

SWANLEY TRANSPORT STUDY

Phase 2 Option Appraisal and Strategy Report

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Executive Summary

Swanley has a constrained town centre environment, the effects of which radiate out to the surrounding villages of Hextable, Swanley Village and Crockenhill. Kent County Council (KCC), as Highway Authority, along with Sevenoaks District Council, has instructed Sweco to undertake an integrated Transport Study reviewing access to Swanley town centre and the surrounding villages.

This Option Appraisal and Strategy Report forms one of two documents produced as part of this study, which include:

- Phase 1 – Baseline Review Report; and
- Phase 2 – Option Appraisal and Strategy Report

This Option Appraisal and Strategy Report documents Phase 2 of the study process, setting out the process of option development and appraisal. Using the Phase 1 Baseline Review as a basis, it provides details of option generation, sifting and assessment, culminating in the identification of the better performing options which should be taken forward as part of a Transport Strategy for Swanley. The potential options were appraised against the current Sevenoaks District Strategy for Transport and KCC Local Transport Plan priorities and the study objectives.

A summary of the prioritised package of measures is presented in this report within the four categories set out below:

- Infrastructure
- Development Management
- Service Provision
- Operational Strategy

The 'Lead' or responsible organisation(s) for delivery and the potential costs and timescales for potential delivery are identified.

The measures are prioritised in the following packages: Tier 1 measures are designed to be relatively quick to implement. Tier 2 include more ambitious schemes which have the potential to provide more benefits. Tier 3 are schemes that are worth a place within the transport strategy but are lower priority.

A total of 21 measures were identified as Tier 1 'high-scoring' schemes that should form the underlying basis of the Transport Strategy for early implementation. These schemes are breakdown as follows:

- Active Travel – 14 measures
- Public Transport Infrastructure – 1 measure
- Highways, Parking & Freight – Area Wide – 4 measures

- Intelligent Mobility – 2 measures

A further 18 measures scored well and form part of the wider package of transport strategy measures; but may have a lower implementation priority because their deliverability and feasibility is considered to be “Likely with Challenges”. These is the Tier 2 package. A further 22 measures were identified as third-tier schemes that, whilst potentially offering benefits, may be more challenging to implement.

In terms of packaging of measures, alternatively there is potential for a number of measures within common categories to be grouped in relation of mode and category, if funding sources are focused on cycling or health, for example.

1. Introduction

1.1. Report Purpose

- 1.1.1. Swanley has a constrained town centre environment, the effects of which radiate out to the surrounding villages of Hextable, Swanley Village and Crockenhill. Kent County Council (KCC), as Highway Authority along with Sevenoaks District Council, has instructed Sweco to undertake an integrated Transport Study reviewing access to Swanley town centre and the surrounding villages.
- 1.1.2. This Option Appraisal and Strategy Report forms one of two documents produced as part of this study, which include:
- Phase 1 – Baseline Review Report; and
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1.2. Background

- 1.2.1. The Phase 1 Report summarised the findings of the Data Collection and Problem Identification Stage. Previous studies undertaken on behalf of KCC and Sevenoaks District Council (SDC), the Planning Authority, to investigate the issues and opportunities surrounding Swanley, in particular the town centre, have been reviewed and summarised. The Phase 1 Report builds upon the findings of the previous studies undertaken.
- 1.2.2. The issues and opportunities within the study area of the Swanley Transport Study, established during the Data Collection and Problem Identification Stage, can be categorised under the following headings. It should be noted that the issues and opportunities have not been arranged in any order of importance or priority.
- Accessibility to Green Space
 - Accessibility for Pedestrians and Cyclists
 - Accessibility to Bus Services
 - Accessibility to Rail Services
 - Public Realm
 - Car Parking
 - Vehicular Accessibility / General
 - Traffic – Highway Safety
 - Traffic – Congestion

- 1.2.3. The review of the baseline data identified some 27 specific issues within the study area. Of these, nine related to the highway network and congestion. A further fifteen related to accessibility for pedestrians, cyclists and public transport whilst the remaining issues related to car parking and public realm.
- 1.2.4. A Phase 1 Measures and Opportunities Workshop was held on 7 February 2018, facilitated by Sevenoaks District Council and Swanley Town Council. It was attended by Sevenoaks District Council and Kent County Council officers as well as several Town, District and Parish Councillors, Ward Members and Clerks.
- 1.2.5. The purpose of this Workshop was to brief the local community representative groups on the aim of the Study, the stages involved and a summary of the work undertaken to date and the initial findings. The Workshop also provided the opportunity to garner the local knowledge and experience of the attendees, gathering their thoughts on the key issues affecting the study area and potential mitigation measures.
- 1.2.6. Many of the issues and problems raised by the external attendees mirrored those already established through the data collection and analysis work undertaken by Sweco, with the majority relating to traffic congestion and resulting air quality issues, car parking pressures, access to the rail station and poor bus service provision.
- 1.2.7. The external attendees at the workshop also identified some 62 potential improvements measures to mitigate the identified issues and problems. The priority for many of the external attendees was schemes to alleviate the existing congestion issues within the town centre, which in turn would address air quality concerns. Improvements to the bus services and access to the rail station were other key measures identified.
- 1.2.8. The next stage of the Study is the Option Development, Appraisal and Strategy stage (Phase 2) which includes identification of potential options aimed at alleviating the underlying transport issues and problems identified in Phase 1. These potential options will be appraised against the current Sevenoaks District Strategy for Transport and KCC Local Transport Plan priorities and the study objectives.

