulting in £45,000 per annum for a travel plan coordinator, £60,000 start-up costs and an on-going annual budget of £40,000. In addition, sustainable travel packs for each dwelling at a total of £75.00 per dwelling (£450,000). **Source:** LMA Sustainable Transport Requirements 2019 WCC
MM-06	Mobility Hubs	To facilitate and encourage active travel modes on site, the micro-mobility strategy would be focused on a central mobility hub supported by secondary hubs located around the LMA site.	The LMA SPD Masterplan makes provision for a Potential Transport Hub close to the Greenway. Mobility hubs would provide the focal point of micro-mobility on site providing community facilities including micro-consolidation (parcel drop off), micro-mobility hire (bikes, e-bike, e-scooters), electric vehicle charging points, bespoke travel planning and car-sharing.	£100,000 for the primary hub and £50,000 - £75,000 per year to fund a community concierge (for a period of at least ten years) **Source:** Vision Part 2 2022 VECTOS and MAP 2022 VECTOS

6.3.6 Cycling

A route-based review of cycling options has been undertaken which analyses the constraints, opportunities and feasibility of providing/ improving cycle infrastructure. Four core routes have been assessed: -

- The Greenway;
- From the Greenway to Stratford Rail Station;
- From the Rail Station to Stratford-upon-Avon town centre; and,
- From the Greenway to Stratford-upon- Avon town centre.

The details of the cycle options are outlined below in the following table, with the locations of the various colour coded sections shown below: -

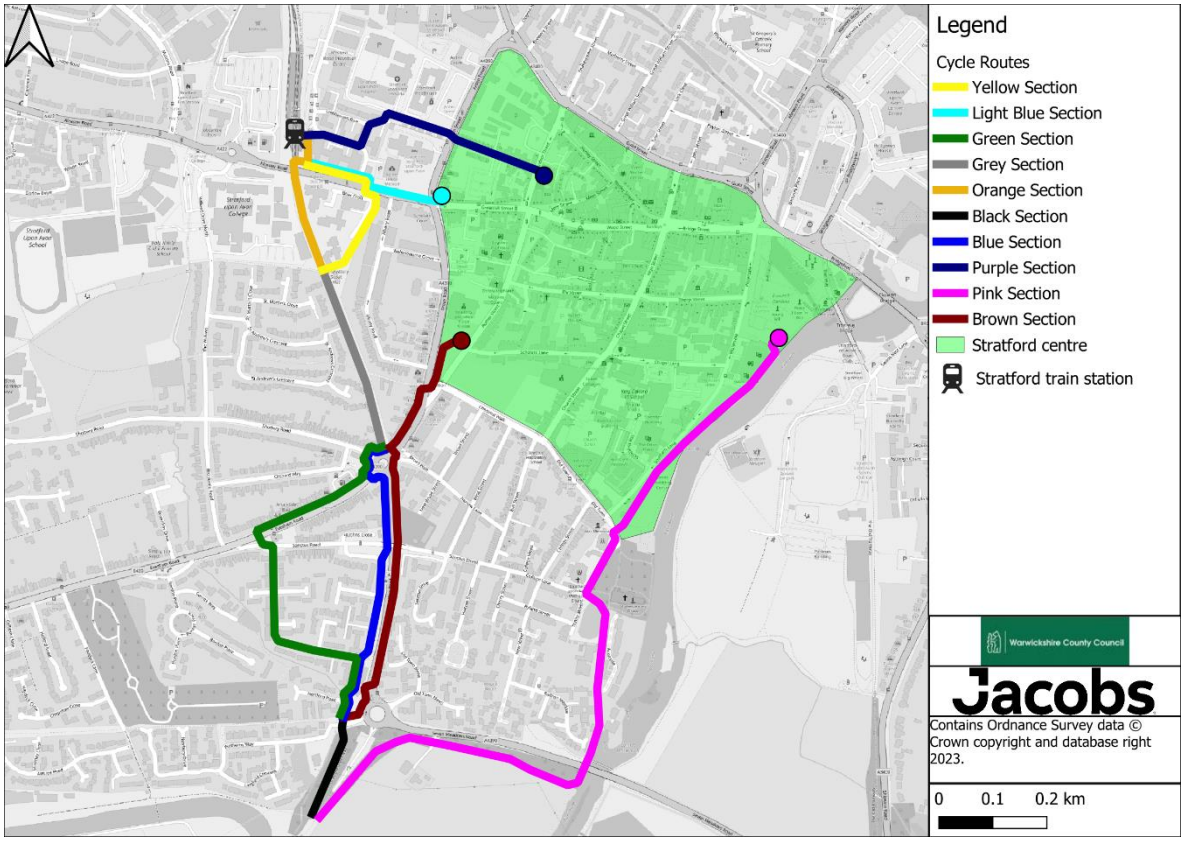

Figure 6.12:- Stratford-upon-Avon enhanced cycling measures

For cycling provision between the Greenway and Stratford Rail Station and/or the town centre, multiple routes have been analysed some of which feature sub-options for different types of cycle provision depending upon the constraints and opportunities analysed through the feasibility assessment.

All cost estimates of the cycling measures are calculated based on the indicative costs in the *'Taylor I and Hiblin B (2017) Typical Costs of Cycling Interventions: Interim analysis of Cycle City Ambition schemes'* report produced for the DfT[15]. Consideration has been given to the advice contained within DfT LTN 1/20 Cycle Infrastructure Design. Costs provided are indicative and subject to refinement through more detailed assessment.

