



Norfolk County Council & Borough Council of
King's Lynn & West Norfolk

KING'S LYNN TRANSPORT STRATEGY





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Lynn & West Norfolk

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EXECUTIVE SUMMARY

This Transport Strategy sets out the vision, objectives and short, medium and long-term transport improvements required to support the existing community of King's Lynn and to assist in promoting economic growth in the area. The Local Plan development data shows that an additional 3,627 dwellings could be provided up to 2026, with further development growth also highlighted during the following 10 years.

The Transport Strategy concludes by setting out a high-level Action Plan to deliver improved transport infrastructure that addresses existing transport barriers and supports sustainable housing and economic growth.

The study stages have been clearly defined during the process and included: information gathering on the issues and opportunities; identification of potential schemes; and a bespoke appraisal and sifting exercise using the study aims and objectives as well as Department for Transport guidance on early option appraisal.

The transport infrastructure presented in the strategy has been sifted from an initial long-list of options which have been subject to stakeholder engagement, appraisal and prioritised using a bespoke Strategic Assessment tool and a Department for Transport's (DfT) based Early Assessment and Sifting Tool (EAST), which compares the Strategic, Economic, Managerial, Financial and Commercial case for each transport option. An Action Plan has then been produced to take forward the identified options along with a series of recommended next steps

In support of this process a traffic model building exercise has been undertaken to reflect existing transport and traffic conditions; followed by traffic forecasting to include and assess the impacts of the planned development growth. Following this the traffic models have been used to provide an initial understanding of a number of potential highway improvement schemes which were identified to understand impacts on congestion relief at the gyratory, Southgates and Hardings Way in particular.

The outcome of all of this work culminates in the Transport Strategy and initial action plan that is presented in this document and lays the foundations for further supporting transport investment in King's Lynn over the short-term (up to 2022); medium-term (2023-2030); and long-term (2030-2036).

It sets out a focus and direction for addressing transport issues and opportunities in the town by understanding the transport barriers to sustainable housing and economic growth and identifying the short, medium and long-term infrastructure requirements to address these barriers.

The Transport Strategy includes a range of strategic and local highway capacity improvement schemes alongside improvement schemes that could address issues with reliability on the existing bus network. These sit alongside the potential to make further improvements to the existing cycling and walking network to further support the already high mode share for journey to work for these active modes of travel.

A single mode or option cannot address the transport issues in King's Lynn. As such a package of measures are required including strategic and local car and non-car based options, that enhance:

- ¡ Local Highway Network capacity;
- ¡ Strategic Highway Network capacity
- ¡ The bus provision;
- ¡ Rail services and King's Lynn Railway Station;
- ¡ Walking and Cycling infrastructure;
- ¡ Parking provisions and management; and
- ¡ Smarter Choices (e.g. Travel Plans).

A proposed Transport Strategy including 18 Short-term schemes is provided, along with 12 medium term and 3 long term schemes. A total of 33 schemes are prioritised for pursuing through the Transport Strategy. A number of general policy and maintenance type schemes have also been identified for early implementation.

Most of these options are at a very early stage of development and very high level, although a few are actively being developed by Norfolk County Council. The options identified in this Transport Strategy are intended to steer the development of more detailed options at a variety of spatial scales.

One of the first actions will be to broaden the dialogue and engagement with local and strategic partners. To deliver as many of the options in the Transport Strategy as possible, a number of options will require a more detailed evidence base before funding opportunities can be successfully pursued.

It is recommended that highway options are developed and assessed using the strategic and micro-simulation models of King's Lynn. These models cover large parts of King's Lynn and were developed to assess the traffic impacts of the planned development and the outcomes of the Transport Study.

None of the options included in the Transport Strategy have secured funding for implementation. However, there is some funding which may be available to develop and assess the options to a greater degree to provide a recommended scheme for implementation including design, initial cost estimates and programme for delivery. Notably this is for Southgates roundabout and London Road initially and also the gyratory and potential Hardings Way initiatives.

Critical to the delivery of the options in this Transport Strategy is the identification of possible funding sources. There is the potential for options to be funded by both the public sector (Local Government and Central Government funding allocations and initiatives) and private sector (through other funding mechanisms and avenues associated with development opportunities). To identify and secure funding for the options outlined in this Transport Strategy it is recommended that relevant stakeholders are engaged during the further scheme development.

1 TRANSPORT STRATEGY CONTEXT

1.1 INTRODUCTION

- 1.1.1. This Transport Strategy sets out the vision, objectives and short, medium and long-term transport improvements required to support the existing community of King's Lynn and to assist in promoting economic growth in the area.
- 1.1.2. The study and strategy is intended to assist in unlocking the significant potential of King's Lynn by identifying transport barriers to growth and economic development and setting out a focus and direction for how this can be addressed. The Borough Council of King's Lynn and West Norfolk (BCKL&WN) Local Plan - Core Strategy sets out that the town has a role as a sub-regional centre. It states that it is important to strengthen the retail function alongside tourist, leisure facilities and employment development and regeneration.

Vision

To support sustainable economic growth in King's Lynn by facilitating journey reliability and improved travel mode choice for all, whilst contributing to improve air quality; safety; and protection of the built environment.

- 1.1.3. An understanding of the current and future transport issues including modelling of the options available, a preferred strategy has been developed including a number of schemes to take forward for further detailed design and implementation. It is designed to provide a focus for activities in and around the town particularly with regard to:
- ┆ Development of allocated sites and future sites coming forward in the Local Plan review to meet housing and employment growth;
 - ┆ Regeneration of underutilised land;
 - ┆ Car parking (rationalisation and capacity);
 - ┆ Resolving air quality issues in the town; and
 - ┆ Growing traffic congestion within the town.
- 1.1.4. The Transport Strategy has been developed around the following transport objectives which were agreed with stakeholders during Stage 1 of the process for developing the Strategy.

Objectives

1. *Provide a safe environment for travel by all modes;*
2. *Encourage town centre accessibility by all modes whilst conserving and enhancing King's Lynn's rich historic environment;*
3. *Support sustainable housing and economic growth;*
4. *Reduce the need to travel by car through development planning;*
5. *Manage traffic congestion in King's Lynn;*
6. *Increase active travel mode share for short journeys;*
7. *Promote and encourage the use of public transport; and*
8. *Reduce harmful emissions and air quality impacts.*

1.2 THE OPPORTUNITIES

- 1.2.1. As the principal town in the Borough, the study has focussed on providing for economic growth, social inclusion, environmental improvements, reduced emissions, as well as better accessibility and connectivity for the town.
- 1.2.2. The BCKL&WN Local Plan is currently under review and will seek to identify how further growth can be accommodated in the borough. This will cover the period up to 2036 and the Transport Study and Strategy will need to consider the emerging proposals from this work within the forecasting work and in the development of appropriate potential mitigation and/or enabling schemes to accommodate the development and growth potential of King's Lynn.
- 1.2.3. King's Lynn was 1 of 10 locations to be designated Heritage Action Zone (HAZ) status by Historic England in March 2017. The key aims of the HAZ are to:
 - i Stimulate local economic growth
 - i Maximise the economic potential of heritage assets
 - i Strengthen the character of King's Lynn conservation areas
 - i Improve King's Lynn's Town Centre's competitiveness as a sub-regional centre
- 1.2.4. The HAZ Partnership Board has agreed a 5-year Delivery Plan setting out a number of interventions to deliver against the HAZ aims including identification of 7 brownfield town centre sites (including 4 existing surface car parks) for redevelopment. A town wide Transportation Strategy is required to understand the impact of these collective developments on the network, and identify solutions including suitable locations for alternative car parking provision to enable these sites to be unlocked.
- 1.2.5. It is very evident that expected changes in the way people and goods move could impact significantly on the way our towns and cities look in the future. Whilst we are on the cusp of potential significant change it will be difficult to predict exactly how these changes in technology, behaviour and movement could impact on the transport and travel in King's Lynn in detail. However, the Transport Study and Strategy will need to acknowledge that these potential changes in transport provision are on the horizon and seek to accommodate the potential implications during the study development.

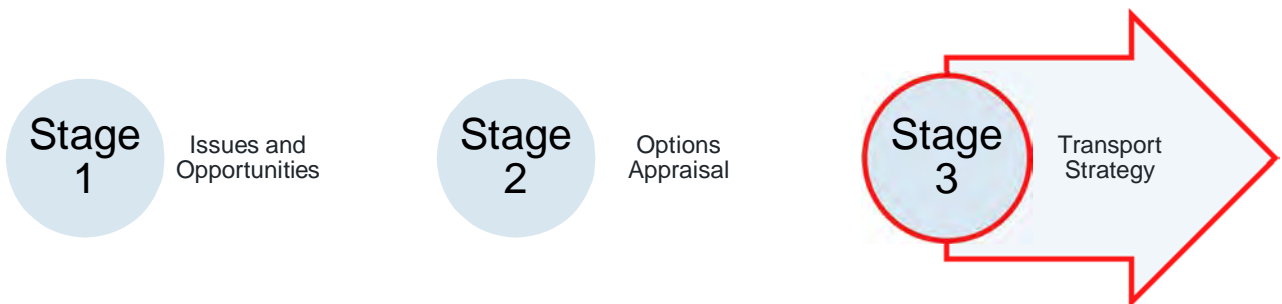
1.3 THE CHALLENGES

- 1.3.1. King's Lynn has been identified as an area for growth in the council's development plan documents. It is identified as a sub-regional centre and a number of development sites have been identified within the plan period up to 2026. Geographically these are in the north, centre, east and south of the town with a small number of sites in West Lynn. Sites for both employment and residential use have been identified.
- 1.3.2. The figures show in the region of 7,000 additional residential units in King's Lynn up to and beyond the current development plan period. With the current traffic and travel problems that have been identified in King's Lynn it will be important that the development contributes to improvements in transport infrastructure for all modes of travel to accommodate the level of additional trips that could result from the prospective residential development.
- 1.3.3. Notable additional employment areas have also been identified to the south of the town: east of Hardwick next to the A149; and to the south of Saddlebow. An enterprise zone (Nar Ouse Business Park) has been identified in the Nar-Ouse regeneration area.

- 1.3.4. There have been a number of local congestion issues already identified within this document as well as limiting issues with all modes of travel. A holistic approach to addressing these alongside each other will be required to accommodate the level of growth that is currently planned for King's Lynn. This Transport Study has identified where problems and issues currently exist in the town and the development of the Transport Strategy will aim to consider how existing issues can be addressed alongside forecasting for future travel needs to identify and develop measures that could enable the planned levels of development to stimulate local economic growth.
- 1.3.5. Of particular importance in the future growth of King's Lynn will be the potential worsening of current congestion areas in the town centre during weekday peak hours and also for accessing the leisure and tourism in the nearby coastal towns:
- ┆ Central gyratory / London Road / Gaywood Road / Lynn Road
 - ┆ A47 / A149 junctions to the south and east
 - ┆ A10 corridor
 - ┆ Southgate / Hardwick and Wisbech Road junctions
 - ┆ South Wootton A148 / Castle Rising Road
- 1.3.6. It will be imperative that walking and cycling modes of travel are developed and supported to promote and encourage continued growth in these modes that already provide a valuable contribution to supporting King's Lynn as a sustainable urban centre.

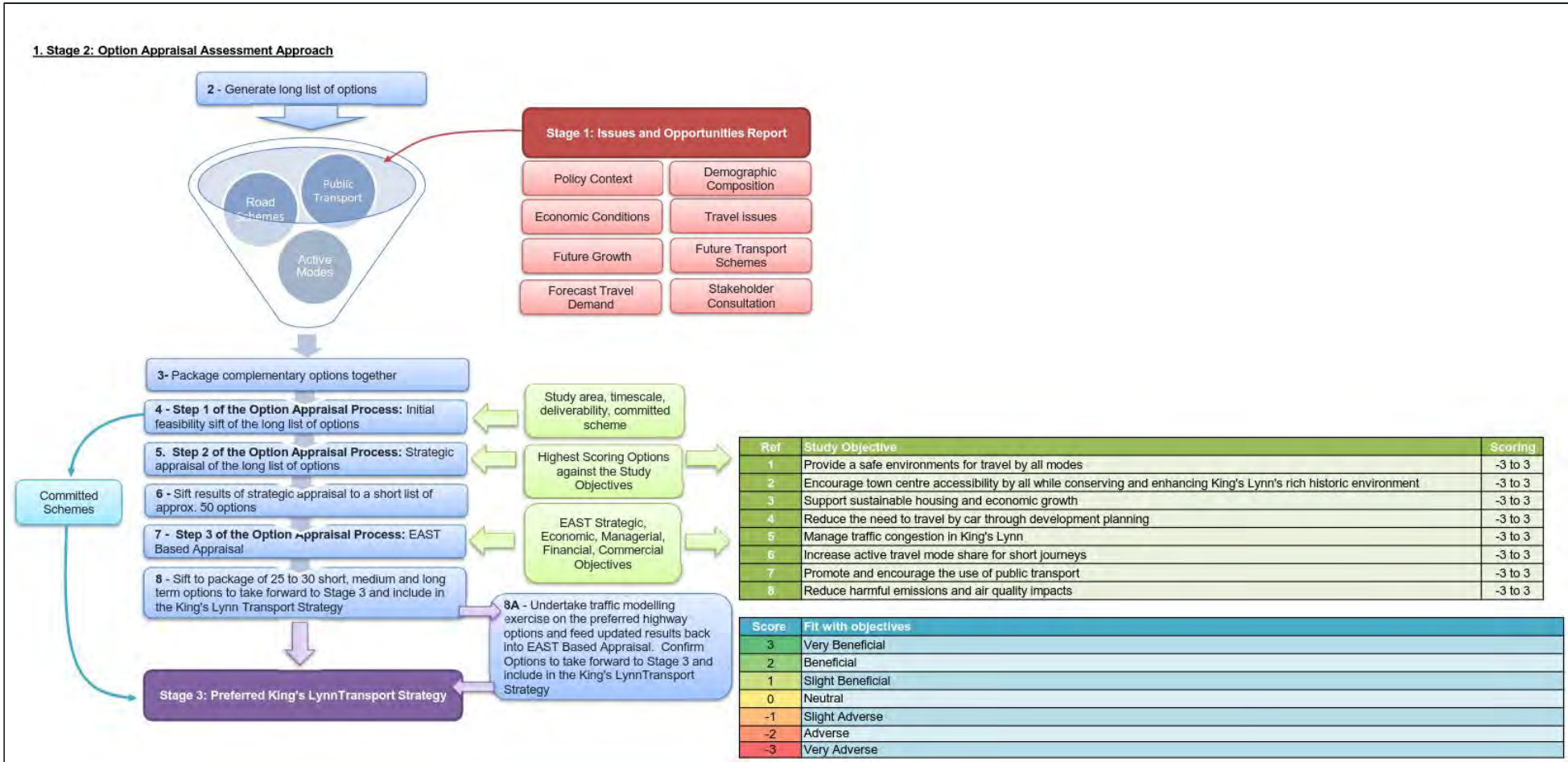
1.4 STUDY STAGES

- 1.4.1. The Transport Strategy is the final part of a suite of reports covering the three stages of the Study. A summary of the two previous stages of the Study is provided below.



- 1.4.2. **Stage 1** of the Study was the production of an issues and opportunities report. This sets out the existing transport situation in King's Lynn and serves as an evidence base for the development of a long list of options for appraisal.
- 1.4.3. **Stage 2** of the Study was an options appraisal report. This was the appraisal of a long list of options using a three-step process outlined in **Section 5** of this Transport Strategy.

1.4.4. The diagram below summarises the Study Stages and options appraisal process.



1.5 PURPOSE OF TRANSPORT STRATEGY

- 1.5.1. The purpose of this Transport Strategy is to support regeneration and help to unlock the economic and growth potential of King's Lynn, whilst supporting the travel needs of the existing community.
- 1.5.2. It sets out a focus and direction for addressing transport issues and opportunities in the town by understanding the transport barriers to sustainable housing and economic growth and identifying the short, medium and long-term infrastructure requirements to address these barriers.
- 1.5.3. The Transport Strategy concludes by setting out a high-level Action Plan to deliver improved transport infrastructure that addresses existing transport barriers and supports sustainable housing and economic growth.

2 SPATIAL SCOPE AND OBJECTIVES

2.1 SPATIAL SCOPE

- 2.1.1. King's Lynn is the largest town in the borough of King's Lynn and West Norfolk and it provides important services and retail for its catchment. Since the rapid expansion of the town's population in the 20th century, the latest data identifies the usual residents population is now approximately 41,590 in 2016 (48,200 in the built-up area (King's Lynn and the Woottons). The latter is closer to the area covered by the strategy. The inclusion of West Winch adds another 2,850 people. The Core Strategy outlines housing, retail and employment growth strategies in the town. By 2025, the population of the King's Lynn area is expected to reach more than 50,000.
- 2.1.2. The River Great Ouse is in a North/south alignment that acts as constraint to the western side of King's Lynn. Furthermore, given the location of the shoreline, large areas of undeveloped land are at risk of tidal and/or fluvial flooding. This limits the expansion options. The areas of lower flood risks are identified in the Core Strategy for potential development schemes. As this is a town of historic value, there are more than 200 listed buildings, a Conservation area and two historic market squares. Moreover, the Area of Outstanding Natural Beauty (AONB) to the north, Reffley Wood, Gaywood Valley and the various parks and gardens throughout King's Lynn restrict development opportunities.
- 2.1.3. Notably there are key areas of employment that are located both to the north and south of the town. The Queen Elizabeth Hospital, located on the eastern edge of the town on the A1076 close to its junction with the A149 is a key employer in the area with around 2,400 staff and 515 beds. These employment opportunities give rise to a number of potential cross-town and inter-urban movement patterns. The hospital has a wide catchment for employment and health needs and contributes to heavy peak period traffic levels in this area of King's Lynn.
- 2.1.4. There are a number of retail and employment opportunities in the town which are located centrally and also prominently on the southern edge of the town in the Hardwick area close to the A149/7 junction. Leisure and recreation activities take place at various locations, with Alive Lynnsport being the largest location for these activities and serving a wide area.
- 2.1.5. Education in King's Lynn is spread throughout the town with a number of localised primary schools serving the immediate and surrounding areas, as well as a smaller number of secondary schools serving wider catchment areas. There are three secondary schools in King's Lynn:
- ┆ King Edward VII Academy
 - ┆ Springwood High School
 - ┆ King's Lynn Academy
- 2.1.6. These are mainly concentrated to the east of the town centre and gyratory, with St Michael's Primary School located in the south, giving rise to a number of cross-town movements.
- 2.1.7. The College of West Anglia, King's Lynn Campus is located to the east of the town centre on Tennyson Avenue / Gaywood Road with a high concentration of public transport opportunities available in this area of King's Lynn as well as being on a highly congested corridor.

2.1.8. The main retail centre is in the heart of King's Lynn at the Vancouver Quarter which offers a wide range of retail choice. Tuesday is still a market day in King's Lynn with stalls in New Conduit Street and Tuesday Market Place.

2.2 OBJECTIVES

2.2.1. The agreed objectives which were established with Stakeholders at the beginning of the Study and have been used in the scheme evaluation and led the direction for the schemes included in the Transport Strategy are as follows:

- ┆ Provide a safe environment for travel by all modes;
- ┆ Encourage town centre accessibility by all modes whilst conserving and enhancing King's Lynn's rich historic environment;
- ┆ Support sustainable housing and economic growth;
- ┆ Reduce the need to travel by car through development planning;
- ┆ Manage traffic congestion in King's Lynn;
- ┆ Increase active travel mode share for short journeys;
- ┆ Promote and encourage the use of public transport;
- ┆ Reduce harmful emissions and air quality impacts.

3 TRANSPORT CHALLENGES AND OPPORTUNITIES

3.1 KING'S LYNN AS A PLACE TO LIVE AND WORK

- 3.1.1. King's Lynn is the largest town in the borough of King's Lynn and West Norfolk. King's Lynn functions as the borough's administrative and cultural centre. King's Lynn acts as a sub-regional centre to the surrounding areas (including some beyond the borough boundary), providing an important service and retail function.
- 3.1.2. The main employment destinations within the study area are the town centre, North Lynn Industrial Estate, the Port, Austin Fields, Hardwick Industrial Estate, Horsley's Fields, Wisbech Road Industry, East Coast Business Park, Saddlebow Industrial Estate, Willows Business Park, Hardwick Narrows Industrial Estate, the College of West Anglia and The Queen Elizabeth Hospital.

3.2 THE ROLE OF KING'S LYNN IN THE WIDER REGIONAL ECONOMY

- 3.2.1. King's Lynn is the centre of a sub-region that extends beyond the borough of King's Lynn and West Norfolk. King's Lynn is a key service centre with the potential to be the driver for the economic well-being of the sub-region. At present, King's Lynn is underperforming in terms of services, the economy, housing and tourism, given its role as a significant centre.
- 3.2.2. There are approximately 62,000 jobs in West Norfolk, of which 55% of these jobs are located in King's Lynn, acting as the principal economic driver for the borough. King's Lynn and West Norfolk's labour market is fairly self-contained, with relatively low levels of in-and-out commuting.
- 3.2.3. Whilst isolation and deprivation issues exist in King's Lynn, the economic base is changing and several world-leading businesses in pharmaceuticals, precision and aerospace engineering and advanced manufacturing sectors including commercial refrigeration, robotics, electronics and specialist chemicals are now located in the borough. The key employment sectors now fall within advanced engineering and manufacturing, added value food activity and tourism.

3.3 CURRENT LOCAL TRANSPORT PROVISION

ACTIVE TRAVEL

- 3.3.1. A summary of the main issues identified for cyclists and pedestrians during the early study stages are as follows:
- i Cycling on the roads is considered dangerous around King's Lynn due to the following: parked cars on the road / footway; narrow roads with cars parked on both sides; potholes and drains.
 - i Notable areas include Gaywood Clock and London Road/ Railway Road which could benefit from on-road protected cycle provision where space allows.
 - i There is no safe place for cyclists to safely cross the A149 to access King's Lynn which limits opportunities for cycle trips from here.
 - i Awareness and enforcement of cycling on the footways is a grey area which needs to be dealt with through education and policy.
 - i The road network in King's Lynn at peak times is not conducive to on-road cycle usage and cyclists should make themselves visible to other road users at all times to assist with their safety.
 - i Cycle provision from the villages outside King's Lynn urban area is limited and could be improved to encourage increased cycle trips from these neighbouring areas.

- i Hardings Way and South Quay is a very valuable asset for cyclists in King's Lynn offering a traffic-free environment, there is a fear that this would be lost if Hardings Way was used for additional traffic to provide relief to other congested parts of the town centre. This is an important leisure and tourism route for cyclists.
- i Safety of crossing B1144-Tennyson Avenue. Areas of concern include the junction with Gaywood Road, as well as the junction at King George V Avenue. Notable areas either side of the railway level crossing on Tennyson Avenue. Considering the NCN1 runs through The Walks park and continues over this road the safe passage of cyclists and pedestrians should be facilitated – assessments of collision data, desirable locations and related desire-lines further support these recommendations.
- i Overall, wayfinding signs and road markings were observed as acceptable and consistent. General maintenance to ensure information displayed to pedestrians and cyclists is clearly presented is necessary.
- i Observable pavement defects did not indicate major structural issues such as subgrade failures; rather, assessment of the area realised faults with surface/binder layers that require general localised maintenance.
- i The relationship of cycling and other modes is a general issue in King's Lynn, cycles on trains and buses could be beneficial to overall transport mode share and making these modes more attractive to users.
- i More journeys associated with education could be provided for by bicycle if safe routes and crossings could be provided along with improved secure storage.
- i Lack of secure storage for bicycles in the town centre.
- i Not all parts of the cycle network in King's Lynn are linked together.
- i King's Lynn has a high level of walking within the town. Due to the layout of the road network it is often quicker to get around by walking and routes which provide important cross-town connections should be encouraged.
- i Footway maintenance is important to ensure people are able to safely continue to walk within the town.
- i Provision needs to be made for pedestrians on desire lines to enable them to access their destination as easily as possible within a safe environment. A number of locations have been identified where accident clusters have occurred during a five-year period and improvements to provision at these locations should be considered.
- i Hardings Way and South Quay provide an important route for pedestrians wishing to avoid London Road to access the town centre and education in the Friars area.
- i There are some areas where improved way-marking for pedestrians would be beneficial, such wayfinding signs were observed to be weathered/dirty which obstructs the displayed information at the footway between Blackfriars Road to Lynn Road.
- i The road width is very wide with 3-4 lanes of traffic at the pedestrian crossings on Railway Road with no central island for protection in instances when the traffic lights change before walking all the way across causing a serious hazard for pedestrians and vulnerable road users in particular.
- i Protection for pedestrians crossing the gyratory where it is 4-lanes wide with no central island is lacking making it very hazardous.
- i During the pedestrian and cycle audit it was observed that vehicles were forced to mount footways at Friars Street as drivers negotiated around parked vehicles which could compromise pedestrian safety.

- i General maintenance issues were also observed during the pedestrian and cycle audit that may improve safety standards if addressed. These include re-painting of surface marking (for example, to indicate cycle lanes), replace or repair guard rail at Blackfriars Road and address parked vehicles mounting footways obstructing pedestrian movements.

BUS, RAIL & FERRY

3.3.2. A summary of the main issues with the bus, ferry and rail provision that have been identified are as follows:

- i Bus journey time reliability is severely impacted on by the delays encountered on the highway network through the centre of the town. All bus services in King's Lynn have to travel through the central gyratory in the town centre.
- i Time efficient access to and from the bus station is constrained by the one-way nature of the gyratory system that provides the point of access for all bus services in King's Lynn. This means that journey time reliability is a problem in the peak hours and additional buses / reduced frequencies have to be employed on the services to accommodate this which leads to increased costs for the operators.
- i The rising costs of bus provision and the constrained nature of the bus network in King's Lynn has been contributory to recent changes to operations in the town and notably the withdrawal of Stagecoach from King's Lynn. Whilst the bus network has been taken over by other companies, this demonstrates the fragile nature of providing public transport in King's Lynn in current transport and economic conditions
- i There is very limited bus priority provision in King's Lynn and the width of the highway network is constrained to provide dedicated on-road provision for buses without severely impacting on the highway network generally.
- i The frequency of traffic signalised junctions on the bus routes impact on bus journey time and reliability as they seem to be uncoordinated with buses being stopped frequently at the traffic signalised junctions and crossings.
- i The villages outside King's Lynn have a relatively poor level of service which means the buses are unattractive to use because of their limited times and/or days of operation.
- i As well as the inherent delays in the town centre the bus services also suffer from significant levels of delay at Hardwick Interchange on their inter-urban routes.
- i Passengers travelling from north to south of the town need to change bus services via the bus station which does not offer an attractive option for passengers and increases the passenger journey times. Connections between the Queen Elizabeth Hospital and the Woottons also necessitates a change of service at Gaywood Clock.
- i Whilst the network coverage of bus services in King's Lynn is good and there are some areas that have a very high level of service frequency, the employment areas are poorly served in terms of their times of operation which often do not cover the shift times with the last service being relatively early in the evening.
- i Sunday bus operations also offer a relatively poor level of service.
- i As a result of the cumulative impacts of these issues the bus services have a relatively low mode share for the journey to work.
- i The bus fare levels in King's Lynn are not competitive with town centre car parking charges.
- i There is opportunity for improved ticketing between the operators which could offer a better public transport experience to users.

- i The bus services on London Road / Railway Road in congested stationary traffic conditions are considered to exacerbate the local air quality issues in the area, possibly due to the type of fuel used and the duration of the congested peak periods.
- i The Hardings Way bus link is under used. However, whilst it provides an excellent opportunity for traffic-free bus travel avoiding the congestion on London Road, it also takes the buses away from their potential passenger base.
- i Onward connections to travel to Norwich for rail services at Ely (for example) are un-coordinated and potentially discouraging use of rail for longer journeys.
- i The ferry service provides a valuable asset for King's Lynn and notably the residents of West Lynn, Clenchwarton, Terrington St Clement and further afield. It is a popular service among residents and the car parking at West Lynn is currently insufficient to cater for the demand.
- i Access to the ferry from the town centre is via Ferry Street and there is scarce signing and promotion of the Ferry from the town centre which could be developed to build an even greater passenger base which in turn could lead to more opportunities for investment in the boats and infrastructure in the future.
- i The tidal nature of the river means that the conditions are operationally difficult at low tide with a need to walk along gang-planks to access the boat. This makes it an inaccessible service for disabled users / pushchairs / elderly or very young people as there is also a stepped access to the water from the Quayside in King's Lynn.
- i The operation for the ferry is being offered for sale by the current owners and it is generally considered that it would be a huge loss to the town's transport system if a suitable buyer did not continue to run the service. The loss of the ferry service could prove to have detrimental impacts on the highway network that links West Lynn with King's Lynn, particularly during the peak hours when the ferry is currently well used.
- i An hourly rail service is available in King's Lynn through the day and half hourly during the peak hours. This is limited by the nature of the single-track sections south of King's Lynn.
- i For the journey to work rail accounts for 1% of trips.
- i Cycle storage provision at the rail station is not covered by CCTV and is therefore not attractive to use due to security issues.
- i The disused railway line between King's Lynn and Hunstanton could be better utilised for pedestrian and cycle use and/or a high quality public transport corridor.

LOCAL HIGHWAY NETWORK

3.3.3. A summary of the main issues with the local highway network that have been identified are as follows:

- i The traffic signals in King's Lynn are perceived to not always cope with the congested traffic situation in King's Lynn in the most effective way, which is considered partly a result of the control room monitoring not being full-time. There are also instances where the traffic lights appear to have long pauses.
- i The traffic lights on Hardwick Road outbound after the railway bridge at Hansa Road cause queueing back to Southgate roundabout causing issues for buses and other vehicular traffic.
- i Gayton Road / Gaywood Road is a major route for all the residential estates to access central King's Lynn with no alternative route available for vehicular traffic. It is also where three high schools and colleges are located. Air quality issues are present in the Gaywood Clock area and with proposed levels of growth in the town this is likely to get worse.

- i Congestion on the A10 through West Winch is also problematic during the peak hours.
- i Car parking in the town consists mainly of surface level car parking and analysis has shown that a number of these car parks reach capacity on an average weekday and weekend, and particularly during the pre-Christmas period. The analysis has also highlighted the car parks that have available capacity and management of space availability that if utilised could benefit traffic flow in the town.
- i With additional development the car parks will reach capacity and additional provision will be required.
- i The traffic associated with the Hospital and traffic from the adjacent residential area (Bishops Park) causes peak hour congestion problems.
- i The Southgate and London Road experiences high levels of congestion in the peak hours and increased journey times.
- i The central gyratory in the town centre experiences air quality issues, particularly on Railway Road and London Road.
- i A number of locations where traffic congestion typically occurs have been identified.
- i Car parking is relatively cheap in the town centre and buses sit in the general traffic making the bus unattractive for people who have a car.
- i Increased development is going to give rise to more travel and trips in the town exacerbating existing issues. Investment in the transport infrastructure to support the additional development is required.
- i With the revised road layout, it is perceived that it is more difficult for vehicles to exit from Valingers Road to London Road during the peak hours.
- i When incidents occur on the highway network either within King's Lynn or on the surrounding strategic highway network (A149/A47) there is no alternative routing to deal with this and the existing highway network is unable to cope.

PERSONAL INJURY ACCIDENTS

- 3.3.4. There were 280 accidents recorded in the area over the 5-year period (2013-2017): 57 in 2013, 58 in 2014, 39 in 2015, 53 in 2016 and 73 in 2017. This is based on all recorded collisions. Figure 3.1 sets out the number of collisions by year over the 5-year period.

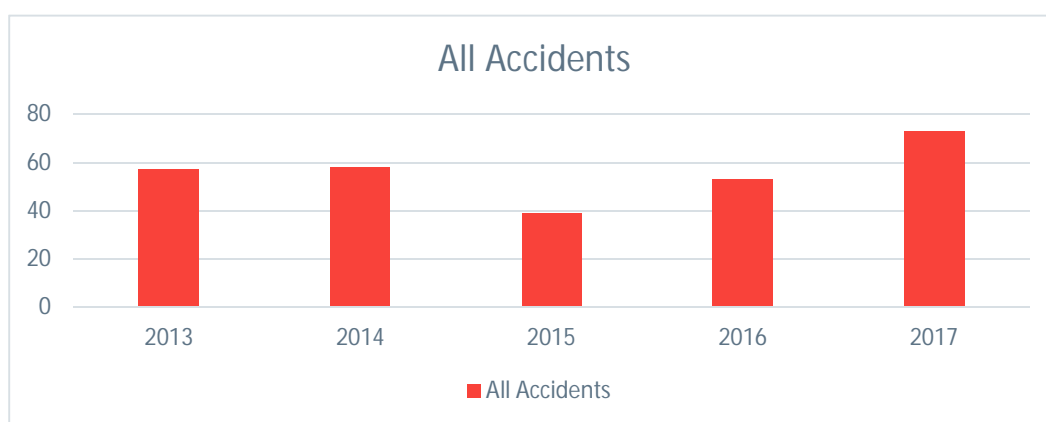


Figure 3-1 – All Collisions (Five Years: January 2013 to December 2017)

(Note; 16 accident data records are incomplete)

3.3.5. In terms of severity the fatal accidents comprised the following:

- i Fatal; 1 x fatal accident;
- i At the A148 Railway Road/Norfolk Street junction, a pedestrian was hit by a vehicle which had failed to stop at a red light on a signalised crossing, the road is one way, three/four lanes.

3.3.6. The serious accidents comprised the following:

- i Serious; 37 serious accidents;
- i All accidents occurred on single carriageway or one-way streets except 3 accidents on roundabouts and 2 accidents on dual carriageways;
- i 13 accidents occurred in darkness, 24 in daylight;
- i All serious accidents occurred in fine weather without winds except 3 listed under weather conditions of 1 'unknown', 1 'other' and 1 raining without winds'; and
- i The road surface condition for all serious accidents break down to; 'Dry conditions' 23 accidents and 'Wet/damp conditions' 14 accidents.

3.3.7. The remainder of accidents were slight in nature.

3.3.8. In terms of cluster locations for serious accidents there are 2 areas identified as clusters for serious accidents:

- i 5 serious accidents at Southgates Roundabout and 3 arms of the roundabout within 120m (30mph speed limit).
- i 5 serious accidents on Hardwick Road between Hardwick Roundabout and Hanse Road (40mph speed limit)

3.3.9. The cluster locations for slight and serious recorded accidents, show there are 4 areas of note:

- i Southgates Roundabout Area:
 - 19 slight/serious accidents
 - The accidents predominantly related to contributory factors 'disobeyed signals' and 'failed to look properly at this location'.
- i A148 near Valingers Road and Greyfriars School Area:
 - 4 accidents near Valingers Road;
 - Attributed to 'Careless/ reckless', caused vehicle shunt, 'failed to look properly (pedestrian)', caused injury to pedestrian, 'failed to look properly', caused a bus and vehicle collision and 'exceeding speed limit' caused vehicle to lose control.
- i South of College of West Anglia, Tennyson Avenue:
 - 5 slight accidents;
 - The contributory factors in these accidents were; 'failed to judge other persons path or speed', 'failed to look properly', 'dazzling sun', inexperienced/learner' and 'failed to look properly (pedestrian)'.
- i North of College of West Anglia, Tennyson Avenue:
 - 6 slight accidents;
 - The majority of accidents were caused by 'disobeyed signals' and 'failed to judge other persons path or speed'.

- 3.3.10. Collisions involving cyclists and pedestrians over the same 5-year period (January 2013 – December 2017) have been considered separately to identify areas where improvements may be required.
- 3.3.11. 98 accidents involving either pedestrians or cyclists were recorded over the 5-year period out of the total 280 accidents. Figure 3.2 sets out the number of collisions involving cyclists / pedestrians by year over the 5-year period.

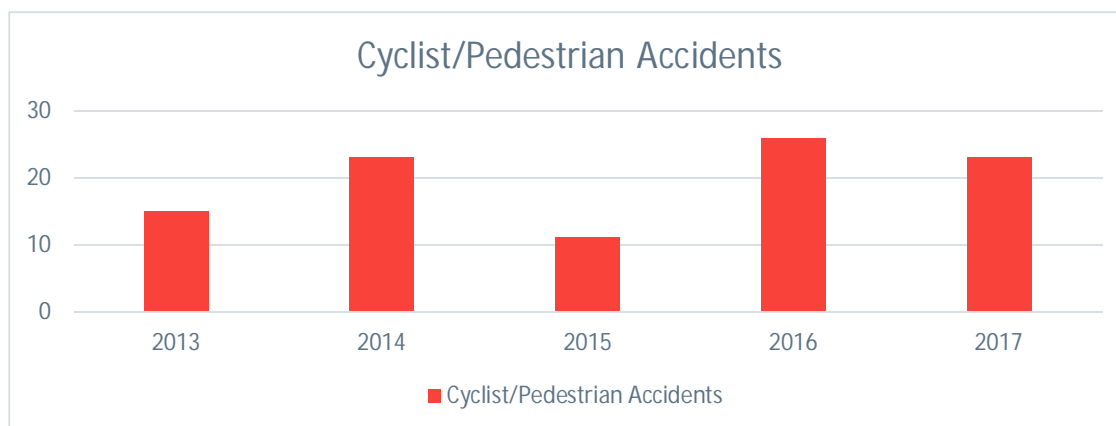


Figure 3-2 - Pedestrian and Cyclist Collisions (five years January 2013 to December 2017)

(Note; 3 accident data records are incomplete)

- 3.3.12. In terms of severity a fatal accident was recorded as follows:
- i Fatal; 1 accident (already described in All Collisions).
- 3.3.13. Serious accident summary information shows the following:
- i 16 serious accidents;
 - i 4 accidents occurred at a non-junction pedestrian light crossing, e.g. pelican/puffin/toucan or similar crossing;
 - i 2 accidents were listed as deliberate acts (aggressive driving) injuring a pedestrian in one incident and a cyclist in another; and
 - i 5 accidents have a contributory factor of 'failed to look properly (pedestrian)'.
- 3.3.14. For the accident clusters involving pedestrians and cyclists, the following locations are notable:
- i College of West Anglia, Tennyson Road from A148 to King George V Avenue:
 - 2 slight accidents, 1 serious accident;
 - The serious accident at this location states 'pedestrian walking along Tennyson Avenue when V1 hit them and drove off. Possible CCTV'.
 - i A148 London Road between Hospital Walk and N Everard Street:
 - 7 slight accidents, 2 serious accidents;
 - The serious accidents at this location state contributory factors as 'crossing masked by a stationary vehicle' and 'failed to look properly 'pedestrian'.

- 3.3.15. This analysis of accidents demonstrates an upward trend in total collisions over the last 2 years and with an increased number of collisions involving pedestrians and cyclists during the last year. This has highlighted the following locations where additional mitigation and road safety/design measures may be beneficial given the potential for continued increases in the attractiveness of walking and cycling in King's Lynn allied to policy decisions to further promote these active travel modes.
- 3.3.16. For pedestrians and cyclists, the main areas are:
- i Railway Road;
 - i London Road / Valingers Road / Windsor Road;
 - i Tennyson Avenue / Lynn Road; and
 - i Southgate junction
- 3.3.17. For all modes the main areas are:
- i Hardwick Road;
 - i A47 / A149 at Hardwick; and
 - i A149 Hardwick Industrial Estate.

CAR PARKING

- 3.3.18. King's Lynn has a number of car parks available in the town centre serving a mixture of purposes, some are privately operated, but most are owned and operated by the council.
- 3.3.19. Some of the car parks in King's Lynn are connected to variable message signs (VMS) that gives users an indication of space availability to assist in their decision-making about which car park to use.
- 3.3.20. Car parks are a key destination for trips to the central area of King's Lynn and access to them needs to be easy to ensure additional trips are not put through the historic central core. Sign-posting for the car parking is comprehensively provided at the entry points to the town centre including some information on space availability through VMS (variable message signs) on London Road, Edward Benefer Way and Gaywood Road.
- 3.3.21. The total stock of car parking spaces in car parks in the centre of King's Lynn is summarised as follows:
- i 1,100+ short stay public parking spaces;
 - i 1,450+ long stay public parking spaces;
 - i 1,050+ private retail / rail station spaces; and
 - i 3,600+ car parking spaces available in King's Lynn.
- 3.3.22. The typical cost of car parking is in a range of £1.80 to £4.70 for between 1 to 5 hours for the Council owned car parks. The cost of the supermarket (free, but time limited) and rail station car parks is separately managed. The above numbers exclude on-street parking provision. There are currently 6 electric car charging points at St James Multi-Storey car park.
- 3.3.23. A car park analysis showed the busiest month of the year as December, with the busiest day being Saturday across all car parks collectively.
- 3.3.24. A number of car parks were also shown to be over-capacity on a number of days during the year as shown in Table 3-1 over page.

Table 3-1 – Number of Days in 2016 when Car Parks were Full

Car Park	Number of Days when car park was Full (2016)
Austin Street East	220
Albert Street	12
Austin Street West	237
Blackfriars Street	215
Baker Lane	137
Boal Quay	65
Common Staithe Quay	242
Vancouver Car Park	8
Saturday Market Place	195
Tuesday Market Place	202
St James Multi-storey, Chapel Street, South Quay, St James Court, Juniper, Surrey Street	No data collected – some reach capacity
Supermarket Car Parks (Morrisons / Matalan)	No data available

- 3.3.1. Overall the analysis indicates that of the 2,560 spaces that are available at the Borough Council car parks, there is a demand for 2,306 spaces at the busiest time of the year. However, permit usage for the long-term car parks (and Vancouver short-term) as well as the permits that have been issued for use in any car park which amounts to 1,065 permits that are currently valid for use in King's Lynn car parks needs to be taken into account. The addition of these users would mean there is less capacity in Austin Street / Boal Quay / Chapel Street / Common Staithe Quay, Juniper and Vancouver. Permit holders account for a potential additional 1,065 users and their impact on the car park capacity analysis depends on the time of day they park and whether this impacts on the peak occupancy levels ascertained from the data.
- 3.3.2. On Saturday the car parks that get close to capacity (90%+) are Blackfriars, St James Court, Saturday Market Place and Tuesday Market Place. Those that have more than 60% of their spaces occupied are Chapel Street, Surrey Street, Albert Street, Vancouver and St James Multi-storey car park. This excludes any permit holders.
- 3.3.3. As identified in paragraph 3.3.1 and the assumptions made, the actual occupancy and remaining capacity of the car parks would be impacted by the permit holder car park usage and it is noted that the car parks can be full on a number of days during the year at certain locations.
- 3.3.4. There are currently four established residents parking zones in King's Lynn, which restrict parking in these areas to residents and their visitors only at certain times of the day. The areas included are:
- ¡ South Quay and King's Staithe Square (South Quay and College Lane);
 - ¡ Portland Street and Waterloo Street;
 - ¡ Highgate and Eastgate area (Kettlewell Lane, Eastgate Street, Archdale Street, Highgate, Littleport Terrace, parts of Gaywood Road); and
 - ¡ Springwood (parts of Elvington and Langland, Rodinghead, Horton Road, Sawston).

AIR QUALITY

- 3.3.5. Studies have identified parts of King’s Lynn as having unsatisfactory levels of air quality, these assessments are in accordance with the *National Air Quality Strategy* (NAQS).
- 3.3.6. As a result, areas of Gaywood and Railway Road/London Road were assigned as *Air Quality Management Areas* (AQMA) due to the levels of Nitrogen Dioxide emitted from road traffic.