1.3. Structure of Report

- 1.3.1. Following this introduction, the remainder of this Phase 2 report will be structured as follows:
 - Chapter 2: Issues and Objectives – summarises the findings of the Phase 1 Baseline Review and sets out the objectives of the study;
 - Chapter 3: Option Generation – sets out the appraisal methodology and develops a range of measures to achieve the identified study objectives;
 - Chapter 4: Strategy Development – establishes the overarching framework for the strategy and sub-strategy elements;
 - Chapter 5: Active Travel & Travel Demand Management – examines processes to build upon the existing Green Infrastructure Network and Cycling Strategy work within the District and integrate with Travel Demand Management to encourage active travel;

- Chapter 6: Public Transport – presents an overview of rail and bus measures;
- Chapter 7: Highways, Parking & Freight – presents an overview of highways, parking and freight measures;
- Chapter 8: Intelligent Mobility – sets out a discussion of the concepts of Intelligent Mobility and Mobility as a Service that could be developed and applied within the District;
- Chapter 9 – Option Appraisal – summarises the outputs of the final appraisal of individual and collections of measures; and
- Chapter 10: Prioritised Package of Measures – the final section considers the best performing measures and collates them together into an integrated package of measures for delivery through the transport strategy, including an outline programme for delivery.

2. Issues and Objectives

2.1. Introduction

2.1.1. This chapter summarises the findings of the Phase 1 Baseline Review Report, highlighting current and future transport related issues and opportunities and underlying reasons that establish the need for improvements within the Swanley Transport Study (STS) study area. From this a series of study specific objectives have been developed.

2.2. Summary of Existing Issues and Problems

2.2.1. Previous studies undertaken on behalf of Sevenoaks District Council and Kent County Council and current policy documents have been reviewed and summarised within the Phase 1 Report. The Phase 1 Report built upon the findings of these previous studies.

2.2.2. As detailed within the Phase 1 report, the issues and opportunities within the Swanley Transport Study, established during the Data Collection and Problem Identification Stage, can be categorised under the following headings. It should be noted that the issues and opportunities have not been arranged in any order of importance or priority.

- Accessibility to Green Space
- Accessibility for Pedestrians and Cyclists
- Accessibility to Bus Services
- Accessibility to Rail Services
- Public Realm
- Car Parking
- Vehicular Accessibility / General
- Traffic – Highway Safety
- Traffic – Congestion

2.2.3. The review of the baseline data identified some 27 specific issues within the study area that suffer from existing transport and accessibility issues. Of these, 11 related to traffic including car parking, vehicular accessibility, highway safety and congestion. A further 4 related to public transport, 9 were pedestrian/cycle issues whilst the remaining 3 related to access to green space and public realm.

2.2.4. The Phase 1 study highlighted the importance of bringing forward transport measures and improvements that seek to improve accessibility by sustainable modes of transport and thus, encourage people out of their cars to reduce the level of car trips on the highway network. A reduction in car volumes would in turn, improve air quality.

2.3. Future Issues and Problems

- 2.3.1. Highway capacity work previously undertaken as part of the U+I application concluded that the existing highway layout could physically accommodate the level of traffic through the network under normal conditions and thus, would operate within theoretical capacity in the baseline and future scenarios tested. However, the spatial vision for the future of the District includes further housing development focused in the urban areas of Sevenoaks and Swanley. As a result, there will be increasing pressures on the transport network in the future, particularly the highway corridors of the B258 and B2173 through Swanley town centre.
- 2.3.2. Congestion and associated journey time variability and unreliability is stressful and costly for drivers. It can result in lost productive time to business, impacting on productivity and placing additional costs on businesses. It can also affect commuting patterns and reduce labour market catchment areas, as well as impacting upon shopping and leisure trips.
- 2.3.3. Furthermore, the reliability of bus trips within Swanley town centre would be increasingly affected by congestion, leading to potential issues associated with service reliability. Existing concerns regarding road safety and the environment would also be exacerbated, with negative consequences felt in terms of the local economy.
- 2.3.4. As a result, the future transport related issues and opportunities to be addressed by the Transport Strategy for Swanley can be categorised into five broad areas, as summarised in **Table 2.1**. The descriptions of each of the issues and opportunities have been discussed and agreed with KCC and SDC officers.

Table 2.1 – Future Identified Issues and Opportunities

Categories		Definition of Issues and Opportunities
1	Constrained Economic Growth	Transport related constraints on the highway network into and around the study area, including lost productive time and reduced accessibility are likely to increase over time as traffic growth exacerbates current transport problems. Such issues, which are frequently worsened by congestion on the M25, M20 and A20, may constrain local economic prosperity and productivity.
2	Congestion and Delay	The M25, M20 and A20 accommodate high volumes of traffic through the whole day and are known to experience congestion at peak times, particularly the M25 northbound towards the Dartford Crossing. Similarly, there are relatively high volumes of traffic entering and exiting Swanley Town Centre on the B2173 and B258. As a result, reduced link speeds, increased vehicular delays, poor journey time reliability and reduced noise and air quality is experienced on the main vehicular routes through the study area.