[15] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/742451/typical-costings-for-ambitious-cycling-schemes.pdf

Table 6-11:- Cycling measures

Reference	Name	Description	Rationale / Constraints	Indicative Capital Cost
C-01	Resurface the Greenway	Resurface the full extent of the Greenway.	To ensure it is available all year round regardless of weather conditions.	£1,500,000
C-02	Stratford Greenway to Wetherby Way, Option 1 (Black section)	Widen and resurface the existing path to 3m for use as a shared use foot/cycleway. Upgrade existing signalised crossing with raised parallel crossing.	Minimal work needed to upgrade to a compliant shared use provision. However, a shared use facility gives lower level of cyclist and pedestrian provision in accordance with LTN 1/20. Raised zebra crossing will ensure active modes have priority.	£300,000
C-03	Stratford Greenway to Wetherby Way, Option 2 (Black section)	Widen and resurface the existing path to 5m for use as a two-way segregated cycle track and footway. Upgrade signalised crossing with raised parallel crossing.	Segregated facility gives higher level of cyclist provision. Raised zebra crossing will ensure active modes have priority.	£403,000
C-04	Wetherby Way to A4390 (Red section)	Remove the white lining from the existing non-compliant cycleway and footway on Wetherby Way to provide a shared use path to the Evesham Road/ Evesham Place roundabout. Widen the path around the roundabout utilising the highway verge to provide a 3m shared use path. Provide a toucan crossing to the north of the roundabout on the A4390.	Minimal work needed to upgrade to a compliant shared use path. However, a shared use facility gives lower level of cyclist and pedestrian provision. Toucan crossing is likely needed on the A4390 due to the volume of traffic.	£229,000
C-05	A4390 to Summerton Way, Option 1 (Red section)	Widen the footway on the eastern side of the carriageway (utilising the existing available verge) to provide a 3m shared use path. Provide a raised parallel crossing on Evesham Place.	Minimal work needed to upgrade to a compliant shared use path. However, a shared use facility gives lower level of cyclist and pedestrian provision. Raised zebra crossing will ensure active modes have priority.	£379,000
C-06	A4390 to Summerton Way, Option 2 (Red section)	Widen the footway on the eastern side of the carriageway, utilising the carriageway reducing the width of the carriageway, to provide a 5m a two-way segregated cycle track and footway where feasible.	Segregated facility gives highest level of cyclist provision. Raised zebra crossing will ensure active modes have priority, to reduce waiting time. However, Sanctus Road overbridge structure impacts deliverability and the segregated provision would need to be downgraded to a shared use path at this location, and lack of available highway land to the north of the bridge also requires a shared use facility. Providing an inconsistent provision is a sub-optimal solution.	£621,000
C-07	Spencer Court (Blue & Green sections)	Widen the existing ramp down to Spencer Court from Wetherby Way to 3m for use as a two-way segregated cycle track.	Existing footway has steps, so users with limited mobility would use the proposed cycle track. This option would therefore need to be shared use with appropriate consideration of gradients to ensure inclusive use for all users.	£22,000
C-08	Spencer Court to Sandfield Road (Blue section)	Introduce a 20mph speed limit to support an on-carriageway cycle route, new signage and lining as appropriate.	Minimal work needed, as a low traffic residential street will likely be suitable for mixed traffic cycling if it has a 20mph limit. Traffic calming measures may be required and a Traffic Regulation Order.	£8,000

Reference	Name	Description	Rationale / Constraints	Indicative Capital Cost
C-09	Sandfield Road to Summerton Way (along A4390) (Blue section)	Widen and resurface the existing path on the west side of the A4390 as 3m shared use path. Provide two raised parallel crossings on Evesham Road and Shottery Road, with shared use path around the roundabout to Summerton Way.	Shared use facility gives lower level of cyclist and pedestrian provision. Significant resurfacing is likely required to create compliant gradient on the existing path.	£463,000
C-10	Spencer Court to Sanctus Road (Green section)	Introduce a 20mph speed limit to support an on-carriageway cycle route, new signage and lining as appropriate.	Minimal work needed, as a low traffic residential street will likely be suitable for mixed traffic cycling if it has a 20mph limit. Traffic calming measures may be required and a Traffic Regulation Order.	£13,000
C-11	Sanctus Road to Summerton Way (along Evesham Road), Option 1 (Green section)	Utilise the existing cycle lanes on Evesham Road and provide a 3m shared use path around the roundabout with raised parallel crossings on Evesham Road and Shottery Road, to Summerton Way.	Minimal work needed to upgrade to a compliant shared use path. However, a shared use facility gives lower level of cyclist and pedestrian provision. Raised zebra crossing will ensure active modes have priority.	£305,000
C-12	Sanctus Road to Summerton Way (along Evesham Road), Option 2 (Green section)	Realign the carriageway and parking bays to convert the existing two cycle lanes into a two-way segregated cycle track along the south side of Evesham Road, then provide a 3m shared use path around the roundabout with raised parallel crossings on Evesham Road and Shottery Road, to Summerton Way.	Segregated facility gives higher level of cyclist provision (however this would be combined with the short section of shared use around the roundabout due to width constraints). Raised zebra crossing will ensure active modes have priority, to reduce waiting time.	£686,000
C-13	Summerton Way, Option 1 (Grey section)	Remove the white lining from the non-compliant cycleway and footway to provide a shared use path.	Minimal work needed to make compliant shared use path. However, a shared use facility gives lower level of cyclist and pedestrian provision.	£321,000
C-14	Summerton Way, Option 2 (Grey section)	Widen the cycleway and footway to 5m to provide a compliant two-way segregated cycle track and footway.	Segregated facility gives higher level of cyclist provision.	£526,000
C-15	Summerton Way to Train Station, Option 1 (Orange section)	Provide 3m shared use path north beyond the disused railway line to link to the station forecourt. Routing to the rail station via the existing NC5 and then upgrading the route on the Alcester Road (A422) is constrained by the bridge parapets.	This is the most direct route to the train station. However, this option would require remedial works to sections of rail line. This is a significant constraint. Shared use facility gives lower level of cyclist and pedestrian provision.	£178,000. Cost does not include the conversion/ remedial works associated with the rail line which would be subject to more detailed analysis
C-16	Summerton Way to Train Station, Option 2 (Orange section)	Provide 5m two-way segregated cycle track and footway north beyond the disused railway line, to link to the station forecourt.	Fastest and most direct route from the existing route to the train station. However, this option would require remedial works to sections of rail line. This is a significant constraint. Shared use facility gives lower level of cyclist and pedestrian provision.	£292,000. Cost does not include the conversion/ remedial works associated with the rail line which would be subject to more detailed analysis