3.4 CURRENT TRIP MAKING PATTERNS

- 3.4.1. The latest available Census data (2011) provides a valuable insight into the journey to work catchment of King’s Lynn as an origin and a destination alongside indicators of the primary mode of transport used for the work journey. An overview of the mode share for the journey to work for the residents of King’s Lynn is provided in Figure 3-3.

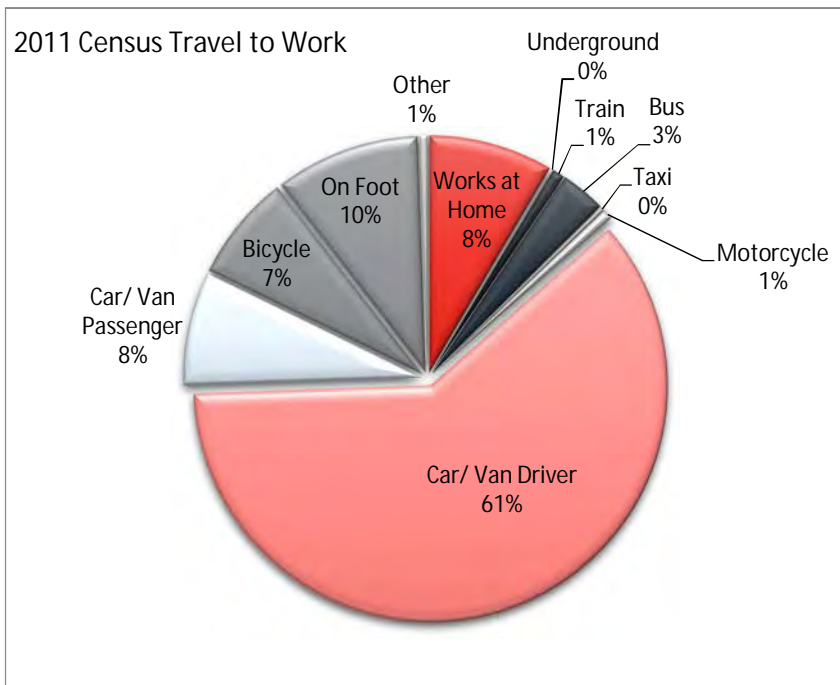


Figure 3-3 - 2011 Journey to Work Mode Share for King's Lynn

- 3.4.2. This pie chart shows that active modes (cycling and walking) account for 17% of journey to work trips and 61% are car drivers. The public transport mode share is 4% (train and bus). Comparisons with the national average statistics are shown in Table 3-2.

Table 3-2 – Census Journey to Work National Average Comparison

Travel Mode	King’s Lynn	England & Wales
Active Modes	17%	8%
Bus	3%	7%
Car Driver	61%	54%

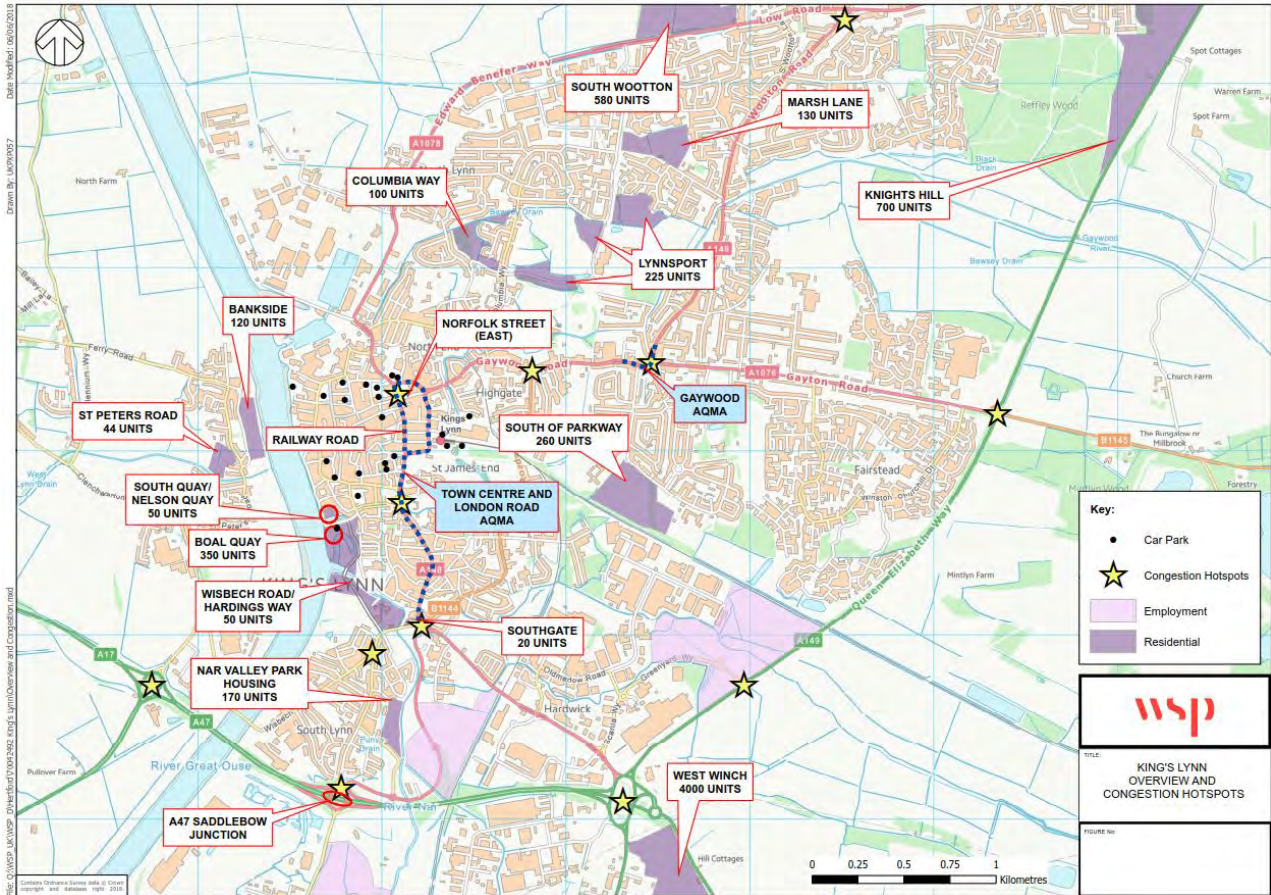
- 3.4.3. Table 3-2 demonstrates that King's Lynn achieves a relatively high proportion of work trips by active modes compared with the national average and a relatively low percentage by bus. The car driver percentage is also higher than the national average. A comparison of the 2011 Census data with 2001 data has shown that there has been negligible change in the mode shares over the intervening 10 years.
- 3.4.4. The analysis of the census data provides the following insights into King's Lynn transport:
- i Mode share by active modes (cycling and walking) is high compared with the national average, providing an indication that King's Lynn is well suited to the use of this mode and also has a good level of provision;
 - i Bus usage for the journey to work is low in King's Lynn compared with the national average, those trips that do take place by bus tend to be over a short distance and within close proximity of the town; and
 - i Car driver trips are relatively high with a large proportion being over a short distance and within the boundary of the town.

3.5 SUPPORTING PLANNED GROWTH

LOCAL PLANNED GROWTH

- 3.5.1. The areas that have been identified for growth within the vicinity of King's Lynn are shown in Figure 3-4.

Figure 3-4 - Study Overview and Development Areas



GROWTH FORECASTS

- 3.5.2. For the purposes of the transport modelling exercise Base year strategic and local micro-simulation models have been prepared using traffic data collected during 2018. Planned development data has then been applied on a site by site basis using data provided by the Borough Council to predict potential traffic growth in 2026 for this initial assessment and to 2036 for the separate study of the West Winch development proposals which are being assessed separately from this study. Figure 3-4 provides an overview of the locations of the developments that have been included in the transport modelling.
- 3.5.3. The Local Plan development information showed that 3,627 dwelling units could be provided up to 2026, with this development included in the 2026 development matrix. In addition, the information provided by the Borough Council in January 2019 identified the Hardwick Extension employment site which will provide 1500 jobs by 2026 and is also included in the forecast model.
- 3.5.4. The detailed local area micro-simulation model for the main town centre area uses traffic data from the Strategic model to predict the localised impacts of the forecast traffic growth. The overall resulting growth assumptions have then been adjusted to match TEMPro growth factors which use the National Trip End Model (NTEM) forecasts.

- 3.5.5. Overall resulting growth in the Strategic model is provided in Table 3-3, which shows growth from 2018 to 2026 at 6.2% in the AM for trip origins and 7.1% in the PM for trip origins in the area.

Table 3-3 – Adjusted TEMPro Growth 2018 - 2026

Period	2018 – 2026	
	Origin	Destination
AM	1.0622	1.0715
PM	1.0712	1.0693

- 3.5.6. The impact of the West Winch housing development is further assessed in the forecast 2036 model which has been used for the West Winch study. The 2026 traffic growth forecasts have been used for the purposes of this town centre study.

3.6 HIGHWAY NETWORK IMPROVEMENT SCHEMES

- 3.6.1. The transport models have been used to understand the potential impacts of some of the initial highway schemes that have been developed for addressing some of the identified problems and issues in King’s Lynn. Following consideration of the primary issues that were identified as causing congestion in King’s Lynn an officer working group developed a number of potential highway schemes which could be tested in the transport models to provide an initial understanding of the impacts. The primary areas of congestion concern were the gyratory, Gaywood Clock and Southgates roundabout. The schemes are therefore focussed in these areas with additional measures for Hardings Way also being considered to test the potential for contributing to alleviating some of the congestion issues at these locations.
- 3.6.2. A summary of the scenarios that have been tested are included in Table 3-4.
- 3.6.3. A series of draft initial drawings which have been used in the traffic models are provided in Appendix A. The outputs from the traffic models show that some revisions to these designs will be required.

Table 3-4 – Option Summary for Traffic Models

Option	Name	Description
Reference	2026 Forecast	Forecast traffic growth from SATURN model applied to 2018 Base matrix No changes to highway network
1	Hardings Way	Use Hardings Way for general traffic as well as buses: - inbound only (northbound) 7.00-11.00 -am - outbound only (southbound) 15.30-18.30 -pm Slight alterations to junction with Wisbech Road
2	Hardings Way complimentary measures	Variant of test 1 with mitigation of any adverse impacts of 1
3	Hardings Way	Use Hardings Way for general traffic & buses in both directions throughout the day - weight limit to restrict HGV - Wisbech Road alterations
4	Hardings Way complimentary measures	Variant of test 3 with mitigation of any adverse impacts of 3
5	Traffic Signals	Remove traffic signals at the following junctions: - Loke Road / Gaywood Road (SK02) - Tennyson Avenue / Gaywood Road (SK01) - Loke Road / John Kennedy Road (SK03)
6	Gyratory – Blackfriars Road two-way	Eastern half 2-way (SK061+2)
7	Gyratory – Railway Road two-way	Convert Railway Road to 2-way, leave rest as existing (existing Norfolk Street) (SK04) a. With Southgates 2-lanes southbound (option 9) b. With a. plus northbound 2-lanes at St James Street
8	Gyratory – Railway Road two-way	Convert Railway Road to 2-way, leave rest as existing with Norfolk Street flow direction reversed (SK05) a. With Southgates 2-lanes southbound (option 9) b. With a. plus northbound 2-lanes at St James Street
9	Southgates	Widening of southbound approach to reduce outbound delays. Review results of Hardings Way tests on Southgates

3.7 TRAFFIC MODEL EXTENTS

3.7.1. The traffic modelling work includes two types of models:

- i A strategic (wider area) SATURN model
- i A local (town area) Paramics model

3.7.2. The model extents are provided figures 3-5 and 3-6.

Figure 3-5 - Strategic (wider area) SATURN Model Extent

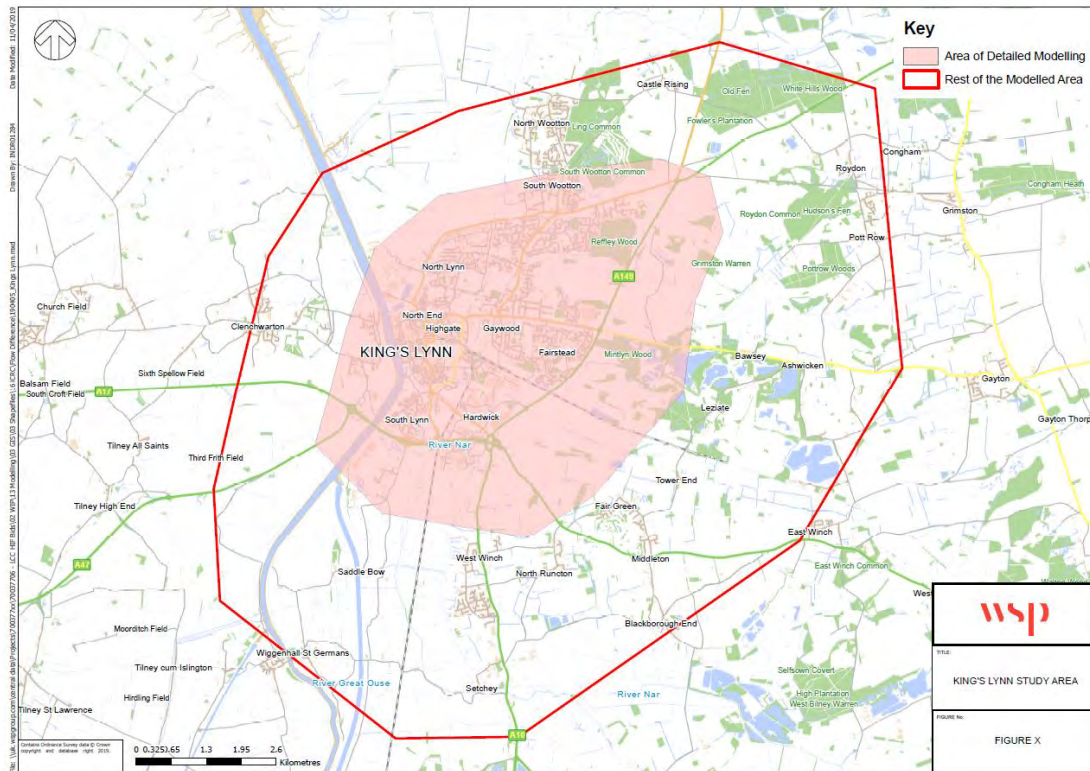
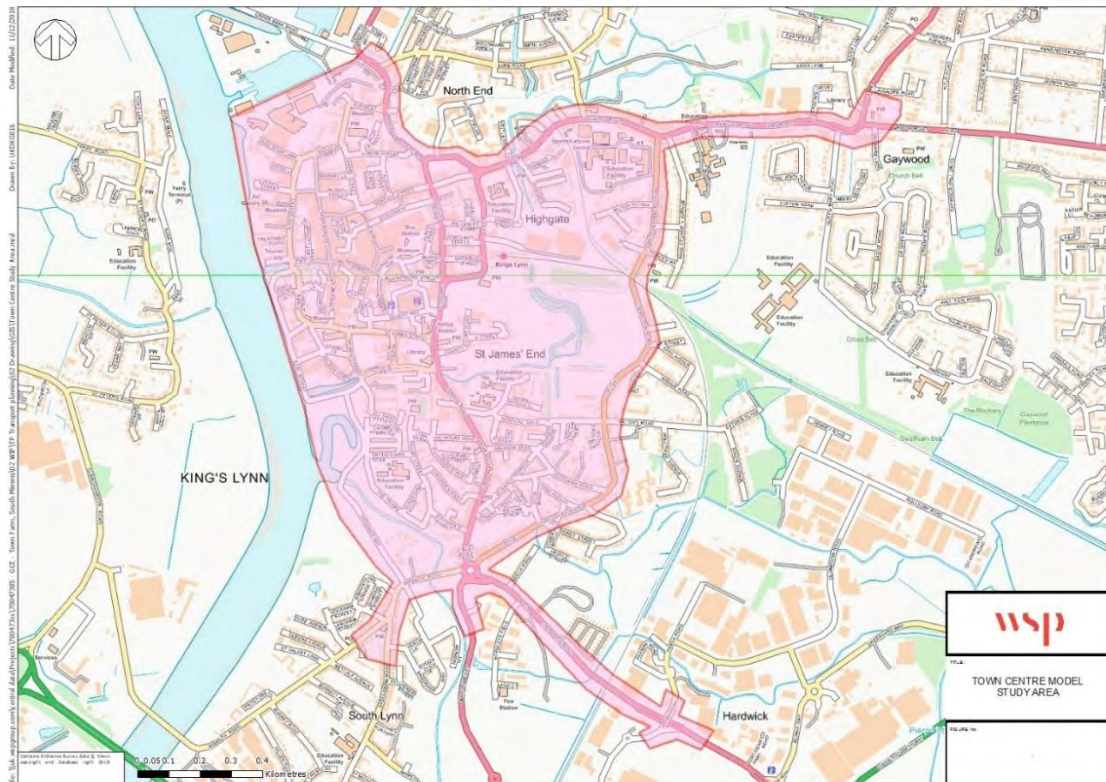


Figure 3-6 - Local (town area) Paramics Model Extent



3.8 STRATEGIC (WIDER AREA) SATURN MODEL SUMMARY

- 3.8.1. The following provides a summary of the main findings from the SATURN modelling work, with a more detailed technical breakdown of the results provided in Appendix B.

SCENARIOS 1 TO 4

- 3.8.2. Scenarios 1 to 4 present a combination of Scenarios relating to the opening of Hardings Way to traffic for some or all of the day. All 4 Scenarios have similar impacts on traffic reassignment.
- 3.8.3. In all there is a reduction in traffic on the A148 London Road, with a counter increase in traffic on Wisbech Road. Further junction testing and signal optimisation of the Wisbech Road / Hardings Way junction may reduce the delay.
- 3.8.4. In all four scenarios the consequence of the opening of Hardings Way to traffic leads to increased traffic on roads such as King's Street (except in Scenario 2 and 4 where this is banned), South Quay, St. James Street. The level of traffic deemed desirable on these sorts of roads needs to be determined to allow for consideration of potential mitigation if the levels forecast are deemed undesirable.
- 3.8.5. Although the opening of the link provides additional route choice in the town, overall benefits are limited as reductions in queues on existing routes are offset by an increase on queues on the routes where flows have increased as a result of the re-assignment.

SCENARIO 5

- 3.8.6. In Scenario 5 three different junctions are proposed to be converted from signalised junctions to roundabouts and priority junctions.
- 3.8.7. The three different junction schemes cause a number of reassignments to occur, from changes in flow along Gaywood Road and Tennyson Avenue to Edward Benefer Way. The schemes tend to reduce traffic within the town centre / gyratory area.
- 3.8.8. A set of sensitivity tests looking at each junction independently may be advisable to isolate the reassignment impacts to achieve desired rerouting. The increases in traffic along Loke Road are not desirable given the residential nature of the street, and some form of mitigation may therefore be required.

SCENARIOS 6 TO 8

- 3.8.9. These Scenarios all reassign traffic away from the gyratory. Consequently, there are some wider reassignment impacts on roads such as Edward Benefer Way. There is a need to consider whether the roads on which traffic reassigns to is desirable and are not too residential. Specific mitigations could alleviate such specific impacts if deemed appropriate.
- 3.8.10. Overall network performance has little benefit from any of the proposed schemes.

SCENARIO 9

- 3.8.11. Scenario 9 is shown to have minimal impact on its own within the SATURN model. Within the Paramics model this Scenario was tested in combination with other Scenarios and further work could seek to replicate this to understand if Scenario 9 provides greater benefit when combined with one or more of Scenarios 1-8.

OVERALL SUMMARY FROM WIDER AREA MODEL

- 3.8.12. The proposed mitigation scenarios demonstrate that the majority of schemes have significant effects upon the assignment of traffic within King's Lynn, however the reassignment has limited overall benefit on highway network performance.
- 3.8.13. The potential wider benefits of schemes associated with the re-assignment of traffic should therefore be considered given the limited network capacity benefits. This could include the benefits that could be provided to active modes on links with reduced traffic flows as a result of the schemes.

3.9 LOCAL (TOWN AREA) PARAMICS MODEL SUMMARY

- 3.9.1. The following provides a summary of the main findings from the Paramics modelling work, with a more detailed technical breakdown of the results provided in Appendix C.
- 3.9.2. The application of the Strategic model growth to the zones in the Paramics micro-simulation model resulted in the development of scenario models to understand the impact on individual junctions within the town. The application of the trip growth to the localised town centre area resulted in growth levels varying for each scenario between 6.9% and 12.8% in the AM peak between 2018 and 2026 and between 7% and 12.5% in the PM peak for the area included in the model.
- 3.9.3. The 2018 Base model has been used along with forecast traffic flows from the SATURN model to develop a 2026 town centre Reference Paramics model. Development data and background traffic growth has been included in the SATURN model and constrained to forecast TEMPRO growth levels for the area. In turn each of the highway option scenarios has been tested in the SATURN model and changes in traffic flows have been applied to the Paramics model matrices to take account of wider area routing outside the localised Paramics network that results from the scenarios.
- 3.9.4. The following conclusions can be drawn from the modelling work that has been undertaken in the local town centre micro-simulation model:
 - i The 2026 Reference case model shows an increase in traffic congestion and a reduction in average vehicle speeds across the model network compared with the 2018 Base model for both the AM and PM peak hours;
 - i The PM peak shows a greater level of additional delay than the AM peak model with the additional 2026 predicted traffic flows;
 - i During the AM peak, the network-wide scenario test results do not show a noticeable improvement over the 2026 Reference case model;
 - i During the PM peak, more benefits are realised though the schemes.
 - i Notably in the PM peak Reference model the addition of the 2026 traffic flows increase the level of delay for vehicles exiting from Millfleet as a result of additional southbound delay associated with Southgate roundabout. Options 1 and 3, (Hardings Way without additional restrictions in King Street); options 7b and 8b (gyratory reconfiguration with 2-lanes southbound Southgate and 2-lanes northbound on Railway Road); and option 9 (2-lanes southbound to Southgates) all provide improvements to the network performance compared to the 2026 reference model, as a result of addressing this issue in the PM peak;
 - i In the AM peak the Hardings Way (without additional mitigation) scenarios (1 and 3) and gyratory scenarios with the Southgates scheme and northbound 2-lanes on Railway Road (7b and 8b) have the most positive impact on network performance, queues, journey times and traffic flow within the town centre model network;

- i The Hardings Way scenarios (1 and 3) and gyratory scenario with the Southgates scheme (8b) have the most positive impact on network performance, queues, journey times and traffic flow within the town centre model network in the PM peak;
- i Overall in the AM peak the gyratory options do not show an improvement over the Reference case model in terms of network performance, journey times, queues or traffic link flows;
- i Overall in the PM peak, gyratory options 7b and 8b show an improvement over the Reference case model in terms of network performance, journey times, queues or traffic link flows;
- i Option 7b and 8b and Option 9 have a positive impact on traffic capacity and congestion levels compared with the alternative gyratory options which do not provide capacity improvement measures southbound to Southgates or northbound to Railway Road;
- i The scenario tests have more of an impact in the PM models compared with the AM models. The PM models are generally more congested than the AM models;
- i Scenario 5 which removes the traffic signals at locations to the north and east of the gyratory shows some benefit to traffic congestions at these locations, in this scenario the Southgates improvement has not been included; and
- i The car park options which included matrix changes only (options 10, 11 and 11a) show that Option 11a would require mitigation at the junction of North Street / John Kennedy Road due to the large increase in traffic flows around the junction as a result of the new car park at the Patrick and Thompson's site. The other car park scenarios show minor localised impacts.

3.9.5. As a result of the conclusions from the modelling work, it is recommended that further work could be undertaken on the following scenarios to explore whether further benefits could be realised from their implementation:

- i Use of Hardings Way for additional traffic and how this could be managed / implemented. Restrictions on King Street have been tested in the modelling work (options 2 and 4) and have shown some of the benefits may be reduced as a result. It could be beneficial to test alongside the Southgates roundabout improvements.
- i Further investigation into making improvements for buses to make better use of Hardings Way, as highlighted in the Options Appraisal also needs further consideration in design options going forward;
- i Southgates southbound improvement scheme combined with Option 5 (conversion of specified junctions to roundabouts) could provide further additional benefits particularly in the PM peak for this scenario;
- i Generally, the gyratory options on their own do not present favourably compared with the Reference case in terms of traffic capacity, delay and link flow. Further design options could be explored to alleviate the constraints that are currently evident in these scenarios and understand potential additional benefits for other modes, including design options that assist access for buses to the bus station;
- i Further clarification on the specific scheme objectives is required since the highway measures that have been tested in both the wider area model and local model appear to show limited benefit for traffic capacity in the forecast scenarios when considered on their own. A focus on providing specific benefits for buses, cycles, pedestrians, air quality and public realm would help to support specific measures;

- i The potential predicted impacts on air quality through an assessment of the traffic flows and speeds within the network can be explored to further support the gyratory options. However, options 7b and 8b may be deemed undesirable in air quality terms due to the provision of a 2-lane northbound section on Railway Road which may negate some of the potential benefits of the gyratory options for air quality improvement; and
- i Further work to develop improvements on all approaches at Southgates with a focus on also improving the pedestrian environment on London Road, and facilitating the use of Hardings Way for enhanced use by buses by providing better connections to Hardwick Road via Southgates and London Road via Millfleet junction.

RECOMMENDATIONS FROM MODELLING WORK

- 3.9.6. The following provides a summary of the conclusions from these initial model tests:
- i In the AM options 1, 3, 8b and 9 provide the highest performance statistics;
 - i In the PM options 1, 3, 5, 8b, 9 provide the highest performance statistics; and
 - i Overall options 1, 3, 5, 8b and 9 have potential for further work in terms of combining and resolving current design related issues.
- 3.9.7. Options 1 and 3 (Hardings Way (without restrictions to town centre access) perform better overall than those with the additional mitigation on King Street. Further investigation on the town centre mitigation is required to fully appreciate the potential impacts of this option on local traffic flows. Further investigation of combining this option with the option 9 Southgates southbound improvement scheme could also realise further benefit.
- 3.9.8. Options 8b and 9 (2-way gyratory with 2-lanes northbound and Southgates option 9) show some potential in assisting with relieving some of the additional problems brought about by the traffic growth up to 2026. Further work to establish whether the gyratory changes bring wider benefits for other users and further feasibility of options for London Road and Southgates design would be beneficial. There is also an opportunity to reduce the scheme scope at the gyratory alongside the potential for specific additional public transport enhancements which is recommended to be considered further.
- 3.9.9. Option 5, whilst not showing much benefit on its own in the AM peak does show some benefits in the PM peak and if combined with Option 9 Southgates southbound improvements further benefits to traffic flow could be realised. It is recommended that the combination of schemes is further considered.

4 PLANNED INFRASTRUCTURE IMPROVEMENTS

INTRODUCTION

- 4.1.1. Whilst there are no planned infrastructure improvements within King's Lynn there were a number of areas for improvement identified on the local highway network which were not taken through the full appraisal process and were sifted out during the early sifting process. The sifting out for these options was primarily in relation to their scope being very localised, maintenance or signage related; and the dependency on commercial bus operator investment decisions which meant that these schemes would have afforded low scores in further appraisal but are nonetheless worthwhile improvements which could provide an immediate localised benefit and are relatively simple short-term measures that could be addressed through local maintenance budgets. These are included in this Strategy document for reference and further uptake.
- 4.1.2. Whilst these schemes were taken out of the appraisal process they have not been discounted from being implemented. During the Stage 2 appraisal they were identified as suitable for taking forward and retaining in the Strategy should future changes be made. For example, the option for bus operators to make further investments in ticketing initiatives is supported by the Transport Strategy.

4.1.3. Table 4-1 sets out the options to promote and encourage bus travel.

Table 4-1 – Options to promote and encourage bus travel

Ref	Theme	Timescale	Option	Description
1.2	Buses	Short	Bus stop hard-standing - opposite Bepak A1078 Edward Benefer Way	Hardstanding for bus stop opposite Bepak (A1078 Edward Benefer Way)
1.8	Buses	Short	Improve bus service offer in King's Lynn on evenings, Sunday and Bank Holiday where feasible	Provide earlier and evening weekday buses for King's Lynn as well as Sunday and Bank Holiday service to relieve traffic congestion to access employment and address social inclusion
1.9	Buses	Short	Multi-operator ticketing on bus services and investigate provision of town-wide real-time information at bus stops	Investigate with the bus operators measures to improve multi-operator ticketing including rail services. Improve passenger information experience at bus stops
1.16	Buses	Medium	Work with bus operators to provide the best possible vehicle stock in King's Lynn	With continuous improvement in bus service reliability and patronage the possibilities for further vehicle investment can be realised in King's Lynn. However, for the bus services to become more viable in the town further support for providing greater service journey time reliability and complimentary parking measures are required in the first instance
-	Buses	Short	Provision of bus stop on the town-bound side at Hardwick retail park	To be sought through developer contributions or existing public transport improvement budgets

4.1.4. Table 4-2 sets out the options to promote and encourage travel on foot and bicycle.

Table 4-2 – Options to promote and encourage travel by active modes

Ref	Theme	Timescale	Option	Description
4.3	Active Travel	Short	Provide cycle lanes and cycle lane cameras (relevant to on-road cycle lanes only)	Provide more on-road space for cyclists and cycle lane cameras for safety
4.4	Active Travel	Short	Unified cycle signage strategy for Kings Lynn	Cycle paths, cycle hire docking stations, signage, etc. needs a unified public realm strategy to aid brand identity for King's Lynn and provide further enhancement
4.6	Active Travel	Short	Secure cycle parking located at CCTV camera locations	Secure cycle parking located near CCTV cameras is required throughout the town and notably at the rail station.
4.12	Active Travel	Short	Formalise pedestrian desire line between John Kennedy Road and Austin Street	Provide for the desire line (between John Kennedy Road and Austin Street over the Norfolk County Council grounds of Priory House) in the street design or take measures to encourage pedestrians to use the existing footway
4.17	Active Travel	Short	Way-finding & signage issues: Saturday Market Place cycle signing; Norfolk Street wayfinding signs; Hardings Way/Wisbech Road wayfinding signs;	Misleading on-street signage - sign in foreground indicates a shared use unsegregated cycle and pedestrian route while just after cycling is prohibited; no wayfinding signage available along Norfolk Street-provide signing along this link; Hardings Way/Wisbech Road no wayfinding signs available-provide signage at this location
4.20	Active Travel	Short	Various locations for repair, repainting and cleaning	Evidence of surface wear, cracking and potholes at entrance to Austin Street West Car Park
4.21	Active Travel	Short	Various locations for repair, repainting and cleaning	In proximity of Priory House is worn. Wear and fading of cycle markings on southern section of John Kennedy Road - junction with Railway Road
4.22	Active Travel	Short	Various locations for repair, repainting and cleaning	Pedestrian footway marking in car park are faded, especially around the disabled parking provision
4.23	Active Travel	Short	Various locations for repair, repainting and cleaning	Wear of step markings at entrance. Maintenance to footway has removed cycle route pavement markings outside the station
4.24	Active Travel	Short	Various locations for repair, repainting and cleaning	Damage to pavement slabs may create a trip hazard in the pedestrianised shopping are
4.25	Active Travel	Short	Various locations for repair, repainting and cleaning	Faded cycle route markings at western end and footway edges cracked

4.26	Active Travel	Short	Various locations for repair, repainting and cleaning	Cycle parking racks have been damaged and need repair
4.27	Active Travel	Short	Various locations for repair, repainting and cleaning	Pedestrian guard railings damaged and need repair
4.28	Active Travel	Short	Various locations for repair, repainting and cleaning	On-road cycle lane markings are faded
4.29	Active Travel	Short	Various locations for repair, repainting and cleaning	Weathered and obscured wayfinding signs need cleaning
4.30	Active Travel	Short	Various locations for repair, repainting and cleaning	Improvised asphalt ramp located between the footway and road to assist with transitioning between grades. Recommend incorporating dropped kerbs
4.31	Active Travel	Short	Various locations for repair, repainting and cleaning	Connections with villages to the east - maintain cutting back of foliage
6.9	Active Travel	Short	Valingers Road improvement scheme / remove right turn into Valingers Road / monitor the trial layout	Investigate providing three lanes southbound, one lane northbound between Checker Street and Valingers Road to aid traffic flow at this location. Monitor the Trial layout; alternative option to remove the right turn into Valingers Road

4.1.5. Table 4-3 sets out the options to promote air quality improvements

Table 4-3 – Options to promote air quality improvements

Ref	Theme	Timescale	Option	Description
4.7	Other	Short	Work with schools and education in King's Lynn to provide safe alternatives to private car for school children	Develop a campaign for King's Lynn to encourage parents not to drive children to school. Work with the schools to develop safer routes to school, walking buses, safe cycle routes, provision for secure cycle storage at the schools and provide the schools with the tools they need to improve localised parking issues around schools and the impacts on the town. Address air quality impacts on Wisbech Road at the schools.
-	Other	Medium	Continue to engage with employers in King's Lynn to promote and provide alternative modes of travel and contribute towards reducing congestion.	Continued work through the County Council Travel Planning to engage further with current and particularly new developments to provide travel planning incentives to deliver sustainable travel mode shares in the future
8.3	Other	Medium	Promote provision for Electric Vehicles in King's Lynn through engagement with employers and infrastructure provision	Electric vehicle uptake is increasing at a high rate in response to climate change impacts and a desire for change. King's Lynn should keep supporting these developments to ensure adequate town centre provision is made and to provide a step change in new developments, both commercial and residential
8.4	Other	Medium	Keep under review the development of autonomous vehicle technology and its application in King's Lynn, particularly in respect of scheme implementation and having a network that is 'future ready'	Smart transport initiatives are starting to happen and be implemented across larger cities in the UK, Norfolk County Council and King's Lynn will need to remain informed about these initiatives and their potential application in the town.

5 THE NEED FOR PRIORITISED INVESTMENT

5.1 TRANSPORT CHALLENGES AND OPPORTUNITIES

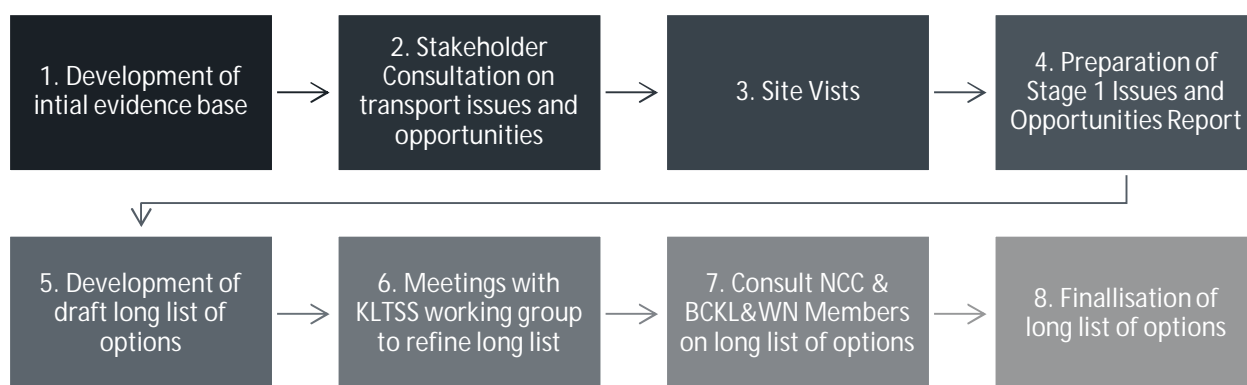
- 5.1.1. The transport challenges and opportunities set out in Section 3 have been used to inform the development of a long list of potential transport infrastructure interventions that can support the Vision and Objectives of this Transport Strategy.
- 5.1.2. In summary the main transport challenges and opportunities that need to be considered are:
- ¡ Improved conditions and opportunities for cycling and walking;
 - ¡ Address the local highway network issues including the traffic signals, gyratory and Southgates in particular;
 - ¡ Address the strategic highway network issues to help relieve through traffic during incidents and seasonal high traffic demand;
 - ¡ Help to support improving bus journey time reliability in King's Lynn by addressing the capacity issues on the highway network whilst also providing schemes that provide overall improvements to the bus journey experience and provide a more socially inclusive service for all;
 - ¡ Support the local ferry provision to both provide for increased demand and provision of an improved passenger experience at low tides in particular and to promote social inclusion; and
 - ¡ Providing an over-arching car parking strategy which encourages use of public transport particularly for short journeys, outside the scope of cycle and walking trips, to support the bus network and leverage additional investment.
- 5.1.3. These issues and opportunities form the main basis of the transport strategy development and align with the strategy vision and objectives.

5.2 PRIORITISED INVESTMENT

- 5.2.1. To address the above challenges and opportunities there is a need for prioritised investment in transport infrastructure. This can help address the reasons for social exclusion by providing better access to jobs and services, but also help promote sustainable housing and economic growth in the town by reducing the need to travel by car and improving access to supply chains and labour markets.
- 5.2.2. The investment in transport infrastructure is envisaged to be through a package of short, medium and long-term infrastructure interventions that could be delivered during the current local plan period to 2026 and beyond to 2036.
- 5.2.3. The following sections summarise the option development process used to identify a recommended shortlist of transport infrastructure schemes, currently uncommitted, that are recommended for progression over the next 10+ years.

5.3 TRANSPORT INFRASTRUCTURE OPTION DEVELOPMENT

- 5.3.1. The initial step was to develop a long list of short (0 to 3 years), medium (3 to 10 years) and long-term (10+ years) options based on the evidence base in the Stage 1 Transport Issues and Opportunities Report (summarised in Section 3 above), working group meetings with Norfolk County Council and BCKL&WN and consultation with stakeholders and Members of BCKL&WN. This process is set out in the diagram on the next page.



5.3.2. No single option was considered capable of solving all the identified issues or achieve all the study specific objectives. Therefore, a number of overarching transport themes that are complementary to each other have been used to group the identified options. The transport themes are:



5.4 STAKEHOLDER ENGAGEMENT

- 5.4.1. A stakeholder consultation event was held on 16 April 2018. The purpose of this event was for the project team to introduce the Transport Strategy to key stakeholders and Council Members. The workshop consisted of a presentation by WSP setting out the transport issues and opportunities in the Transport Strategy study area.
- 5.4.2. The presentation was followed by a feedback session where key Stakeholders and Council Members could provide comment on the transport issues and opportunities identified in the presentation.

5.4.3. Comments were received in regard to the following:

- ┆ Walking and cycling infrastructure;
- ┆ Travel patterns of residents;
- ┆ Visitors and workers of King's Lynn;
- ┆ Rail and bus services; and
- ┆ The local and strategic road network.

5.4.4. Feedback received was incorporated into the Stage 1 Issues and Opportunities report and taken into consideration during the development of the long list of options.

5.4.5. Further engagement has been undertaken with BCKL&WN and NCC member groups as follows:

- ┆ Thursday 31st August 2017;
- ┆ Thursday 7th December 2017;
- ┆ Wednesday 14th February 2018;
- ┆ Wednesday 9th May 2018;
- ┆ Thursday 12th July 2018;
- ┆ Thursday 15th November 2018;
- ┆ Wednesday 10th April 2019; and
- ┆ Wednesday 7th August 2019.

5.5 LONG LIST OF OPTIONS

5.5.1. In total, 100 conceptual options were initially identified for King's Lynn, this was shortened to take account of compatible schemes that were similar in scope or located in the same area. Following this initial review, the schemes comprised:

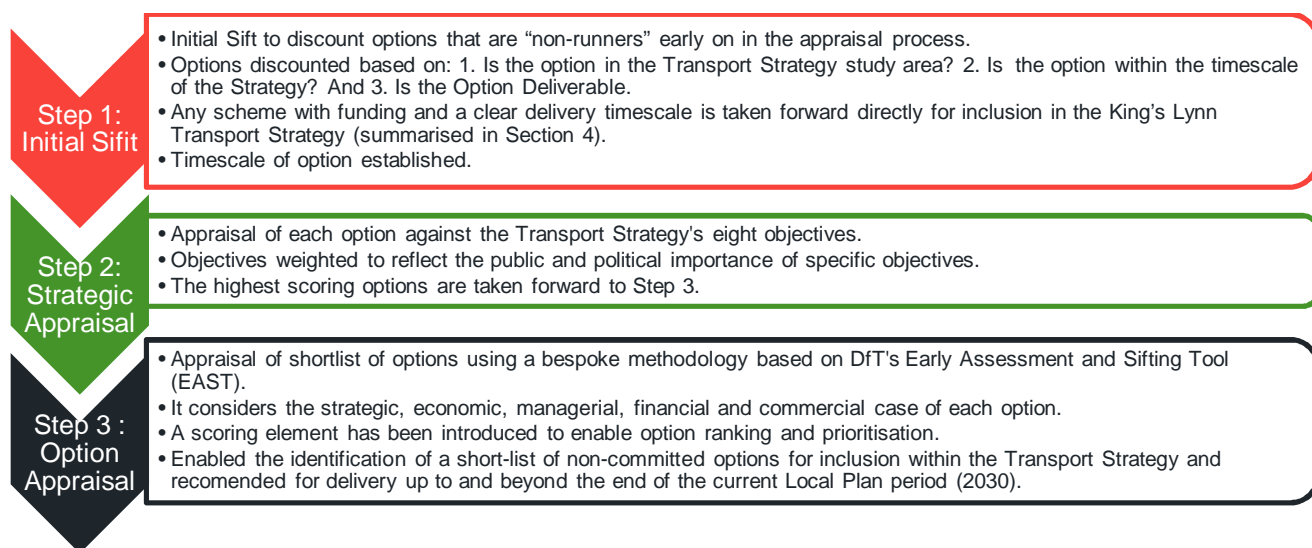
- ┆ 24 General local highway improvement schemes;
- ┆ 4 Ferry Service improvement schemes;
- ┆ 5 improvement schemes related to traffic signals in King's Lynn;
- ┆ 21 Bus service & associated infrastructure improvement schemes;
- ┆ 2 Public Realm improvement schemes;
- ┆ 4 Rail improvement schemes;
- ┆ 30 Active travel improvement schemes;
- ┆ 6 Parking policies / improvement schemes;
- ┆ 1 Electric vehicle scheme;
- ┆ 2 Smarter choices initiatives; and
- ┆ 1 Autonomous vehicle technology initiative.

5.6 OPTION APPRAISAL

5.6.1. It is not possible to deliver all of the options identified on the long list due to timescale, funding and deliverability constraints. Therefore, in order to identify a prioritised list of options for inclusion in the Transport Strategy an option appraisal of the long list of options was undertaken. This appraisal was undertaken using a bespoke Strategic Assessment tool based on the Department for Transport's Early Assessment and Sifting Tool (EAST) which compares the Strategic, Economic, Managerial, Financial and Commercial case for each transport option.

5.6.2. The purpose of the option appraisal was to produce a shortlist of short, medium and long-term options recommended for delivery up to and beyond the end of the current local plan period (2030).

5.6.3. The appraisal was a three-step process which is reported in full in the Stage 2 document:



5.6.4. The following section identifies the shortlist of short, medium- and long-term options recommended for delivery by the end of the current local plan period (by 2026) with a view to also taking these forward to accommodate the potential additional growth currently being identified to 2036.