Categories		Definition of Issues and Opportunities
3	Inadequate Transport Infrastructure	Whilst improvements are currently programmed on the M25, including at Junction 3 to the east of Swanley, there are no improvements programmed within the study area and as such, there remains several issues and inadequacies. These include poor junction design, constrained public highway, narrow footways/lack of dropped kerbs and tactile paving on pedestrian desire lines, fragmented cycle routes and limited bus services, particularly in the evening.
4	Safety for all Road Users	Inadequate infrastructure, both in terms of highway layout and pedestrian/cycle networks have raised safety concerns and the potential need for more detailed analysis of accident patterns on some primary route corridors.
5	Lack of Resilience	The constrained nature of the primary routes into and through the study area mean there is limited opportunity to provide physical highway improvements to relieve congestion in peak times. This is exacerbated when there are accidents or incidents on the M25 and/or M20/A20 corridor which can cause significant disruption as vehicles divert through Swanley.

2.3.5. These issues are predicted to worsen in the future, exacerbated by forecast traffic growth both locally and strategically. Increases in traffic volumes and corresponding reductions in capacity of the network could also have negative implications in terms of:

- Accessibility;
- Journey time reliability;
- Air quality and noise; and
- Redistribution of traffic.

2.3.6. The transport related problems discussed above could negatively impact the economic growth and prosperity of Swanley and its surrounding villages, as well as the quality of life and well-being of its residents now and in the future.

2.4. Objectives

2.4.1. In line with the outcomes for transport drawn from KCC’s Local Transport Plan 4 and the transport priorities drawn from the Sevenoaks Strategy for Transport, a set of four Swanley Transport Study objectives have been established, as set out in **Table 2.2**. These support a number of broad themes to which local and regional policies can be aligned and reflect the issues and opportunities identified above. The wording of these objectives has been discussed and agreed with KCC and SDC

Table 2.2 – STS Study Objectives

Study Objectives		Definition of Objective
1	Support and facilitate sustainable economic growth	To provide high quality transport improvements required to provide good connectivity to and within the study area to support and facilitate sustainable employment and housing growth and regeneration. The transport strategy measures should also contribute to protecting and enhancing the natural, built and historic environment to maintain a high quality of life and reduce pollution.
2	Safety management and collision reduction	Working with partners to manage safety and reduce collisions on the transport network through the enhancement and promotion of a safe and secure travelling environment.
3	Tackle congestion, including through the provision of enhanced sustainable travel modes and improved sustainable access and travel choice to help create a sustainable community	Tackling congestion within the study area through the provision of highway and junction improvements to assist with the distribution and free-flow of traffic. Also tackle congestion through the provision of good quality pedestrian, cycle and public transport infrastructure and encourage and enable healthier travel and leisure activities through supporting the provision of integrated public transport networks, travel choice and sustainable access to services to encourage modal shift from the car. This will act to reduce pollution from transport to improve air quality in urban areas and key corridors.
4	Ensure the effective management and maintenance of all transport assets	Effectively and efficiently managing roads, footways and cycleways and to keep the transport network operational and safe in all seasons. As noted by the key stakeholders, this is key to ensure that sustainable travel remains an attractive and feasible option to the private car.

2.4.2. The above objectives, together with the issues and opportunities set out in **Table 2.2**, form part of the framework for appraisal and evaluation of each transport related improvement option considered in detailed within Phase 2 of the Swanley Transport Study.