Reference	Name	Description	Rationale / Constraints	Indicative Capital Cost
C-17	Summerton Way to Train Station, Option 3 (Yellow section)	Provide a 3m shared use path to link to Briar Croft, a 3m shared use path around the corner of Briar Croft onto Alcester Road, a toucan crossing on the west arm of Alcester Road at the junction with Brunel Way, to link to the existing toucan crossing on Brunel Way and the shared use path on Station Approach.	Avoids the section north beyond the disused railway line although this is a less direct route from the existing route to the train station. Potential land constraint at Briar Croft.	£318,000
C-18	Evesham Place, Option 1 (Brown section)	Widen the footway slightly to provide a 3m shared use path. Upgrade the existing crossing to a toucan crossing.	Minimal work needed to upgrade to a compliant shared use path. However, a shared use facility gives lower level of cyclist and pedestrian provision. Toucan crossing is required on the A4390 due to the volume of traffic.	£282,000
C-19	Evesham Place, Option 2 (Brown section)	Remove on street parking bay and right turn lane, with some widening into the central island at the junction with Chestnut Walk, to provide a 5m two-way segregated cycle track and footway.	Segregated facility gives higher level of cyclist provision. Requires removal of parking, which is likely to be unpopular. Requires removal of existing right turn lane.	£373,000
C-20	Firs Gardens (Brown section)	Utilise existing paved paths through the park as a 3m wide shared use route. Some resurfacing may be required.	Minimal work needed to upgrade to a compliant shared use path. However, a shared use facility gives lower level of cyclist and pedestrian provision.	£224,000
C-21	Alcester Road (Light blue section)	Reallocate the nearside carriageway lane as a two-way segregated cycle track. Provide a cycle crossing as part of the existing signalised junction, into the disused land on the northeast corner of the junction with Greenhill Street. Opportunities to explore available land for cycle parking as part of the wider cycling strategy (as detailed in the previous section).	Segregated facility gives higher level of cyclist provision. Requires removal of nearside traffic lane.	£637,000
C-22	Brunel Way, Gresley Close and Mansell Street (Dark blue section)	Introduce a 20mph speed limit to support an on-carriageway cycle route, new signage and lines as appropriate. Opportunities to explore available land for cycle parking as part of the wider cycling strategy (as detailed in the previous section).	Minimal work needed, as a low traffic residential street will likely be suitable for mixed traffic cycling if it has a 20mph limit. Traffic calming measures may be required and a Traffic Regulation Order.	£212,000
C-23	Stratford Greenway to Lucy's Mill Bridge, Option 1 (Purple section)	Widen and resurface the existing path to the south of the A4390 to 3m for use as a shared use path.	Minimal work needed to upgrade compliant shared use path. However, a shared use facility gives lower level of cyclist and pedestrian provision.	£548,000
C-24	Stratford Greenway to Lucy's Mill Bridge, Option 2 (Purple section)	Widen and resurface the existing path to the south of the A4390 to 5m for use as a two-way segregated cycle track and footway.	Segregated facility gives higher level of cyclist provision.	£899,000
C-25	Lucy's Mill Bridge to Old Town (Purple section)	Introduce a 20mph speed limit to support an on-carriageway cycle route, new signage and lines as appropriate.	Minimal work needed, as a low traffic residential street will likely be suitable for mixed traffic cycling if it has a 20mph limit.	£11,000

Reference	Name	Description	Rationale / Constraints	Indicative Capital Cost
			Traffic calming measures may be required and a Traffic Regulation Order.	
C-26	Old Town to Swan Theatre (Purple section)	Utilise existing paved paths through the park and alongside the River Avon as a 3m wide shared use route. Some resurfacing may be required. Provide cycle parking outside the Swan Theatre, as the entrance point into the town centre.	Minimal work needed to upgrade to a compliant shared use path. However, a shared use facility gives lower level of cyclist and pedestrian provision. Potential flooding issue, as the route is adjacent to the River Avon.	£297,000

6.3.7 South Stratford Park & Ride/ Stride

It is noted that historically there has been limited demand for a Park & Ride in the south of Stratford-upon-Avon. The 2019 WCC study included a high-level appraisal of a Park & Ride facility in the south of the town. The principle of a south Stratford Park & Ride is to intercept trips from the south of Stratford travelling to the town centre thereby reducing the impact upon congested routes. The 2019 WCC study identified the following relevant key findings from the high-level analysis: -

- Future development in south Stratford could create additional demand where demand has been historically low;
- The additional demand would be better served by providing a bus service between LMA and Stratford-upon-Avon since it would avoid the need for passengers to switch mode and it would take traffic off the Campden Road corridor as well as from the last mile of the journey from the edge of Stratford into the town centre; and,
- Preliminary studies for potential Park & Ride sites in other parts of the county for a basic 500 site with standalone bus service could be expected to incur the following costs:
    - Capital costs: £2.5m (excluding land acquisition)
    - Maintenance costs: £125,000.00 per annum
    - Bus operational costs: £250,000.00 per annum (less passenger fares revenue)

Given the scale of the study work involved in analysing the viability and feasibility of a Park & Ride facility, a high-level assessment has been undertaken considering the following factors: -

- Location and access;
- Demand;
- Mobility hub considerations and alternatives; and,
- Public transport costs.

Location and access

The Rosebird centre presents an immediate opportunity for a suitable location for a south Stratford Park & Ride facility. This would be accessed directly from Shipston Road as one of the main routes used by private vehicle trips to maximise convenience for users, as well as enabling buses to serve the site effectively.