5.7 OPTION MODELLING

- 5.7.1. Initial design work has been undertaken on some of the highway schemes that look to alleviate congestion and air quality issues at key locations in King's Lynn. These have been used in the strategic and local area traffic models to begin to understand the possible traffic and air quality implications of certain changes to the highway network.
- 5.7.2. This process has identified a number of options that could be worth considering in more detail in terms of design and modelling to establish whether alternative design arrangements could bring greater levels of benefit in terms of traffic flow and air quality objectives.
- 5.7.3. Where appropriate these outline measures have been included within the proposed Transport Strategy for King's Lynn and are identified as warranting some further analysis and design at this stage.
- 5.7.4. Specifically, the modelling work has found the following initiatives show some benefits and are should be considered further in terms of both design detail and also benefit.
- A scheme for Southgates roundabout;
 - A scheme for Hardings Way; and
 - A scheme for the Gyratory.

6 AN INTEGRATED TRANSPORT STRATEGY FOR KING'S LYNN

6.1 OVERVIEW

- 6.1.1. This section sets out a package of short, medium and long-term options to address the transport issues in King's Lynn and support sustainable economic growth. The selection of schemes for the strategy that are presented within this section has focussed on where the investment has potential to have the greatest impact, based on the information-gathering exercise, the results of the detailed scheme appraisal process and the transport modelling work that has been undertaken to date. The initial scheme selections detailed here have come out of the option appraisal assessment approach detailed in paragraph 1.4.4 and has also been verified through local Member engagement meetings.
- ┆ **Short-term** options are planned for delivery by 2022;
 - ┆ **Medium-term** options are planned to be delivered between 2023 and 2030; and
 - ┆ **Long-term** options are planned for delivery beyond 2030.
- 6.1.2. All of the options identified in this section of the Transport Strategy and Action Plan are non-committed, have no identified funding source and have no confirmed timescale for delivery. As such the expected delivery should be treated as a recommendation and may change based on funding opportunities and/or further option feasibility.
- 6.1.3. It should be noted that all the options presented in the Transport Strategy are unranked and presented in terms of timescale (short, medium and long) and also by mode and geographical coverage.
- 6.1.4. The Stage 2 report identified a wide range of options for inclusion in the Strategy. The focus of this transport strategy is to identify those areas where the investment will have the greatest impact, based on the information-gathering exercise, the results of the detailed scheme appraisal process and the transport modelling work that has been undertaken to date. The schemes which were identified in the Stage 2 report which have not been included in the Transport Strategy and this Stage 3 Report are included in Appendix D with further reasoning provided.
- 6.1.5. A list of 18 Short-term schemes is provided, along with 12 medium term and 3 long term schemes. A total of 33 schemes are prioritised for pursuing in the Transport Strategy.

6.2 A MULTI-MODAL STRATEGY

- 6.2.1. The Transport Strategy includes a range of strategic and local highway capacity improvement schemes alongside improvement schemes that could address issues with reliability on the existing bus network. These sit alongside the potential to make further improvements to the existing cycling and walking network to further support the already high mode share for journey to work for these active modes of travel.
- 6.2.2. A single mode or option cannot address the transport issues in King's Lynn. As such a package of measures are required including strategic and local car and active mode based options, that enhance:
- ┆ Local Highway Network capacity;
 - ┆ Strategic Highway Network capacity
 - ┆ The bus provision;
 - ┆ Rail services and King's Lynn Railway Station;

- Walking and Cycling infrastructure;
- Parking provision and management; and
- Smarter Choices (e.g. Travel Plans).

6.3 ENVIRONMENTAL AND AIR QUALITY IMPACTS

- 6.3.1. The potential changes to the transport infrastructure will consider the environmental impacts to provide overall improvements in air quality where feasible. Research suggests that transportation is a significant emitter of pollutants harmful to health, habitats, ecologies, the local built and natural environment as well as having links to climate issues. Combustion-engine powered transportation produce destructive pollutants such as Carbon Dioxide (CO₂), Nitrogen Oxides (NO_x) and Particulate Matter (PM₁₀ and PM_{2.5}) which are linked to concerns such as rising climate temperatures, respiratory issues and acid rain.
- 6.3.2. Overall, the transport options highlighted in tables 6-1 to 6-10 aim to provide an improvement in traffic flow with potential positive impacts on environmental conditions, particularly in terms of air quality. For example, schemes may incorporate the optimisation of traffic flows which reduces idling vehicles and can lead to improved journey times which is in accordance with good practice and promoting sustainable transport systems.
- 6.3.3. Further work on understanding and quantifying the air quality impacts will be undertaken from the traffic modelling exercise with the traffic flows from the option traffic models being used to inform this.

6.4 TRANSPORT STRATEGY AND ACTION PLAN

- 6.4.1. The proposed Transport Strategy is included in this section which provides tables and plans identifying the scheme location, mode of travel and timescale.
- 6.4.2. In order to realise the ambitious vision and objectives of this Transport Strategy and to help deliver the infrastructure solutions identified, an outline Action Plan has been developed in Tables 6-1 to 6-10. This is intended to:
- Help identify initial actions to develop each option; and
 - Identify stakeholder engagement that is likely to be required.
- 6.4.3. The initial actions are intended to help steer the development of business case for the programme of work as a whole and individual projects within the programme, and to assist with securing future funding.
- 6.4.4. The initial actions and likely stakeholders are provided alongside the description of each option in the tables in each Section 6.4, 6.5 and 6.6.
- 6.4.5. Figures 6-1, 6-2 and 6-3 show the locations of the short-term, medium-term and long-term options respectively.

6.4.6. Within the tables the schemes are categorised and labelled as follows:

i Timescale

- Short Term (S)
- Medium Term (M)
- Long Term (L)

i Mode / Type of Scheme

- Public Transport (PT)
- Active Modes (AM)
- Traffic Signals (TS)
- Highway Network (HN)
- Travel Management (TM)

i Scheme reference number

6.5 SHORT TERM (OPTIONS EXPECTED TO BE DELIVERED BY 2022)

6.5.1. The location of the short-term options is included in the figure below, detailed in tables 6-1 to 6-5.

Figure 6-1 - Transport Strategy Short Term Options



Table 6-1 – Options to encourage journeys by public transport (Short-term Public Transport – SPT)

Ref	Option	Description	Benefits	Dis-Benefits	Initial Actions	Stakeholders
SPT1 (1.10)	Access for buses to bus station via Albion Street; Improved Albion Road exit for buses	Bus lane on Railway Road and bus station access via Albion Street to reduce delay and journey times for buses. Improve the road layout design to provide an improved left turn onto Railway Road from Albion Street which is a tight turn. Current traffic light timings only allow 2 buses through (usually cars + buses to exit). More green time needed / change quicker when there are a number of vehicles waiting to exit	Benefits for bus access, egress and routing to the bus station, providing more reliable journeys and reducing journey time on some routes. Potential for switch from car to improved bus services. Local air quality benefits.	Provision of a bus lane may reduce capacity for other vehicular traffic	Prepare highway design options and test in tracking and the micro-simulation model. Adjust/optimize signal timings for exit from Albion Road	Norfolk County Council Bus Operators
SPT2 (1.19)	Reduction in outbound delays at Hansa Road, Hardwick Road junction outbound for public transport; Hansa Road yellow box improvements for traffic exiting retail park	Address traffic signal delays at the junction in the outbound direction which cause queues back to Southgate and beyond and impact on bus journey times as well as Southgates roundabout and London Road; Review yellow box usage and improvements at B&Q / Next to allow people to exit the retail park more easily	Benefits for all main road traffic in terms of journey times and queues.	Potential for additional delays for exiting retail park traffic and/or pedestrian movements	Prepare alternative highway design layouts to address the problem. Adjust/optimize the traffic signal timings for the main road outbound traffic flow / rationalisation of the pedestrian movements	Norfolk County Council
SPT3 (2.1)	Enhanced signage and publicity for King's Lynn ferry	Provide improved information and signage for the Ferry around the town and through information technology to further promote and encourage its use	Benefits for travel in King's Lynn and for the retention of this facility within the community	None	Design and provide locations for additional signing and information through web and social media	BCKL&WN and current Ferry Operator
SPT4 (2.2)	Additional car parking at West Lynn for the Ferry and secure storage for cycles	Provide improved and additional car parking at West Lynn alongside provision for secure cycle storage	Benefits for travel in King's Lynn and for the retention of this facility within the community	None	Develop a scheme for the improved parking provision and identify location for the cycle storage	BCKL&WN and NCC

Table 6-2 – Options to encourage journeys by actives modes (Short-term Active Modes – SAM)

Ref	Option	Description	Benefits	Dis-Benefits	Initial Actions	Stakeholders
SAM5 (4.2)	Cycle lane continuity through the town (including improved provision for cyclists including new routes / infrastructure / signage)	A number of areas where cycle provision and infrastructure could be improved have already been identified and it is proposed that these could be taken forward through further development of schemes to further optimise and promote their use. Areas where it would be beneficial to expand the cycle network around King's Lynn will also be included Historic Quayside route, town centre access and alternatives, major road crossing and safety provision	Improved uptake of cycling for all to provide greater social inclusion and a level of infrastructure provision that matches the already high level of people who use cycling as their main mode of travel for their work journey.	Disbenefits of improved cycle provision on other modes would be managed to ensure minimal impact	Develop designs for the identified locations where improvements are required and consult with local cycling group on specific schemes and measures for implementation.	BCKL&WN Norfolk County Council Cycle Action Group
SAM6 (4.10)	Port of King's Lynn highway design access improvements including pedestrians and cyclists at North Street and Cross Bank Road	In the vicinity of the Port of King's Lynn (North Street and Cross Bank Road) improve operations to reduce risks to vulnerable road users through better provision for industrial vehicles, incorporating appropriate pedestrian crossings and cycle lanes.	Improved safety and permeability for pedestrians and cyclists. Safer vehicular access arrangements.	Additional delay to main road traffic where signalised intervention is provided.	Prepare highway design options.	Norfolk County Council Port of King's Lynn
SAM7 (4.13)	Tennyson Avenue Pedestrian & Cycle improvements: King George V Avenue pedestrian improvements; Tennyson Road, The Walks, Tennyson Avenue pedestrian improvements; Tennyson Avenue, Gaywood Road pedestrian improvements; Review of pedestrian crossing facilities on Extons Road and Tennyson Avenue	King George V Ave: cluster of pedestrian/cycle accidents, provide improved crossing facilities to accommodate pedestrian movements. At access point to The Walks pedestrians and cyclists are not provided with crossings over B1144 except dropped kerbs and footway marking-provide improved crossing provision. Gaywood Road: cluster of pedestrian/cycle accidents, provide improved crossing facilities to accommodate pedestrian movements. Identify locations for more pedestrian crossings including signalised ones on Extons Road and Tennyson Avenue to improve road safety for pedestrians in this area.	Improved safety for pedestrians and cyclists and continuity of routes provision for these modes in this area of King's Lynn.	Additional delay to main road traffic where signalised intervention is provided.	Prepare highway design options at the specified locations in this area and consult with user groups. Undertake feasibility study through Capital Improvement Budget for the improvements at Tennyson Avenue/Gaywood Road junctions (already underway)	Norfolk County Council Network Rail Office of Road and Rail (ORR) Cycle Action Group

<p>SAM8 (4.14 4.18)</p>	<p>Review pedestrian crossing provision on London Road. South Lynn to Hardwick pedestrian crossing review.</p>	<p>Cluster of pedestrian/cycle accidents identified a lack of provision for access from residential areas to the west across London Road. Review crossing locations and facilities on London Road</p>	<p>Safety improvement for pedestrians, cyclists and other vulnerable road users. Improve vehicular traffic flow if these can be rationalised. Improvements in local air quality if traffic flow is improved</p>	<p>Potential for improved traffic flow</p>	<p>Undertake optioneering and initial design feasibility including desire line assessment in conjunction with the wider feasibility study for highway capacity improvements at Southgates roundabout junction</p>	<p>Norfolk County Council BCKL&WN</p>
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Table 6-3 – Options to reduce delay and congestion on the local highway network (Short-term Traffic Signals – STS)

Ref	Option	Description	Benefits	Dis-Benefits	Initial Actions	Stakeholders
STS9 (5.1 5.5)	Review traffic signal timings at various locations to optimise traffic movements, including reviewing junctions where priority for buses is feasible	Review signal timings (too much signal green time) for North Street approach / retail park traffic at Hardwick / at Estuary Road approach / at Hamburg Way. Right turn into Millfleet. A 6-month trial that fitted the buses in King's Lynn with detector equipment for the traffic signals to address reliability and journey time issues leading ultimately to reductions in costs and improvements to the attractiveness and reliability of bus services in King's Lynn	Improve traffic flow and local air quality benefits. Reduced journey times for all main road vehicular traffic. Improve reliability of bus services and relieve congestion on primary routes through King's Lynn. Potential for switch from car to improved bus services. Local air quality benefits	May lead to increased delay from side roads. May encourage more vehicular travel	Undertake a detailed review of traffic signal timings at the identified locations. Feasibility study into improvements and /or upgrade to traffic signal operations Initiate discussions to re-instate the bus detection at the signals and undertake a trial including collection of traffic data to understand the benefits/disbenefits to enable informed decision-making	Norfolk County Council
STS10 (5.2)	Linked and co-ordinated traffic signals	Co-ordinated traffic signals would help with bus scheduling and reliability as currently the traffic signals are out of sync with each other so there is a perception that it is very stop/start and slow journeys particularly for buses	Improve traffic flow and local air quality benefits. Reduced journey times for all main road vehicular traffic. Improved bus service reliability	May lead to increased delay from side roads. May encourage more vehicular travel.	Undertake a detailed review of traffic signal timings from Hardwick to Gayton Road. Feasibility study into improvements and /or upgrade to traffic signal operations	Norfolk County Council
STS11 (5.4)	Gaywood Clock / Queen Mary Road traffic light improvements and junction redesign	Consider improvements to the traffic light phasing at Gaywood Clock/Queen Mary Road and junction re-design	Improved traffic flow and reduced delays. Should also aim to improve cycle/pedestrian accessibility. Initial modelling results show some benefit to journey times and delay in this area if junction is re-designed	Scheme should not dis-benefit cyclist/pedestrian movements	Initial scheme design without signals has been prepared and tested in the traffic modelling (with the location below) to provide initial understanding of traffic impacts. Further feasibility required including impacts on other road users. Study the potential for traffic signal improvement	Norfolk County Council

Ref	Option	Description	Benefits	Dis-Benefits	Initial Actions	Stakeholders
STS12 (5.4)	Loke Road John Kennedy Road traffic signal optimisation or junction redesign	Phasing issue between lights needs to be addressed to link the phasing together / check phasing to let traffic out for a shorter period. Options also to be developed to provide an alternative junction arrangement to assist with traffic flow at this location	Improved traffic flow and reduced delays. Should also aim to improve cycle/pedestrian accessibility. Initial modelling results show some benefit to journey times and delay in this area if junction is re-designed	Scheme should not dis-benefit cyclist/pedestrian movements	Initial scheme design without signals has been prepared and tested in the traffic modelling (with the locations above) to provide initial understanding of traffic impacts. Further feasibility required including impacts on other road users. Study the potential for traffic signal improvement	Norfolk County Council

Table 6-4 – Options to reduce delay and congestion on the local highway network (Short-term Highway Network – SHN)

Ref	Option	Description	Benefits	Dis-Benefits	Initial Actions	Stakeholders
SHN13 (6.1)	Railway station bus layby re-design	Consider re-design for the layby outside the rail station to prevent cars stopping in the layby and also address issues with getting the bus on the loop in the road to activate the traffic lights to change to let them out	Improvement to bus journey times and access to the rail station bus stops	None	Develop alternative layby design for preventing car use and to ensure bus the bus can effectively egress from the bus stop	Norfolk County Council Network Rail Govia Thameslink Railway (GTR) Bus Operators
SHN14 (6.5)	Southgates roundabout highway capacity improvement scheme - small-medium scale	Undertake a review of lane marking and usage at Southgates roundabout to provide improvements in traffic flow, including 2-lanes southbound. Also undertake a review of the traffic signal operation to optimise the traffic flow at this key junction that provides access to King's Lynn. Enhance crossing provision for cyclists and pedestrians at the South Gate alongside highway improvement measures to improve traffic flow also considering access for buses from Hardwick Road to Hardings Way	Initial traffic modelling shows benefits in PM peak to have 2-lanes continuous southbound	May lead to increased severance with additional traffic lanes. Potential removal of car parking on London Road	Initial design sketch for 2-lanes southbound considered within traffic modelling. Further feasibility review of signal operation, lane usage and potential for upgrade within existing highway boundary including access to Hardings Way for buses. Funding already in place to undertake further design and feasibility work at this location during next 12 months	Norfolk County Council BCKL&WN Bus Operators
SHN14a (6.7)	Vancouver Avenue - improved lane management	Vancouver Avenue - investigate improved lane management - left lane = straight and left / right lane = right - to ease traffic congestion, also provide a longer left filter lane / increase length of the left turn lane to ease traffic congestion on this approach. Also consider provision of a left filter lane with give-way onto Hardwick Road to ease the traffic using the roundabout and provide potential for improvement to traffic signal operation.	to be considered in conjunction with the above. Improve traffic flow.	See above	See above	See above

Ref	Option	Description	Benefits	Dis-Benefits	Initial Actions	Stakeholders
SHN15 (6.14)	Estuary Road / Edward Benefer Way junction improvements	New junction arrangements submitted to planning - phasing of traffic lights with alternative priorities / take out private access and make two-lanes over the traffic lights / remove left turn from traffic lights	Improved journey times for all traffic. Maintain cycle and pedestrian crossing arrangements	Adverse impacts on journey times from side roads	NCC review of junction arrangement proposals, being progressed through development planning	Norfolk County Council
SHN16 (6.17)	Low Road Castle Rising Rd Wootton Rd Grimston Rd junction improvements	New junction arrangements have been submitted to planning - phasing of traffic lights with alternative priorities / take out private access and make two-lanes over the traffic lights / remove left turn from traffic lights	Improved journey times for all traffic. Maintain cycle and pedestrian crossing arrangements	Adverse impacts on journey times from side roads	NCC review of junction arrangement proposals, being progressed through development planning	Norfolk County Council

Table 6-5 – Options to manage travel behaviour (Short-term Travel Management – STM)

Ref	Option	Description	Benefits	Dis-Benefits	Initial Actions	Stakeholders
STM17 (7.2)	Provide a comprehensive Car Parking Strategy for King's Lynn	Develop a Car Parking Strategy for King's Lynn including an assessment of opportunities for Park & Ride	Town-wide approach to car parking management in conjunction with delivering Transport Strategy improvements	Potential changes may not be well-received if alternatives aren't in place. Perception of impacts on town centre business	BCKL&WN to commission development of Strategy for car parking during next 6 months	BCKL&WN
STM18 (4.7)	Work with schools and education in King's Lynn to provide safe alternatives to private car for school children	Develop a campaign for King's Lynn to encourage parents not to drive children to school. Work with the schools to develop safer routes to school, walking buses, safe cycle routes, provision for secure cycle storage at the schools and provide the schools with the tools they need to improve localised parking issues around schools and the impacts on the town. Address air quality impacts on Wisbech Road at the schools.	Health, safety and wellbeing benefits for children. Opportunities to influence mode choice of future generations	n/a	NCC to work with schools to develop and deliver improved access for children through safety measures and information campaigns. Led by NCC, with potential funding through LTP4?	Norfolk County Council

6.6 MEDIUM TERM (OPTIONS TO BE DELIVERED BY 2030)

6.6.1. The locations of the Medium-term options are provided in the figure 6-2, detailed in tables 6-6 to 6-8.

Figure 6-2 - Transport Strategy Medium Term Options

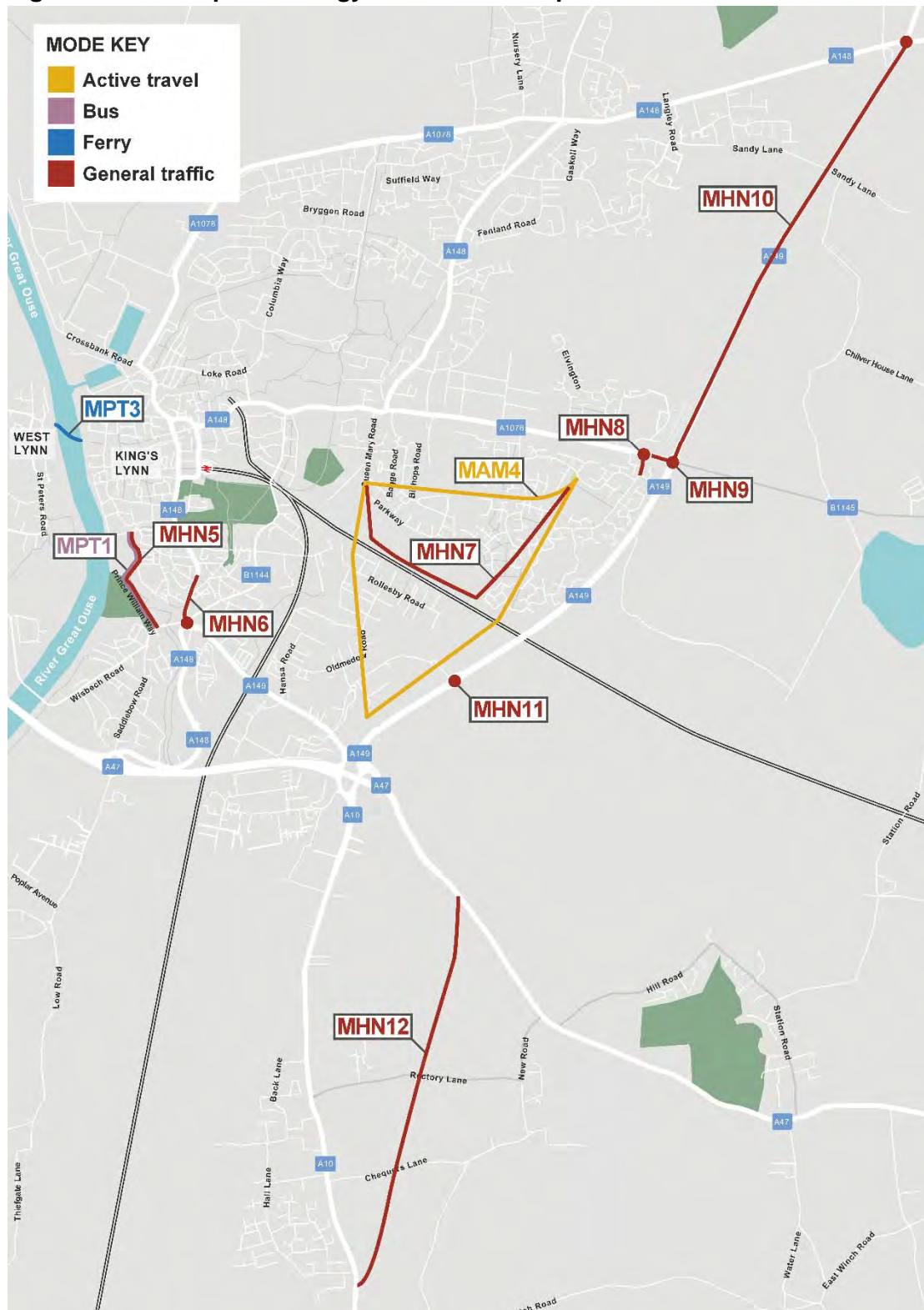


Table 6-6 – Options to encourage the use of public transport (Medium-term Public Transport – MPT)

Ref	Option	Description	Benefits	Dis-Benefits	Initial Actions	Stakeholders
MPT1* (see also MHN5) (1.3)	Increased use of Harding's Way for buses - address issues at Millfleet and Wisbech Road to Hardwick Road to make more advantageous for buses	Harding's Way as a bus only route to accommodate an increase in buses and bus usage with buses also continuing to serve London Road. A combination of routes is required. Retain Hardings Way as traffic-free except buses. Encourage more buses to make use of the route and the potential reliability/journey time benefits. Retain high level of provision for pedestrians / cyclists and especially vulnerable road users and mobility scooters.	Enhanced bus reliability and journey time experience in peak hours. Retains benefits of this route for active modes of travel.	Impact on vehicular traffic on London Road at Millfleet and Wisbech Road between Southgate and Hardings Way.	Develop initial scheme designs for Wisbech Road and Millfleet junctions. Short-term amendments to the traffic signal timings to be investigated. Considered alongside Southgate roundabout improvements.	Norfolk County Council Bus Operators
MPT2 (1.12)	Town centre gyratory re-design. Various Options - Bus Lanes - Railway Rd, London Rd, Blackfriars Rd	Redesign of traffic movements around gyratory to assist with AQMA, congestion, connectivity and road safety objectives. Various schemes developed through workshop and tested in the transport model. Investigate potential for providing bus-only lanes through Railway Road, London Road, Blackfriars Road to take out areas that generate air pollution and improve air quality with modal shift.	Potential for improved air quality and road safety. Potential for improvements to buses for access to bus station.	Initial modelling suggests that there may be additional congestion at some locations around the gyratory and benefits to vehicular traffic are limited.	Air quality benefits need further assessment. Bus lane / access/ egress alternative schemes need initial design and assessment.	Norfolk County Council BCKL&WN
MPT3 (2.3)	Provide enhanced access to the Ferry throughout the day / year to provide a more usable service for all.	Look further at the previously developed options for the ferry service to enable access for a wider range of people and provide improvements / alternatives to access during low tides.	Benefits for travel in King's Lynn and for the retention of this facility within the community. Promote social inclusion.	May have an impact on Ferry journey times if alternative preferred location.	Re-appraise the alternative locations and/or means of providing safe access to the ferry service for all.	BCKL&WN Ferry Operator

*following further modelling and design assessment work the most appropriate use of Hardings Way, either for buses or additional traffic will be determined. Both cannot be pursued together but are included for further evaluation purposes.

Table 6-7 – Options to encourage journeys by active modes (Medium-term Active Modes – MAM)

Ref	Option	Description	Benefits	Dis-Benefits	Initial Actions	Stakeholders
MAM4 (4.11 6.12)	Queen Mary Road, Fairstead, Hardwick improvements in linkages for pedestrians and cyclists	Investigate how best to provide access across the railway line and around the town for modes other than private car to relieve some of the congestion pressure in Gaywood area. Enhancements to pedestrian link from Parkway to Rollesby Road to provide year-round use.	Enhanced high quality pedestrian route to access employment	Possible impacts on open parkland	Develop a scheme to improve the route including lighting, surfacing and signing to facilitate improved accessibility	Norfolk County Council BCKL&WN Network Rail User Groups

Table 6-8 – Options to reduce delay and congestion on the local highway network (Medium-term Highway Network – MHN)

Ref	Option	Description	Benefits	Dis-Benefits	Initial Actions	Stakeholders
MHN5 (see also MPT1*) (6.2)	Hardings Way opened for additional traffic	Investigate options to allow additional traffic to use Hardings Way to alleviate the congestion on London Road and assist with air quality management. This could include specific additional vehicle types being permitted to use the route; open only at specified times of the day; as an emergency measure to assist with incident management; directional to provide alternative routes for inbound traffic in the AM peak and outbound traffic in the PM peak; or to provide access to specific parts of the town centre only. Mitigation measures would be needed to ensure there are no impacts on the historic core.	Improved journey times/reduced congestion/improved air quality on London Road	Increased traffic in historic core	Initial modelling shows some congestion relief on London Road, introduction of restriction to access for historic core provides lower benefit for London Road traffic. Further design work to understand outcomes and combine with enhancements for higher bus use	Norfolk County Council BCKL&WN
MHN6 (6.6)	South Gate highway capacity enhancements - providing two lanes in both directions / large scale redesign	Make South Gate traffic-free by providing two lanes northbound and two lanes southbound using the park to provide the extra lanes (based on previous proposal for CIF). Opportunity to also provide improved access for buses to/from Hardings Way	Improve traffic flow in King's Lynn. Opportunity to also provide improved access for buses to Hardings Way. Improved public realm/heritage	Taking land from the park / development viability. Potential severance impacts by providing 4-lane carriageway for pedestrians and cyclists	Further feasibility design and viability checks. Option testing in modelling work alongside bus priority/access improvement options	Norfolk County Council BCKL&WN Developers
MHN7 (6.12)	Queen Mary Road link to Fairstead	Link to development land at Parkway with potential link to Fairstead - traffic to go through Fairsted / route coming out of Fairstead and along Sand line / bridge over Sand line / road alongside railway line / park and ride	Vehicular link between the two estates could provide relief for Gayton Road and Gaywood with benefits to journey times and air quality	May lead to rat-running (highway design layout could address this)	Undertake initial highway design layout for link road scheme. Potential funding source is via developers	Norfolk County Council Network Rail Developers
MHN8 (6.13)	Winston Churchill Drive QEH access widening	Investigate a scheme to provide widening of the access to allow improved movement onto roundabout / improved traffic flow. Also look at widening of Winston Churchill Drive closest to Corbyn Shaw Road where on-street parking is prevalent	Improved journey times	n/a	Consider design improvements at Winston Churchill Drive junction with A1046	Norfolk County Council BCKL&WN QEH

Ref	Option	Description	Benefits	Dis-Benefits	Initial Actions	Stakeholders
MHN9 (6.20)	QEH roundabout capacity improvements	The slip road onto A149 northbound needs improvement and the roundabout needs to be able to accommodate forecast traffic levels	Management of through traffic in King's Lynn town centre / improved journey times / air quality management	Environmental	Develop and test feasibility design options with HE	Norfolk County Council BCKL&WN
MHN10 (6.21)	A149 Dualling up to Knights Hill; Knights Hill junction capacity improvements	Dualling of the A149 / crawler lane up to Knights Hill / two lanes up to Knights Hill / mark lanes from bottom of hill / increase width / lanes at roundabout which are too narrow at the junctions onto / off the roundabout (QE to King's Lynn) - suitable for emergency services; Consider a redesign of this junction to improve traffic capacity and traffic flow to accommodate forecast traffic levels associated with development	Management of through traffic in King's Lynn town centre / improved journey times / air quality management	Environmental	Develop and test feasibility design options with HE	Norfolk County Council BCKL&WN Highways England
MHN11 (6.19)	A149 Jubilee Roundabout capacity improvements	Jubilee Roundabout capacity improvements to improve traffic flow and accommodate planned growth	Management of traffic through town centre / reduced journey times / air quality management	Environmental	Develop and test feasibility design options with HE	Norfolk County Council BCKL&WN Highways England
MHN12 (6.22)	West Winch Housing Access Road	Highway improvement access road to enable the housing growth at West Winch and to provide some relief to the A10	Management of through traffic in King's Lynn town centre / improved journey times / air quality management	Environmental	Develop and test feasibility design options with HE	Norfolk County Council BCKL&WN Highways England Developer

6.7 LONG TERM (OPTIONS TO BE DELIVERED AFTER 2030)

6.7.1. The locations of the Long-term options are shown in the figure below, detailed in tables 6-9 to 6-10.

Figure 6-3 - Transport Strategy Long Term Options



Table 6-9 - Options to reduce delay and congestion on the local highway network (Long-term Highway Network - LHN)

Ref	Option	Description	Benefits	Dis-Benefits	Initial Actions	Stakeholders
LHN1 (6.4)	Hospital to A149 direct access link	Provide an additional exit onto A149 for exiting traffic from the hospital to ease local congestion issues around the hospital	Local congestion relief and air quality management	Environmental	Provide initial feasibility design with HE. Model to test the level of benefits that could be achievable	Norfolk County Council BCKL&WN QEH
LHN2 (6.8)	Wisbech Road to Nar Ouse Way link Road	Investigate the potential for providing a highway link between Wisbech Road and Nar Ouse Way to assist in alleviating Southgates roundabout	Local congestion relief at Southgates	Land and environmental	Investigate alongside options for Southgates roundabout	Norfolk County Council BCKL&WN Developer

Table 6-10 - Options to encourage the use of public transport (Long-term Public Transport - LPT)

Ref	Option	Description	Benefits	Dis-Benefits	Initial Actions	Stakeholders
LPT3 (3.1)	Train frequency improvements	Implementation of Ely Area Enhancement Scheme to deliver doubling of train frequency to half-hourly (2025-2030). Improve rail links to Cambridge and London. Improve connecting services - connections to Norwich from Ely. King's Lynn 8 Car Project will increase train capacity from 4 Car trains between King's Lynn, Cambridge and London by December 2020.	Improved service level for passengers and reduction in car mode share for outbound and inbound trips to/from King's Lynn	Potential increase in vehicular traffic to the rail station. Additional traffic delay at level crossing	Ely Area - Funding in place for current phase of work (GRIP 2). Further development stages to be funded separately under the new RNEP processes.	Network Rail Govia Thameslink Railway (GTR) NCC BCKL&WN

7 NEXT STEPS

7.1 OVERVIEW

- 7.1.1. This Transport Strategy has identified a short-list of 33 non-committed transport infrastructure options to address the transport challenges and opportunities in King's Lynn and support the overarching vision and objectives.
- 7.1.2. Most of these options are at a very early stage of development and very high level, although a few are actively being developed by Norfolk County Council. The options identified in this Transport Strategy are intended to steer the development of more detailed options at a variety of spatial scales.
- 7.1.3. This section sets out the work required to progress the options presented in this Transport Strategy further.

7.2 COLLABORATIVE ACTION

- 7.2.1. One of the first actions will be to broaden the dialogue and engagement with local and strategic partners.
- 7.2.2. A King's Lynn Transport Strategy Implementation group should be established to help guide the development and delivery of options and include a range of stakeholders. This should include:
- ┆ Borough Council of King's Lynn and West Norfolk (BCKL&WN);
 - ┆ Norfolk County Council;
 - ┆ Highways England;
 - ┆ New Anglia Local Enterprise Partnership;
 - ┆ Network Rail;
 - ┆ Govia Thameslink Railway (GTR) (main operator) and Greater Anglia (secondary operator);
 - ┆ Bus operators; and
 - ┆ Cycle groups.
- 7.2.3. The level of collaboration required will depend on the scale of the options being progressed. Local options are likely to be developed by Norfolk County Council and BCKL&WN. Whereas strategic road or rail options, such as the schemes relating to capacity improvements on the A149 will require greater collaboration with Highways England. The rail schemes are currently under development. The King's Lynn 8 car train project is about to commence construction of necessary enabling works. With regards to the Ely Area Capacity Enhancements (EACE), funding is in place for the current phase of work (GRIP 2), with further development stages to be funded separately under the new RNEP processes. Borough and County officers and Members will keep a watching brief on these schemes to realise their delivery within the suggested timescales.
- 7.2.4. The priority of the implementation group meetings will be to establish the delivery priority of options, progress the development and design of options and identify and progress funding options.

7.3 POLICY INTEGRATION

- 7.3.1. In order for the King's Lynn Transport Strategy to be successful, local and regional economic, transport and land use policies will need to be integrated and aligned.
- 7.3.2. Ensuring that policies support future developments in the Transport Strategy study area, be they in urban or rural settings, and deliver strong transport links is an imperative for sustainable economic growth in King's Lynn. This includes the Local Plan and Air Quality Action Plan.

7.4 EVIDENCE BASE

- 7.4.1. To deliver as many of the options in the Transport Strategy as possible, a number of options will require a more detailed evidence base before funding opportunities can be successfully pursued.
- 7.4.2. The strategic and microsimulation models that have been developed for the King's Lynn Transport Strategy and the West Winch Housing area provide a robust tool for assessing the impact of highway interventions in King's Lynn and following more detailed scheme design these tools will be invaluable in understanding the potential traffic impacts and their monetary value to be able to source funding.

7.5 SCHEME DEVELOPMENT

- 7.5.1. The Transport Strategy has presented a high-level list of short, medium and long-term options recommended for delivery over the next 15 years+. However, before the options can be delivered, further work will be needed to develop the design and detail.

- 7.5.2. At this stage it is anticipated that this work will include:

- **Engagement with stakeholders**, including:
 - New Anglia Local Enterprise Partnership;
 - Norfolk County Council;
 - BCKL&WN;
 - Highways England;
 - Network Rail;
 - GTR (main operator) and Greater Anglia (secondary operator);
 - Local bus operators; and
 - Local businesses.
- **Ensure that the options align with stakeholders' existing and emerging strategies**, including:
 - Highways England's East of England Route Strategies;
 - Norfolk County Councils Local Transport Plans;
 - Regional Transport Strategies (EAST)
 - BCKL&WN Local Plan;
 - BCKL&WN Heritage Action Zone / Town Centre Masterplan;
 - Air Quality Action Plan; and
 - Car Parking Strategy.
- **Developing the design of the option** (e.g. identifying possible routes, alignments, layouts etc.).
- **Undertaking further feasibility assessments to ensure the option is deliverable.**
- **Undertake a high-level costing exercise** to assist with identifying and securing option funding.

- ❑ **Option Assessment to understand the impact of the proposed option** (e.g. e.g. impact on other junctions, environmental impacts etc.).

- ❑ **Development of Highways Schemes**

- 7.5.3. It is recommended that highway options are developed and assessed using the strategic and micro-simulation models of King's Lynn. These models cover large parts of King's Lynn and were developed to assess the traffic impacts of the planned development and the outcomes of the Transport Study.

7.6 FUNDING SOURCES

- 7.6.1. None of the options included in the Transport Strategy have secured funding for implementation. However, there is some funding which may be available to develop and assess the options to a greater degree to provide a recommended scheme for implementation including design, initial cost estimates and programme for delivery. Notably this is for the Southgates roundabout and London Road initially. Critical to the delivery of the options in this Transport Strategy is the identification of possible funding sources.

- 7.6.2. There is the potential for options to be funded by both the public sector (Local Government and Central Government funding allocations and initiatives) and private sector (through other funding mechanisms and avenues associated with development opportunities).

- 7.6.3. Potential sources of funding include:

- ❑ **New Anglia Local Enterprise Partnership:** NCC previously received a £1m contribution for the £4.5m Lynn Sport link road.
- ❑ **Highways England:** Funding allocation in their next Road Investment Strategy.
- ❑ **Network Rail:** Funding allocation in their next Control Period.
- ❑ **Central Government Funds:** Local Sustainable Transport Fund, National Productivity Investment Fund, Pinch-point funding for local highway networks, etc.
- ❑ **Norfolk County Council**
- ❑ **Borough Council of King's Lynn & West Norfolk**
- ❑ **S106 Contributions / Planning Conditions** associated with development applications
- ❑ **Private Operators:** (e.g. GTR and Greater Anglia, bus operators etc.).
- ❑ **Social Enterprises and partnerships.**

- 7.6.4. To identify and secure funding for the options outlined in this Transport Strategy it is recommended that relevant stakeholders are engaged during the further scheme development.

7.7 BUSINESS CASE DEVELOPMENT

- 7.7.1. To access public funding streams and attract private funding, business cases for some of the short and medium-term options will need to be developed.

- 7.7.2. This will build on the evidence base presented in the Stage 1 Issues and Opportunities Report and Stage 2 Options Appraisal Report.

- 7.7.3. It is expected that the business case will follow DfT guidance and set out the following:

- ❑ **A case for the scheme**, the strategic case;
- ❑ **The value for money**, the economic case;
- ❑ **Commercial viability**, the commercial case;

- i **The financial affordability**, the financial case; and
- i **Achievability**, the management case.

7.7.4. The decision-making process typically takes place in three phases:

1. Strategic Business Case;
2. Outline Business Case; and
3. Full Business Case.

7.7.5. At each stage there is an investment decision point on whether to proceed to the next stage.

7.7.6. Critical to the business cases will be identifying funding sources including innovative funding streams across all modes.

7.8 TRANSPORT STRATEGY REVIEW

7.8.1. The Transport Strategy has presented a package of high-level short, medium and long-term options for delivery at a strategic, area wide and local scale.

7.8.2. It is recognised that as options are developed and further studies are undertaken there is the potential for the scope, deliverability, funding options and delivery timescale of the options to change.

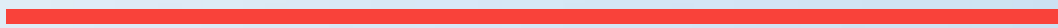
7.8.3. For this reason, the Transport Strategy will be a 'living plan' that will be regularly reviewed throughout the plan period as further studies are undertaken and as more detail on the proposed options becomes available. This will include:

- ┆ Additional clarity and detail on the option proposals;
- ┆ Updates to the list of planned improvement schemes;
- ┆ Updates to the delivery timescales; and
- ┆ Updates to option funding sources.

7.8.4. It is recognised that over the timescale of the Transport Strategy there will be opportunities for additional transport improvements, particularly in view of changing technology and development opportunities, updates and reviews of this Transport Strategy should embrace these potential changes in policy and technological direction.

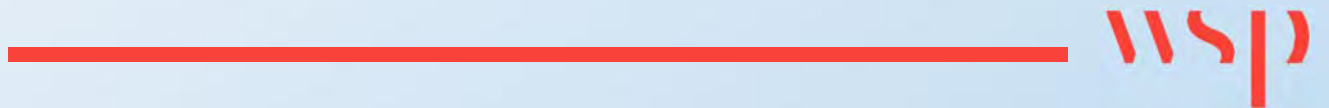
Appendix A

DRAFT SCHEME DRAWINGS



Appendix B

SUMMARY SATURN TECHNICAL
MODEL OUTPUTS



5 SCENARIO APPRAISAL

5.1 INTRODUCTION

- 5.1.1. Each scheme has been tested within the 2026 Do Minimum model and this chapter focuses on a comparison of each of the scheme scenarios with respect to 2026 Do Minimum scenario (DM). For each scenario the following performance statistics are considered:
- i Change in traffic flow
 - i Change in delay
 - i Volume / capacity ratio
 - i Select Link Analysis (where appropriate)
- 5.1.2. In addition to the plots presented within Section 5, Appendix C provides additional plots, and reference to these is made throughout this section.
- 5.1.3. For each scenario there is a comparison against network summary statistics. Appendix D provides the full network summary statistics for all the scenarios:
- 5.1.4. These statistics include the following:
- i Transient Queues (PCU-Hrs)
 - i Over-capacity Queues (PCU-Hrs)
 - i Link Cruise Time (PCU-Hrs)
 - i Total Travel Time (PCU-Hrs)
 - i Total Travel Distance (PCU-kms)
 - i Average Speed (kph)

5.2 SCENARIO 1 - HARDINGS WAY

5.2.1. The primary impact of opening of Hardings Way is the redistribution of traffic within the town as a result of the new route choice introduced to the network. Figure 5-1 shows the traffic flow differences between Scenario 1 and DM for the AM Peak in 2026.



Figure 5-1: Scenario 1 - DM Actual Flow Difference Plot AM Peak

5.2.2. Figure 5-1 shows that an increase in traffic on Hardings Way is anticipated due to the removal of the ban, with traffic redistributing to this route away from Railway Road. Additionally, there is a similar reassignment of traffic onto Wisbech Road, instead of A148, connecting the A47 Road with King's Lynn Town Centre. There is also an associated increase in traffic on South Quay and King Street, with a decrease within the gyratory.

5.2.3. Overall the changes in flow have limited impact upon network delay and this is illustrated in Figure C.1-2 of Appendix C. There are minor reductions to delays on Railway Road and the network surrounding it during the AM Peak, however these are balanced by minor increases in delay associated with increased traffic in the vicinity of Hardings Way.

- 5.2.4. There is limited impact on link capacity, with a small number of links with a high V/C ratio (above 85%), and thus a poor level of service and they are illustrated on Figure C.1-3 of Appendix C. This highlights likely congestion at junctions including Hardings Way with Boal Street, and Purfleet Place with King Street.
- 5.2.5. In the PM the reassignment of traffic is very similar to the AM. There is an increase in traffic on Hardings Way Southbound as anticipated due to the removal of traffic bans on it, with traffic redistributing to this route from Railway Road and from B1144 Road. Unlike in the AM there is limited redistribution to King Street and this is illustrated in Figure C.1-4.
- 5.2.6. The delay comparison of between Scenario 1 and DM for PM Peak in 2026 show greater impacts than in the AM as demonstrated in Figure 5-2.