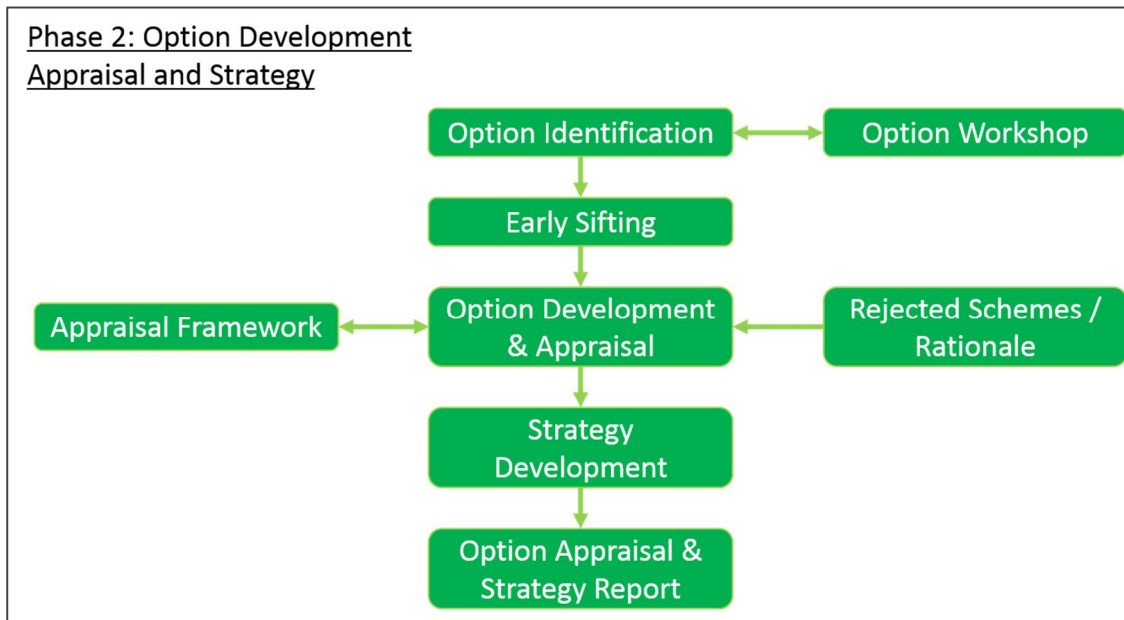
3. Option Generation

3.1. Introduction

3.1.1. The Option Development, Appraisal and Strategy stage forms a key phase of the Study. It includes identification of potential options aimed at alleviating the identified transport issues and opportunities. This stage also provides an opportunity to appraise potential options against the Strategy for Transport/LTP transport priorities and the objectives of the STS.

3.1.2. The key elements of the Option Development, Appraisal and Strategy Stage (Phase 2) are shown in **Figure 3.1**.

Figure 3.1 – Phase 2 Key Stages



3.1.3. The remainder of this Chapter presents the generation of transport related improvement options for Swanley and the wider study area. It details the option generation process and the measures identified to be taken forward for appraisal.

3.2. Consultation and Engagement Process

3.2.1. Phase 2 of the Study was informed by the previous evidence and consultation and engagement strategy outlined in **Table 3.1**. The process consisted of a number of key stages to ensure that stakeholders' views were captured to help inform the option generation and development process.

Table 3.1 – Consultation Summary

Phase	Key Activities	Key Outcomes
Previous	<p>Previous Evidence:</p> <ul style="list-style-type: none"> Recent Studies and existing consultation Feedback 	<p>Objectives:</p> <ul style="list-style-type: none"> Identify local problems and issues Identify previously tested options/solutions and effectiveness/acceptability
Study Specific	<p>On-going Study Specific Evidence:</p> <ul style="list-style-type: none"> KCC/SDC Officer Reviews Meetings Options Workshop 	<p>Objectives:</p> <ul style="list-style-type: none"> Identify local problems and issues Comment on study specific objectives Identify opportunities and desired options for improvement

Previous Evidence

- 3.2.2. As detailed within the Phase 1 report, this study has drawn on the evidence provided in support of a number of policy and strategy documents, as well as recent studies.
- 3.2.3. The data collection has focused on both strategic issues affecting the study area and the associated issues affecting the surrounding transport network, including key public transport links, and issues at individual locations. The outcomes of this work formed the review of previous studies set out within Chapter 4 of the Swanley Transport Study Phase 1 Report.

Study Specific

- 3.2.4. The existing evidence base provided useful input, however it was identified that further study specific consultation should be undertaken to ensure that views on current issues and opportunities, as well as potential improvement measures, for the study area could be captured and developed. As such, workshops with District and County Officers as well as parish, ward and town Councillors and Clerks were undertaken at key stages throughout the Study. Feedback on current issues was incorporated within the Baseline Review, as set out in the Phase 1 Report, and proposed options assessed as part of the option generation and development processes in Phase 2.

3.3. Option Generation

- 3.3.1. Following the identification of the issues and opportunities within the study area, the next stage of the process was to identify and pull together a range of measures or interventions that have the potential to achieve the objectives identified within Section 2.4, to improve the current situation and facilitate future development growth.
- 3.3.2. In line with best practice DfT guidance, a long list of potential measures and options was generated with an unbiased view of historic proposals and local aspirations.

3.3.3. The following sources were used to identify potential measures and options to be considered as part of this study:

- Options discussed at the Inception Meeting (04/01/18);
- Options discussed in previous studies. This was important to ensure that this study takes account of the findings of previous studies which have been undertaken;
- Options discussed at the Issues and Opportunities Workshop (07/02/18);
- New options which have emerged from the findings of the data collection and problem identification stage of the study.

3.3.4. This process resulted in the identification of 98 initial options. These included options that were specific to Swanley town centre as well as the wider transport network and aimed at reducing congestion, addressing safety concerns, improving accessibility by non-car modes and improving resilience.

3.3.5. The 98 measures and options that have been identified for further consideration as part of the study were categorised under the following general headings. These are not listed in any order of priority or importance.

- 1 x Air Quality Measure
- 15 x Highway Infrastructure Improvements
- 4 x Traffic Management Measures
- 5 x Highway Safety Measures
- 1 x Collision Reduction Measure
- 3 x Signage and Road Markings Improvements
- 3 x Inclusive Mobility Improvements
- 9 x Car Parking Measures
- 14 x Bus Infrastructure and Service Improvements
- 4 x Rail Measures
- 31 x Pedestrian and Cycle Improvement Measures
- 1 x Public Realm Improvements
- 2 x Travel Planning Measures
- 2 x Powered Two-Wheeler Measures
- 2 x Freight Measures

3.4. Early Sifting

3.4.1. Due to the significant number of potential measures and options, it was considered necessary to undertake a very high level early sifting exercise ahead of an Options and Measures Workshop with KCC/SDC officers to identify which options were deemed appropriate to take forward as part of the Swanley Transport study, and which were not.