The Rosebird centre benefits from sufficient space allowing buses to circulate the internal car park and/ or utilise the existing bus stops adjacent the site without the need for buses to enter the site. Moreover, there is an existing layby within the northern section of the car park which could provide a safe and convenient location for boarding and alighting. The internal access road which runs through the centre of the site creates clear separation between the northern car park, adjacent to the community hall, and car park located adjacent to the Waitrose supermarket thereby reducing the interaction between buses and users of the car park for retail purposes.

Spaces are clearly marked and there is an existing network of pedestrian routes within the site with direct access to the adopted network of footways on Shipston Road. The site benefits from being located adjacent to the established network of footways and crossings providing opportunity to offer a dual park and stride function to the town centre potentially via the Old Tramway similar to the dual function of Bishopton Park & Ride/ Stride. Further assessment of the availability of carpark spaces would need to be considered in line with any future growth aspirations at the Rosebird centre.

The site is a favourable candidate for such a facility given its location and the existing supporting infrastructure, however using the site for this function would be subject to third party agreements. Such agreements may be beyond a reasonable planning control linked solely to development at LMA and purview of the site promoters requiring input from both the Local Planning Authority as well as Warwickshire County Council as Highway Authority.

Demand

Using the MND, a high-level analysis has been undertaken to determine what proportion of traffic travelling to Stratford-upon-Avon town centre originates from the south of Stratford. This gives a broad indication of the proportion of trips that may travel to the town centre via the A3400 past the Rosebird site. If the proportion of trips overall travelling to Stratford-upon-Avon centre from the south is insignificant, then this would indicate that there is low potential to intercept trips at a south Stratford Park & Ride.

On this basis, additional analysis has been completed for trips travelling towards Stratford-upon-Avon by direction. All MSOAs covering Stratford-upon-Avon have been selected:

- Stratford-on-Avon 009;
- Stratford-on-Avon 010; and,
- Stratford-on-Avon 011.

This analysis has been developed using the same dataset and assumptions as set out in section 4.4 above. The following MND has been selected as part of the analysis. The MND was selected to represent the following: -

- Peak Period (AM 06:00 – 09:00)
- Average Weekday
- All Months
- All modes
- Direction of Travel to Selected MSOAs
- All trips between Selected MSOAs have been excluded (Stratford-upon-Avon internal trips)

Origin and Destination pairs were then categorised by direction of traffic into Stratford-upon-Avon as either:

- North (Warwick Road via A46/M40)
- West (Birmingham Road and Alcester Road via A46)
- South & East (A3400, Banbury Road and Wellesbourne Road)

The results indicate: -

- North – 36% of all trips travelling into Stratford-upon-Avon travel from the North;
- South & East – 24% of all trips travelling into Stratford-upon-Avon travel from the South and East; and,
- West – 40% of all trips travelling into Stratford-upon-Avon travel from the West.

The analysis demonstrates that the proportion as a whole of trips travelling from the south to the centre of Stratford-upon-Avon is significant. The data shows that trips originating from the South and East are mostly local/ short distance trips. In addition to future demand generated at LMA, the analysis indicates that there is a reasonable potential for a South Stratford Park & Ride to intercept trips on the southern side of the town to reduce the demand within the town centre itself.

Additional study work to analyse market demand and the attractiveness of such a facility is required. This would need to consider the viability of a south Stratford Park & Ride in the context of forming part of a wider parking and public transport strategy to manage demand, as well as parking charges across Stratford-upon-Avon. Such a wider strategy may provide more viable solutions to demand issues and consequential congestion in the town centre, where the ability to provide significant highway infrastructure is a limited prospect due to constraints.

Mobility hub considerations and alternatives

A more traditional Park & Ride allows the user to drive to a car park on the periphery of the urban area and complete the final portion of their journey by bus. As noted above, this has the benefits of reducing vehicle trips entering the town centre with additional benefits to the streetscape in the historic centre in terms of air quality and reduced impacts upon noise.

Typically, a traditional Park & Ride provides a large surface car park and is focused on offering sustainable travel for the last leg of a journey. By contrast, mobility hubs offer a wider array of facilities for pedestrians and cyclists who may choose to use public transport as part of their journey. A mobility hub generally enables interchange

between two or more modes of transport, so in effect a traditional Park & Ride could also be considered as a mobility hub.

Mobility hubs at LMA would not be strategically placed within the town centre and therefore would not facilitate a rail service opportunity to rail or other primary mass transit modes, however, they do offer the opportunity to promote public transport as the primary mode of transport for the full journey. The WCC 2019 high level analysis, indicated that the additional demand created at LMA may be better served by providing a bus service between Long Marston Airfield Garden Village and Stratford-upon-Avon since it would avoid the need for passengers to switch mode.

In combination with regular and reliable bus services, the mobility hub option at LMA may provide a more viable alternative to the South Stratford Park & Ride, promoting more sustainable trips during the first mile, as well as the last mile rather than promoting trips by car (and providing a large car park to accompany it).

Public transport costs

Table 6-12:- Rosebird P&R Proposed Frequency

Reference	Name	Description and Source	Rationale	Indicative Costs	Indicative High-Level Revenue Cost
P&R1	P&R Loop (Figure 6.13)	This southern P&R option can either function as a standalone route via Seven Meadows Bridge and Clopton Bridge, or function as a figure-of-eight movement with the existing P&R at Stratford-upon-Avon Parkway Station.	The principle of a south Stratford Park & Ride is to intercept trips from the south of Stratford travelling to the town centre thereby reducing the impact upon congested routes in the town centre.	With the same frequency as the existing P&R service and only routing via the blue route in Figure 6.13 the cost is £334,000 annually. Total subsidy required (Fare-Cap): £3,748,000 The annual cost of running the service as a figure-of-eight movement with the same existing P&R frequency is £826,000.	The high-level analysis indicates potential commercial viability after 2039 based upon the assumptions listed above in section 6.3.2.