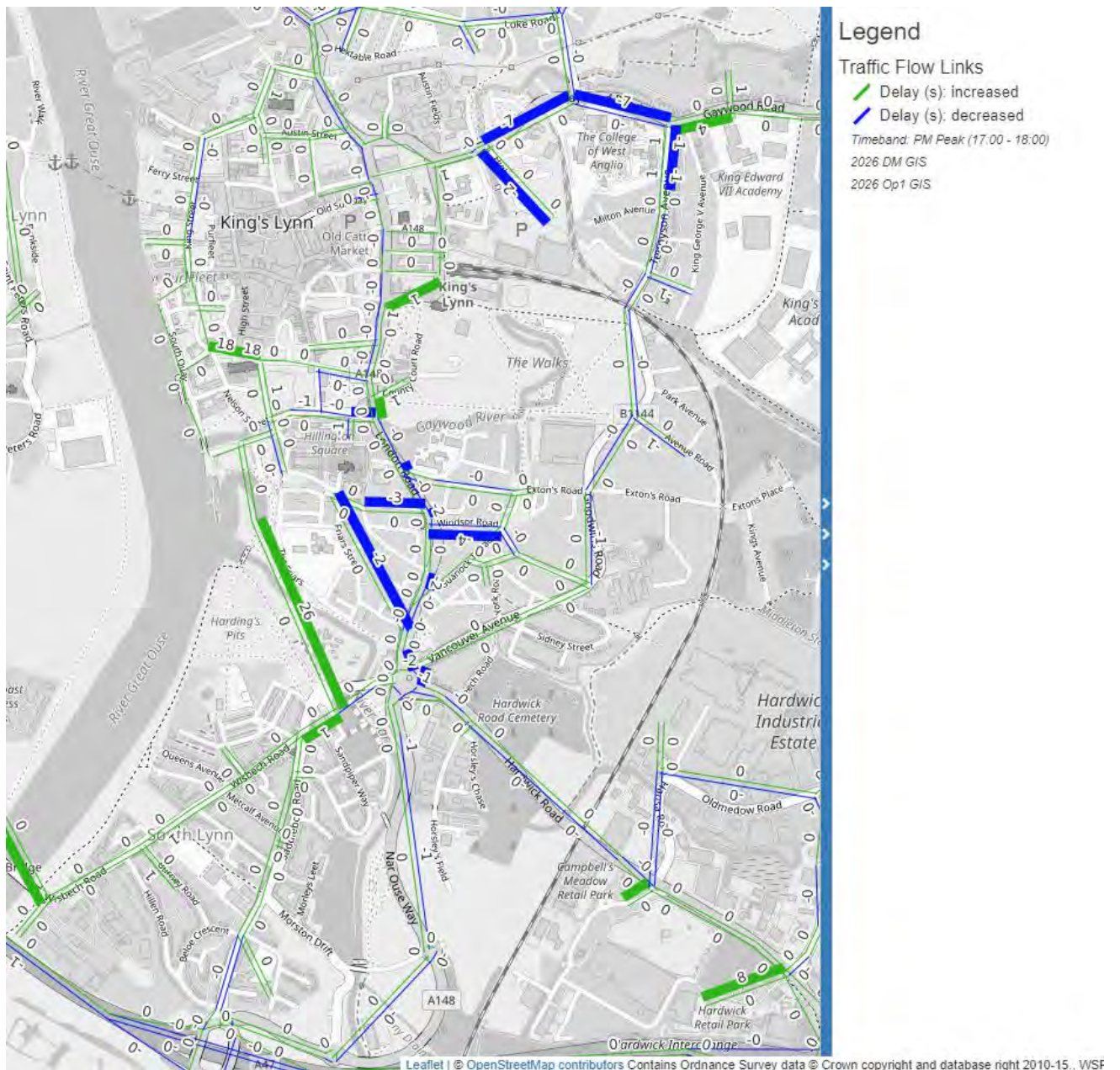


Figure 5-2: Scenario 1 - DM Delay Difference Plot PM Peak

- 5.2.7. Figure 5-2 shows that there is an increase in delay on Hardings Way southbound. This is due to the rise in traffic exiting on Wisbech Road and heading towards Southgates junction. Signal optimisation at this junction could potentially reduce this delay. Figure C.1-6 shows the corresponding Volume/Capacity ratio as a percentage for Scenario 1 in the PM Peak in 2026.
- 5.2.8. There are a few links where the V/C ratio falls in the range of 90-100%, which is a high V/C ratio and will lead to congestion and a poor level of service during the PM Peak, especially at Southgate's roundabout.

SELECT LINK ANALYSIS

- 5.2.9. Select Link Analysis has been undertaken along Hardings Way to understand the routing of traffic using the road.

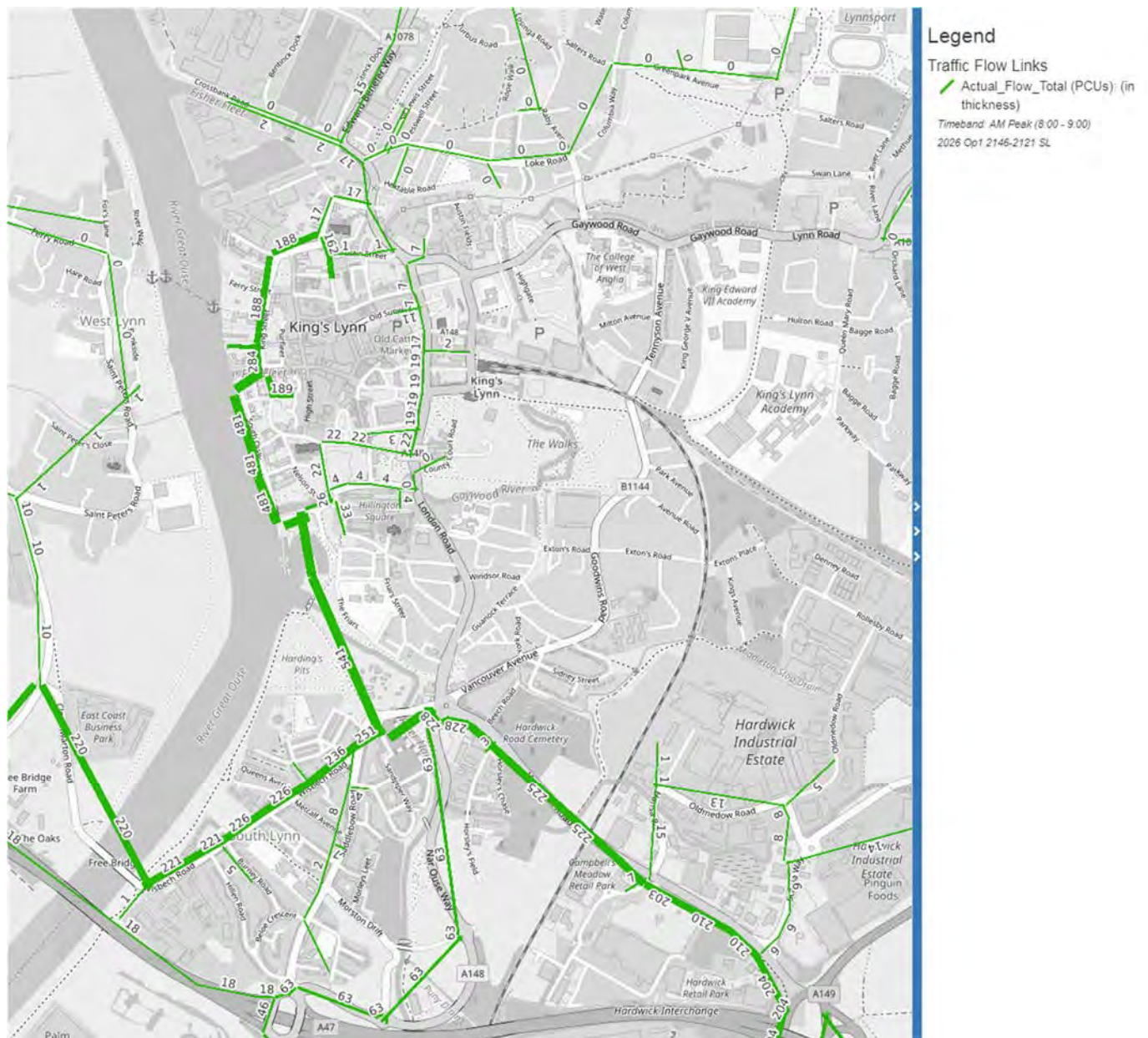


Figure 5-3: Scenario 1 Select Link Analysis AM Peak Hardings Way Northbound

5.2.10. Figure 5-3 shows the routing of traffic on Hardings Way Northbound within Scenario 1. A considerable amount of traffic uses South Quay and then King Street in the AM Peak. Consideration should be given as to whether this level of reassignment is desirable given the nature of the King Street and surrounding roads. Figure 5-4 provides the corresponding information for the evening peak period.

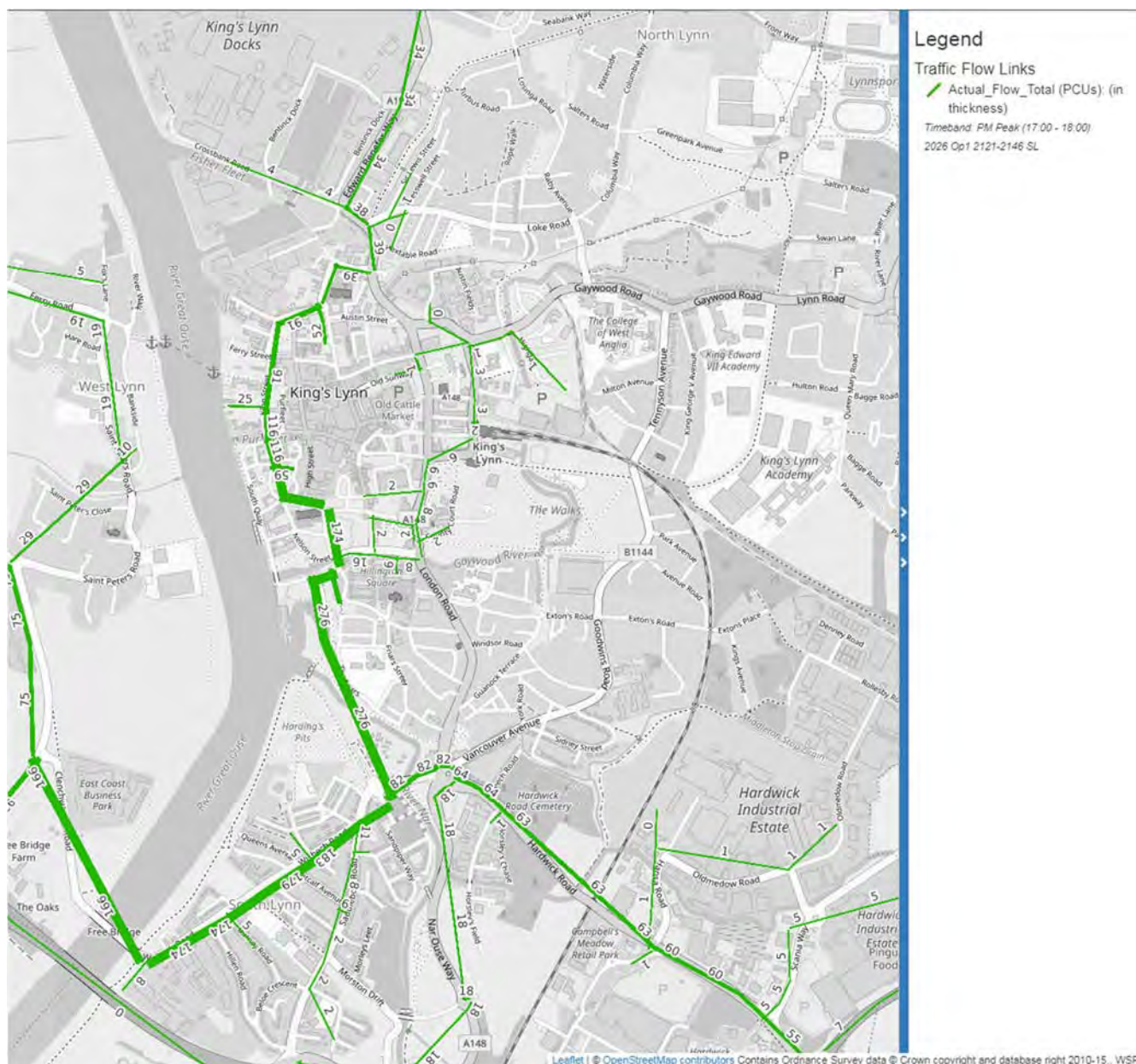


Figure 5-4: Scenario 1 Select Link Analysis PM Peak Hardings Way Southbound

5.2.11. Figure 5-4 shows that there is a high number of vehicles that use Hardings Way southbound in the PM peak, particularly those heading west out of King's Lynn and using Wisbech Road.

SCENARIO 1 NETWORK SUMMARY STATISTICS

5.2.12. Table 5-1 presents network summary statistics for Scenario 1 and a comparison against the Do Minimum case.

Table 5-1: Scenario 1 Network Summary Statistics

<i>Statistic</i>	<i>Unit</i>	DM		Scenario 1		Scenario 1 - DM	
		AM	PM	AM	PM	AM	PM
<i>Transient Queues</i>	PCU - Hrs	512.1	599.4	486.6	585.6	-25.5	-13.8
<i>Over-capacity Queues</i>	PCU - Hrs	23.5	39.4	28.7	32.6	5.2	-6.8
<i>Link Cruise Time</i>	PCU - Hrs	1237.6	1329.3	1236.5	1335.3	-1.0	6.0
<i>Total Travel Time</i>	PCU - Hrs	1773.1	1968.1	1751.8	1953.5	-21.3	-14.6
<i>Total Travel Distance</i>	PCU - kms	71087.6	75434.8	70974.4	75587.7	-113.2	152.9
<i>Average Speed</i>	kph	40.1	38.3	40.5	38.7	0.4	0.4

5.2.13. Table 5-1 shows that Scenario 1 has a positive impact on levels of queuing and reduces total travel times whilst speeds increase.

SCENARIO 1 SUMMARY

5.2.14. Scenario 1 causes traffic levels using London Road to reduce by over 400 PCUs northbound in the AM by causing reassignment to Hardings Way and King Street. In the PM the scheme causes an increase in traffic on Hardings Way southbound as well as the gyratory southbound. One of the main delay impacts is in the PM at the Hardings Way / Wisbech Road signalised junction, although signal optimisation may alleviate this.

5.3 SCENARIO 2 - HARDINGS WAY COMPLIMENTARY MEASURES

- 5.3.1. Scenario 2's primary impact also the reassignment of traffic. Figure 5-5 shows the traffic flow difference between Scenario 2 and the Do Minimum Network in 2026 for AM Peak, and thus the wider reassignment impact of the proposals.

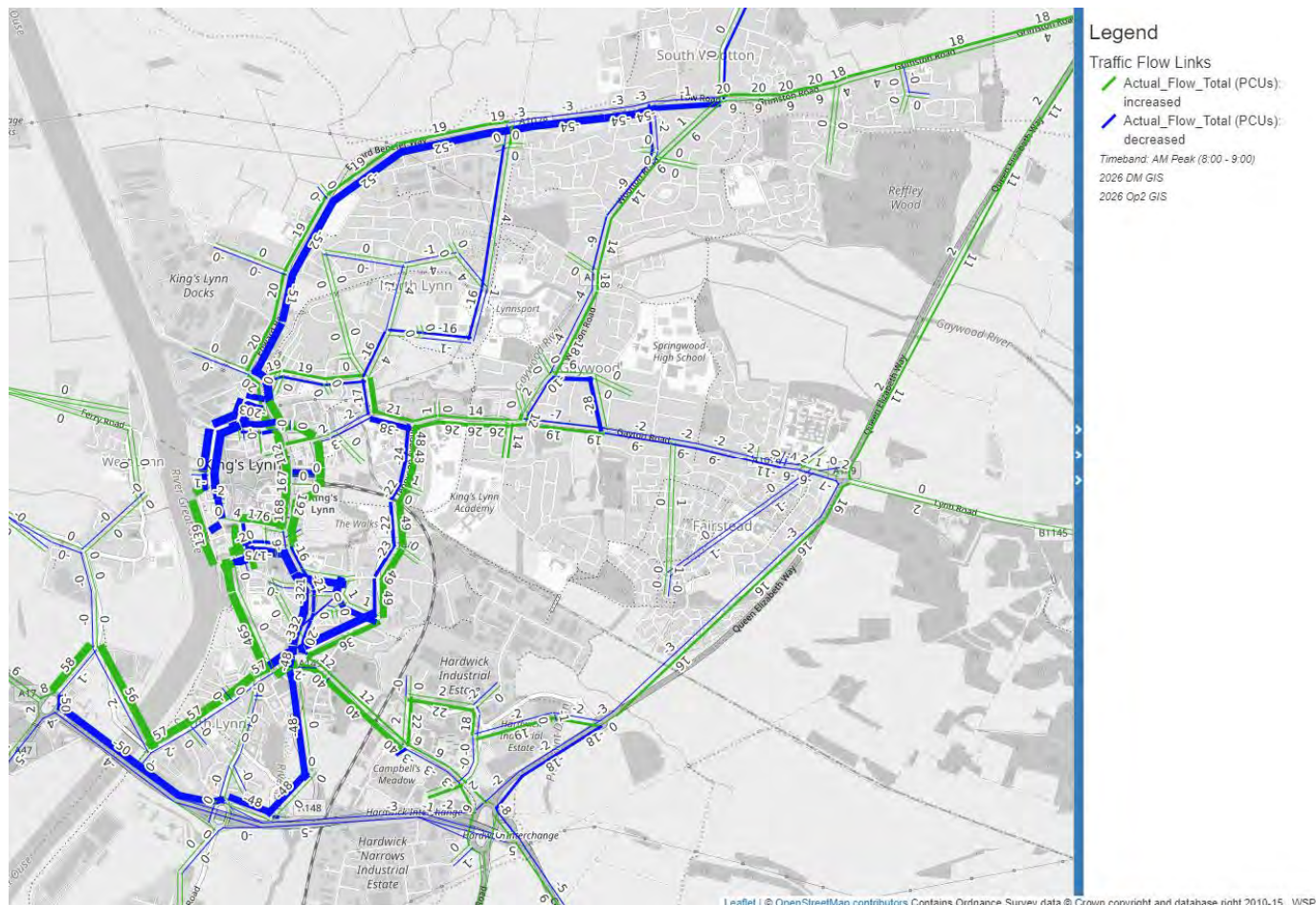


Figure 5-5: Scenario 2 - DM Actual Flow Difference Plot AM Peak (Wider Area)

- 5.3.2. Figure 5-5 shows that in 2026 there are increase in traffic on Wisbech Road and decrease of traffic on A47 and on Edward Benefer Way. It can be seen that in 2026 there is an increase in traffic on Hardings Way due to opening the road to traffic. This results in a decrease in traffic movements between the A148/ London Road junction and London Road / St James Street junction. Traffic on Railway Road increases, due to the banning of both direction movements for traffic on King Street. Additionally, traffic on B1144 Road increase in the southbound direction. Figure C.2-7 of Appendix C shows the traffic flow difference between Scenario 2 and the Do Minimum Network in 2026 for the AM Peak period although zoomed in on the town centre.
- 5.3.3. Despite these changes in flow there is minimal impact on delay and this is illustrated in Figure C.2-9. Figure C.2-9 shows there is reduction in delay on London Road and the surrounding roads. Additionally, there is an increase in delay of 8 seconds at the junction of Hardings Way with Boal Street. Whilst not significant, this is a consequence of the increased traffic through this junction.

5.3.4. The network level of service in King's Lynn Town Centre is generally good, Figure C.2-10 shows the Volume/ Capacity ratio as a percentage in Scenario 2. Whilst there are a few instances, where links are above capacity, namely Purfleet Place and King Street, in most cases links are well below operating capacity. On London Road there are a couple of links with a range of 70-85% of its capacity and the St James' Road approach to the junction of London Road with Blackfriars Road is at 90% so nearing full capacity.

5.3.5. Figure 5-6 shows the flow difference plot between Scenario 2 and the Do Minimum in 2026 for the PM Peak.

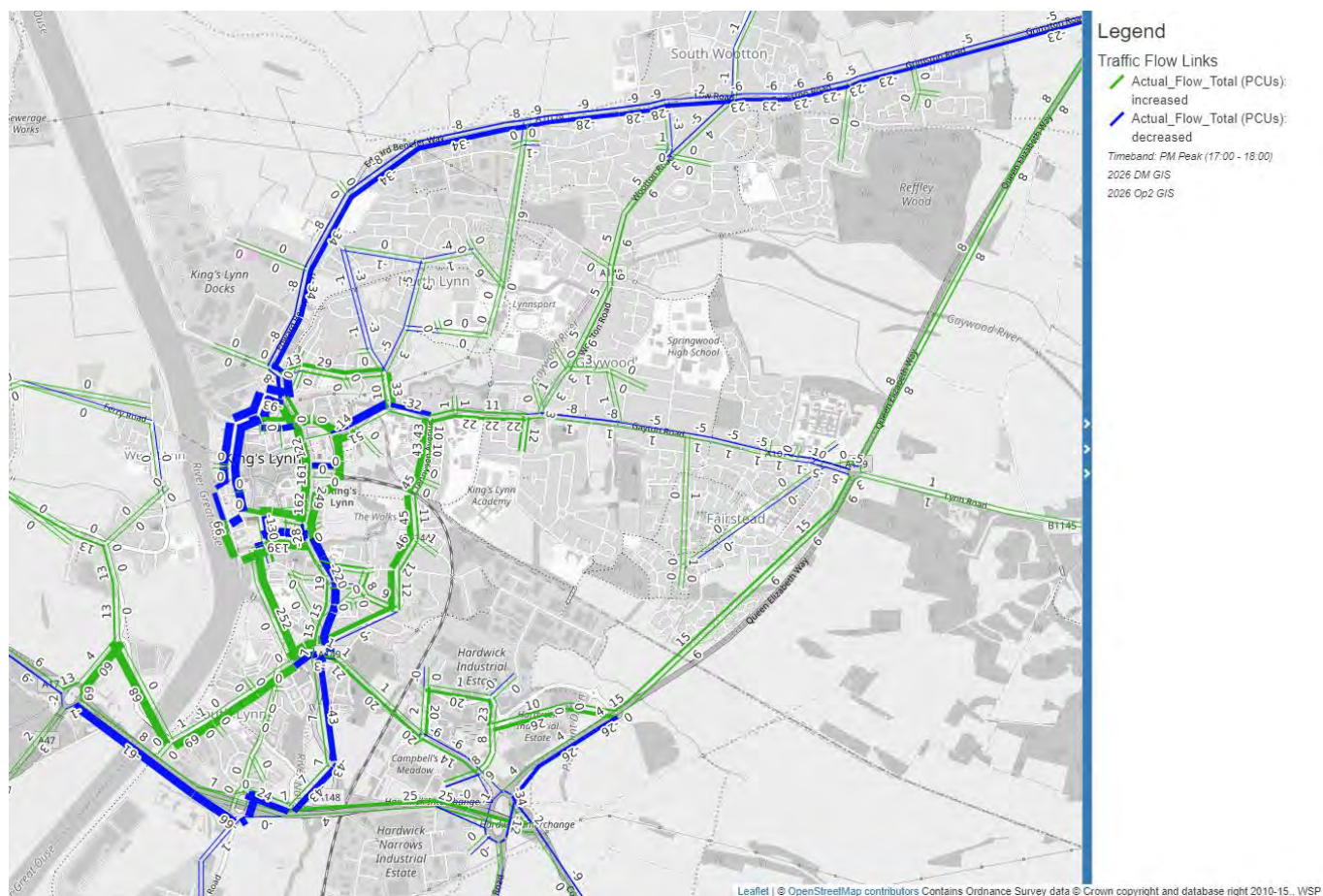


Figure 5-6: Scenario 2 - DM Actual Flow Difference Plot PM Peak

5.3.6. Figure 5-6 shows a decrease in flow on the A47 and an increase on Wisbech Road leading to A47 Road through Clenchwarton Road. Additionally, there is a reduction of traffic on Edward Benerfer Way. There is a decrease in flow on London Road southbound. The decrease in traffic is due to the opening of the Hardings Way, which provides the network with additional capacity. Similar increases in traffic can be seen on Wisbech Road instead of A148 Road, which connects the A47 Roads with King's Lynn Town Centre. Figure C.2-11 of Appendix C shows the traffic flow difference between Scenario 2 and the Do Minimum Network in 2026 for the PM Peak period although zoomed in on the town centre.

5.3.7. Over most of the town centre there are no significant delays, but there is an increase in delay of 16 seconds on Hardings Way Southbound. This is illustrated in Figure C.2-13 showing delay differences between Scenario 2 and the Do Minimum in 2026 for PM Peak.

5.3.8. In terms of the level of service at the St James' Road approach to the Railway Road / Blackfriars Road junction the V/C ratio reaches 85%. Additionally, at Southgates roundabout the London Road approach and exit arm of Hardwick Road reach V/C levels above 100. This is illustrated in Figure C.2-14.

SCENARIO 2 NETWORK SUMMARY STATISTICS

5.3.9. Table 5-2 presents network summary statistics for Scenario 2 and a comparison against the Do Minimum case.

Table 5-2: Scenario 2 Network Summary Statistics

<i>Statistic</i>	Unit	DM		Scenario 2		Scenario 2 - DM	
		AM	PM	AM	PM	AM	PM
<i>Transient Queues</i>	PCU - Hrs	512.1	599.4	512.4	607.4	0.4	8.0
<i>Over-capacity Queues</i>	PCU - Hrs	23.5	39.4	31.8	37.3	8.3	-2.1
<i>Link Cruise Time</i>	PCU - Hrs	1237.6	1329.3	1239.8	1334.9	2.3	5.5
<i>Total Travel Time</i>	PCU - Hrs	1773.1	1968.1	1784.0	1979.5	11.0	11.4
<i>Total Travel Distance</i>	PCU - kms	71087.6	75434.8	71278.4	75692.6	190.8	257.8
<i>Average Speed</i>	kph	40.1	38.3	40.0	38.2	-0.1	-0.1

5.3.10. Table 5-2 shows that Scenario 2 causes marginally more queuing, reduces average speeds and increases total travel time and distance.

SCENARIO 2 SUMMARY

5.3.11. Scenario 2 has similar routing impacts to Scenario 1 although reduces the traffic flow on King Street and encourages the use of the gyratory instead as a result of the link closure. Overall the complimentary measures to the link closure are having no positive impact on overall network performance.

5.4 SCENARIO 3 - HARDINGS WAY

5.4.1. The primary impact of Scenario 3 is also the reassignment of traffic away from London Road and Railway Road to Hardings Way. Figure 5-7 shows the traffic flow differences between Scenario 3 and DM for the AM Peak in 2026.

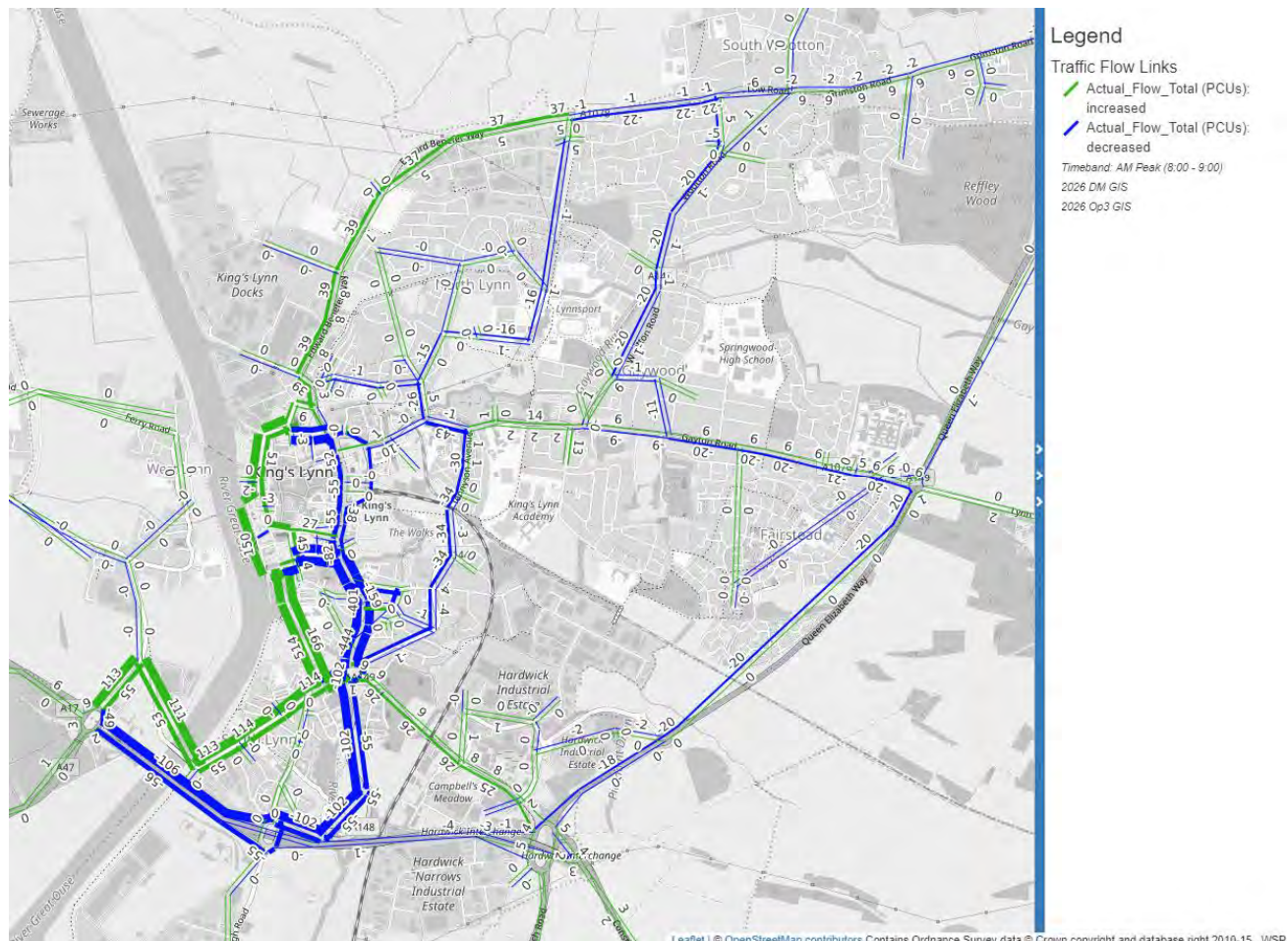


Figure 5-7: Scenario 3 - DM Actual Flow Difference Plot AM Peak Wider Area

- 5.4.2. Figure 5-7 shows a significant increase in traffic on Hardings Way in both directions due to the removal of traffic bans on it. This results in reduced traffic flows on London road and Railway Road. Furthermore, this option reduces the traffic on A148, which in turn increases the traffic on Wisbech Road and provides some relief to the A47 connecting these two roads.
- 5.4.3. There is a small increase in delay on Hardings Way in both directions and on King Street where a significant increase in traffic results in blocking the minor arm of the junction with Purfleet Place and leads to a delay of 31 seconds. This is illustrated in Figure C.3-17.
- 5.4.4. As illustrated in Figure C.3-18, there are no significant Volume/ Capacity issues within the King's Lynn Town centre except at the junction of Purfleet Place with King Street, where the junction experiences delay exiting onto the major arm.
- 5.4.5. Figure 5-8 shows the corresponding traffic flow differences between Scenario 3 and DM for the PM Peak in 2026.

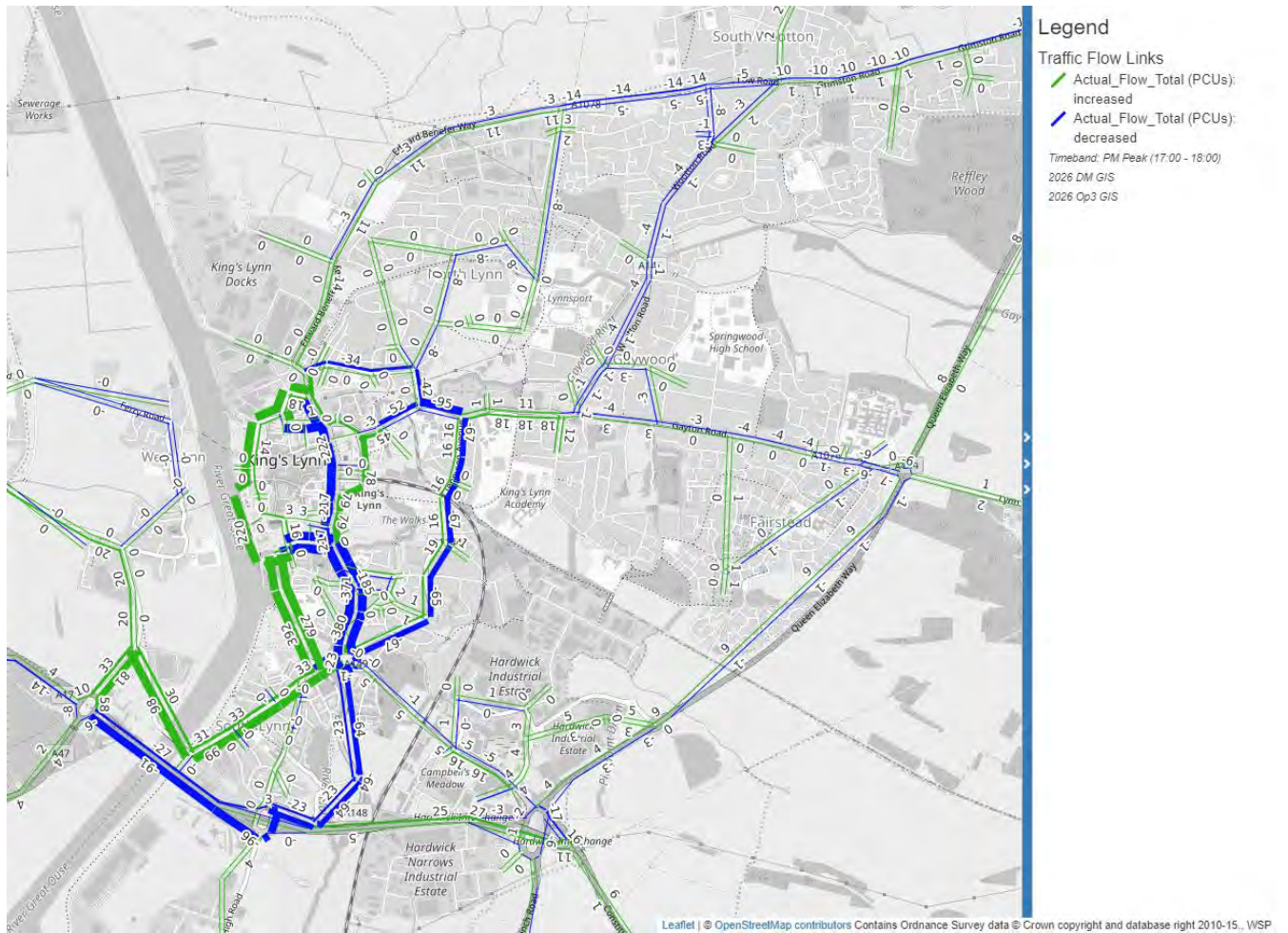


Figure 5-8: Scenario 3 - DM Actual Flow Difference Plot PM Peak

- 5.4.6. Figure 5-8 shows that there is a significant increase in traffic on Hardings Way in both directions as a result of the removal of traffic bans on it. This reduces the traffic flow on London Road and Railway Road. Furthermore, it reduces the traffic on A148, in turn increasing the traffic on Wisbech Road whilst reducing the flow on the A47 road connecting between these two roads.
- 5.4.7. Over most of the town centre there are limited changes in delay. There are small decreases in delay on London Road, whilst there is an increase in delay of 36 seconds on Hardings Way southbound, as expected given the road has been opened to traffic. Figure C.3-21 illustrates this delay.
- 5.4.8. There are a number of junctions where a high V/C is observed within the King's Lynn Town centre, namely the junction of Purfleet Place with King street, Southgates roundabout, and Saturday Market Place. Figure C.3-22 illustrates the Volume/ Capacity ratio as a percentage for Scenario 3 in the 2026 PM Peak.

SELECT LINK ANALYSIS

- 5.4.9. Select Link Analysis has been undertaken to understand the routing of traffic that uses Hardings Way. The results of this Select Link Analysis are presented in Figure 5-9, Figure 5-10, Figure 5-11, and Figure 5-12.