3.4.2. The reasons for options not being recommended to take forward are summarised below:

- Outside of the study area
- Outside the scope of the study, i.e. would form part of another study being / to be undertaken by others.
- Would form part of the highway works associated with detailed planning applications of future developments and thus would be brought forward through planning obligations.
- Could not be brought forward solely by Kent County Council and/or Sevenoaks District Council, e.g. new rail infrastructure.

3.4.3. All the options outlined above and the outcomes of the early sifting exercise were presented to KCC and SDC officers at a Phase 2 Options meeting on 23rd February 2018. Following this meeting the options not recommended to be taken forward, as a result of the early sifting and the discussions with KCC/SDC officers, were removed to generate a definitive list of 62 options to be appraised within Phase 2.

3.4.4. The Option Identification Spreadsheet setting out the identified options and the associated comments and reasoning resulting from the early sifting exercise has been included as **Appendix A** of this report. The options and measures have been grouped together by type and given a unique option code for reference. Separate tables have been provided for the options that have been brought forward for appraisal and those that have been discounted.

3.4.5. It is important to note that the schemes are currently at an early stage and successive scheme development would be required to define the scope of each improvement.

4. Strategy Development

4.1. Introduction

4.1.1. This chapter of the report sets out an overview of the process for developing the overall strategy, including an overarching framework.

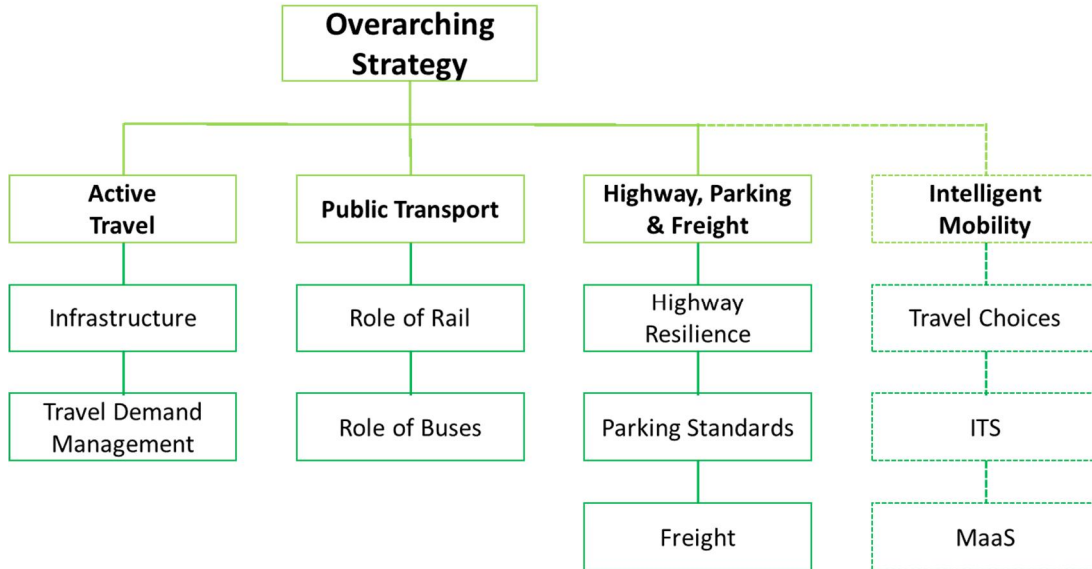
4.1.2. Across the policies, issues and opportunities assessed within the baseline review set out within the Phase 1 Report, a set of common themes emerged. These have been summarised into 12 key themes that provide the underlying basis for the requirements of the transport strategy:

- **Encouraging travel by sustainable modes;**
- **Promote active travel** to reduce congestion, improve air quality and health benefits;
- **Enhance the quality and capacity of public transport provision**, particularly the coverage of bus services;
- **Reduce barriers to movement**, including walking and cycling permeability and rail crossings;
- **Discouraging private car ownership** and/or the level of private car use, particularly for single occupancy trips;
- Continuing to **manage and improve air quality** through measures to reduce vehicle emissions;
- **Improve the resilience of the transport network** to incidents to ensure it is reliable and efficient;
- Recognise the **different socio-economic and land-use characteristics of each place** within the study area and ensure that transport is inclusive and accessible for all needs;
- **Enhance road safety and personal security;**
- **Manage car parks and areas with high demand for on-street parking provision;**
- **Manage the developing role of taxis and private hire vehicles;** and
- **Manage and/or consolidate servicing, delivery and freight movements**, making use of alternative modes of transport and new technologies.

4.2. Strategy Framework

4.2.1. As a means of providing a structure to the strategy development process, an overarching framework has been developed. This has considered the study objectives and appraised the range of scheme measures and policies that could be implemented to deliver against these objectives. This identified four main areas, with a series of sub categories, as set out in **Figure 4.1**.