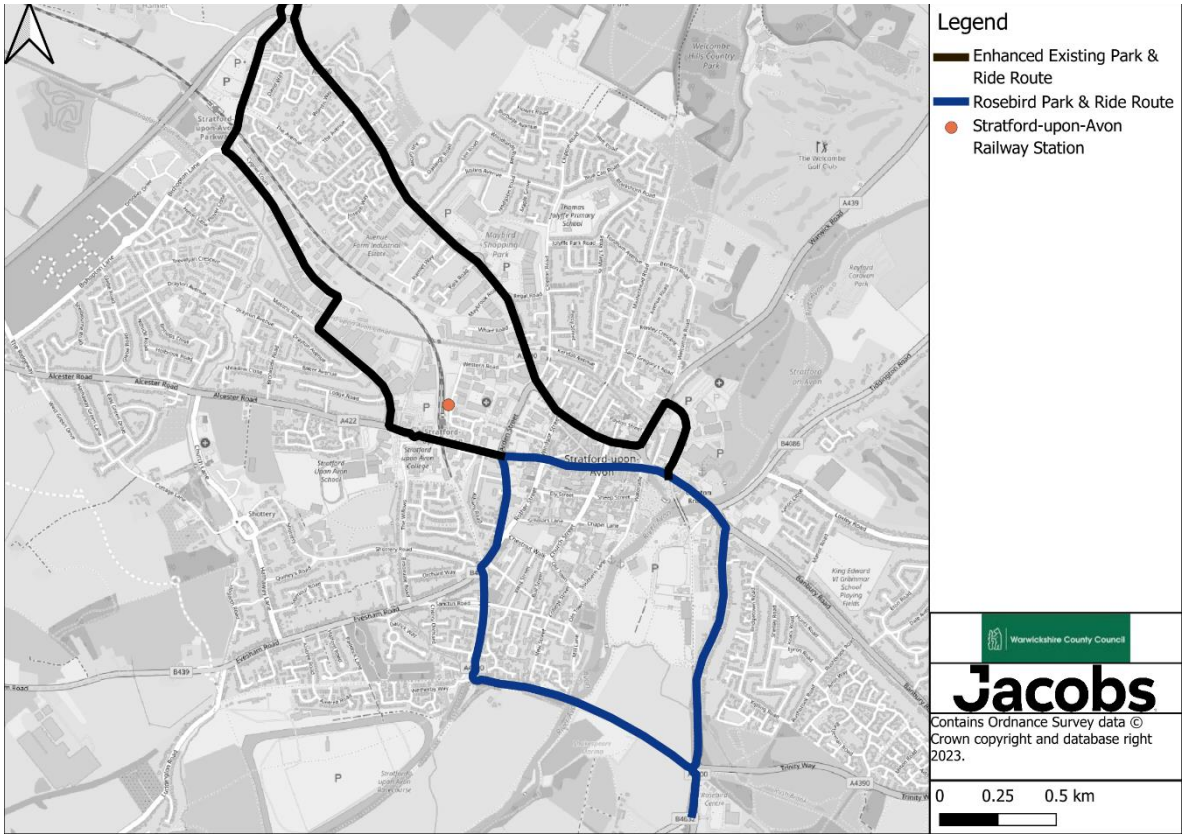

Figure 6.13:- P&R Routes

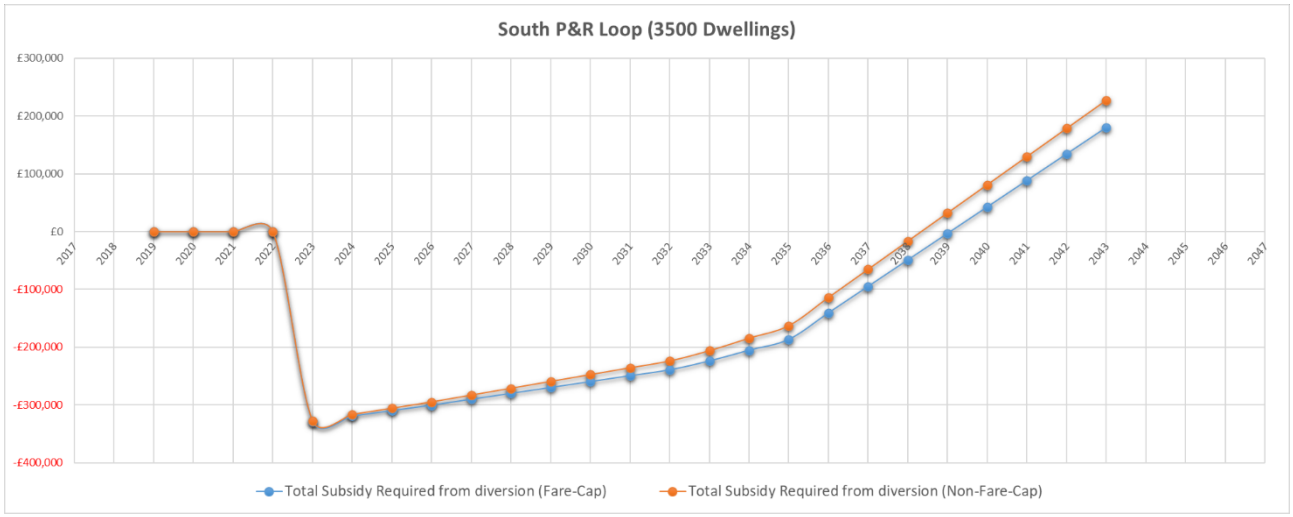

Figure 6.14:- Rosebird P&R loop only Revenue Calculations with 3500 Dwellings

Figure 6.14 shows two lines spanning the timeline of the development for this public transport option. These lines show the total subsidy required with the Fare-cap (£2.50) and without Fare-Cap (£2.90): The cost of the diverted service compared to the revenue generated from users at the Long Marston development per year. This is with the £2.50 fare cap. Subsidies will stop being needed after 2038.

7. Stage 3: - Sifting and Appraisal

The DfT EAST (Early Appraisal Sifting Tool) has been used to calculate scores for each public transport, cycle and micro-mobility option. EAST is a decision supporting tool which is used to quickly summarised and present evidence on options in a clear and consistent format, providing decision makers with relevant, high level, information to help them form an early view of how options perform and compare.