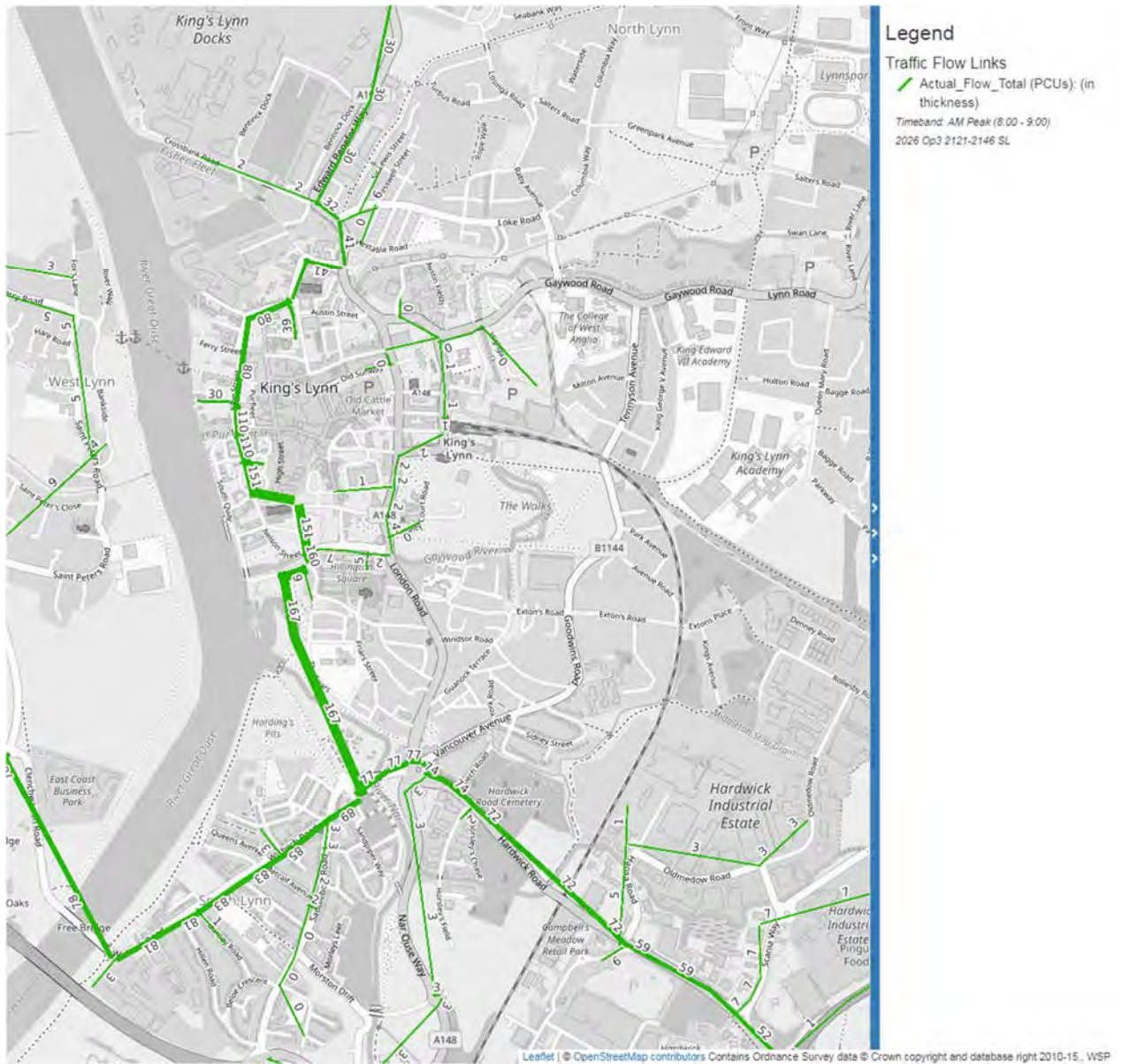


Figure 5-9: Scenario 3 - Select Link Analysis AM Peak Hardings Way Northbound

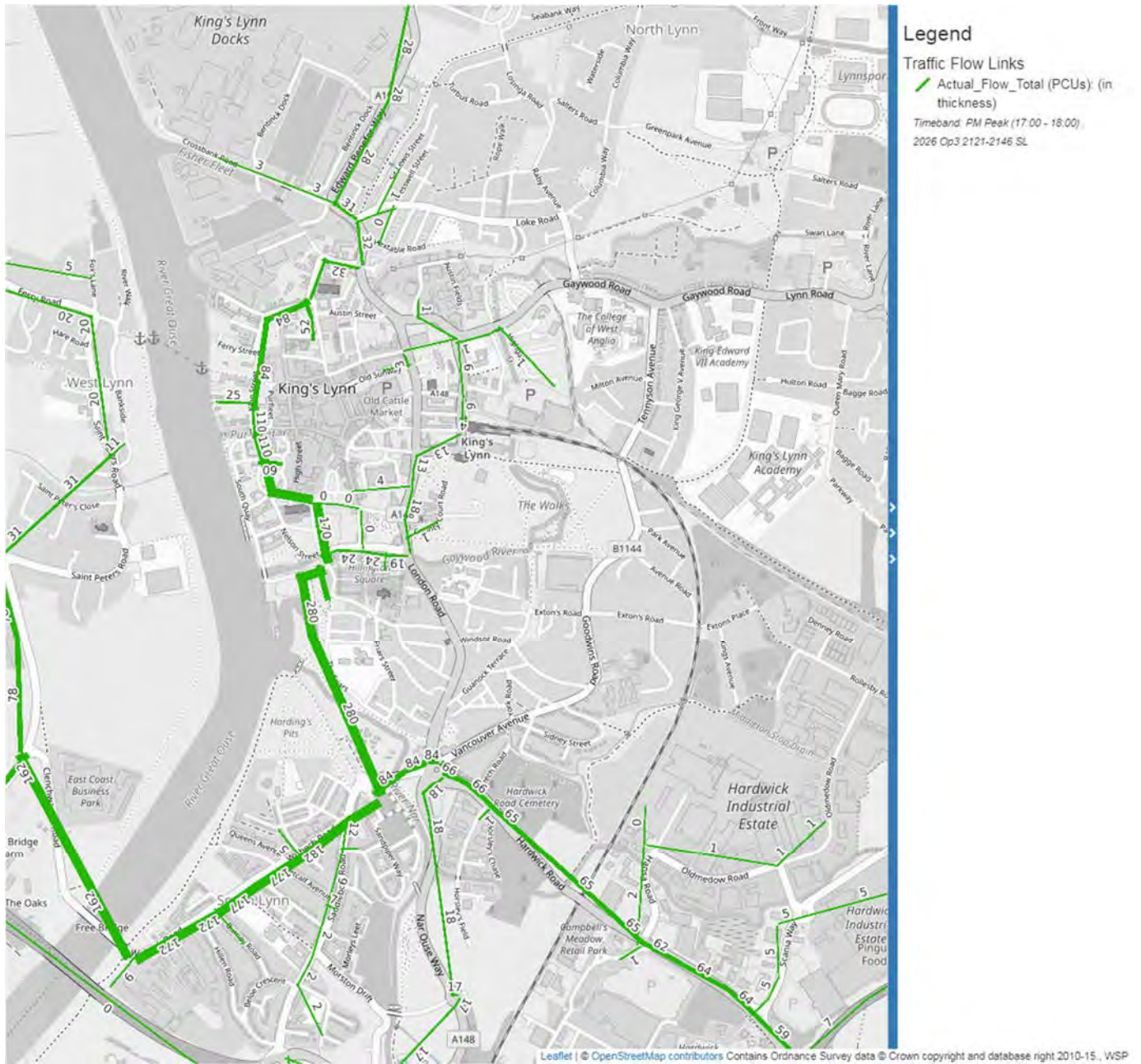


Figure 5-10: Scenario 3 - Select Link Analysis PM Peak Hardings Way Northbound

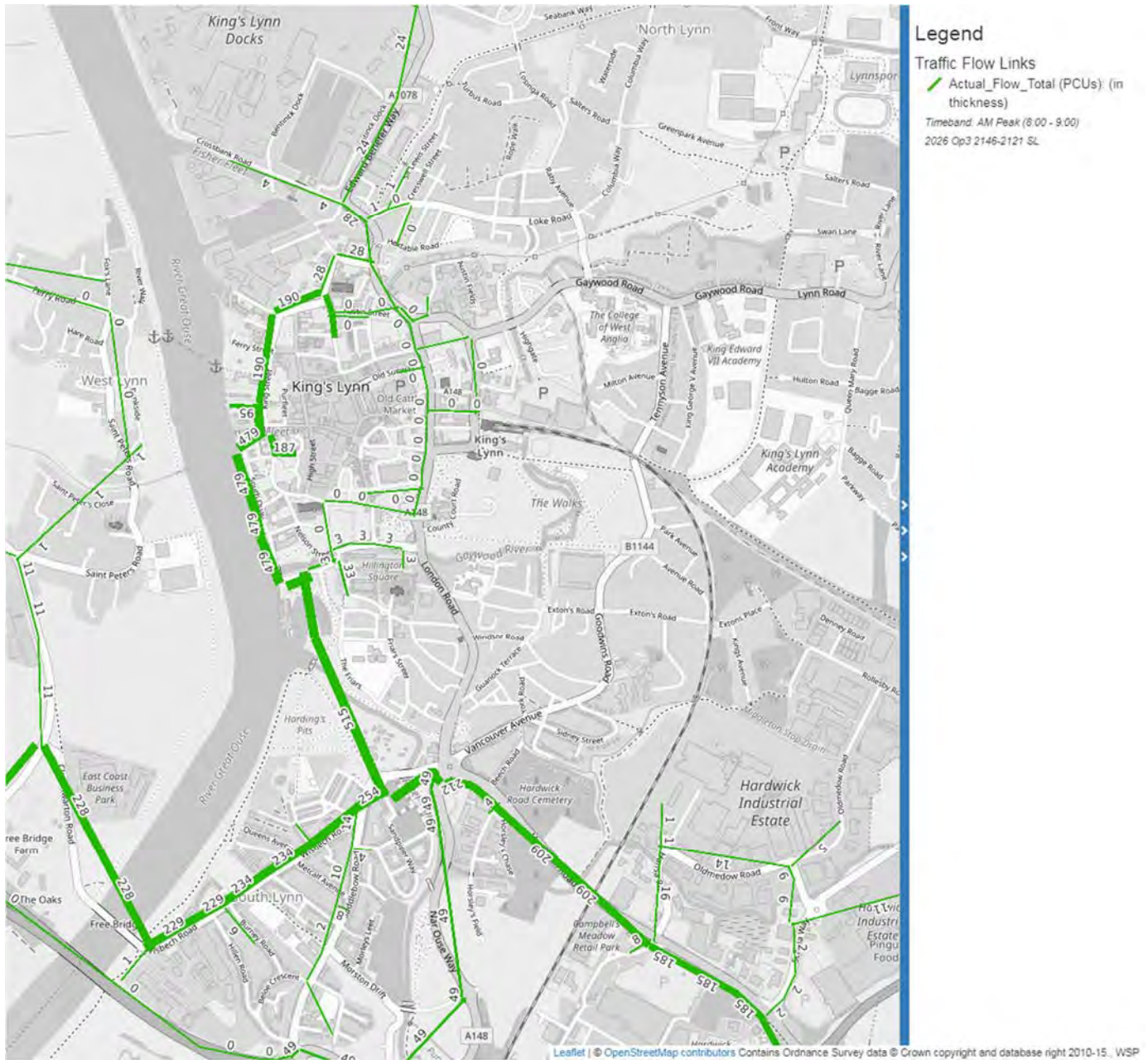


Figure 5-11: Scenario 3 - Select Link Analysis AM Peak Hardings Way Southbound

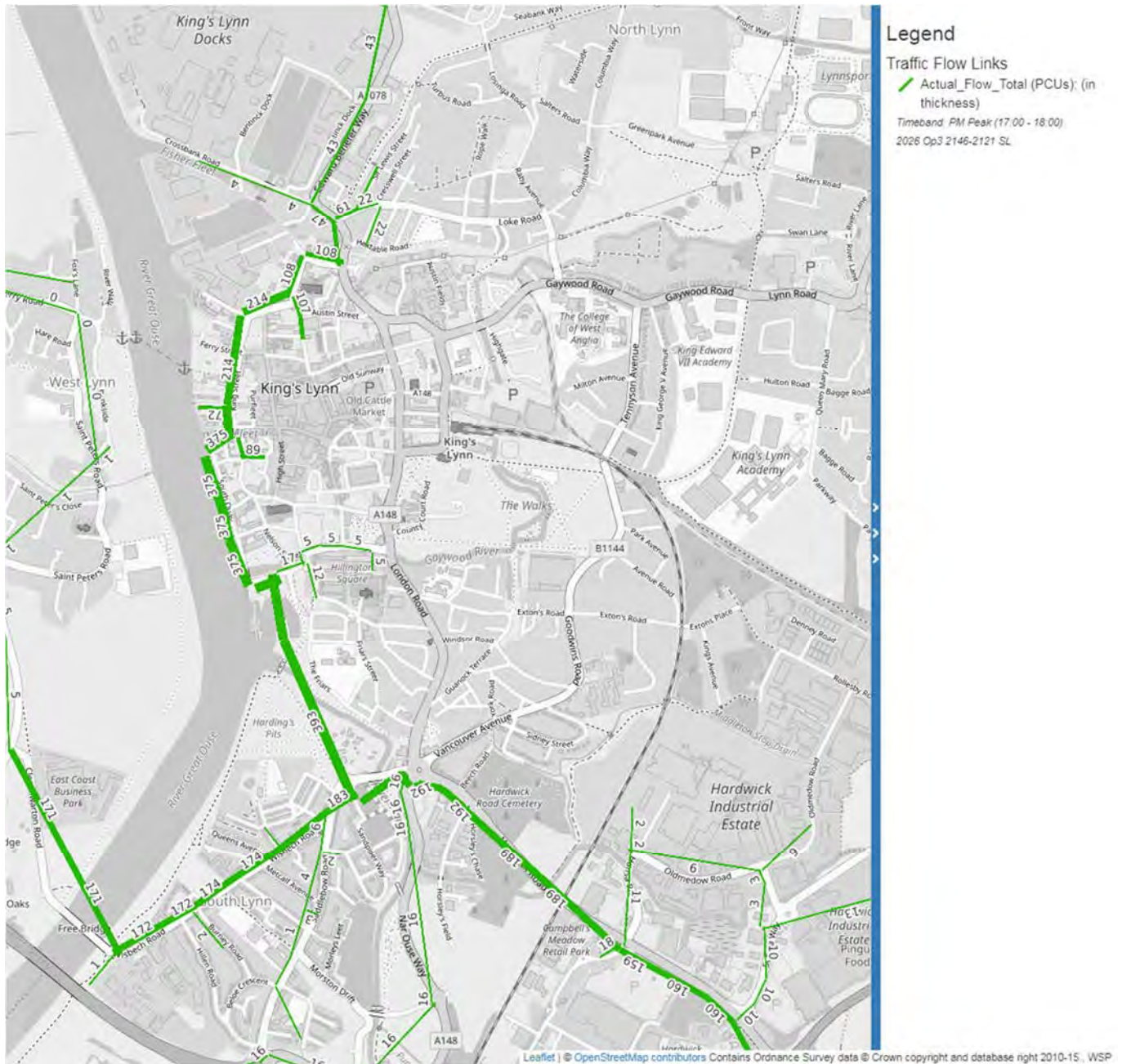


Figure 5-12: Scenario 3 - Select Link Analysis PM Peak Hardings Way Southbound

5.4.10. Traffic using Hardings Way routes through Wisbech Road, London Road, and King's Street. Only a small number of vehicles use Hardings Way route through the town centre via the Railway Road gyratory area.

SCENARIO 3 NETWORK SUMMARY STATISTICS

5.4.11. Table 5-3 presents network summary statistics for Scenario 3 and a comparison against the Do Minimum case.

Table 5-3: Scenario 3 Network Summary Statistics

<i>Statistic</i>	Unit	DM		Scenario 3		Scenario 3 - DM	
		AM	PM	AM	PM	AM	PM
<i>Transient Queues</i>	PCU - Hrs	512.1	599.4	488.2	568.9	-23.9	-30.5
<i>Over-capacity Queues</i>	PCU - Hrs	23.5	39.4	28.3	33.9	4.8	-5.4
<i>Link Cruise Time</i>	PCU - Hrs	1237.6	1329.3	1238.0	1337.6	0.4	8.3
<i>Total Travel Time</i>	PCU - Hrs	1773.1	1968.1	1754.4	1940.5	-18.7	-27.6
<i>Total Travel Distance</i>	PCU - kms	71087.6	75434.8	70955.0	75563.7	-132.6	128.9
<i>Average Speed</i>	kph	40.1	38.3	40.4	38.9	0.4	0.6

5.4.12. Table 5-3 shows that Scenario 3 has a positive impact on total travel times and queueing as these are reduced. Average speeds are also seen to increase.

SCENARIO 3 SUMMARY

5.4.13. Like Scenarios 1 and 2, Scenario 3 has a significant impact on the traffic levels using London Road and Railway Road by causing significant reassignment to Hardings Way and King Street. There is a reassignment from the A148 to Wisbech Road, and this reduces traffic on the A47 between the A47 / A17 junction and the A47 / A148 junction.

5.5 SCENARIO 4 - HARDINGS WAY COMPLIMENTARY MEASURE

5.5.1. Scenario 4's primary impact is the reassignment of traffic given the new route choice provided by the opening of Hardings Way. Figure 5-13 shows the traffic flow differences between Scenario 4 and DM for AM Peak in 2026.

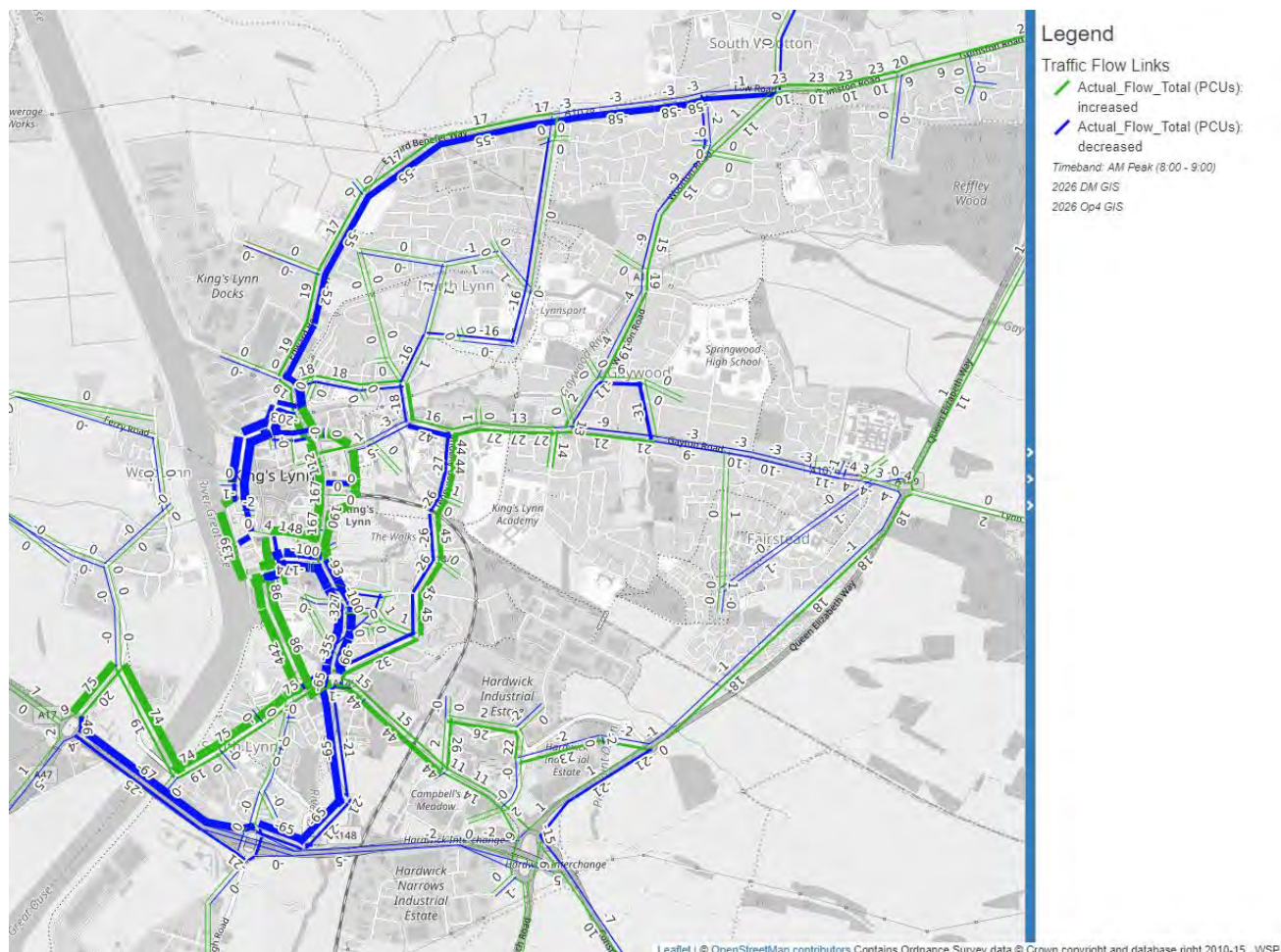


Figure 5-13: Scenario 4 - DM Actual Flow Difference Plot AM Peak

5.5.2. Figure 5-13 shows that there is a significant increase in traffic on Hardings Way in both the directions due to the removal of traffic bans on it, which reduces traffic flows on London Road. There is also a reduction in traffic flow at King Street which results in the increase of traffic on Railway Road. Furthermore, shows a significant increase on Wisbech Road with a countering reduction in traffic on A148 Road. Figure C.4-25 shows the corresponding delay difference plot between Scenario 4 and the Do Minimum in the 2026 AM Peak. Figure C.4-25 shows that there is a decrease in delay on London Road and the adjacent areas, and minor increase of delay on Hardings Way in both directions. The largest increase is seen at Purfleet Place where there is an increase of 14 seconds.

5.5.3. There are a small number of links where V/C is close to or exceeding capacity within the King's Lynn Town centre, namely Purfleet Place with King Street junction and the junction of at Loke Road with Gaywood Road this is illustrated in Figure C.4-26.

5.5.4. Figure 5-14 shows the traffic flow differences between Scenario 4 and DM in the PM Peak 2026.

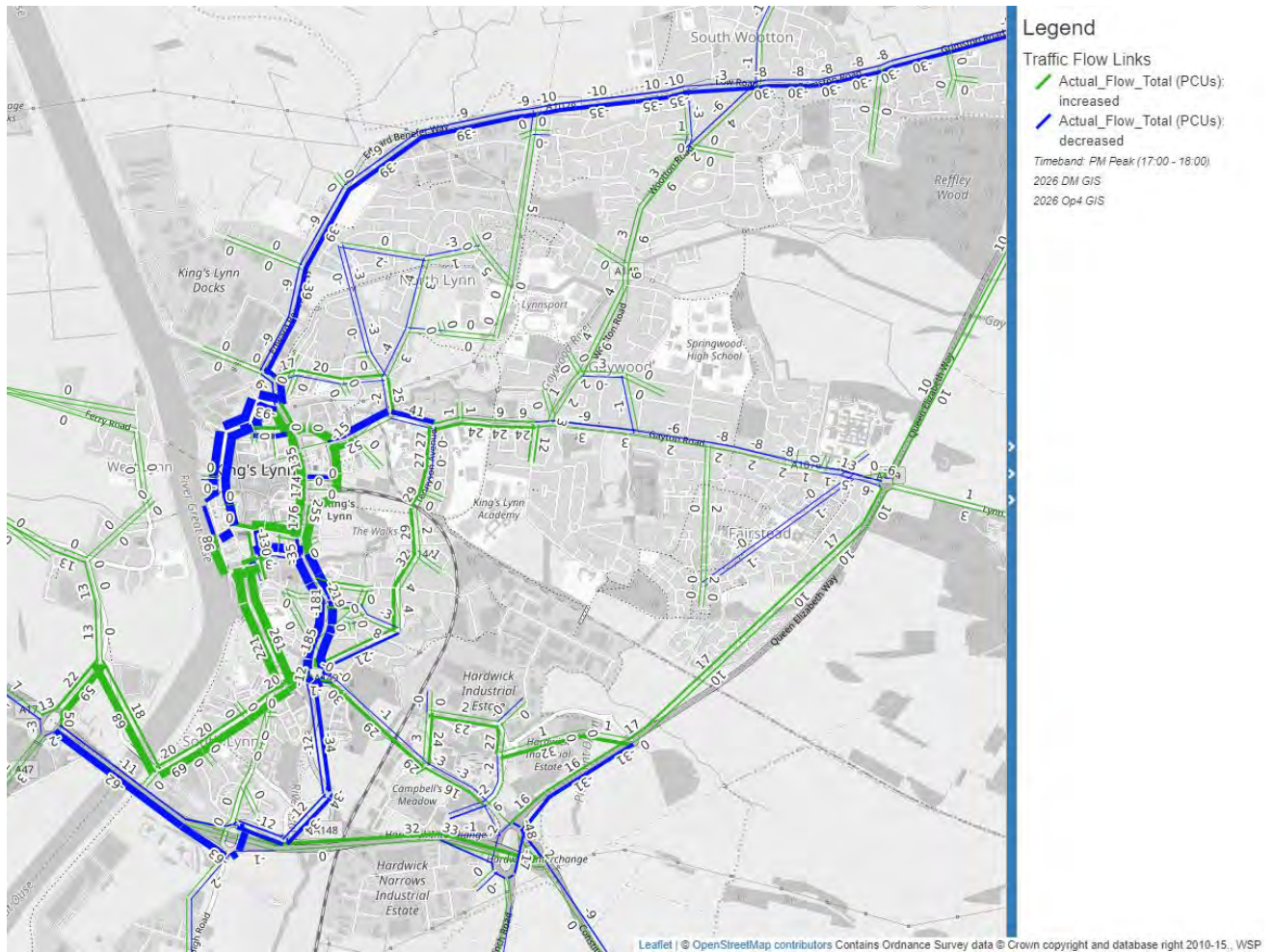


Figure 5-14: Scenario 4 - DM Actual Flow Difference Plot PM Peak

- 5.5.5. Figure 5-14 shows a significant increase in traffic on Hardings Way in both directions due to the removal of traffic bans on it, which reduces traffic levels on London Road. There is also reduction in traffic flow along King Street, due to the traffic ban, leading to an increase in traffic on Railway Road.
- 5.5.6. It also shows a significant increase in traffic on A47 Road in one direction as expected. There is also a significant reduction in traffic flow at Edward Benefer Way.
- 5.5.7. In this scenario there are decreases in delay on London Road and the adjacent areas, and significant increase in delay on Hardings Way of 19 seconds southbound. This is illustrated on Figure C.4-29. Although not shown on this figure there is a small increase of 11 seconds on Queen Elizabeth Road as a result of the proposed mitigation.
- 5.5.8. There are a few links where the volume/capacity is at or nearing capacity within the King's Lynn Town Centre, namely the junction of Saturday Market Place with Church Street. This is illustrated in Figure C.4-30.

SCENARIO 4 NETWORK SUMMARY STATISTICS

- 5.5.9. Table 5-4 presents network summary statistics for Scenario 4 and a comparison against the Do Minimum case.

Table 5-4: Scenario 4 Network Summary Statistics

<i>Statistic</i>	Unit	DM		Scenario 4		Scenario 4 - DM	
		AM	PM	AM	PM	AM	PM
<i>Transient Queues</i>	PCU - Hrs	512.1	599.4	514.6	598.0	2.5	-1.4
<i>Over-capacity Queues</i>	PCU - Hrs	23.5	39.4	32.8	37.5	9.3	-1.9
<i>Link Cruise Time</i>	PCU - Hrs	1237.6	1329.3	1239.9	1333.5	2.3	4.1
<i>Total Travel Time</i>	PCU - Hrs	1773.1	1968.1	1787.2	1968.9	14.2	0.8
<i>Total Travel Distance</i>	PCU - kms	71087.6	75434.8	71260.5	75615.6	172.9	180.8
<i>Average Speed</i>	kph	40.1	38.3	39.9	38.4	-0.2	0.1

5.5.10. Table 5-4 shows that there is an increase in over capacity queues in the AM, although a small reduction in the PM. This leads to increased overall travel times and distance.

SCENARIO 4 SUMMARY

5.5.11. Scenario 4 has similar impacts to Scenario 1 to 3, with increased traffic on Hardings Way resulting in in traffic routing through South Quay and avoiding London Road. In common with Scenario 2 the closure of King's Street leads to increased traffic on Railway Road.

5.6 SCENARIO 5 - TRAFFIC SIGNALS

- 5.6.1. The appraisal of the junction of John Kennedy Road / Loke Road is likely to be impacted by the lower than observed traffic flow that was identified in the validation screenline across this road. Given in the base model this road has less traffic than observed, the patterns seen in this Scenario would likely persist if the base model performed better in this location, and it is likely the effects seen would be more pronounced given the increased traffic levels.

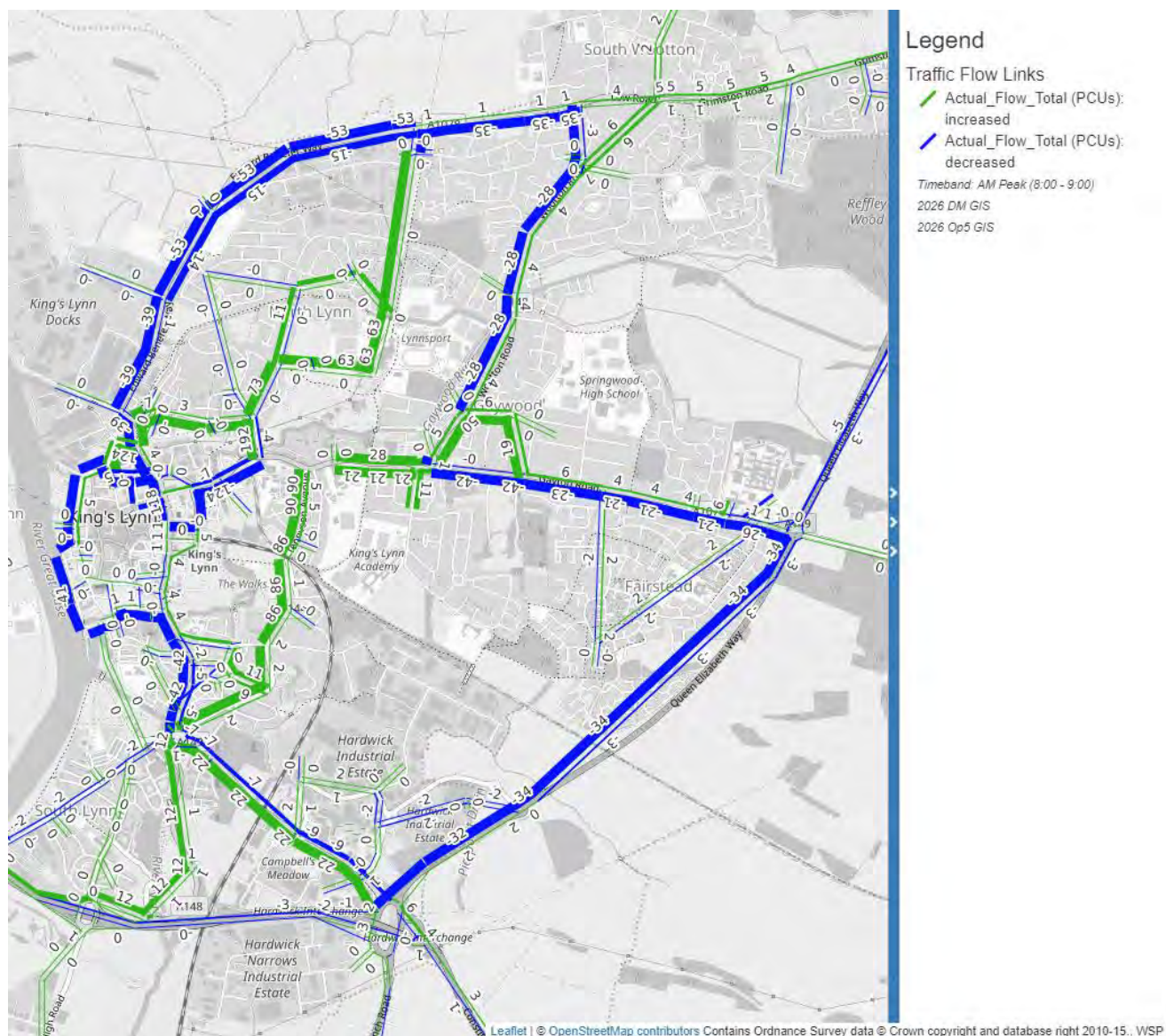


Figure 5-15: Scenario 5 – Actual Flow Difference Plot AM Peak

- 5.6.2. Figure 5-15 shows the flow difference plot between Scenario 5 and the Do Minimum in 2026 for the AM Peak. It shows that there is a decrease in flow on London Road and on King Street, and in turn a significant increase in traffic on the B1144 road. This is a result of the improved performance of the roundabout (compared to existing traffic signals) which resulted in the elimination of cyclic delay occurring due to the presence of signals in the base year model. There is also a significant reduction (100+ vehicles) on Gaywood Road approaching the gyratory and a large increase on Tennyson

Avenue (80+ vehicles). It shows that a decrease in flow on the A149 Road and Edward Benefer Way, and counter increase in flow on B1144 Road and Reid Way.

- 5.6.3. In the AM a reduction in delay is observed adjacent to the roundabout scheme for the junction of Loke Road with Gaywood Road and also a reduction of delay on London Road. There is a reduction of 15 seconds on Gaywood Road westbound. This is illustrated in Figure C.5-33. To the edge of the figure there is an increase of 29 seconds on Gayton Road.
- 5.6.4. There are only a couple of links at or exceeding capacity and therefore have high Volume/ Capacity ratios, namely London Road north of Vallingers Road and A1076 Gayton Road. These are shown in Figure C.5-35.
- 5.6.5. Figure 5-16 shows the flow difference plot between Scenario 5 and the Do Minimum in 2026 for the PM Peak.

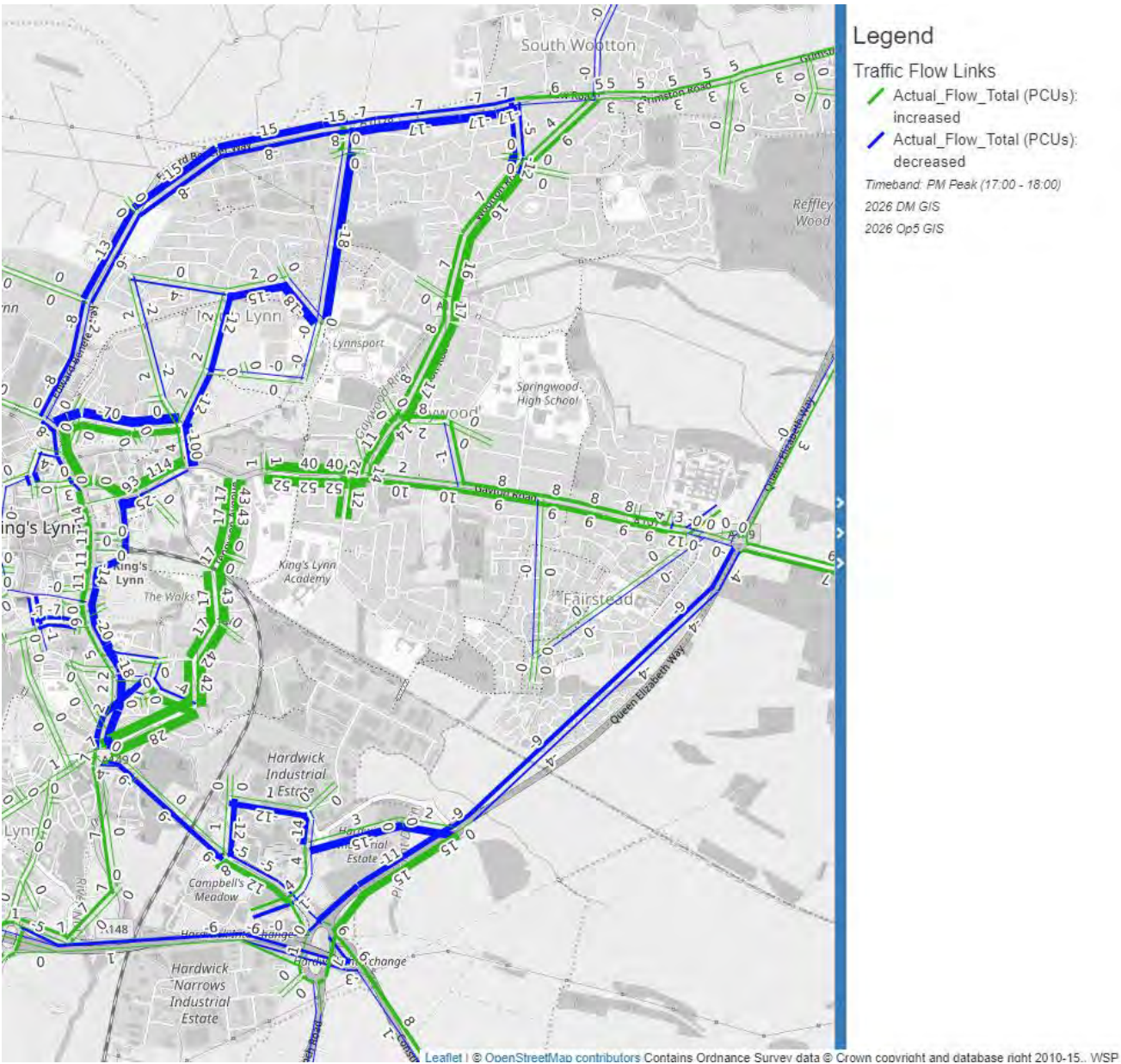


Figure 5-16: Scenario 5 – DM Actual Flow Difference Plot PM Peak

- 5.6.6. The figure shows a decrease of flow on the London Road as a result of an increase in traffic on the B1144. This figure also shows there is no significant impact seen for PM period across wider area. There is a small increase in flow on the A148 and associated decrease in traffic on the Edward Benefer Way road and Field Way.
- 5.6.7. In terms of delay, over most of the network there are only small changes, however, there is a reduction of 30 seconds on Gaywood Road westbound. There are no significant changes in delay for traffic in the PM peak in the wider area. Figure C.5-38 illustrates these delay changes for the PM.
- 5.6.8. In terms of Volume/Capacity ratios, most links within King's Lynn during the PM Peak are well within capacity. However, Southgates roundabout does have multiple arms with Volume Capacity ratio's above 85%. These volume/capacity ratios on a link basis for Scenario 5 are illustrated in Figure C.5-40.

SCENARIO 5 NETWORK SUMMARY STATISTICS

- 5.6.9. Table 5-5 presents network summary statistics for Scenario 5 and a comparison against the Do Minimum case.

Table 5-5: Scenario 5 Network Summary Statistics

<i>Statistic</i>	Unit	DM		Scenario 5		Scenario 5 - DM	
		AM	PM	AM	PM	AM	PM
<i>Transient Queues</i>	PCU - Hrs	512.1	599.4	495.9	589.5	-16.2	-9.9
<i>Over-capacity Queues</i>	PCU - Hrs	23.5	39.4	25.7	36.6	2.2	-2.8
<i>Link Cruise Time</i>	PCU - Hrs	1237.6	1329.3	1242.4	1333.3	4.9	4.0
<i>Total Travel Time</i>	PCU - Hrs	1773.1	1968.1	1764.0	1959.4	-9.1	-8.8
<i>Total Travel Distance</i>	PCU - kms	71087.6	75434.8	71076.5	75636.0	-11.1	201.2
<i>Average Speed</i>	kph	40.1	38.3	40.3	38.6	0.2	0.3

- 5.6.10. Table 5-5 shows that Scenario 5 has a positive impact on the level of transient queues and total travel time, and provides a small increase in average speeds.

SCENARIO 5 SUMMARY

- 5.6.11. The three different junction schemes cause a number of reassignments to occur, including changes in flow along Gaywood Road and Tennyson Avenue to Edward Benefer Way. The schemes provide a small reduction of traffic within the town centre / gyratory area, although some of the wider reassignment impacts are more significant (100+ vehicles per hour in some places). A set of sensitivity tests looking at each junction independently may be advisable to isolate the reassignment impacts to achieve desired rerouting. The increases in traffic along Loke Road are perhaps not desirable given the residential nature of the street.

5.7 GYRATORY – BLACKFRIARS ROAD TWO-WAY (SCENARIO 6)

- 5.7.1. Scenario 6 primarily has reassignment impacts, although a couple of links see some large delay increases.
- 5.7.2. Figure 5-17 shows the flow difference plot between Scenario 6 and the Do Minimum in 2026 for AM Peak.

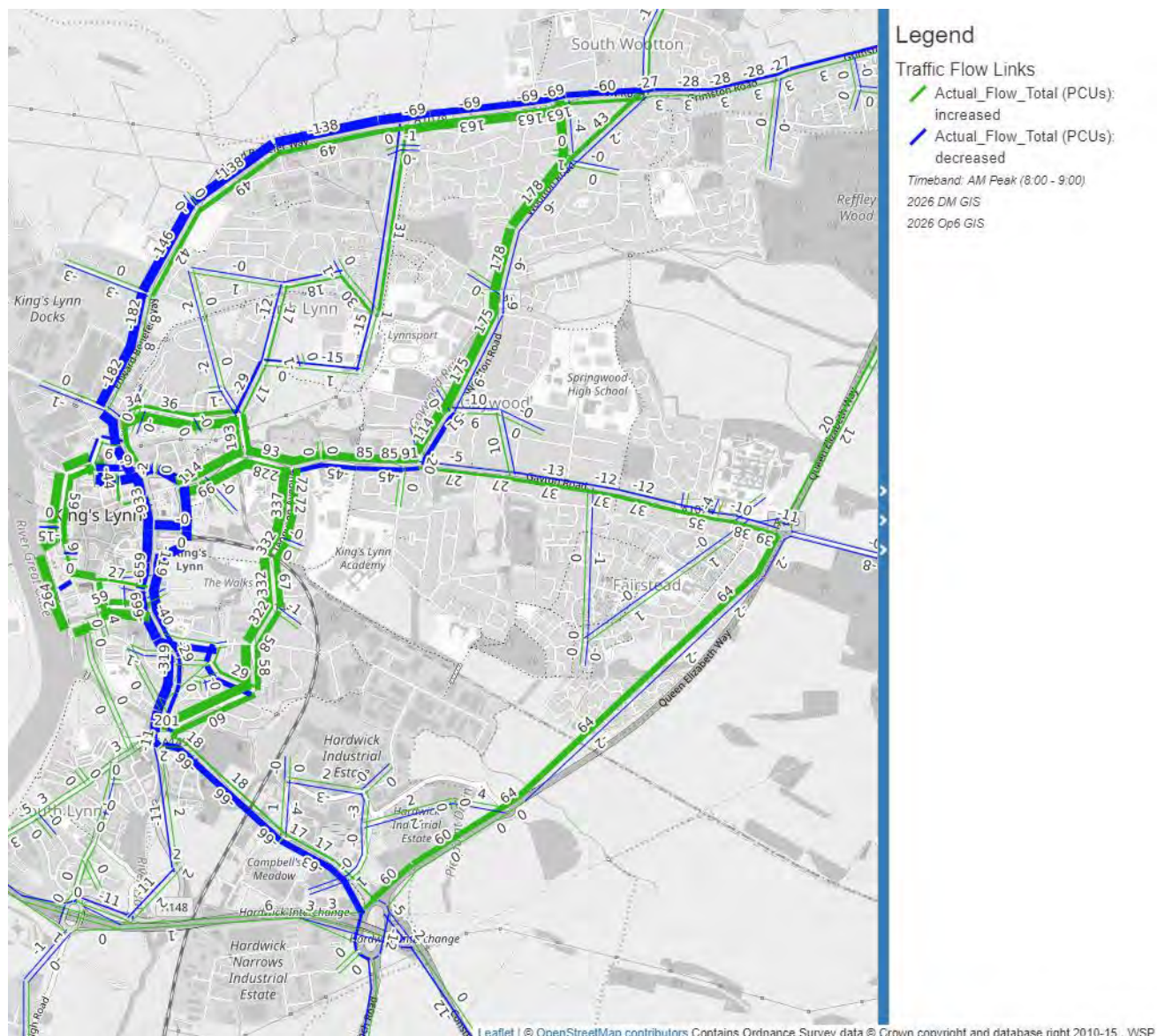


Figure 5-17: Scenario 6 – DM Actual Flow Difference Plot AM Peak

- 5.7.3. There is a significant decrease in flow on London Road and Railway Road with counter increase of flow on B1144 Road and King Street. There is a decrease in flow of up to 182 PCUs observed on Edward Benefer Road, with counter increase in flow on A148 Road.
- 5.7.4. There is significant reduction in delay along Railway Road, however this is countered by some very significant increases, such as 302 seconds on Purfleet Place and 55 seconds on Gaywood Road. There is however a significant increase in delay at the Gaywood Road / Loke Road junction. There

are no significant changes in delay across the wider network. Figure C.6-43 illustrates the delay difference between Scenario 6 and the Do Minimum in 2026 for AM Peak.

5.7.5. In this scenario a few links have a poor level of service due to the increased flow, resulting in a V/C ratio more than 90%. Key links experiencing stress are: Vancouver Avenue Eastbound, Purfleet Place, Norfolk Street and Blackfriars Road between Norfolk Street and Portland Street. Figure C.6-45 shows the Volume/ Capacity ratio as a percentage for Scenario 6 in 2026 for AM Peak.

5.7.6. Figure 5-18 shows the flow difference plot between Scenario 6 and the Do Minimum in 2026 for PM Peak.

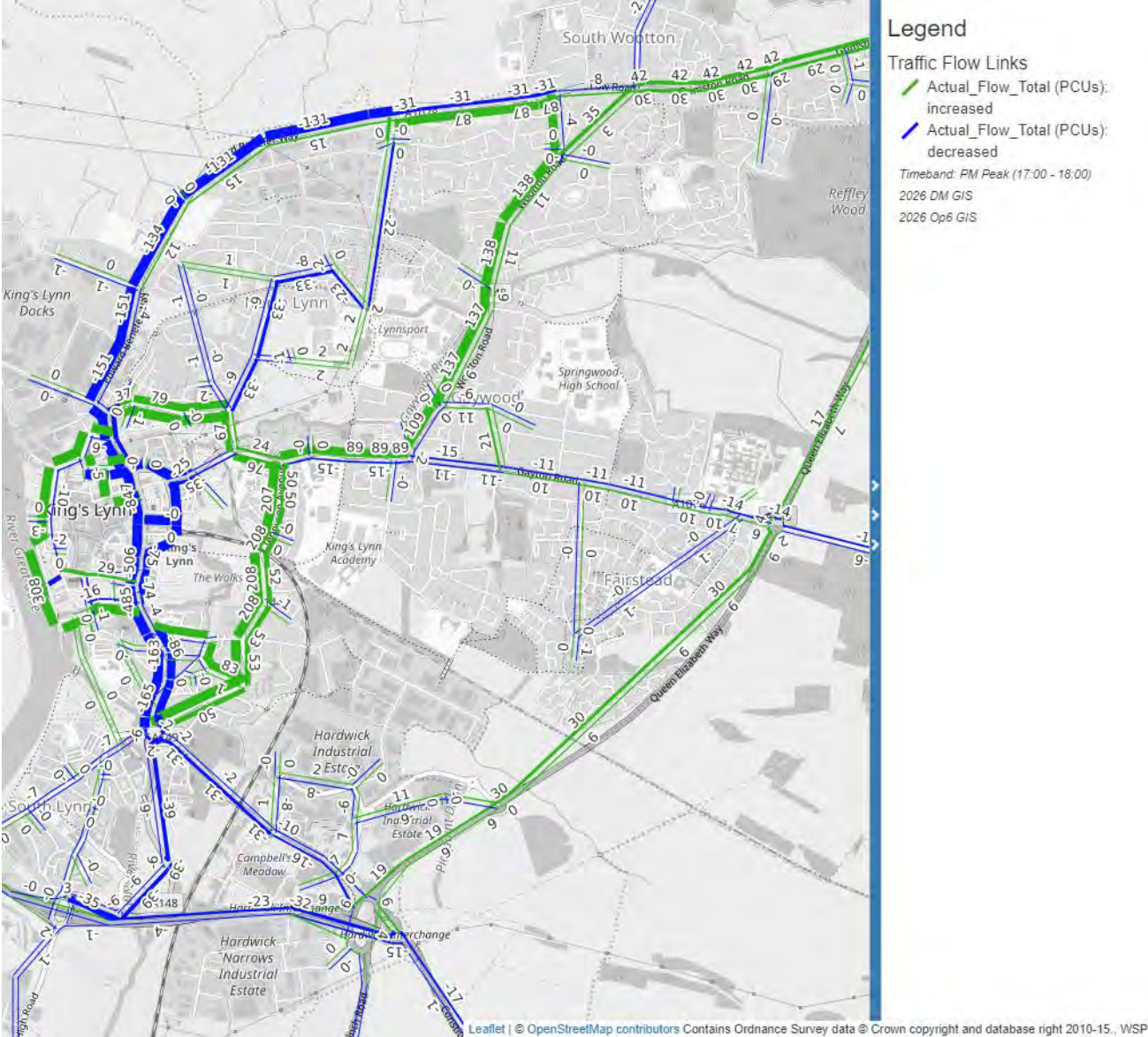


Figure 5-18: Scenario 6 – DM Actual Flow Difference Plot PM Peak

5.7.7. There is a significant reduction in flow on Railway Road (up to 1009 PCUs). In turn traffic on B1144 Road and King Street has increased. A reduction in flow of up to 151 PCUs is observed on Edward Benerfer Way, in turn traffic on the A148 has increased.