Figure 4.1 – Strategy Framework



ITS = Intelligent Transport systems; MaaS – Mobility as a Service

Overarching Strategy

4.2.2. The overarching Transport Strategy will take a holistic overview of the integrated elements relating to the management of travel demand and the provision of new and improved infrastructure. It will focus upon the socio-economic and land-use issues affecting the study area and the requirement for a focused strategy encompassing mode choice and demand management.

Sub-Strategy Elements

4.2.3. Four main sub-strategy elements have been identified:

- Active Travel and Travel Demand Management
- Public Transport
- Highways, Parking and Freight
- Intelligent Mobility

4.2.4. Chapter 8 of the Draft Revised National Planning Policy Framework (NPPF) discusses the promotion of healthy and safe communities. It states that planning policies and decisions should aim to achieve healthy, inclusive and safe places which are safe and accessible and support healthier lifestyles, for example through the use of clear and eligible pedestrian routes and layouts that encourage walking and cycling (Para 92). Indeed, within Chapter 9 (Promoting Sustainable Transport), the NPPF states that the planning system should actively manage patterns of growth through limiting the need to travel and offering a genuine choice of transport

modes which can help to reduce congestion and emissions, and improve air quality and public health (Para 104).

- 4.2.5. The sequencing of the sub-strategies reflects the overall transport strategy which is based upon a hierarchal approach to transport provision. This has the promotion of active travel modes (walking and cycling) as the key underlying basis of the strategy, supported by public transport provision, and then other motorised transport. This approach is considered to reflect the latest Government Guidance set out above.
- 4.2.6. The Intelligent Mobility sub-strategy covers the specific use of technology and travel behaviour methods to enhance and influence the way people travel, whilst encompassing aspects of each of the three other sub-strategy elements. The Intelligent Mobility measures set out within this document may be utilised to enhance all types of travel but will primarily reflect the aspiration to promote and encourage active travel and sustainable modes above the use of the private car.
- 4.2.7. The following chapters of this report set out separate sub-strategies developed for each of the four elements discussed above, taking a more focused examination of the issues relating to individual modes, but ensuring an integrated approach across them all.

4.3. Growth Within Swanley

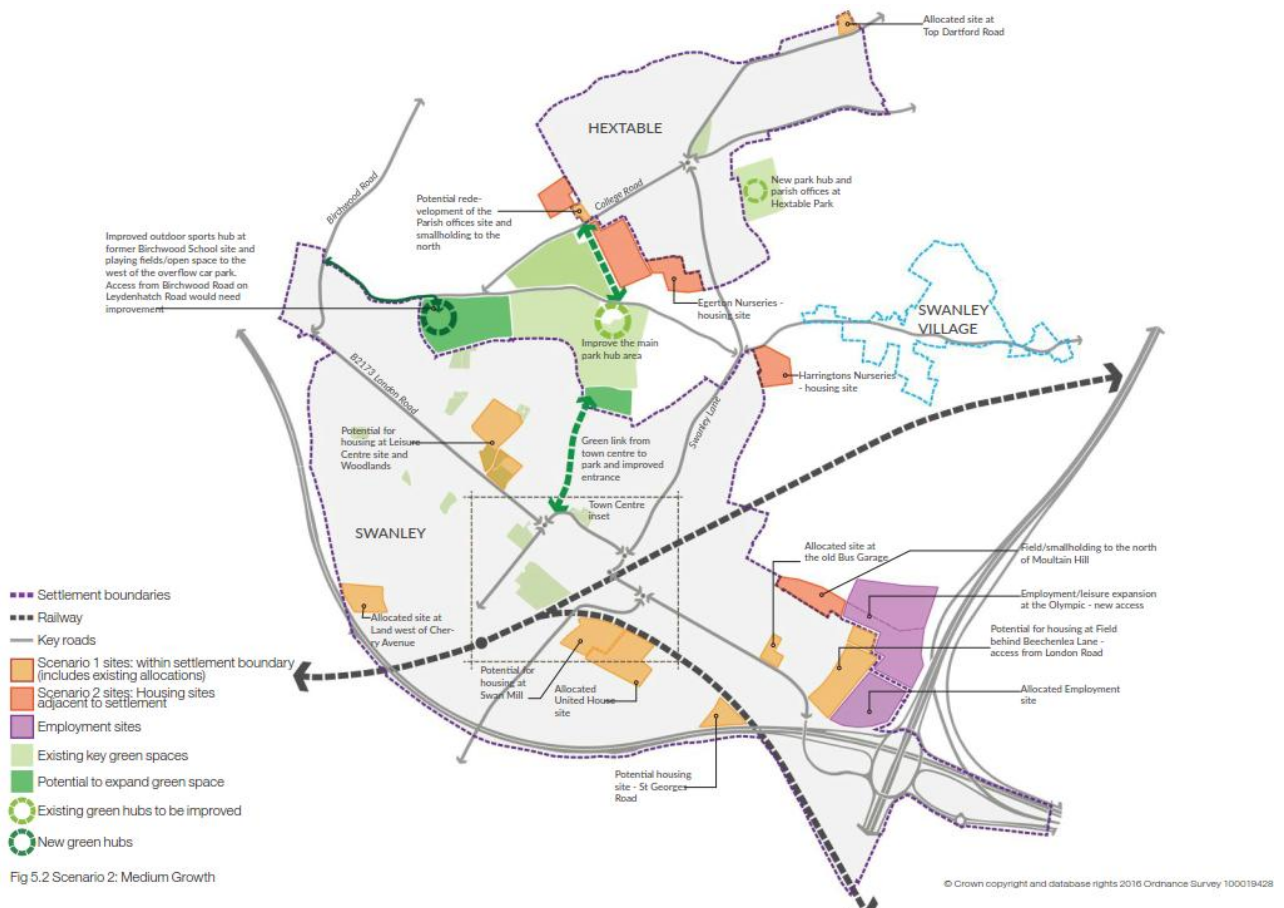
- 4.3.1. The 2011 Census recorded the population of the Swanley area as 20,318, of which 16,226 live in Swanley and 4,092 in Hextable. Swanley is Sevenoaks district's second largest town and together with Hextable, the population of the two settlements exceeds that of Sevenoaks itself. Based on Office of National Statistics (ONS) population projections, Sevenoaks District Council's Local Housing Needs Study (2017) (Page 8) stated that the population of Sevenoaks District will increase from 118,900 in 2015 to 142,500 in 2039. Following the introduction of the Government's standardised methodology for assessing housing need, the unconstrained housing needs for Sevenoaks District for the 20-year Local Plan period (2015-2035) is for 12,400 - 13,960 homes. This equates to an annualised need for 698 new homes across the District.
- 4.3.2. As well as a projected housing growth for the District, there is a projected employment growth. The District's objectively assessed needs for future employment land requirements were set out in Table 10.1 of the Economic Needs Study (2016), which was 11.6 hectares over the Local Plan period to 2035. Furthermore, the Sevenoaks District Retail Study (2016) suggests that there is a requirement for an additional 2,000sqm of comparison goods floor space (Ref. Table 7.4) and 1,600sqm convenience goods floor spaces (Ref. Table 8.3) within Swanley town centre by 2035.