EAST has been designed so that it can be applied without having to obtain detailed evidence. This flexibility allows options to be considered at an early stage of development, however, the level of confidence that can be applied to comparisons facilitated by the tool will depend on the robustness of the underlying evidence base.

EAST scores are divided into five different dimensions: the Strategic Dimension, Economic Dimension, Managerial Dimension, Financial Dimension and Commercial Dimension: -

- **The Strategic Dimension** includes the scale of impact and the fit with wider government and other objectives. This is similar to the exercise undertaken as part of the initial sift as set out in Section 5. Options with a low scale of impact are not necessarily poor options but these would need to be complimentary options and packaged together with other options with a high scale of impact;
- **The Economic Dimension** includes the impacts to economic growth, carbon emissions, socio-distributional impacts, local environment, well-being, and value for money. The carbon emissions criteria include consideration of embedded carbon if significant construction works are required. At this stage of assessment, the value for money scores are high-level estimates as there are only high-level costs and no benefit calculations to inform this assessment;
- **The Management Dimension** includes the public acceptability and practical feasibility of the option. Unlike many other criteria in which a low score can be offset by other benefits, options which score poorly on public acceptability and practical feasibility can be discounted;
- **The Financial Dimension** is focused on the affordability of the option, including the capital costs and revenue costs. As above, a poor score on affordability means the option can be discounted; and,
- **The Commercial Dimension** includes the flexibility of the option and if any income will be generated. Most options in this assessment will score poorly on the commercial case due to not generating any income, as such the low scores for options in this case needs to be considered in this context.

The options taken through the EAST process are as follows:

- Public Transport Options
    - Existing bus with enhancements (this includes all the options for Bus Route 3 additions and diversions, as there is little to differentiate them in terms of the EAST assessment)
    - BRT option 1 Shipston Road to Clopton Bridge
    - BRT option 2 Shipston Road to Clopton Bridge, via the Old Tramway
    - BRT option 3 Seven Meadows to Evesham Road
    - BRT option 4 existing park & ride route
    - BRT option 5 Birmingham Road and Guild Street
    - Electric buses
    - South Stratford Park & Ride

- Cycle Options
    - Resurface The Greenway
    - Greenway to Stratford Train Station route
        - Option 1, via Wetherby Way, the A4390, Summerton Way, and the section north beyond the disused railway line
        - Option 2, via Wetherby Way, Spencer Close, Sandfield Road, the A4390, Summerton Way, and the section north beyond the disused railway line
        - Option 3, via Wetherby Way, Spencer Close, Sanctus Road, Evesham Road, Summerton Way, and the section north of the disused railway line
        - Option 4, via Wetherby Way, the A4390, Summerton Way, Briar Croft, and Station Approach
        - Option 5, via Wetherby Way, Spencer Close, Sandfield Road, the A4390, Summerton Way, Briar Croft, and Station Approach

        - Option 6, via Wetherby Way, Spencer Close, Sanctus Road, Evesham Road, Summerton Way, Briar Croft, and Station Approach
    - Spur from the above route to the Town Centre, via Evesham Road and Firs Gardens
    - Stratford Train Station to Town Centre
        - Option 1, via Alcester Road to Greenhill Street
        - Option 2, via Brunel Way, Gresley Close and Mansell Street to Winsor Street
    - Greenway to Town Centre, via the route to Lucy's Mill Bridge and riverside route to Swan Theatre

- Micro-mobility
    - Car club
    - Bike and e-bike sharing
    - E-cargo bike sharing
    - Scooter sharing
    - Personalised travel planning
    - Mobility hubs

7.1 EAST summary

A summary of the EAST assessment is shown in Table 7-1 below, with the scores aggregated into a RAG system for each of the five dimensions. The detailed EAST forms for each option can be seen in Appendix A.

Table 7-1:- EAST summary

Option	Strategic	Economic	Management	Financial	Commercial
Existing bus with enhancements	Green/Amber	Amber	Green	Green/Amber	Green
BRT1 Shipston Rd to Clopton Br	Green	Green/Amber	Amber	Green/Amber	Amber
BRT2 via Old Tramway	Green	Green/Amber	Red	Amber/Red	Amber
BRT3 Seven Meadows to Evesham Rd	Green/Amber	Green/Amber	Amber	Green/Amber	Amber
BRT4 existing P&R route	Green	Green/Amber	Amber	Green/Amber	Amber
BRT5 Birmingham Rd and Guild St	Green	Green/Amber	Amber	Green/Amber	Amber
Electric buses	Green/Amber	Green/Amber	Green	Amber/Red	Green
South Stratford Park & Ride	Green/Amber	Amber	Amber	Amber	Green/Amber
Resurface The Greenway	Green	Green/Amber	Green	Green/Amber	Amber
Greenway to Train Station Op1	Amber	Amber	Amber/Red	Red	Green/Amber
Greenway to Train Station Op2	Green/Amber	Amber	Amber/Red	Red	Green/Amber
Greenway to Train Station Op3	Green	Amber	Amber/Red	Red	Green/Amber
Greenway to Train Station Op4	Amber	Green/Amber	Green	Green/Amber	Green/Amber
Greenway to Train Station Op5	Green/Amber	Green/Amber	Amber	Green/Amber	Green/Amber
Greenway to Train Station Op6	Green	Green/Amber	Green	Green/Amber	Green/Amber
Spur to Town Centre	Amber	Green/Amber	Amber/Red	Green/Amber	Green/Amber
Train Station to Town Op1	Green/Amber	Amber	Red	Green/Amber	Green/Amber
Train Station to Town Op2	Green/Amber	Green/Amber	Green	Green	Amber
The Greenway to Town	Green/Amber	Green	Green	Green/Amber	Green/Amber
Car club	Green/Amber	Amber	Amber	Amber	Green/Amber
Bike and E-bike sharing	Green/Amber	Green/Amber	Green	Green/Amber	Amber
E-Cargo bike sharing	Green/Amber	Green/Amber	Green	Green/Amber	Amber
Scooter sharing	Green/Amber	Green/Amber	Green	Green/Amber	Amber
Personalised travel planning	Green/Amber	Amber	Green	Green	Green

Mobility hubs	Green/Amber	Amber	Green	Green/Amber	Amber

7.1.1 EAST summary – Public Transport options

Each of the bus enhancements options score well in the strategic dimension, with scores of either green or green/amber. Most of the supporting BRT options for the buses score the best in this dimension due to the higher scale of impact these will have over other bus enhancements, with the exception of BRT 3 which is slightly lower than the other BRT options due to potential conflicts with cycle options along the A4390 most notably at the A4390 Evesham Place/ Seven Meadows Road/ B439 Evesham Road/ Shottery Road roundabout. Future design considerations would need to be cognisant of the conflict as part of the design evaluation at this junction.