5.7.8. There is a considerable increase of 62 seconds in delay on Gaywood Road Westbound at the junction with Loke Road, as well as the junction of Gaywood Road and Tennyson Avenue. There is also an increase in delay at the Blackfriars Road / Austin Street junction. The largest increase of 72 seconds is seen at Purfleet Place. There are no noticeable changes in delay across the wider area. These delays difference between Scenario 6 and the Do Minimum in 2026 for PM Peak are illustrated in Figure C.6-48.

5.7.9. Figure C.6-50 shows the Volume/ Capacity ratio as a percentage for Scenario 6 in 2026 for PM Peak. There are few links at or over capacity, namely Saturday Market Place, Purfleet Place, the Southgates roundabout and Blackfriars Road. Approach arms to the Gaywood Road / Tennyson Avenue roundabout also have volume capacity ratios over 90%.

SCENARIO 6 NETWORK SUMMARY STATISTICS

5.7.10. Table 5-6 presents network summary statistics for Scenario 6 and a comparison against the Do Minimum case.

Table 5-6: Scenario 6 Network Summary Statistics

<i>Statistic</i>	<i>Unit</i>	DM		Scenario 6		Scenario 6 - DM	
		AM	PM	AM	PM	AM	PM
<i>Transient Queues</i>	PCU - Hrs	512.1	599.4	539.6	619.4	27.5	20.1
<i>Over-capacity Queues</i>	PCU - Hrs	23.5	39.4	78.4	59.4	55.0	20.0
<i>Link Cruise Time</i>	PCU - Hrs	1237.6	1329.3	1256.8	1342.3	19.2	13.0
<i>Total Travel Time</i>	PCU - Hrs	1773.1	1968.1	1874.8	2021.2	101.7	53.1
<i>Total Travel Distance</i>	PCU - kms	71087.6	75434.8	71769.5	75812.1	681.9	377.3
<i>Average Speed</i>	kph	40.1	38.3	38.3	37.5	-1.8	-0.8

5.7.11. Table 5-6 shows that Scenario 6 leads to increases in queueing, travel time and travel distance and a reduction in average speed.

SCENARIO 6 SUMMARY

5.7.12. In Scenario 6 traffic is seen to reassign away from gyratory area to King Street, Loke Road and Tennyson Avenue. There is significant increase in delay at the Gaywood Road / Loke Road junction. This delay increase could be addressed through signal optimisation or junction reconfiguration to account for the change in flow patterns. Strategic reassignment is also observed in northbound traffic (100 + vehicles) in both time periods shifting from Edward Benefer Way to Wootton Road.

5.8 GYRATORY RAILWAY ROAD TWO WAY (SCENARIO 7)

- 5.8.1. Scenario 7 causes reassignment away from the gyratory although not as much as in Scenario 6. Figure 5-19 shows the flow difference plot between Scenario 7 and the Do Minimum in 2026 for AM Peak.

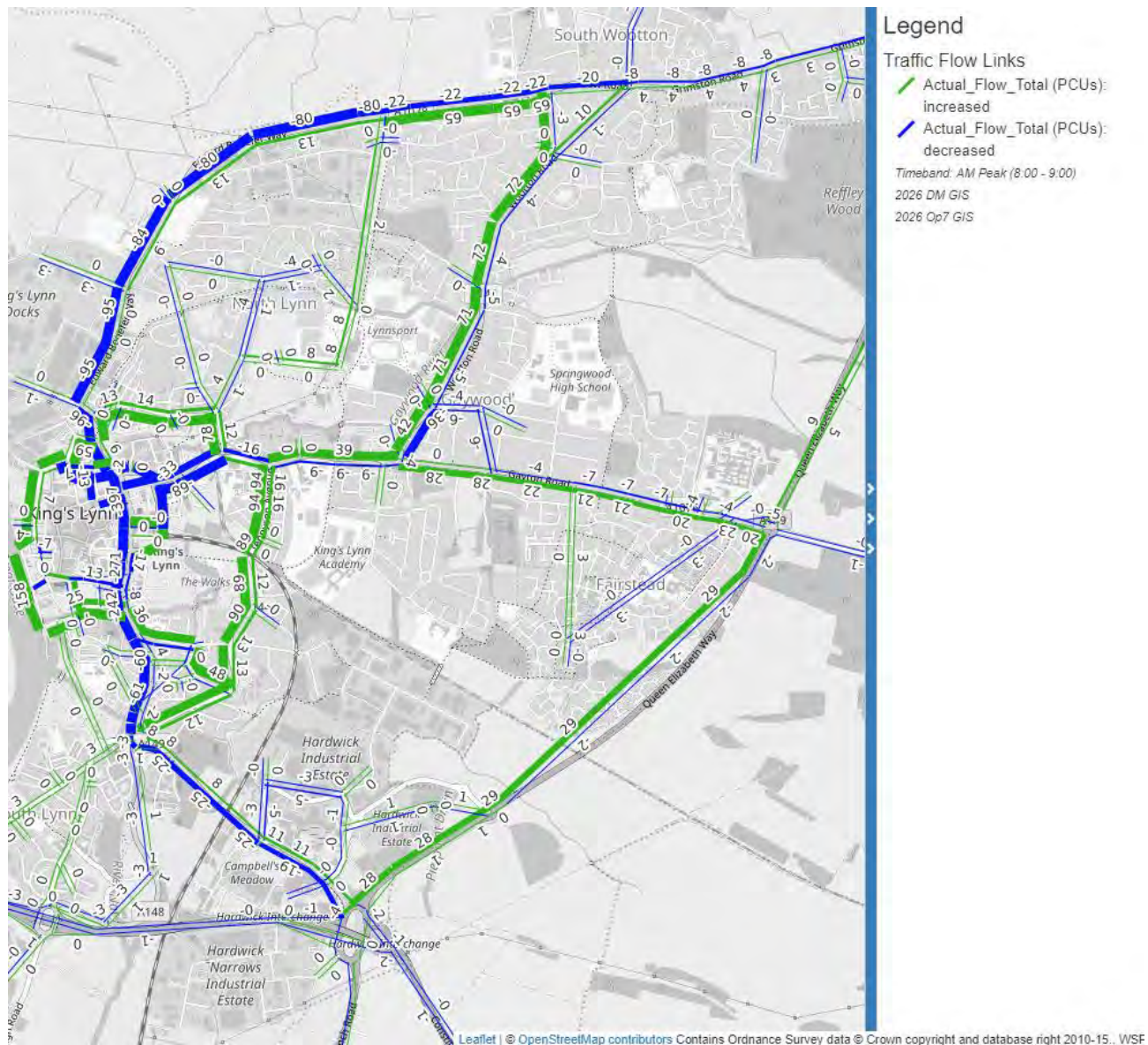


Figure 5-19: Scenario 7 – DM Actual Flow Difference Plot AM Peak

- 5.8.2. There is noticeable reduction in flow has been observed on Railway Road (up to 397 PCUs), and consequently traffic on B1144 and King Street has increased. There is a reduction of up to 95 PCUs along Edward Benefer Way with a counter increase of up to 72 PCUs on the A148.
- 5.8.3. There are some modest delay changes (positive and negative) around the gyratory. The John Kennedy Road approach to the Austin Street junction sees an increase of 11 seconds, whilst Blackfriars Road Southbound sees an increase of 24 seconds. Wellesley Street is seen to have experience a delay of 58 seconds. The largest increase of 80 seconds is seen as Purfleet Place

eastbound. Figure C.7-53 shows the delay difference between Scenario 7 and the Do Minimum in 2026 for AM Peak.

- 5.8.4. Within this town centre area there are two links which are at or near capacity. These are the junction of Railway Road with Blackfriars Road and the junction of Purfleet Place with King Street. Figure C.7-54 illustrates these Volume/ Capacity ratios as a percentage for Scenario 7 in 2026 for AM Peak.
- 5.8.5. Figure 5-20 shows the flow difference plot between Scenario 7 and the Do Minimum in 2026 for PM Peak.



Figure 5-20: Scenario 7 – DM Actual Flow Difference Plot PM Peak

- 5.8.6. A significant reduction in flow, up to 327, is observed on Railway Road, and a reduction of up to 343 on Blackfriars Road, which leads to an increase in traffic on the B1144 and King Street. The western end of Gaywood Road / Littleport Street also sees a reduction to/from the east. Portland Street sees an increase of 302 vehicles as a consequence of the changes in the configuration of the gyratory.
- 5.8.7. There are a number of links around the gyratory each with increases of approximately 20 seconds, which combined adds considerably to the overall travel time around the gyratory. There is also an increase of 23 seconds on Gaywood Road east of Tennyson Avenue. These delays are illustrated in Figure C.7-56 which shows the delay differences between Scenario 7 and the Do Minimum in 2026 for PM Peak.
- 5.8.8. There are a few links which are at or near capacity, namely some links at the junction of Railway Road with Blackfriars Road, the junction of Southgates roundabout and the junction of Loke Road with Gaywood Road. Figure C.7-57 shows the Volume/ Capacity ratio as a percentage for Scenario 7 in 2026 for PM Peak.

SCENARIO 7 NETWORK SUMMARY STATISTICS

- 5.8.9. Table 5-7 presents network summary statistics for Scenario 7 and a comparison against the Do Minimum case.

Table 5-7: Scenario 7 Network Summary Statistics

<i>Statistic</i>	Unit	DM		Scenario 7		Scenario 7 - DM	
		AM	PM	AM	PM	AM	PM
<i>Transient Queues</i>	PCU - Hrs	512.1	599.4	519.5	619.7	7.5	20.3
<i>Over-capacity Queues</i>	PCU - Hrs	23.5	39.4	45.1	39.0	21.7	-0.4
<i>Link Cruise Time</i>	PCU - Hrs	1237.6	1329.3	1244.7	1333.0	7.2	3.7
<i>Total Travel Time</i>	PCU - Hrs	1773.1	1968.1	1809.4	1991.7	36.3	23.5
<i>Total Travel Distance</i>	PCU - kms	71087.6	75434.8	71309.5	75587.2	221.9	152.4
<i>Average Speed</i>	kph	40.1	38.3	39.4	38.0	-0.7	-0.4

- 5.8.10. Table 5-7 shows that Scenario 7 increases queuing, travel times, and travel distances, with a small reduction in average speeds.

SCENARIO 7 SUMMARY

- 5.8.11. In common with Scenario 6, there is significant reassignment away from the gyratory to parallel routes: King Street, Tennyson Avenue. There is also reassignment from Edward Benefer Way to Wootton Road. Loke Road is predicted an increase in traffic which may not be desirable given its residential nature.

5.9 RAILWAY ROAD (SCENARIO 8)

5.9.1. Scenario 8, in common with the other scenarios primarily affects the assignment of traffic within the town centre. In contrast, however, the reassignment impacts do not spread as far out as some of the other scenarios. Figure 5-21 shows the flow difference plot between Scenario 8 and the Do Minimum in 2026 for AM Peak.

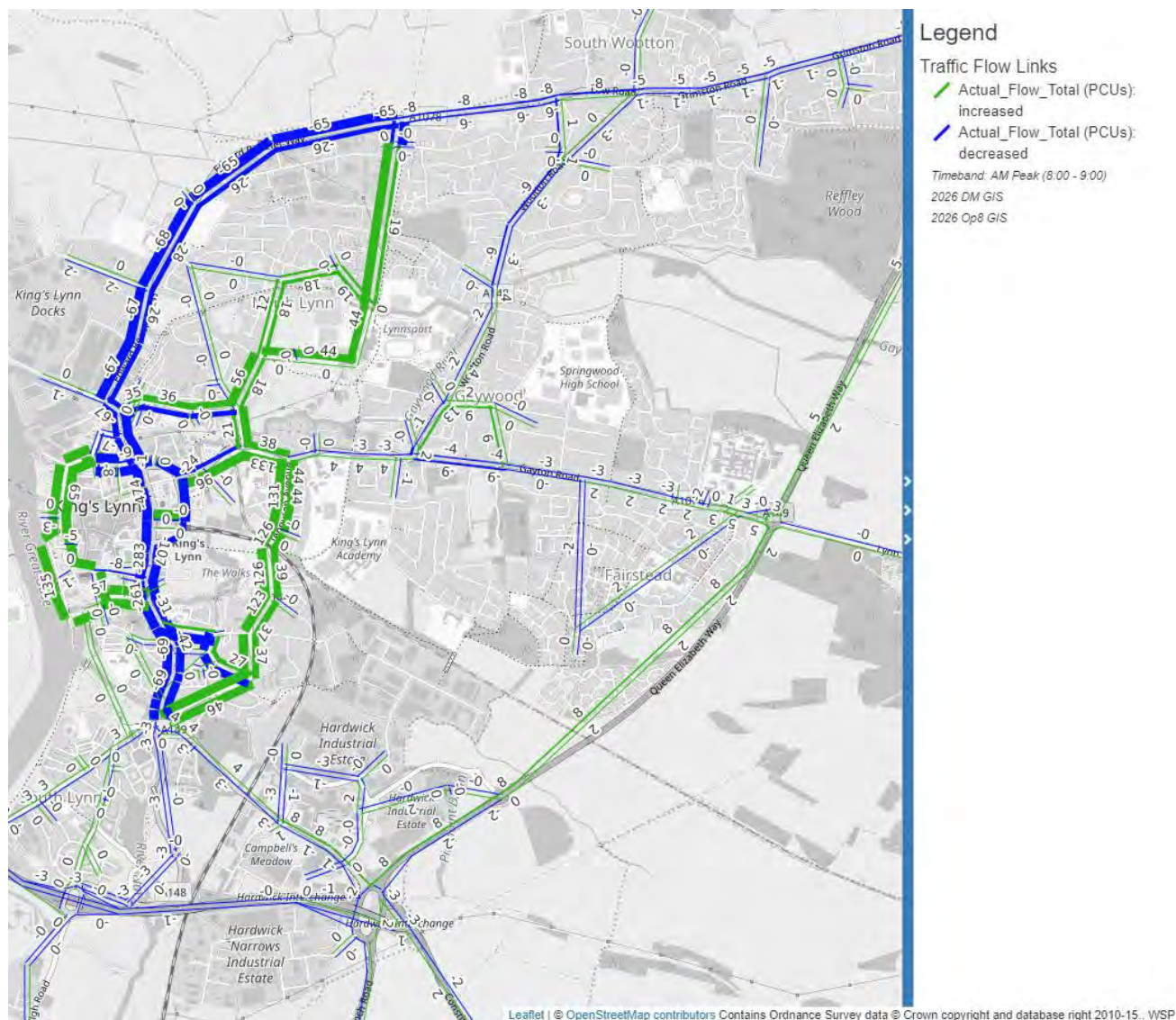


Figure 5-21: Scenario 8 – DM Actual Flow Difference Plot AM Peak

- 5.9.2. There is noticeable reduction in flow has been observed on Railway road, in turn traffic on B1144 road and King street got increased. A noticeable reduction in flow has been observed on Railway Road and Edward Benefer Way, in turn traffic on B1144 road and Reid Way has increased.
- 5.9.3. Most of the town centre sees no or only small impacts on delay. There is a significant increase in delay of 81 seconds on the Saint James' Road approach to the Blackfriars Road / Railway Road. An increase of 56 seconds is seen on A148 Wellesley Street, whilst a 60 second increase is seen on Purfleet Place. These are illustrated in Figure C.8-60 which shows the delay difference between Scenario 8 and the Do Minimum in 2026 for AM Peak.

- 5.9.4. There are a few links which are at or near capacity, namely at the junction of Railway Road with Blackfriars Road and at the junction of Purfleet Place with King Street and are consistent with the locations of the largest increases in delay. These are illustrated Figure C.8-61 which shows the Volume/ Capacity ratio as a percentage for Scenario 8 in 2026 for AM Peak.
- 5.9.5. Figure 5-22 shows the flow difference plot between Scenario 8 and the Do Minimum in 2026 for the PM Peak.

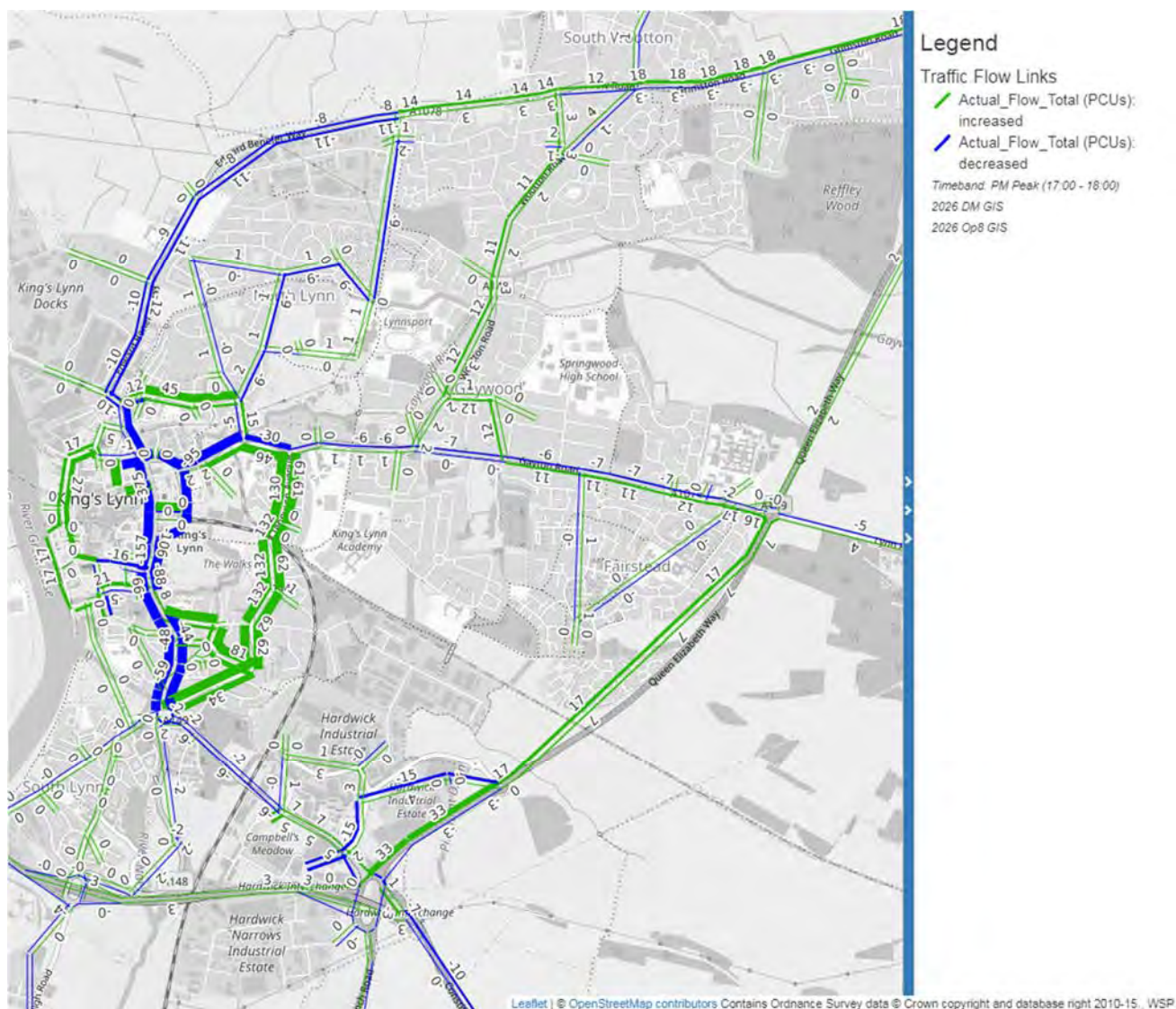


Figure 5-22: Scenario 8 – DM Actual Flow Difference Plot PM Peak

- 5.9.6. There is noticeable reduction in flow on Railway Road and Gaywood Road, with traffic diverted towards the B1144, Tennyson Avenue.
- 5.9.7. Most links in the network see no change in delay. However, there is noticeable increase in delay of 30 seconds on the John Kennedy Road approach to the John Kennedy Road / Austin Street junction. A 58 second increase in delay is seen on the A148 Wellesley Road, and a 48 second increase on the Blackfriars Road approach to Blackfriars Road / Railway Road junction. Figure C.8-64 illustrates these delay differences between Scenario 8 and the Do Minimum in 2026 for PM Peak.

5.9.8. There are few links which are at or over capacity namely, such as at the junction of Railway Road with Blackfriars Road, Southgates roundabout, at the junction of Saturday Market Place with Church Street and the junction of Loke Road with Gaywood Road. Figure C.8-65 illustrates these Volume/Capacity ratios as a percentage for Scenario 8 in 2026 for PM Peak.

SCENARIO 8 NETWORK SUMMARY STATISTICS

5.9.9. Table 5-8 presents network summary statistics for Scenario 8 and a comparison against the Do Minimum case.

Table 5-8: Scenario 8 Network Summary Statistics

<i>Statistic</i>	Unit	DM		Scenario 8		Scenario 8 - DM	
		AM	PM	AM	PM	AM	PM
<i>Transient Queues</i>	PCU - Hrs	512.1	599.4	514.1	627.6	2.0	28.2
<i>Over-capacity Queues</i>	PCU - Hrs	23.5	39.4	40.8	36.6	17.3	-2.8
<i>Link Cruise Time</i>	PCU - Hrs	1237.6	1329.3	1244.7	1333.4	7.1	4.1
<i>Total Travel Time</i>	PCU - Hrs	1773.1	1968.1	1799.5	1997.6	26.5	29.5
<i>Total Travel Distance</i>	PCU - kms	71087.6	75434.8	71170.3	75606.6	82.7	171.8
<i>Average Speed</i>	kph	40.1	38.3	39.5	37.8	-0.5	-0.5

5.9.10. Table 5-8, like Scenarios 6 and 7, shows that there is an increase in queuing, travel times and travel distance with a reduction in speed in Scenario 8.

SCENARIO 8 SUMMARY

5.9.11. Scenario 8 illustrates a reduction in traffic around the gyratory. In the AM there is a shift in traffic from Edward Benefer Way to Lynnsport Way northbound and residential roads such as Columbia Way. As seen in other Scenarios where traffic is discouraged from using the gyratory, there is an increase in traffic on South Quay and King Street. Overall, there is no noticeable benefit to network performance.

5.10 SOUTHGATES (SCENARIO 9)

5.10.1. Figure 5-23 shows the flow difference plot between Scenario 9 and the Do Minimum in 2026 for AM Peak.

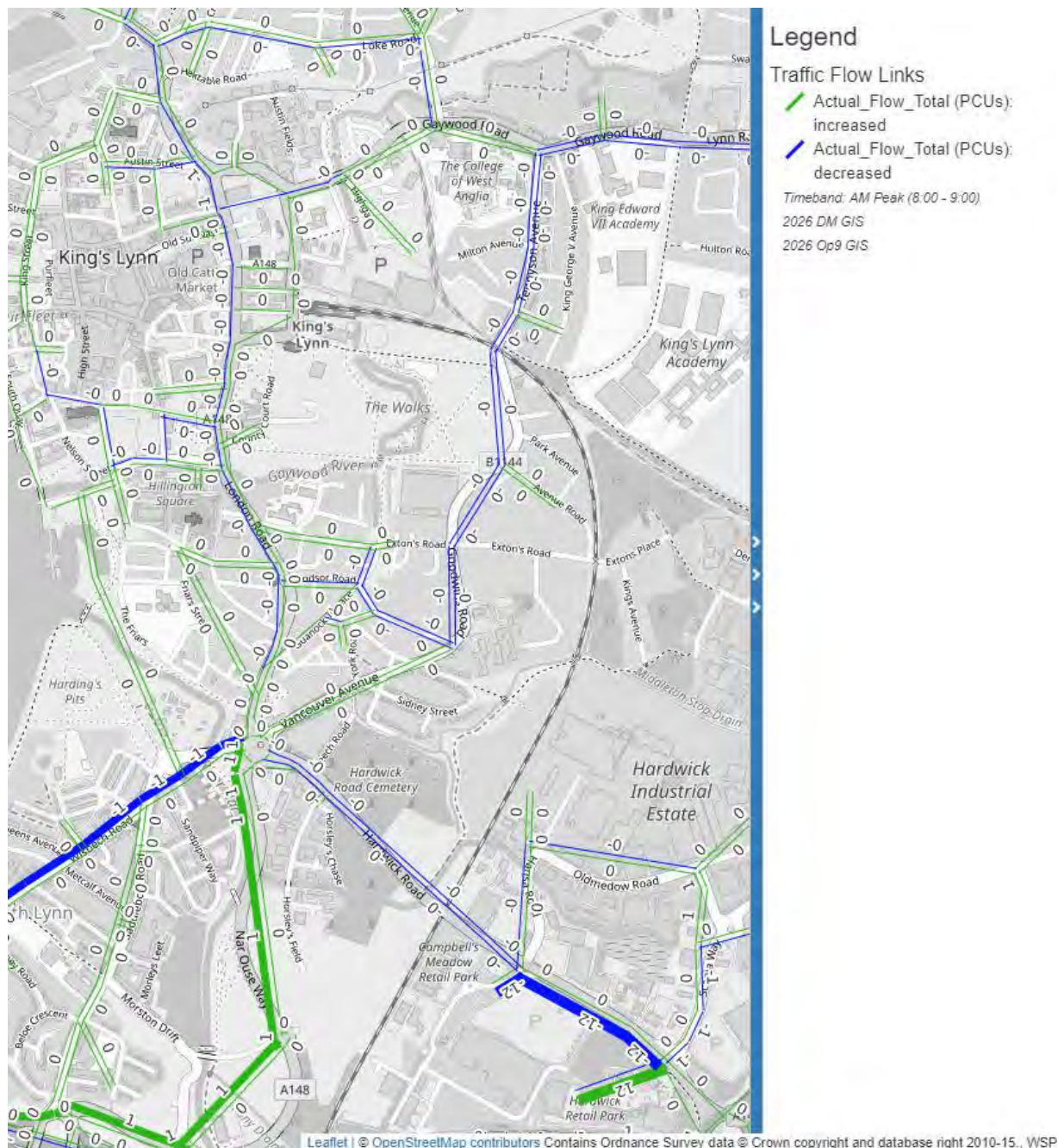


Figure 5-23: Scenario 9 – DM Actual Flow Difference Plot AM Peak

- 5.10.2. There are minimal changes in forecast across King's Lynn Town Centre. The consequent delay changes are minimal given small flow change and are illustrated in Figure C.9-67.
- 5.10.3. There are a couple of links at or over capacity, such as on London Road, although most links operate well within capacity. Figure C.9-68 illustrates the Volume/ Capacity ratios as a percentage for Scenario 9 in 2026 for AM Peak.

5.10.4. Figure 5-24 shows the flow difference plot between Scenario 9 and the Do Minimum in 2026 for PM Peak.



Figure 5-24: Scenario 9 – DM Actual Flow Difference Plot PM Peak

- 5.10.5. As with the AM there is no noticeable flow change as a consequence of the Southgates scheme.
- 5.10.6. The scheme has very little impact on delay within King's Lynn town centre. Figure C.9-70 shows the delay difference between Scenario 9 and the Do Minimum in 2026 for PM Peak.
- 5.10.7. Most roads within network are within capacity, with volume capacity ratios below 85%. However, there is a high V/C ratio at the entry approach of Southgate roundabout and at the junction of Loke road with Gaywood Road. This is illustrated in Figure C.9-71 which shows the Volume/ Capacity ratio for Scenario 9 in 2026 for PM Peak.

SCENARIO 9 NETWORK SUMMARY STATISTICS

5.10.8. Table 5-9 presents network summary statistics for Scenario 9 and a comparison against the Do Minimum case.

Table 5-9: Scenario 9 Network Summary Statistics

<i>Statistic</i>	Unit	DM		Scenario 8		Scenario 8 - DM	
		AM	PM	AM	PM	AM	PM
<i>Transient Queues</i>	PCU - Hrs	512.1	599.4	510.4	598.2	-1.6	-1.2
<i>Over-capacity Queues</i>	PCU - Hrs	23.5	39.4	23.5	40.9	0.0	1.6
<i>Link Cruise Time</i>	PCU - Hrs	1237.6	1329.3	1237.7	1329.0	0.2	-0.3
<i>Total Travel Time</i>	PCU - Hrs	1773.1	1968.1	1771.6	1968.1	-1.4	0.0
<i>Total Travel Distance</i>	PCU - kms	71087.6	75434.8	71094.4	75422.9	6.8	-11.9
<i>Average Speed</i>	kph	40.1	38.3	40.1	38.3	0.0	0.0

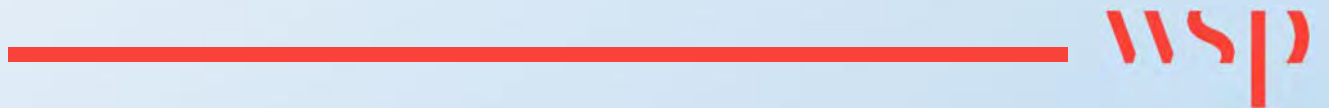
5.10.9. Scenario 9 shows a marginal improvement in transient queuing, with little change in travel time and distance, and no change in average speed.

SCENARIO 9 SUMMARY

5.10.10. Scenario 9 has minimal impact on flow levels and delays in both time periods.

Appendix C

SUMMARY PARAMICS TECHNICAL
MODEL OUTPUT

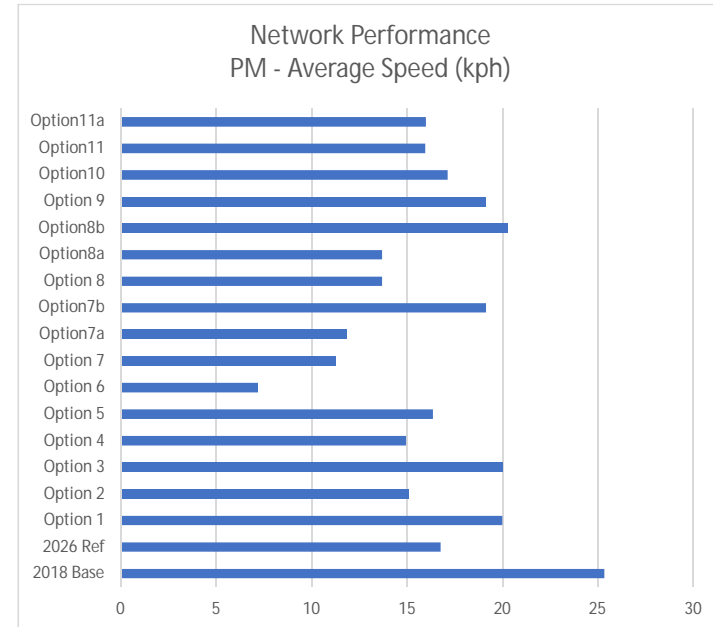
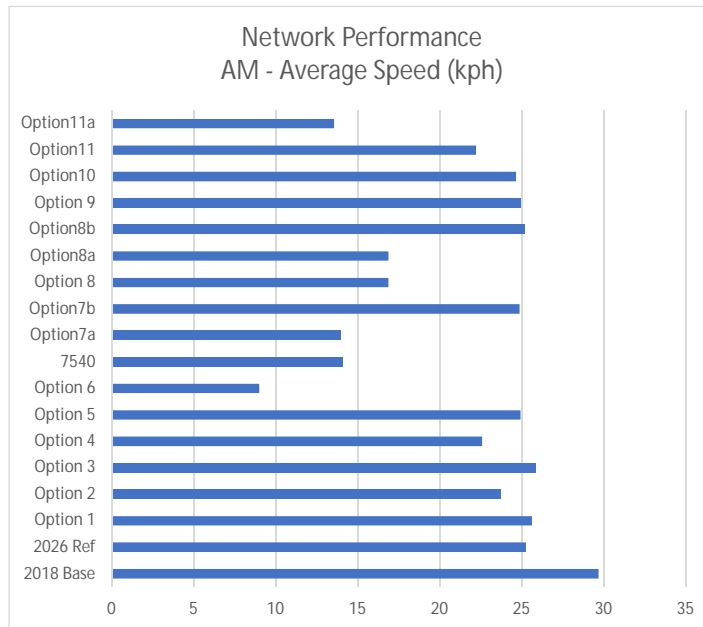


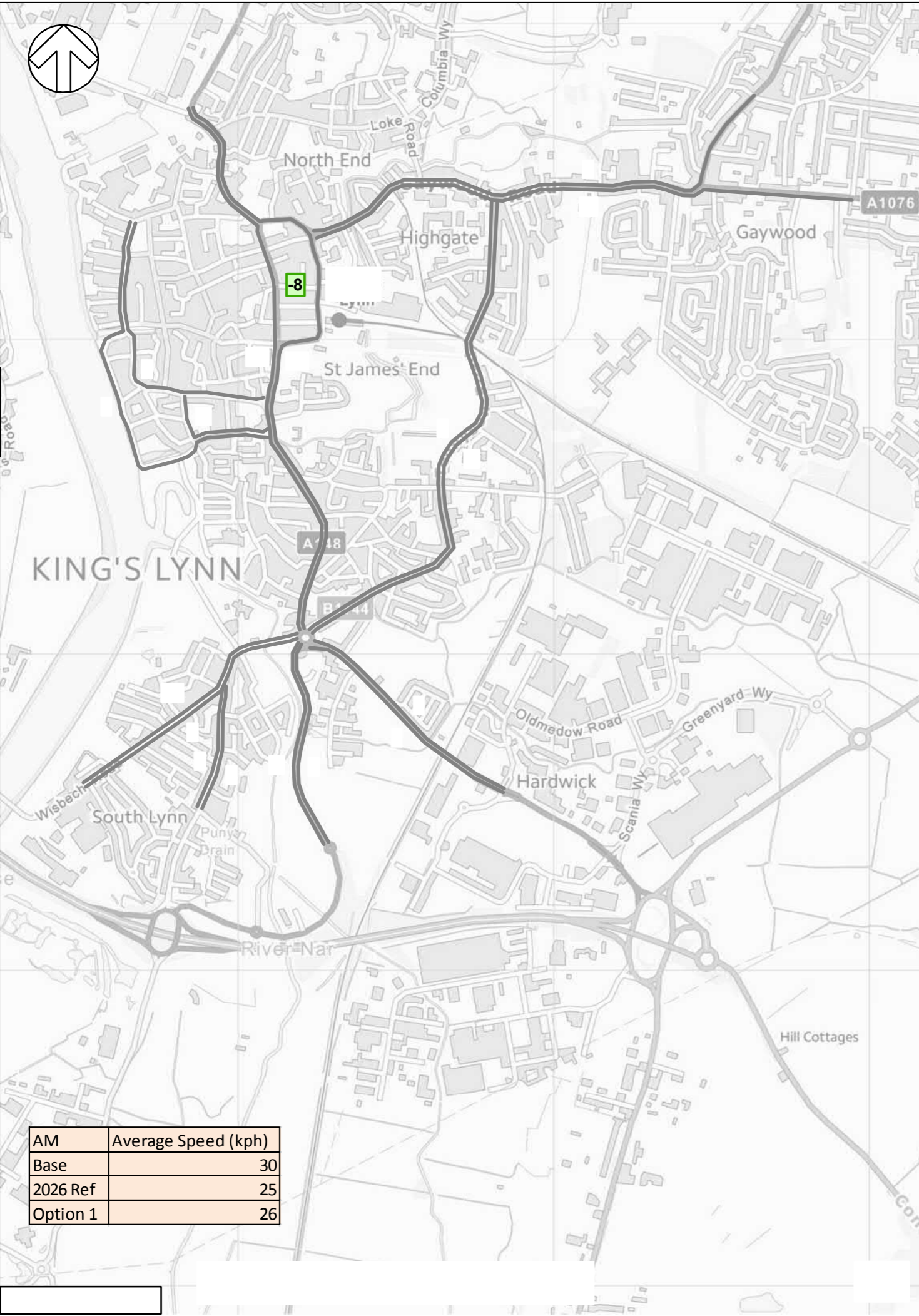
Option	Name	Changes to Highway Network	Drawing
2018 Base	Base Model	-	-
2026 Reference	Reference Model	None	-
Option 1	Hardings Way (one way)	Use Hardings Way for general traffic as well as buses: - Inbound only (northbound) AM Peak model (07:00 - 10:00) - Outbound only (southbound) PM Peak model (16:00 - 19:00) - Weight limit to restrict HGV - Buses re-routed where required (due to one way operation)	SK09
Option 2	Hardings Way (one way) - Complimentary Measures	Use Hardings Way for general traffic as well as buses: - Inbound only (northbound) AM Peak model (07:00 - 10:00) - Outbound only (southbound) PM Peak model (16:00 - 19:00) - Weight limit to restrict HGV - Buses re-routed where required (due to one way operation) - Banned straight ahead movement on link 495:163 and 260:163 to reduce rat running	SK09
Option 3	Hardings Way (two way)	Use Hardings Way for general traffic as well as buses in both directions throughout the day: - Weight limit to restrict HGV	SK08
Option 4	Hardings Way (two way) - Complimentary Measures	Use Hardings Way for general traffic as well as buses in both directions throughout the day: - Weight limit to restrict HGV - Banned straight ahead movement on link 495:163 and 260:163 to reduce rat running	SK08
Option 5	Traffic Signals removal	Remove traffic signals at the following junctions - Loke Road / Gaywood Road - Tennyson Avenue / Gaywood Road - Loke Road / John Kennedy Road	SK02 SK01 SK03
Option 6	Gyratory - Blackfriars Road two-way	Eastern half of gyratory becomes two-way	SK06-1 SK06-2
Option 7	Gyratory - Railway Road two-way	Convert Railway Road to 2-way, leave rest as existing	SK04-PO1
Option 7a	Gyratory - Railway Road two-way with widening of southbound approach on Southgates	- Convert Railway Road to 2-way, leave rest as existing - Widening of southbound approach (1 lane to 2 lanes) from Windsor Road to Southgates to reduce outbound delays.	SK04-PO1 SK10
Option 7b	Gyratory - Railway Road two-way with widening of southbound approach on Southgates and two lane section northbound between St James Street past Norfolk Street	- Convert Railway Road to 2-way, leave rest as existing - Widening of southbound approach (1 lane to 2 lanes) from Windsor Road to Southgates to reduce outbound delays. - Increase northbound from 1 lane to 2 lanes on Railway Road (between St James Street and past Norfolk Street) - removal of ghost island turning lanes.	SK11 SK10
Option 8	Gyratory - Railway Road two-way	Convert Railway Road to 2-way, leave rest as existing with Norfolk Street flow direction reversed	SK05
Option 8a	Gyratory - Railway Road two-way with widening of southbound approach on Southgates	- Convert Railway Road to 2-way, leave rest as existing with Norfolk Street flow direction reversed - Widening of southbound approach (1 lane to 2 lanes) from Windsor Road to Southgates to reduce outbound delays.	SK05 SK10
Option 8b	Gyratory - Railway Road two-way with widening of southbound approach on Southgates and two lane section northbound between St James Street past Norfolk Street	- Convert Railway Road to 2-way, leave rest as existing with Norfolk Street flow direction reversed - Widening of southbound approach (1 lane to 2 lanes) from Windsor Road to Southgates to reduce outbound delays. - Increase northbound from 1 lane to 2 lanes on Railway Road (between St James Street and past Norfolk Street) - removal of ghost island turning lanes.	SK12 SK10
Option 9	Southgates	- Widening of southbound approach (1 lane to 2 lanes) from Windsor Road to Southgates to reduce outbound delays.	SK10
Option 10	Car Parks South (Boal Quay / Church Street)	- 220 space loss at Boal Quay (136 spaces to remain) - 450 spaces to be provided at Church Street (243 existing, additional 207 spaces provided at Church Street)	NA
Option 11	Car Parks North	- 430 loss in spaces at Chapel Street (-80) / Common Staithe (-117) / Austin Street West & Albert Street (-233) - 450 spaces to be provided at Austin Street East (123 existing) - additional 327 spaces at Austin Street East	NA
Option 11a	Car Parks North	- 430 loss in spaces at Chapel Street (-80) / Common Staithe (-117) / Austin Street West & Albert Street (-233) - 500 spaces to be provided at Patrick and Thompson Site (Zone 53)	NA

AM PEAK Hour	2018 Base	2026 Ref	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	7540	Option7a	Option7b	Option 8	Option8a	Option8b	Option 9	Option10	Option11	Option11a
Total Vehicles	6,551	7,454	7,518	7,520	7,613	7,625	7,463	7,760	7,540	7,536	7,495	7,506	7,498	7,448	7,442	7,559	8,072	8,169
Average Speed (mph)	18	16	16	15	16	14	15	6	9	9	15	10	10	16	16	15	14	8
Average Speed (kph)	30	25	26	24	26	23	25	9	14	14	25	17	17	25	25	22	22	14
Total vehicles difference to Ref		903	64	66	160	171	10	306	87	82	42	52	45	-6	-12	105	619	715

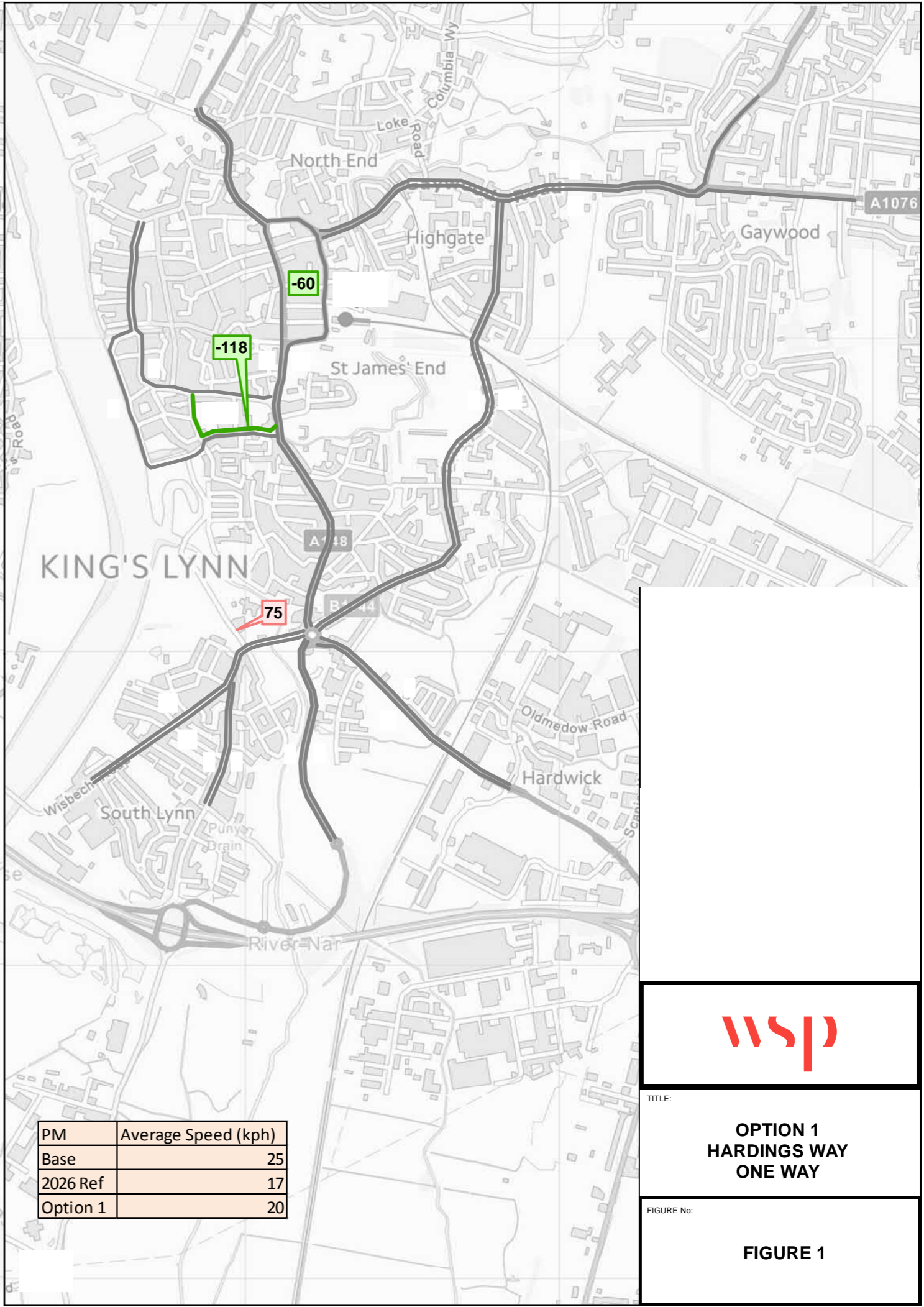
PM PEAK Hour	2018 Base	2026 Ref	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option7a	Option7b	Option 8	Option8a	Option8b	Option 9	Option10	Option11	Option11a
Total Vehicles	6,916	7,505	7,561	7,545	7,598	7,599	7,505	6,849	6,626	7,707	7,498	6,751	6,389	7,558	7,538	7,508	7,662	7,499
Average Speed (mph)	16	10	12	9	12	9	10	4	7	7	12	9	9	13	12	11	10	10
Average Speed (kph)	25	17	20	15	20	15	16	7	11	12	19	14	14	20	19	17	16	16
Total vehicles difference to Ref		588	56	40	93	95	0	-656	-878	203	-6	-754	-1,116	54	33	3	157	-5