Location of Growth within the Swanley Area

- 4.3.3. The current strategy for housing and employment growth is to accommodate new development within, and respecting, the existing settlement boundaries around Swanley and Hextable. It involves infill development, intensification and regeneration of existing sites and uses. This includes the reuse of previously developed land on the edges of Swanley and Hextable.

4.3.4. It is envisaged that this strategy, based on the Scenario 2: Medium Growth scenario set out within the Master Vision for Swanley, is projected to deliver in the region of 1,200 – 1,300 dwellings and approximately 60,000sqm of employment use. The location of the development sites is illustrated on **Figure 4.2**.

Figure 4.2 – Medium Growth Scenario – Development Locations



Swanley and Hextable Master Vision – Figure 5.2

4.3.5. If a substantial proportion of local residents were to take up the new jobs to be created within the area, they could walk, cycle or travel by bus to work and thus, there would be reduced pressure on medium and long-distance transport networks such as the train and strategic road network.

4.3.6. Whilst the complete “Transformational Growth” Scenario (Scenario 3 within the Swanley and Hextable Vision Report) has not been considered, this Study has taken account of Sites submitted as part of the Local Plan call for sites. This includes a residential led development to the east and west of Beechenlea Lane. This potential development, which consists of some 525 residential dwellings, a community/local centre, sports hall and a healthcare facility. Within the

draft Local Plan, the developable land adjacent to Beechenlea Lane is included as two potential development sites referenced MX54a and MX54b. Site Ref MX54a incorporates the potential development listed above, whilst MX54b includes additional land to the northwest extending from the railway line to Highland Hill to provide some 750 residential units, representing the Transformational Growth Scenario.

Location of Permitted Developments

4.3.7. A proportion of the housing allocation sites already have planning permission. The size and status of these sites are set out in **Table 4.1**, whilst the locations of the sites are indicated (in red) on **Figure 4.3**. It is noted that there are currently no employment allocation sites with planning permission listed.

Table 4.1 – Housing Allocation Sites

Ref	Settlement/Site Address	No. of Units allocated in the Allocations and Development Management Plan	Allocations and Development Management Plan estimated development period	Current Status 2016/17
<i>Policy H1 – Residential Development Allocations</i>				
H1(g)	Bevan Place, Swanley	46	2017-2021	Not started
H1(h)	Bus Garage/Kingdom Hall, London Road, Swanley	30	2012-2016	Not started
H1(i)	Land West of Cherry Avenue, Swanley	50	2016-2021	Not started
H1(j)	57 Top Dartford Road, Hextable	14	2017-2021	Not started
<i>Policy H2 – Mixed Use Development Allocations</i>				
H2(b)	United House, Goldsel Road, Swanley	185	2012-2016	Under Construction

Table 2.2 of the Local Plan Authority Monitoring Report 2016/17

Figure 4.3 – Location of Permitted Housing Development Sites



4.3.8. As detailed within Paragraph 3.36 and Table 3.1 of the Economic Needs Study (2016), the Allocations and Development Management Plan (ADMP) adopted in February 2015 included a total of 10 existing employment allocations within Swanley totaling 22.1 hectares. This included a number of existing employment areas where the intensification and redevelopment would be supported. The existing employment sites are listed in **Table 4.2**, whilst the location of the sites is indicated in **Figure 4.4**.