The South Stratford Park & Ride has an average scale of impact due to the uncertainty of whether it would encourage sufficient modal shift to have a significant impact based on a historic lack of use.

The BRT options also score higher in the economic dimension than the other bus options in isolation, as the BRT measures would provide higher benefits to journey times and reliability. The conversion of the fleet to electric buses also scores well in the economic dimension due to the high benefits to carbon emissions and the local environment.

The enhancements to the existing buses and the conversion to electric buses score the highest for the management dimension, due to high scores in public acceptability and practical feasibility (i.e., both are relatively easy to achieve and likely to be acceptable with the public). The various BRT options have a lower practical feasibility due to the difficulty of introducing infrastructure along constrained urban corridors. The BRT 2 option in particular (via the Old Tramway) also scores much lower for acceptability and practicality, as this is converting an existing active mode route into carriageway space.

The financial dimension considers the affordability of the options. The option for enhancements to the existing buses does not require any infrastructure works (only requires the purchase of additional buses and the hiring of additional drivers), which therefore scores well in the financial dimension. Most of the BRT options, with the exception of BRT 2, only introduces infrastructure in key locations to improve throughput of buses through congested junctions which also scores well for the financial dimension. The bus options which score poorly for the financial dimension are BRT 2, which requires the conversion of an existing active travel route to carriageway, the conversion of the fleet to electric buses, and the provision of the South Stratford Park & Ride.

The commercial dimension is worse for BRT due to the inflexibility of the options, as the BRT infrastructure for each option would need to be installed at specific locations for each route, compared to the higher flexibility of the additional buses required for the other bus enhancements and/or the electric buses which could be shifted around to other routes if needed.

The best performing bus options are the BRT 1, 4, and 5 routes. One or more of these routes can also be complimented with the enhancements to the existing services and the conversion of the bus fleet to electric vehicles.

7.1.2 EAST summary – cycling

Resurfacing the Greenway scores very highly in the strategic dimension. This is the only viable route for active modes between LMA and Stratford-upon-Avon, therefore improving it has a high impact as all active mode users from LMA will benefit. Option 3 and 6 for the route between the Greenway and the Stratford Train Station also scores highly in the strategic dimension, as these route options are able to comply best with LTN 1/20 guidance in providing the closest to a fully segregated route possible within the urban constraints of Stratford-upon-Avon. Options 1 and 4 between the Greenway and the Train Station score the lowest in the strategic dimension, along with the spur from this route to the Town Centre, due to potential conflicts with bus options along the A4390.

For the economic dimension, all of the cycling options score well for carbon emissions with just the option to resurface the Greenway scoring slightly lower due to the embedded carbon in the significant construction works this option would require. Likewise, they all score high for well-being due to the increased levels of physical activity and a reduction in crime for those options which include secure cycle parking in the town centre.

Most cycle options score well for the local environment due to the reduction in air pollution and noise from the mode shift to cycling, with the exception of the Train Station to Town option 1 due to the expected congestion that reallocating a traffic lane to a cycle track will create (hence an increase in pollution and noise). The expected value for money category is high for most of the options due to a low construction cost and high expected benefits to active modes, however the cost of providing a path along the disused railway track means that the Greenway to Train Station options 1-3 score low, as does the Train Station to Town option 1 due to disbenefits to drivers with the reallocation of critical road space to a cycle track.

Most of the cycling options score well for acceptability, with the exception of the Train Station to town centre option 1 due to the congestion this is likely to cause, and the spur from the A4390 route to the town centre due to the removal of residential on-street parking spaces. The Greenway to Train Station options 1-3 score low for practical feasibility due to the issues with building over the disused railway, and the spur to Town option also scores low due to the practicality of providing a route through the A4390 / Rother Street junction and the impact to the capacity of the right turn movements.

In the commercial dimension, none of the cycling options will be generating any income. The difference in scores is purely due to the flexibility of the options, for which they generally score average to high (as there is the potential to downgrade the level of provision from full segregation to shared use in various locations), with the exception of resurfacing the Greenway which is a very inflexible option.

The resurfacing of The Greenway is a required option to open up the wider cycling measures into Stratford-upon-Avon. The Greenway to Train Station option 6 is the best alignment overall for this route, along with Train Station to Town option 2. The Greenway to the town centre off road route via the riverside also scores highly.

7.1.3 EAST summary – micro-mobility

There is little to differentiate the micro-mobility options in the strategic dimension. Only the personalised travel plans score lower than the others on scale of impact, but this would be included as a complimentary measure instead of a standalone option.

The various sharing schemes (car club, bike and e-bike, e-cargo bike, and scooters) score well for carbon emissions and local environment as they are either promoting a mode shift to active modes or otherwise removing non-essential car trips (car club participants would not own a car and would therefore have reduced car trips in general). This leads to a higher economic score for most of these options, but it is offset for the car club due to the lower well-being score (less physical activity) and value for money category (higher set up cost).

All of these options score green for the management dimension, except for the car club, as they are acceptable and practical to implement. The land within the LMA development site to provide the car club makes this less practical, and providing cars is likely to be less acceptable than bikes, e-bikes, or scooters.