Base/Reference	
Better/Same performance as Ref	
Worse performance than Ref	
Worse performance than Ref & Less vehicles	





AM	Average Speed (kph)
Base	30
2026 Ref	25
Option 1	26

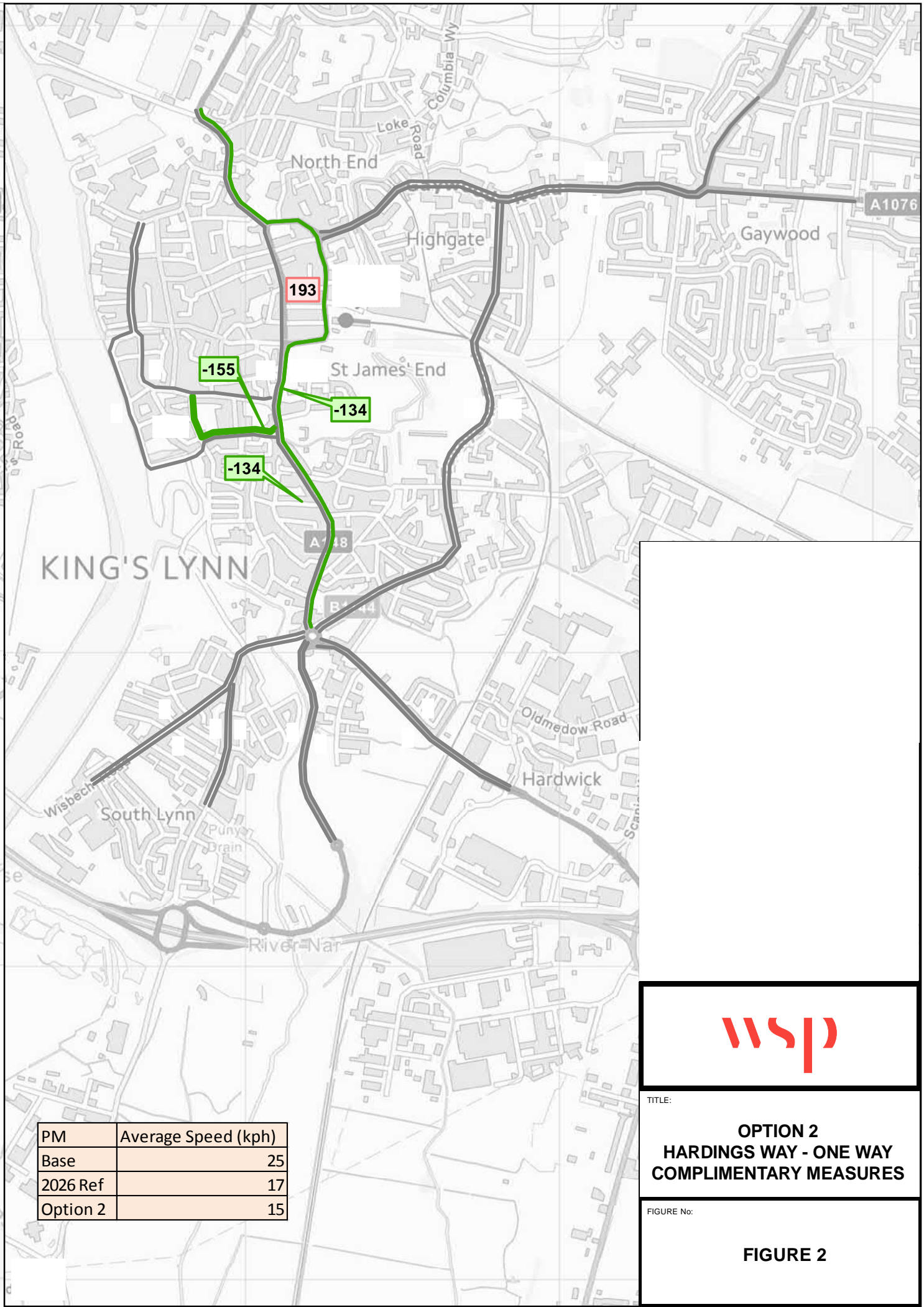
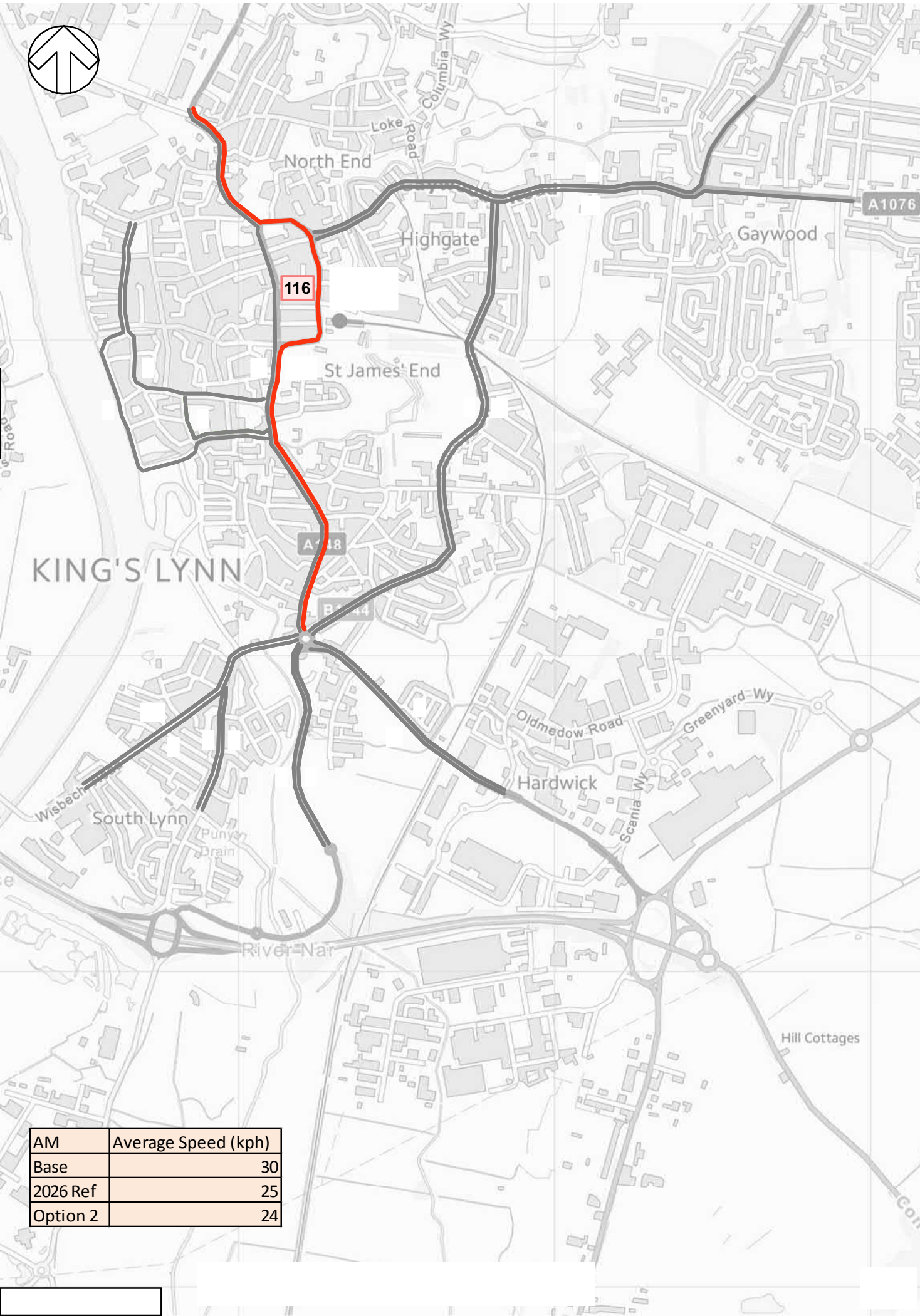


PM	Average Speed (kph)
Base	25
2026 Ref	17
Option 1	20



TITLE:
**OPTION 1
HARDINGS WAY
ONE WAY**

FIGURE No:
FIGURE 1



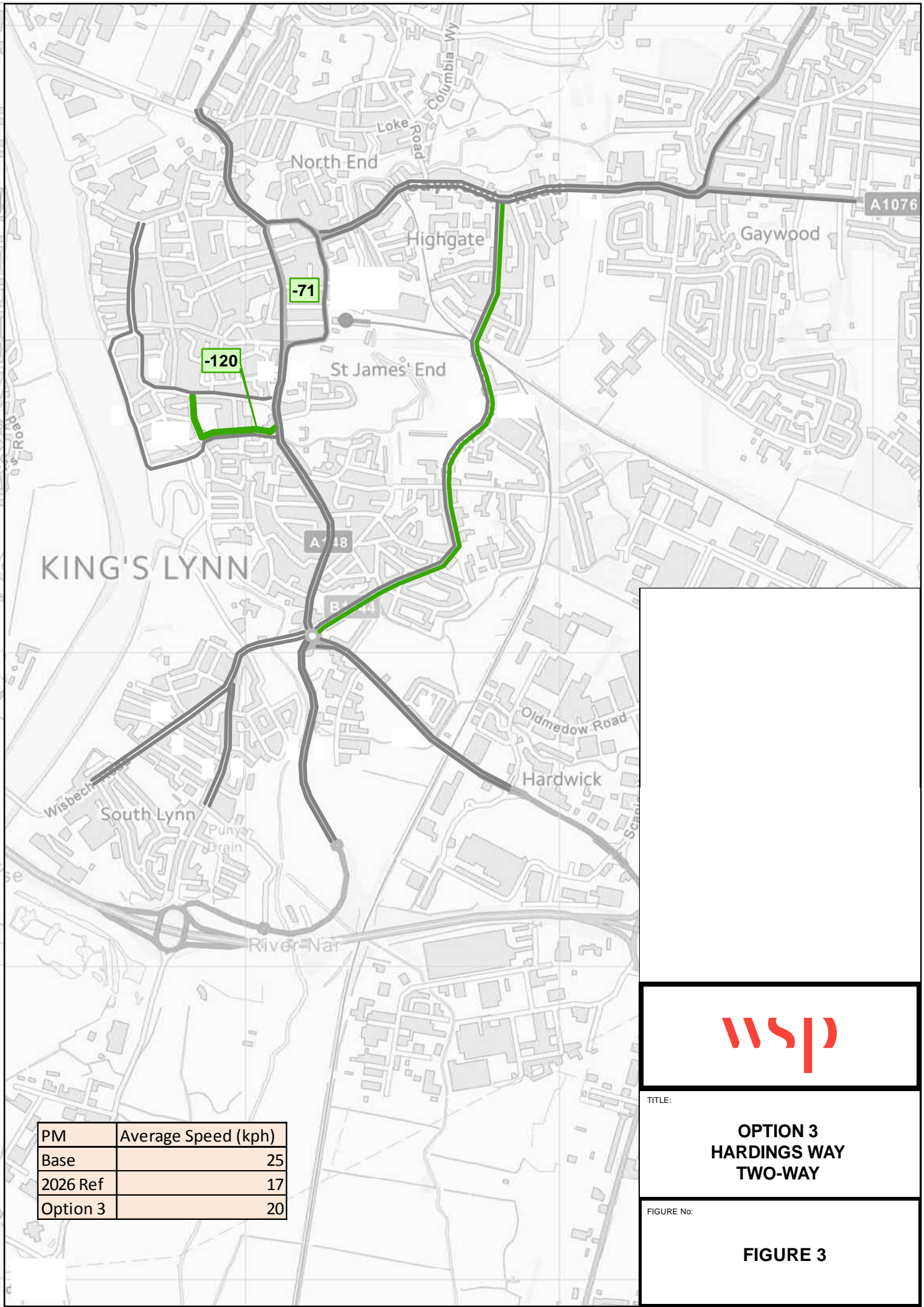
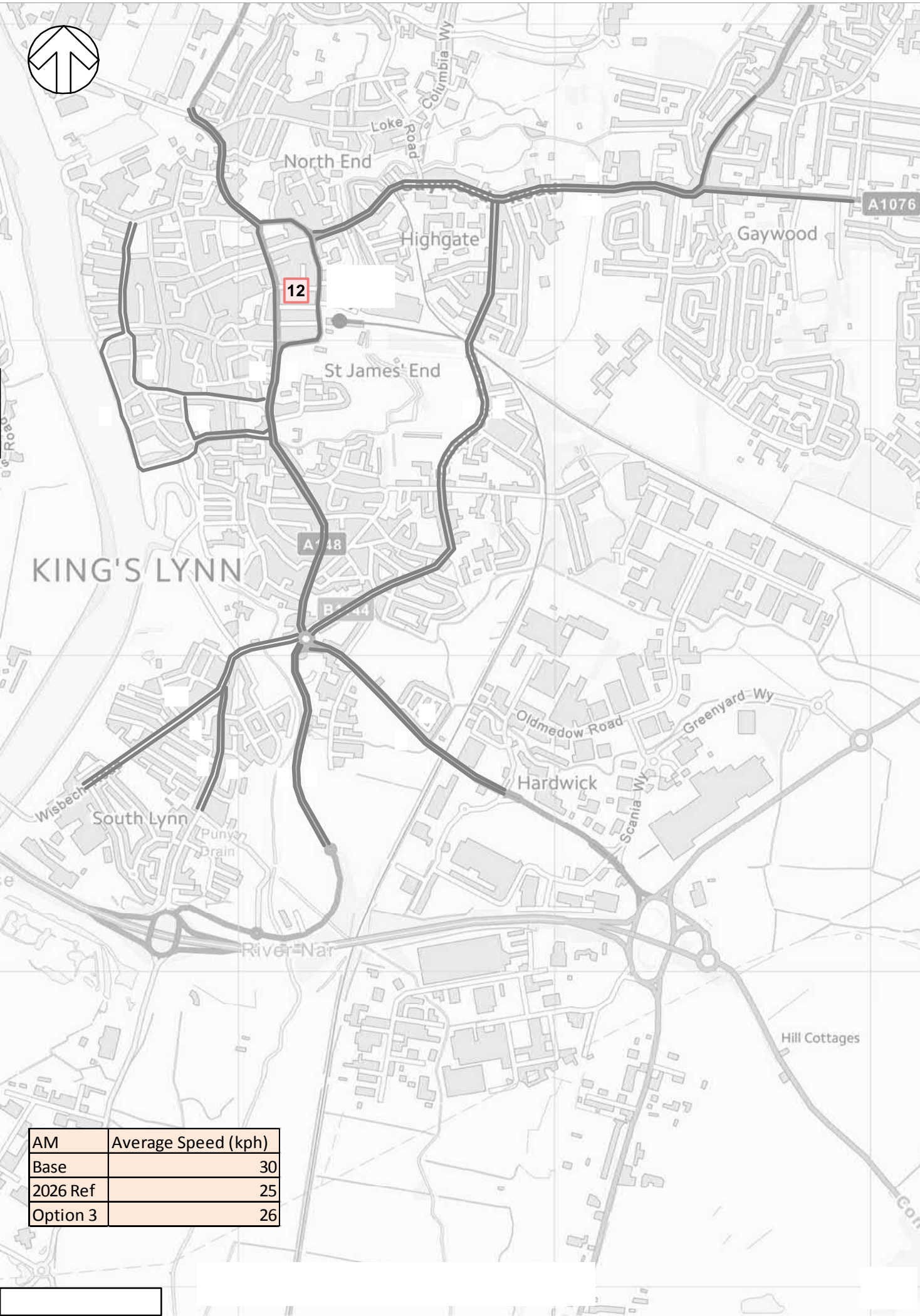
AM	Average Speed (kph)
Base	30
2026 Ref	25
Option 2	24

PM	Average Speed (kph)
Base	25
2026 Ref	17
Option 2	15



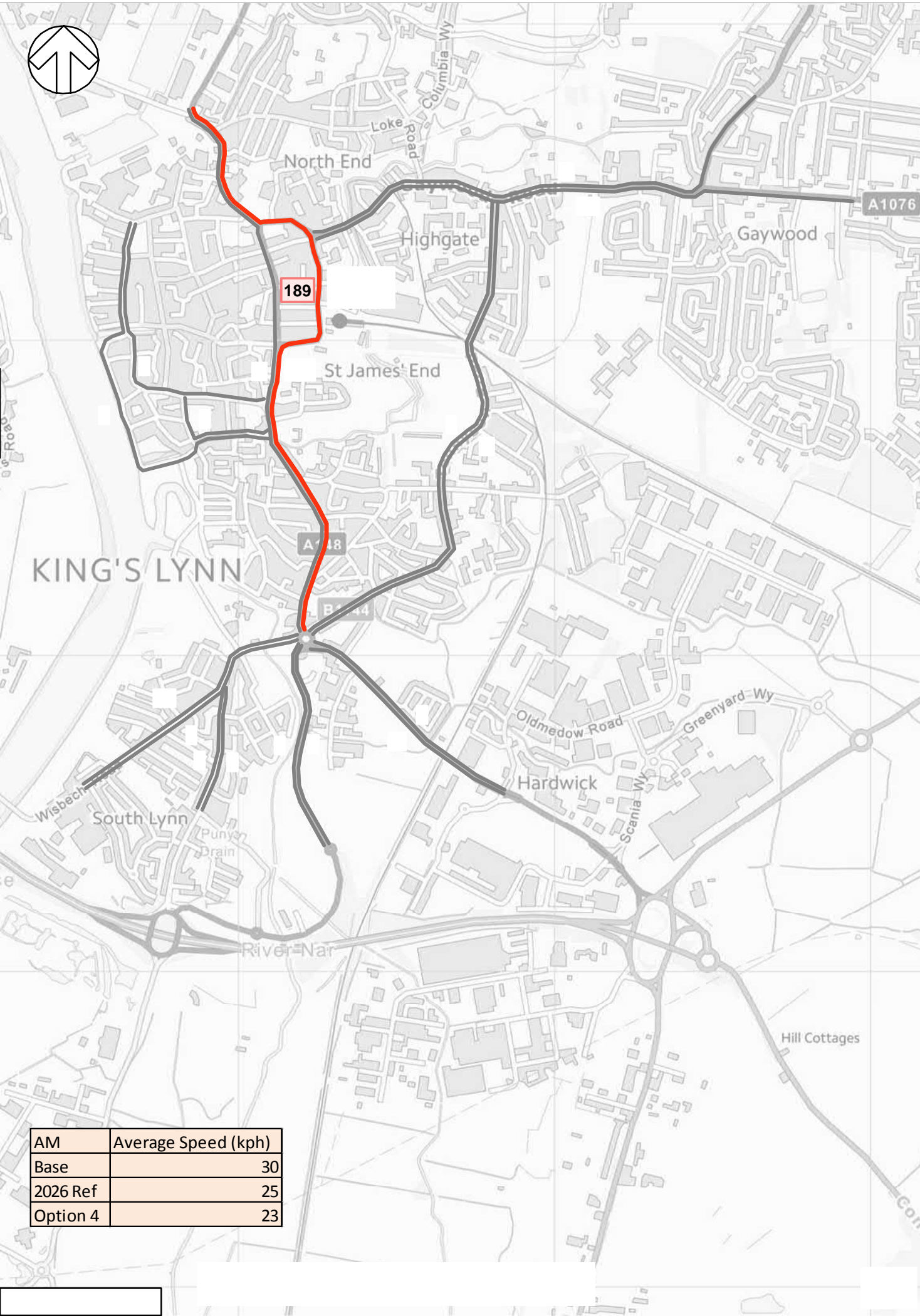
TITLE:
**OPTION 2
HARDINGS WAY - ONE WAY
COMPLIMENTARY MEASURES**

FIGURE No:
FIGURE 2

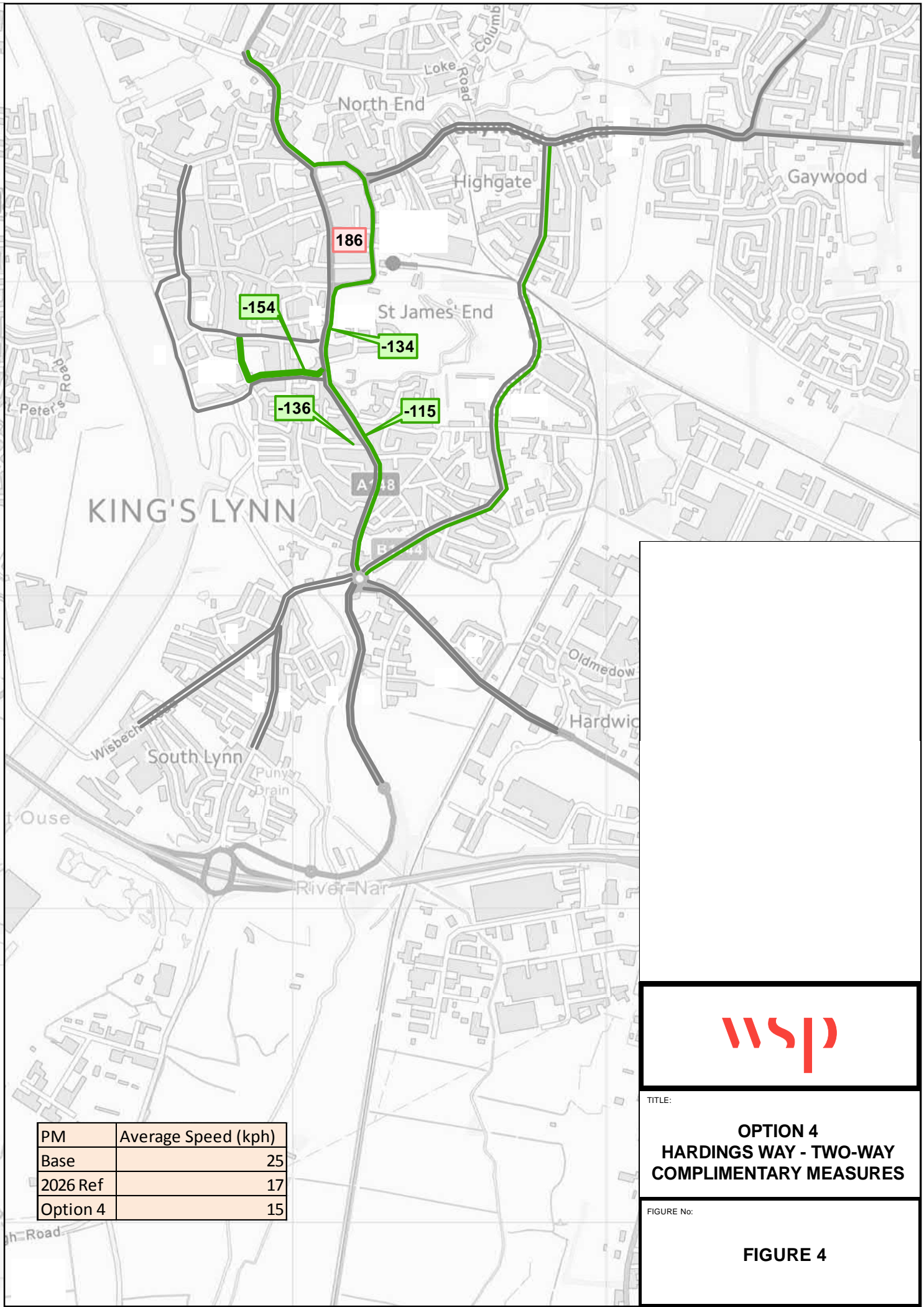


TITLE:
**OPTION 3
HARDINGS WAY
TWO-WAY**

FIGURE No:
FIGURE 3



AM	Average Speed (kph)
Base	30
2026 Ref	25
Option 4	23



PM	Average Speed (kph)
Base	25
2026 Ref	17
Option 4	15



TITLE:
**OPTION 4
HARDINGS WAY - TWO-WAY
COMPLIMENTARY MEASURES**

FIGURE No:
FIGURE 4



KING'S LYNN

AM	Average Speed (kph)
Base	30
2026 Ref	25
Option 5	25

AM PM

PM	Average Speed (kph)
Base	25
2026 Ref	17
Option 5	16

Key: Difference in Queue Length (m) Compared to 2026 Reference

- 123 Decreased Queue Length
- 123 Increased Queue Length

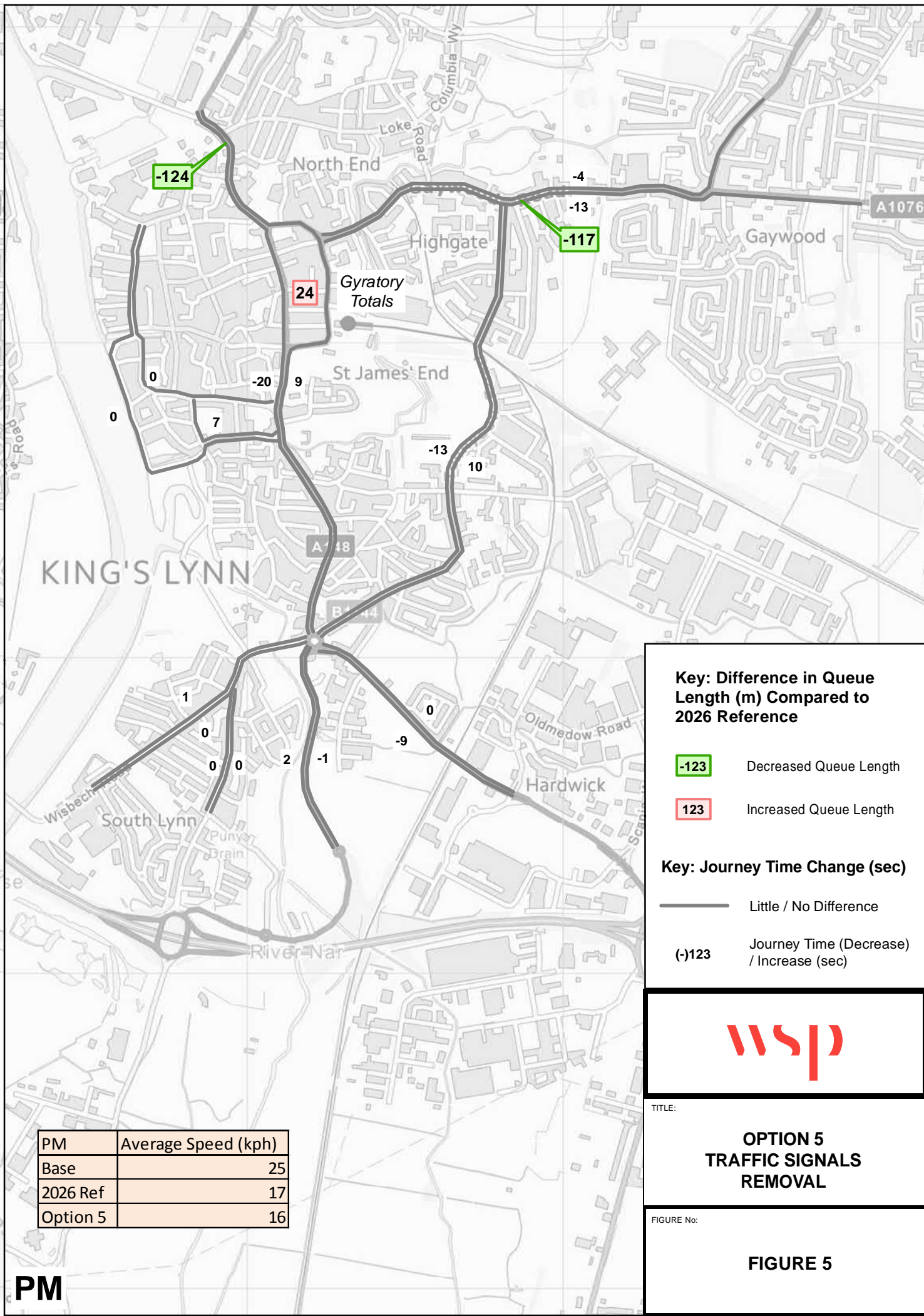
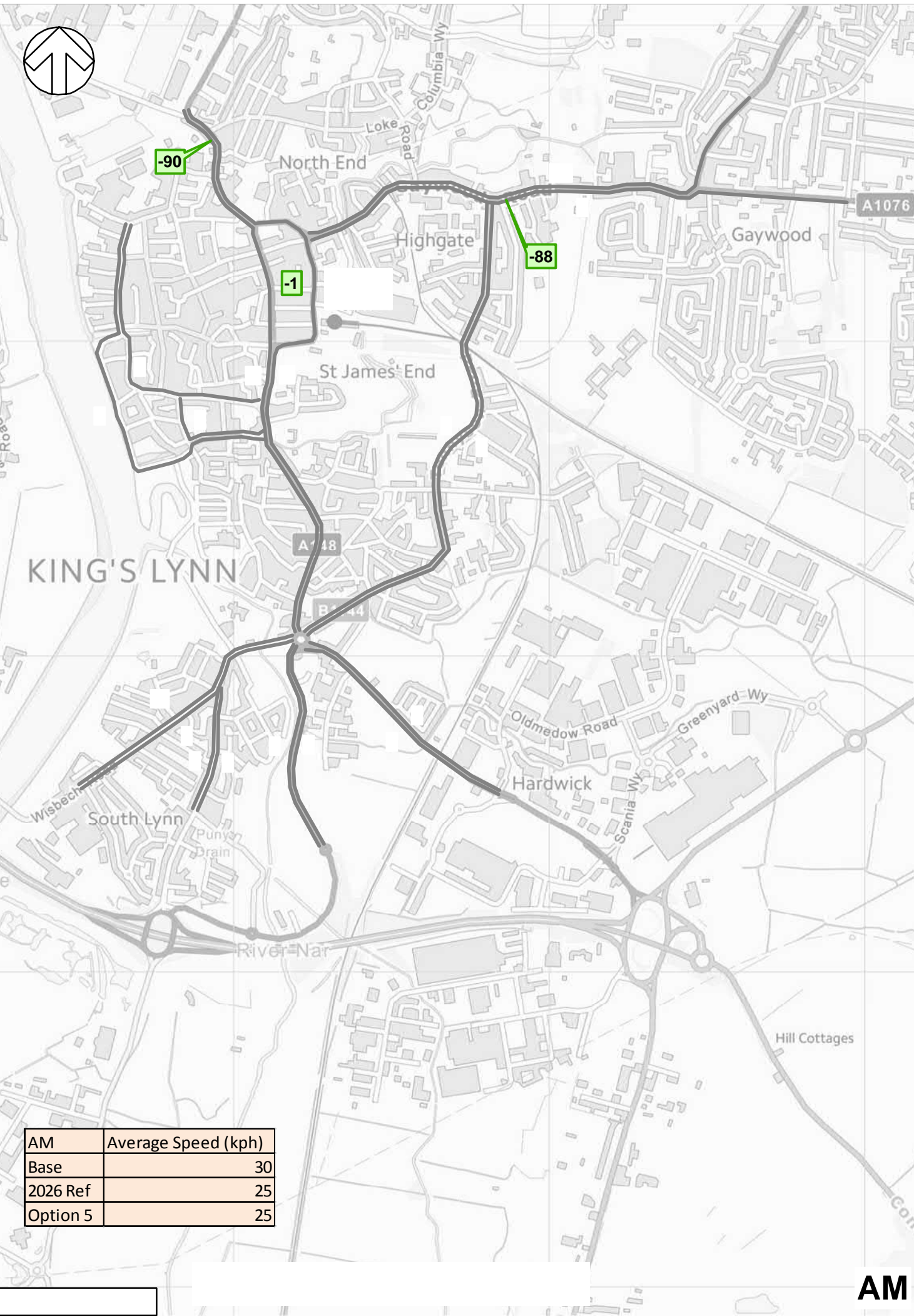
Key: Journey Time Change (sec)

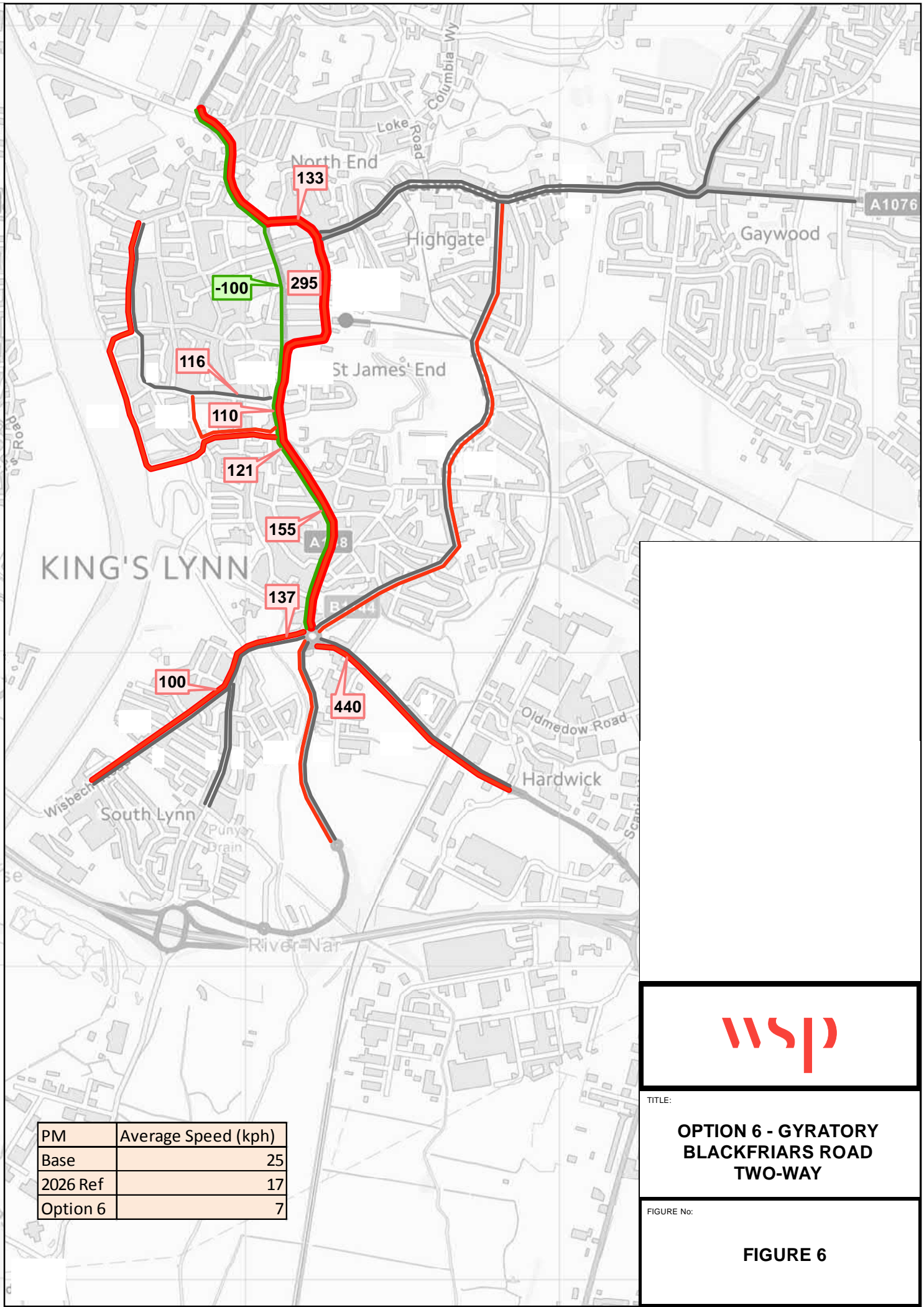
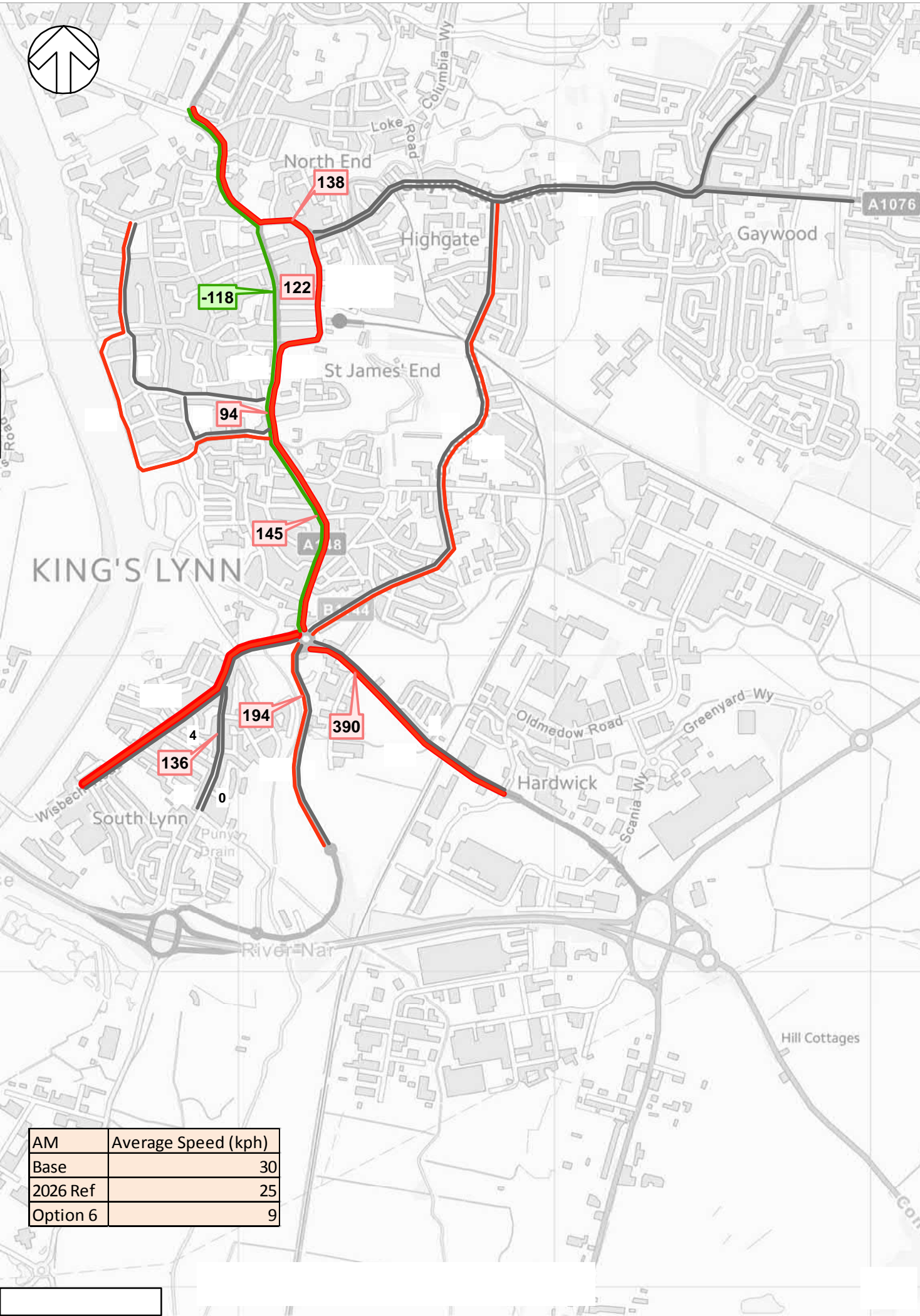
- Little / No Difference
- (-)123 Journey Time (Decrease) / Increase (sec)



TITLE:
**OPTION 5
TRAFFIC SIGNALS
REMOVAL**

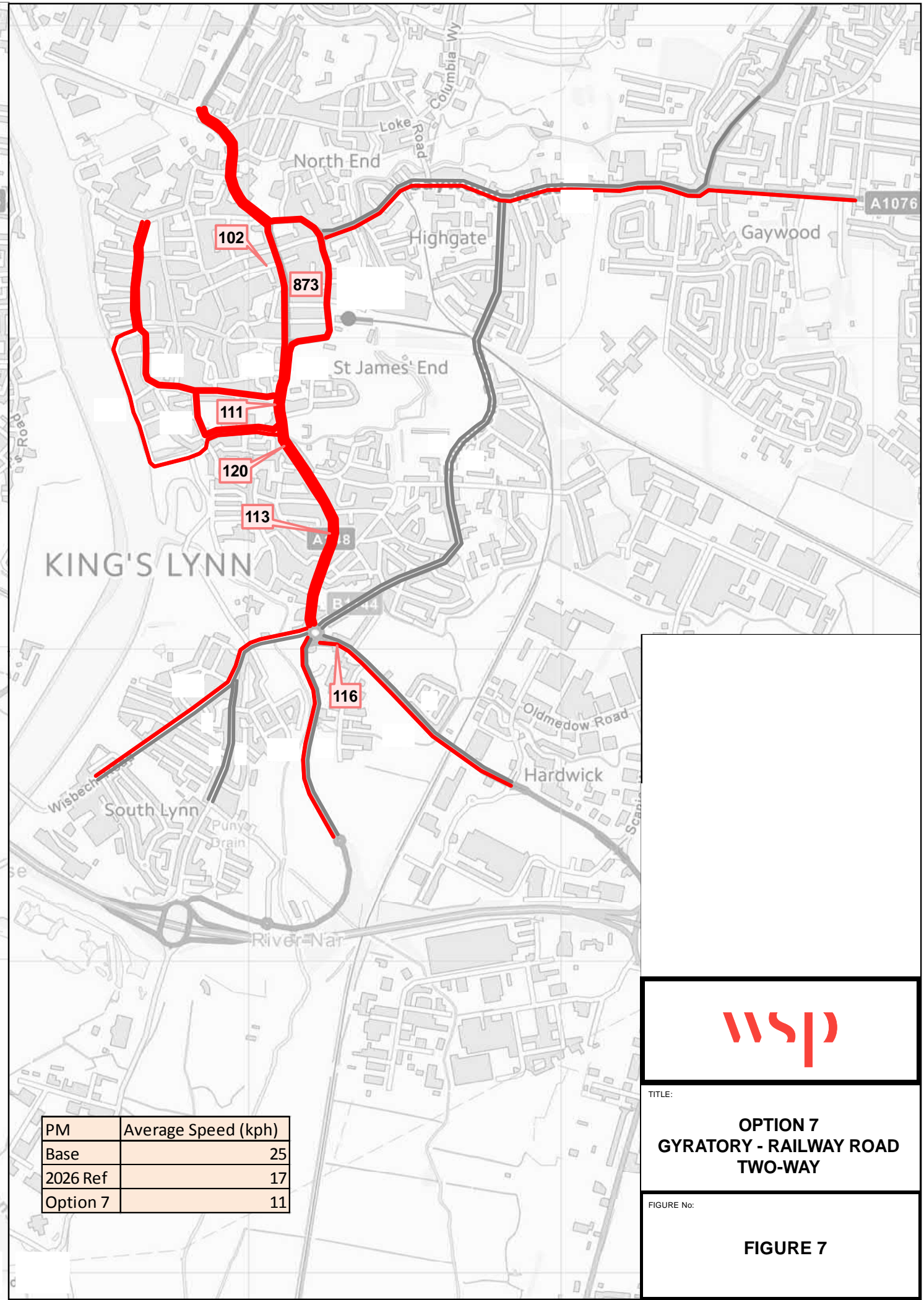
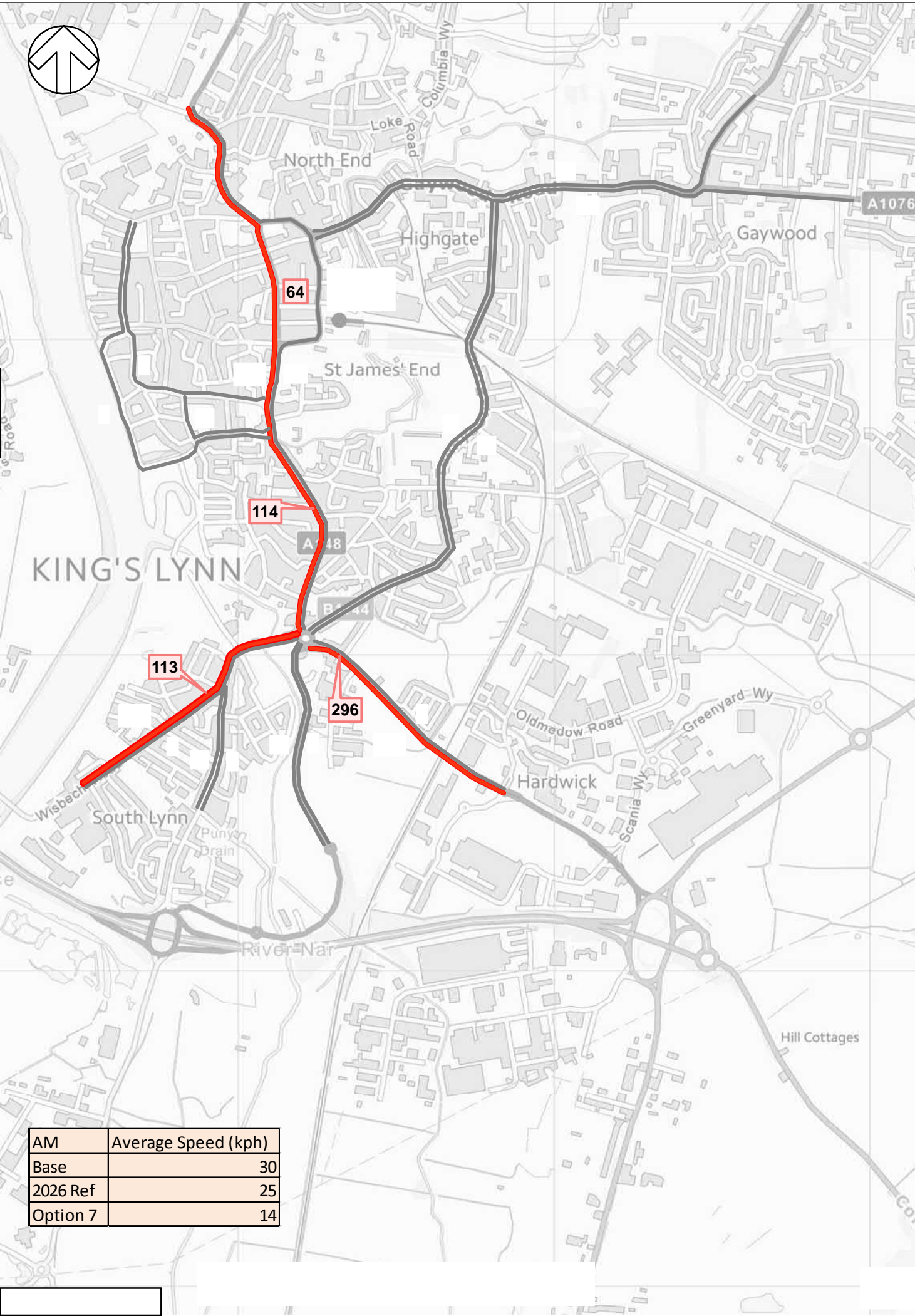

FIGURE No:
FIGURE 5





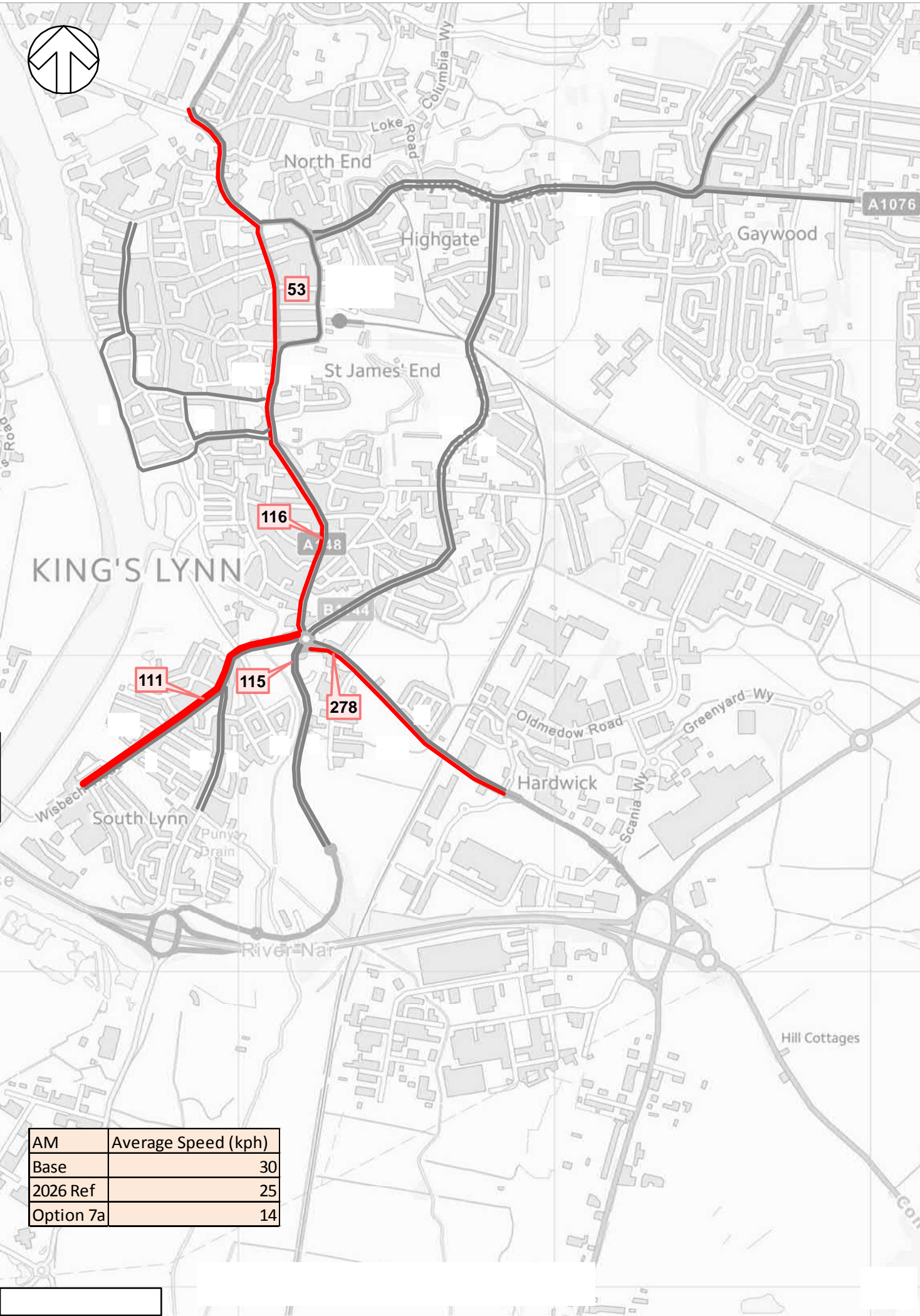
TITLE:
**OPTION 6 - GYRATORY
BLACKFRIARS ROAD
TWO-WAY**

FIGURE No:
FIGURE 6

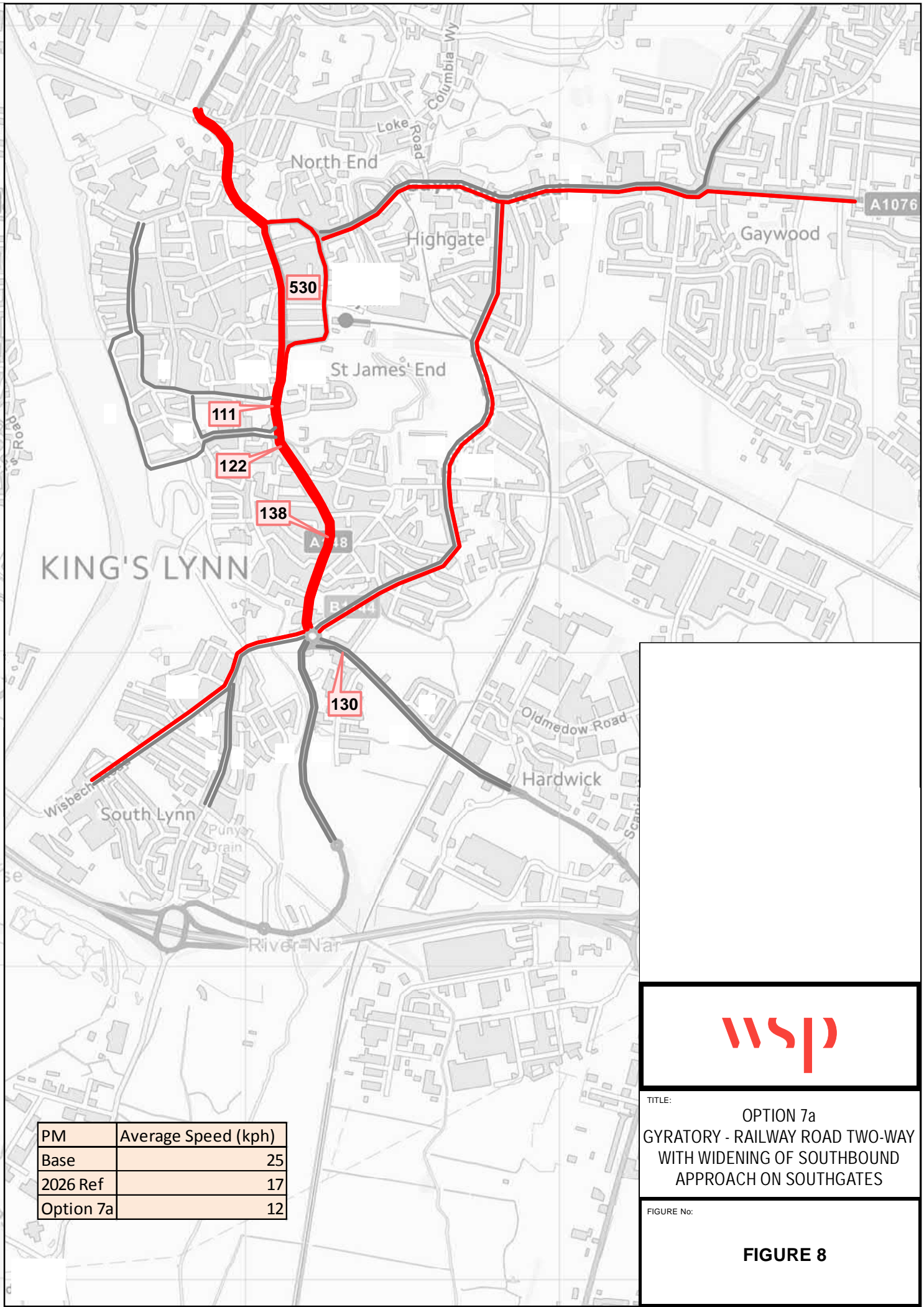



TITLE:
**OPTION 7
 GYRATORY - RAILWAY ROAD
 TWO-WAY**

FIGURE No:
FIGURE 7



AM	Average Speed (kph)
Base	30
2026 Ref	25
Option 7a	14

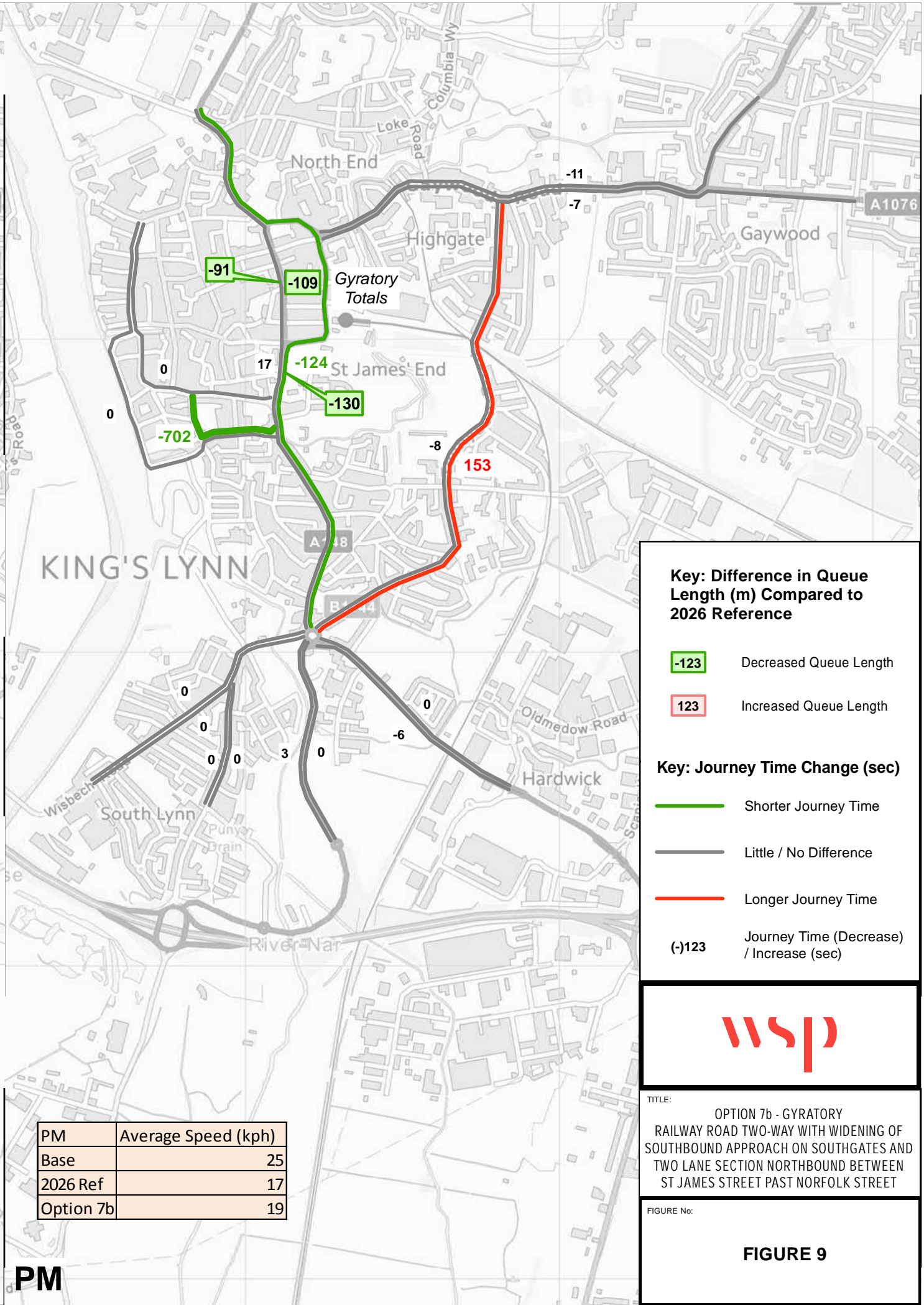
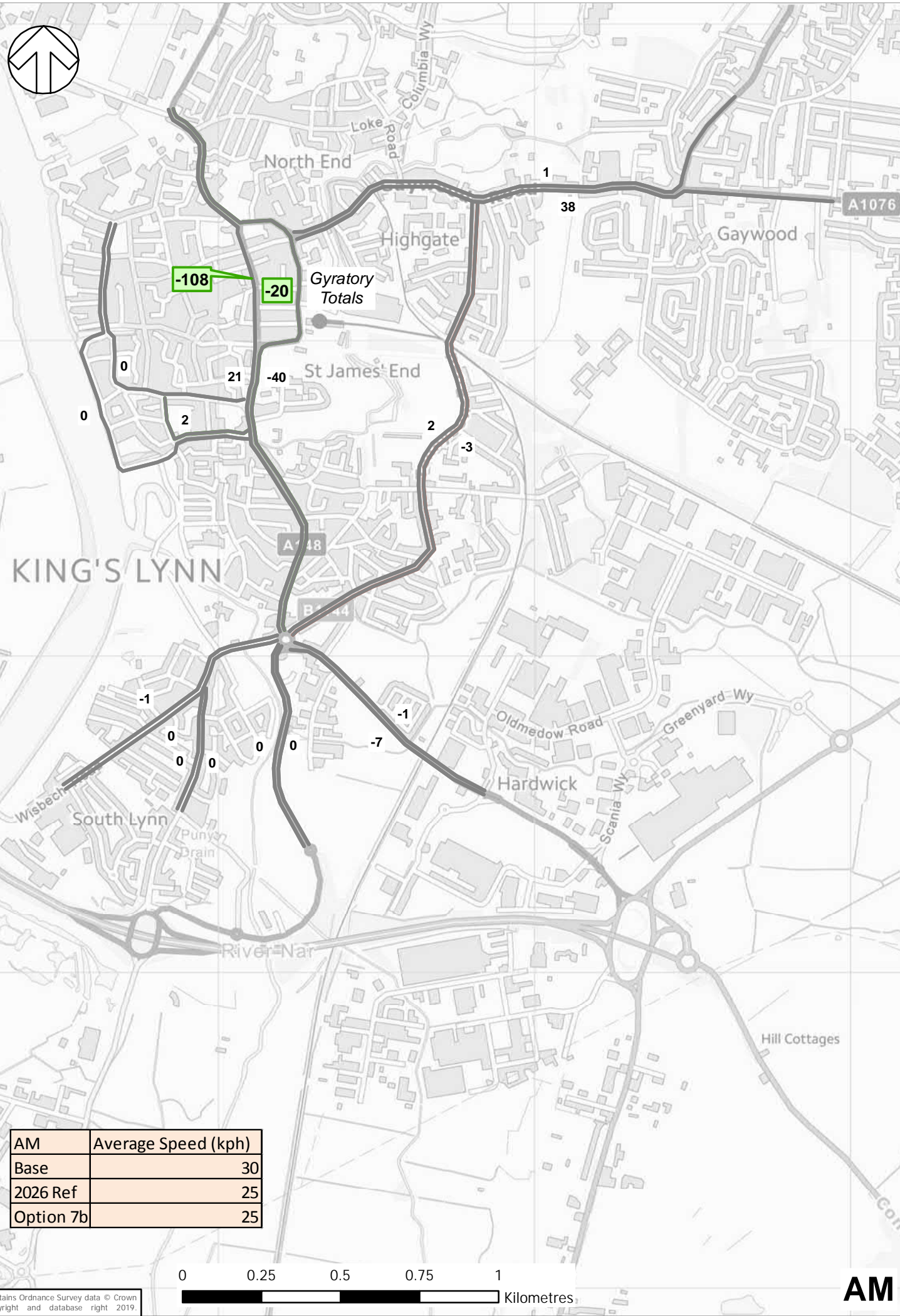


PM	Average Speed (kph)
Base	25
2026 Ref	17
Option 7a	12



TITLE: OPTION 7a
 GYRATORY - RAILWAY ROAD TWO-WAY
 WITH WIDENING OF SOUTHBOUND
 APPROACH ON SOUTHGATES

FIGURE No:
FIGURE 8



Key: Difference in Queue Length (m) Compared to 2026 Reference

- 123 Decreased Queue Length
- 123 Increased Queue Length

Key: Journey Time Change (sec)

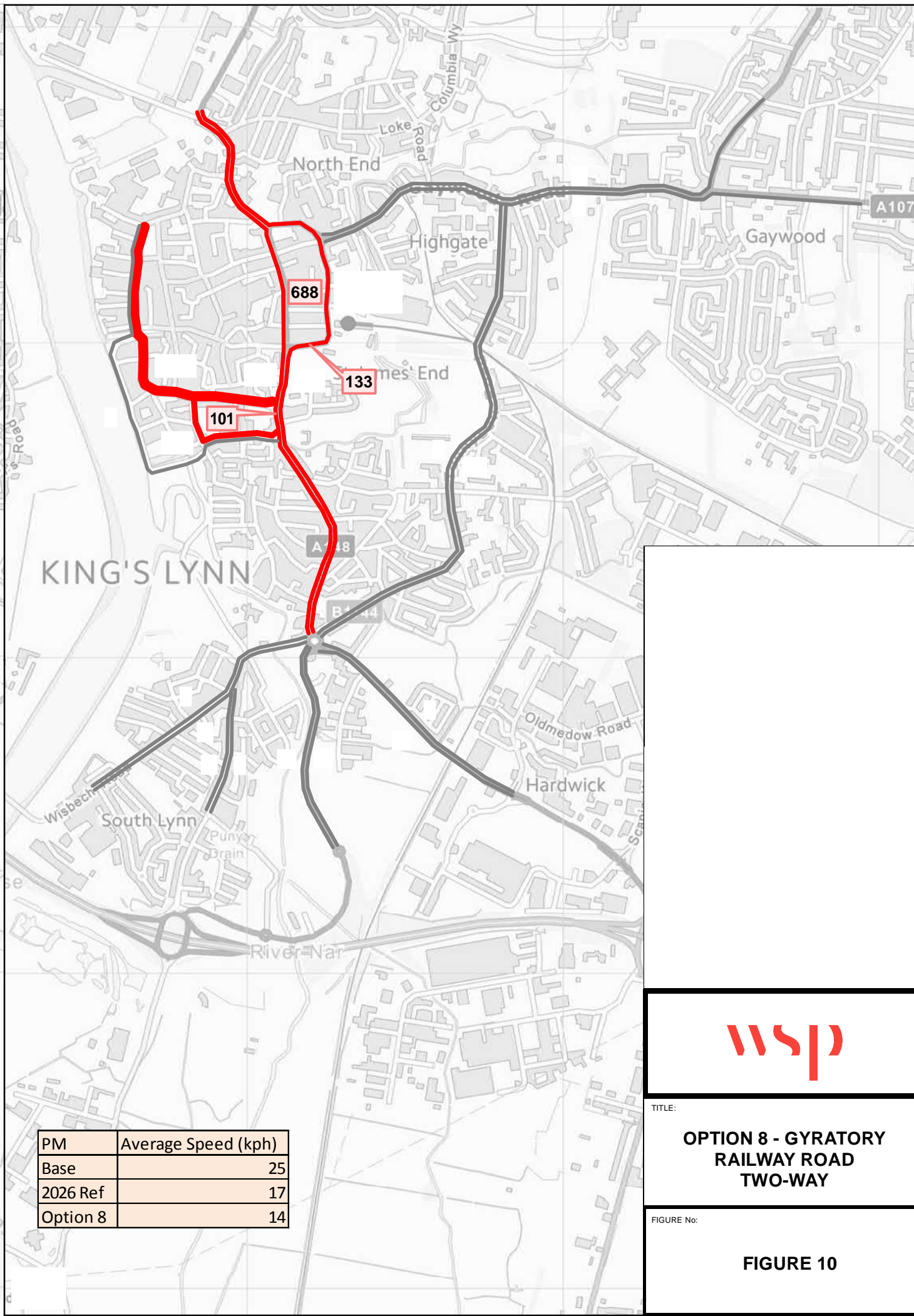
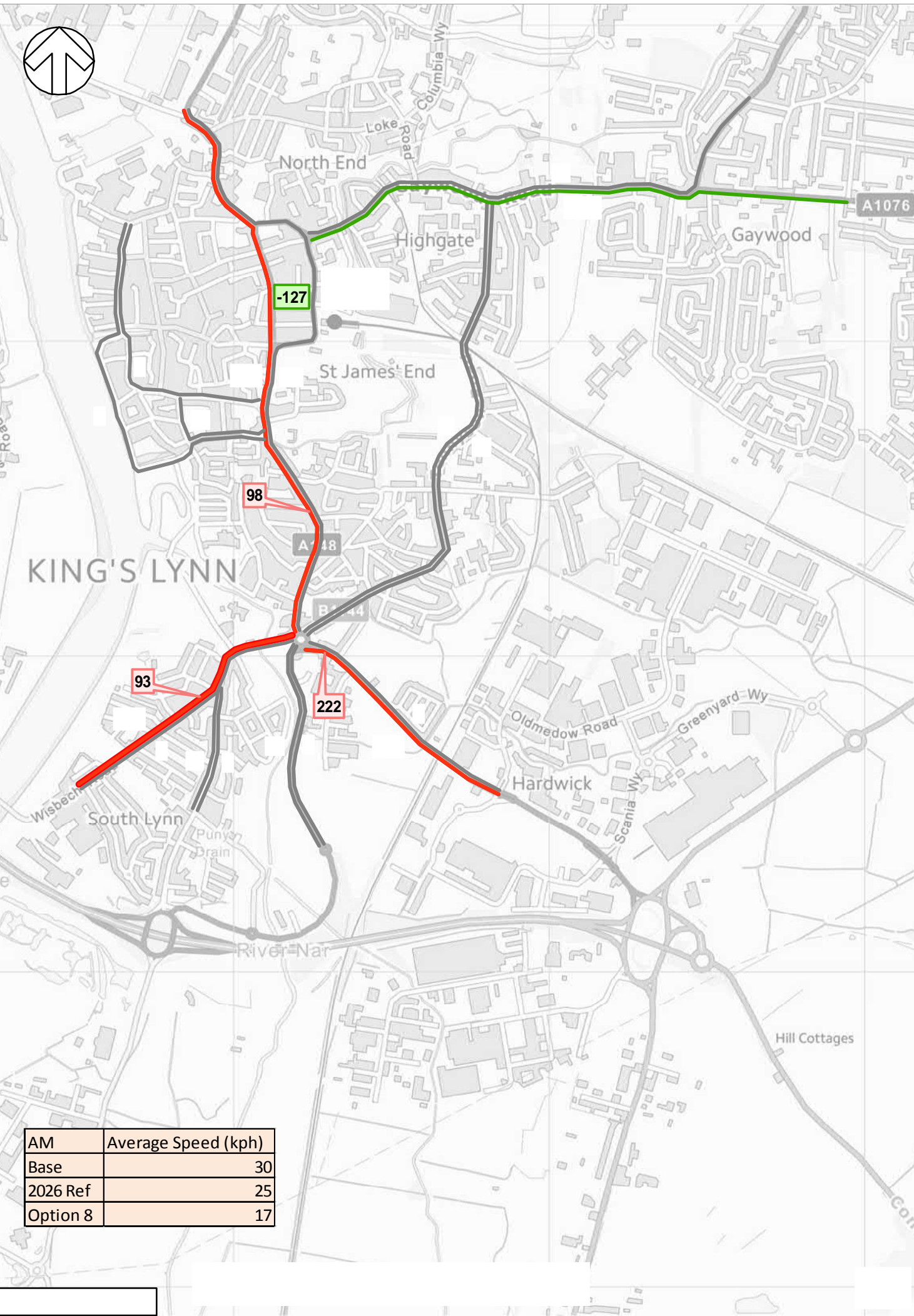
- Shorter Journey Time
- Little / No Difference
- Longer Journey Time

(-)123 Journey Time (Decrease) / Increase (sec)



TITLE: OPTION 7b - GYRATORY RAILWAY ROAD TWO-WAY WITH WIDENING OF SOUTHBOUND APPROACH ON SOUTHGATES AND TWO LANE SECTION NORTHBOUND BETWEEN ST JAMES STREET PAST NORFOLK STREET

FIGURE No: **FIGURE 9**



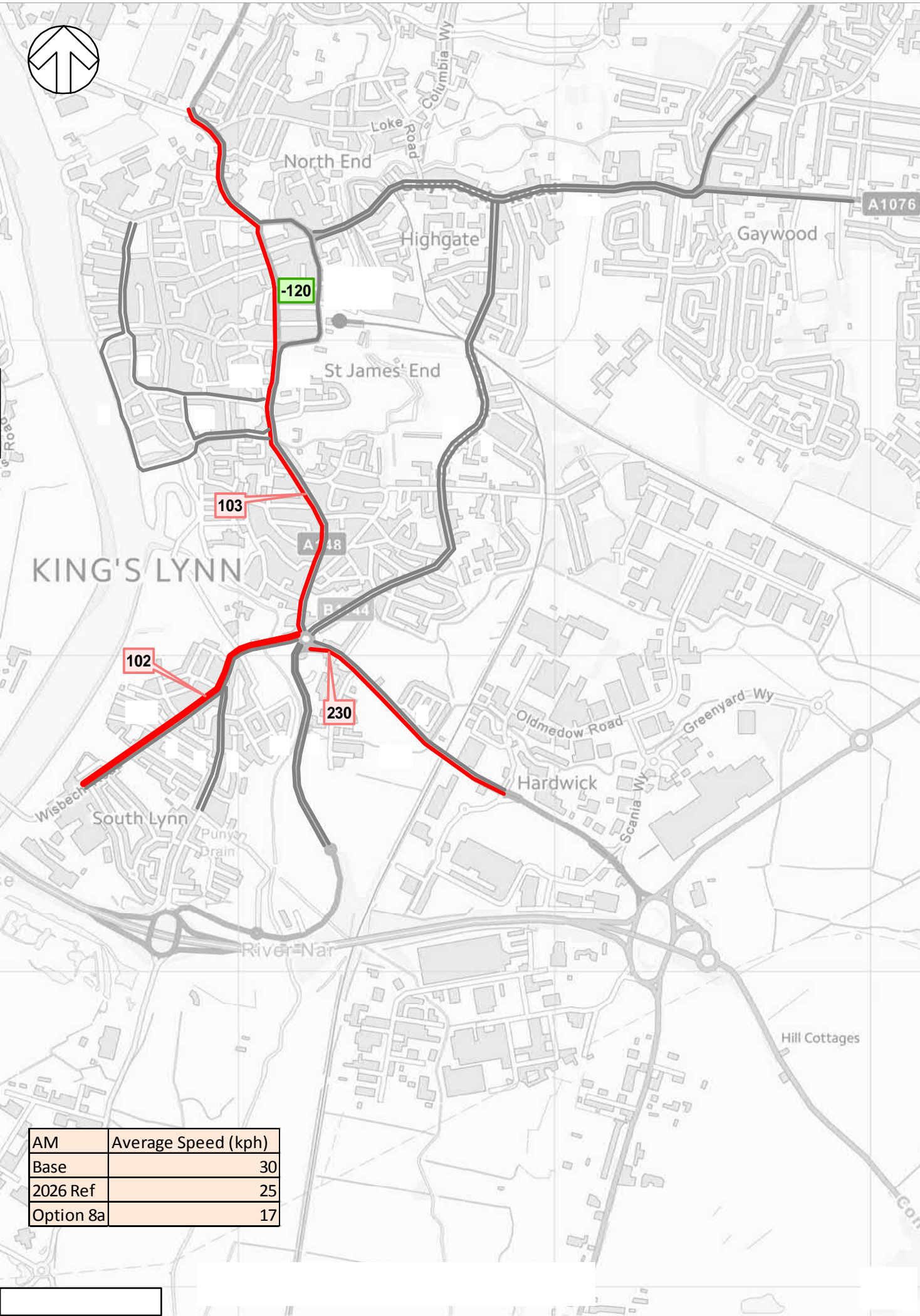
AM	Average Speed (kph)
Base	30
2026 Ref	25
Option 8	17

PM	Average Speed (kph)
Base	25
2026 Ref	17
Option 8	14

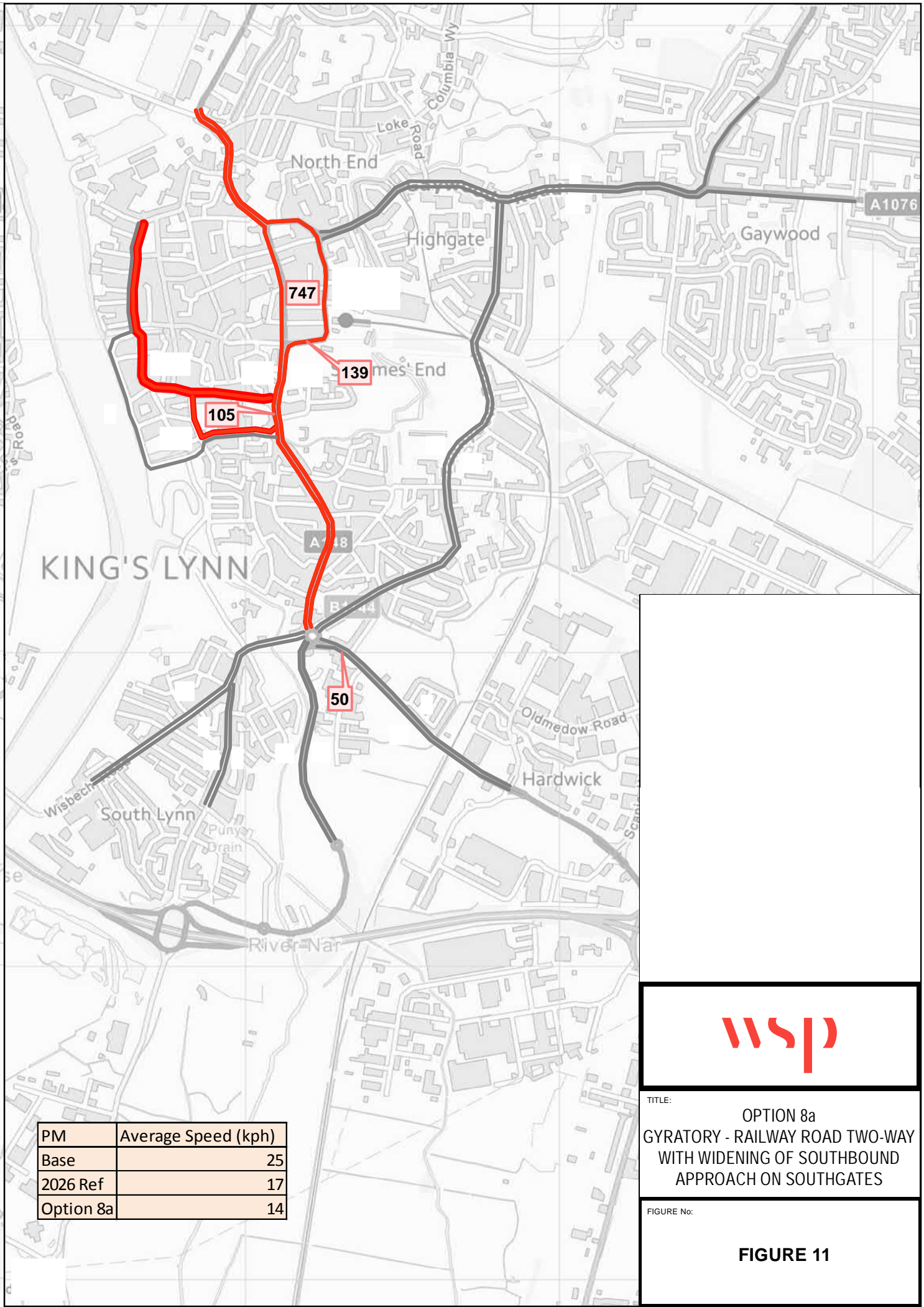


TITLE:
OPTION 8 - GYRATORY RAILWAY ROAD TWO-WAY

FIGURE No:
FIGURE 10



AM	Average Speed (kph)
Base	30
2026 Ref	25
Option 8a	17



PM	Average Speed (kph)
Base	25
2026 Ref	17
Option 8a	14



TITLE: OPTION 8a
GYRATORY - RAILWAY ROAD TWO-WAY
WITH WIDENING OF SOUTHBOUND
APPROACH ON SOUTHGATES

FIGURE No:
FIGURE 11



KING'S LYNN

AM	Average Speed (kph)
Base	30
2026 Ref	25
Option 8b	25

AM PM

KING'S LYNN

PM	Average Speed (kph)
Base	25
2026 Ref	17
Option 8b	20

Key: Difference in Queue Length (m) Compared to 2026 Reference

-123 Decreased Queue Length

Key: Journey Time Change (sec)

Shorter Journey Time

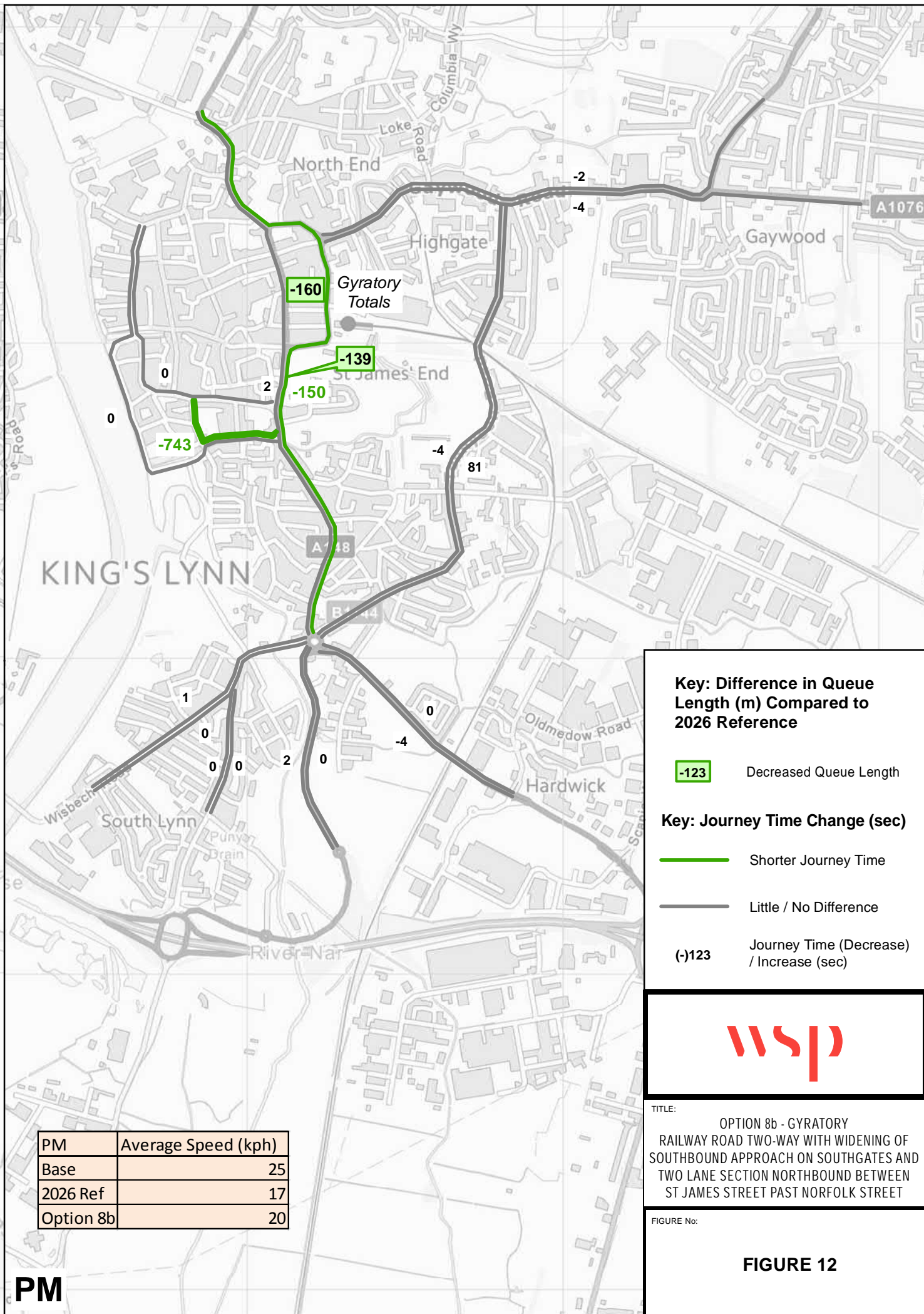
Little / No Difference

Journey Time (Decrease) / Increase (sec)



TITLE: OPTION 8b - GYRATORY RAILWAY ROAD TWO-WAY WITH WIDENING OF SOUTHBOUND APPROACH ON SOUTHGATES AND TWO LANE SECTION NORTHBOUND BETWEEN ST JAMES STREET PAST NORFOLK STREET

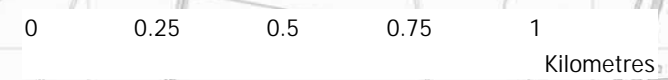
FIGURE No: **FIGURE 12**





KING'S LYNN

AM	Average Speed (kph)
Base	30
2026 Ref	25
Option 9	25



AM

KING'S LYNN

PM	Average Speed (kph)
Base	25
2026 Ref	17
Option 9	19

PM

Key: Difference in Queue Length (m) Compared to 2026 Reference

-123 Decreased Queue Length

Key: Journey Time Change (sec)

Shorter JourneyTime

Little / No Difference

Journey Time (Decrease) / Increase (sec)



TITLE:
**OPTION 9
 SOUTHGATES**

FIGURE No:
FIGURE 13

Appendix D

EXCLUDED SCHEMES (STAGE 2 TO
STAGE 3)



Reference	Theme	Timescale	Option	Reason for not including in Overall Strategy
1.14				Combined and included as STS9
4.1	Active travel	Short	Cycle Route around historic quayside	Combined and included as SAM5
5.5	Traffic Signals	Short	Traffic signal optimisation and right turn arrow into Millfleet from London Road	This will be included in the traffic signal review for King's Lynn as STS10
6.3	Highway Network	Medium	Traffic management associated with A47 congestion	Further pursuance of this will need to be as part of a wider strategy for Highways England.
6.11	Highway Network	Medium	A1076 provide new right turn lane into Queensway	Widening of road to accommodate right turn would result in loss of cycle path facilities.
6.15	Highway Network	Medium	Gaywood Road bus priority and HOV lanes and junction redesign at Loke Road	The road space available for HOV lane and impact on other road users including additional delay for buses is not feasible at this location, however it is recognised through the other measures that this location needs some congestion relief.
6.18	Highway Network	Medium	Hardwick Roundabout capacity improvements / Hardwick Interchange priority for buses	The capacity improvements at this location will be assessed as part of the West Winch housing access strategy, therefore specific priority for buses in advance of this is not currently a priority
7.1	Parking	Medium	VMS improvements for car parking	This will be captured as part of the wider Car Parking Strategy that will be undertaken.
1.20	Buses	Long	Investigate Park & Ride Scheme for King's Lynn	



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Hertford
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