Each of the sharing schemes would be able to generate income. However, these are also fairly inflexible options, as once the land is taken to provide these facilities there is little else which can be done without extra cost to redevelop it to another use. However, personalised travel planning is very flexible and would be tailored to the needs of the residents.

All of the bike and e-bike, e-cargo bike, or scooter sharing schemes score well enough to be implemented, alongside complimentary personalised travel planning.

8. Stage 4: - Summary and Next Steps

8.1 Overview of assessment

Stratford-upon-Avon is a historic strategic centre with a diverse local economy; vital characteristics which are important to preserve and enhance. The existing constraints within Stratford-upon-Avon, compounded by the lack of route choice for river crossings and high demand, are material considerations when developing a robust transport strategy for LMA. The CS places emphasis on promoting a self-sufficient thriving community at LMA and an exemplar modern development which promotes facilities and local living which recognises these constraints.

Starting with the concept of promoting containment, self-sufficiency, and the promotion of sustainable transport strategies at LMA, the existing Vision (outlined in the SPD) recognises the need to: -

- Provide new employment opportunities through a mix of uses at LMA;
- Be an attractive place to live and be well served from day one and throughout its delivery;
- Provide a range of commercial and community uses within the local centre at LMA;
- Be well connected by sustainable transport to Stratford-upon-Avon and surrounding local destinations; and,
- Create a network of pedestrian and cycle networks within and beyond the site.

In addition to the above, historically, it has been recognised in policy that the trip making potential of this edge-of-town development is significant. Moreover, impacts of development traffic on the existing congested and constrained urban network through Stratford-upon-Avon have been considered such a scale to justify a major transport intervention in the form of the SWRR. This is in addition to the promotion of sustainable transport strategies and self-sufficient policies as outlined in the Vision.

In transport terms, with uncertainty over the delivery of the SWRR, the level of potential external demand to be managed at LMA through the aspirational transport Vision is significant. Recognising this significant transport challenge, the recent Vision and Validate study principally considered how LMA can come forward and be delivered in a policy compliant sustainable manner, utilising solutions that may offer alternatives to the SWRR.

Now having undertaken a more detailed assessment of the underlying assumptions set out in the Vision and Validate work against evidentiary sources, analysis demonstrates there is significant variation in potential externalised trip making at LMA. The principal concern would be unmitigated impacts upon congestion or unacceptable impacts upon highway safety if the Vision is not fully realised in the way it is envisaged.

The transport Vision for LMA as presented in the Vision and Validate study is considered to be optimistic in terms of the level of containment anticipated to be achieved and the level of demand transferred to sustainable travel modes based upon the evidence presented. As indicated in the Vision and Validate study, further economic assessments may assist in confirming and refining the retail and leisure offering at LMA. It is recommended that any such assessment is extended to employment and educational landuses.

Elements of the strategy are commendable such as the development of mechanisms to enable more agile working practices and reduction in levels of parking on-site. The feasibility and practicality of such initiatives in planning terms should be discussed and developed with SDC.

The supporting transport strategy underpinning the aspirational transport Vision has been evaluated as part of a comprehensive baseline review, and additional mitigation options have been analysed: -

- Options including converting the Greenway into a heavy or light rail mass-transit offer are unlikely to be feasible;
- Constraints within Stratford-upon-Avon limit the feasibility of partial or fully segregated BRT options and these options are unlikely to be viable;
- Underpinning the transport offer for short distance trips at LMA, is the development of an aspirational micro-mobility strategy. Refinement of this strategy should be undertaken as the scale of some of the interventions have potential viability issues;
- Cycling options have been explored; options which require the removal of on-street parking, creating a more direct route to the railway station by expanding the section of disused railway and a route

through the A4390 / Rother Street junction which impact the capacity of the right turn movements, are unlikely to be feasible; and,
- A south Stratford Park and Ride at the Rosebird centre is a favourable candidate for such a facility given its location and the existing supporting infrastructure, however using the site for this function would be subject to third party agreements. Such agreements may be beyond a reasonable planning control linked solely to development at LMA.

The option assessment indicates there are a number of options which are considered feasible and warrant further exploration: -

- Enhancement of conventional bus services, as the primary mass-transit offer at LMA, indicates a viable and feasible option to offer transport choice and mitigate impacts;
- This is linked with enhancing connections for multi-modal public transport journeys at Honeybourne and Stratford rail stations;
- There are opportunities to improve bus reliability, whilst being cognisant of the constrained streetscape of Stratford-upon-Avon, at key junctions in the town centre through the implementation of technology-based solutions. This builds upon the committed highway improvement schemes particularly the Clopton Bridge improvement package;
- E-bike schemes, Mobility hubs and Personalised Travel Planning as a package of supporting measures; and,
- The Greenway offers a unique opportunity to link LMA to Stratford-upon-Avon. Options which involve full conversion of the Greenway such as heavy or light rail options, have not historically been demonstrated to be feasible. Enhancing the cycling route on the Greenway, also presents opportunities to enhance cycling connections within the town centre.

8.2 Future traffic modelling requirements

Scenario based modelling assessments are recommended in accordance with the TRICS Guidance Note on the Practical Implementation of the Decide & Provide Approach. This would require a range of scenarios based upon the most optimistic case, where the development is fully delivered in accordance with the Vision, and scenarios which are less optimistic where the development Vision is not fully realised in transport terms. This moves away from more traditional *worst-case* modelling-based assessment.

A comparison of the outputs can then be undertaken, and the impacts assessed. An assessment of the likely associated environmental impacts of transport related to the development, particularly in relation to proximity to environmentally sensitive areas (such as the air quality management areas or noise sensitive areas) are recommended.

Transport modelling is recommended to be undertaken to robustly capture the degree of demand changes anticipated by enhancements to public transport and switches to sustainable modes of travel. Once the outputs of this assessment are available, more detailed assessment developing a comprehensive mitigation package can be advanced by site promoters and supporting transport consultants.

Appendix A: EAST Assessment Outputs