Table 4.2 – Existing Employment Sites in Swanley

Ref	Site Address	Total Area (Hectares)
EMP1(l)	Wested Lane Industrial Estate	8.2
EMP1(m)	Swanley Town Council Offices	0.4
EMP1(n)	Swan Mill, Goldsel Road	2.6
EMP1(o)	Horizon House	0.3
EMP1(p)	Media House	0.3
EMP1(q)	Moreton Industrial Estate	1.8
EMP1(r)	Park Road Industrial Estate	1.3
EMP1(s)	Southern Cross Industrial Estate	1.9
EMP1(t)	Teardrop Industrial Estate	3.4
EMP1(u)	The Technology Centre	1.9

Policy EMP1 – Land for Business (Page 38 of ADMP, 2015)

Figure 4.4 – Location of Permitted Housing Development Sites



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Sweco UK Limited
Grove House
Mansion Gate Drive
Leeds, LS7 4DN

+44 20 3002 1210
www.sweco.co.uk
Reg.no 2888385

Sweco
Lector Court
151-153 Farringdon Road
London EC1R 3AF

4.4. Issues Arising from Growth

- 4.4.1. Increases in population and employment will have impacts on the transport network, to roads as well as public transport. This section explores how the forecast growth will access the highway network and public transport network.
- 4.4.2. In assessing the future year requirements for transport provision, use has been made of the population and employment projections developed by SDC for the Local Plan, as outlined above.

Forecasts of Highway Demand

- 4.4.3. With reference to the Local Plan Period of 2015 to 2035, the future baseline flows for the traffic analysis has adopted TEMPro growth rates for 2035 as agreed with KCC. TEMPro (Trip End Model Presentation Program) is the industry standard tool for estimating traffic growth. The forecasts within the program take account of national projections of population, employment, housing, car ownership and development trip rates. The resultant forecast increases in traffic flows are set out in **Table 4.3**.

Table 4.3 – Forecast Traffic Growth Rates

Time Period	2035 Growth Factors
AM Peak	15%
Inter Peak	21%
PM Peak	15%
Sat Inter Peak	17%

- 4.4.4. The growth rates have been applied to all background traffic to establish the future year flows on the highway network. The TEMPro rates account for most future development however, the scale of the potential Beechenlea Lane development means this site is not felt to be included. As such, the trips predicted to be associated with this development site, calculated using the industry tool TRICS (Trip Rate Information Computer System), have been added to the future year baseline traffic flows. The resultant AM and PM peak hour baseline traffic flows are included as **Appendix B** of this report.
- 4.4.5. The increases in traffic flows would have to be accommodated on the existing road network as no significant road capacity increases are planned or are likely to be possible. However, it is unlikely that these forecast increases in traffic can be accommodated without further compromising the operation of the highway network. Therefore, a reduction in current car use, and lower future car use, will be essential.
- 4.4.6. The population and employment growth will also increase public transport trips. The programmed improvements to the rail network, as discussed in Section 6.2 of this report, are considered to provide sufficient capacity to cater for increases in rail trips to/from Swanley as a result of the Local Plan. With regards the bus network, this will respond to development as it happens so, whilst there are no planned bus improvements or increases in bus frequencies, the

completion of the planned developments may generate sufficient passenger demand, and associated revenue, to warrant the implementation of bus service enhancements.

4.4.7. It is clear therefore, that there will be a need for more local sustainable transport in the form of local walking and cycling infrastructure and measures, as well as enhancements to public transport provision, to encourage people to switch modes, especially to walking and cycling, and therefore ease congestion on the road network.

4.4.8. The number of freight vehicles, especially vans, is increasing and adds to through traffic. There are a number of measures to mitigate this, which are explored in this transport strategy.

4.5. Developing Improvement Measures

4.5.1. The Phase 1 report identified a series of issues and opportunities for transport and movement relating to both current demands, as well as future year scenarios based on the development and employment strategies for the Local Plan.

4.5.2. Each individual sub-strategy element considers potential improvement measures to target the issues and opportunities and to deliver against the four identified strategy objectives. The improvement measures are summarised at the end of each sub-strategy section.

4.5.3. For potential improvement measures that can be modelled using capacity analysis software, a series of future year mitigation modelling tests were undertaken and are discussed within Chapter 9.

5. Active Travel and Travel Demand Management

5.1. Introduction

- 5.1.1. The existing transport strategies for the Borough and the County highlight a strong level of support for both encouraging active travel (walking and cycling) as a means of promoting healthy living. There is an underlying requirement to ensure as many trips as possible are undertaken by these most sustainable modes so as to reduce congestion and improve air quality. This was supported by the Phase 1 baseline study.
- 5.1.2. Without a strong and well supported active travel strategy, with associated travel demand measures, the growth outlined within the Local Plan cannot be delivered in a sustainable manner. Active travel modes also form an important intermediary function as part of the public transport network and thus, ensuring appropriate connections to and from Swanley rail station and the bus stops throughout the study area are of critical importance.

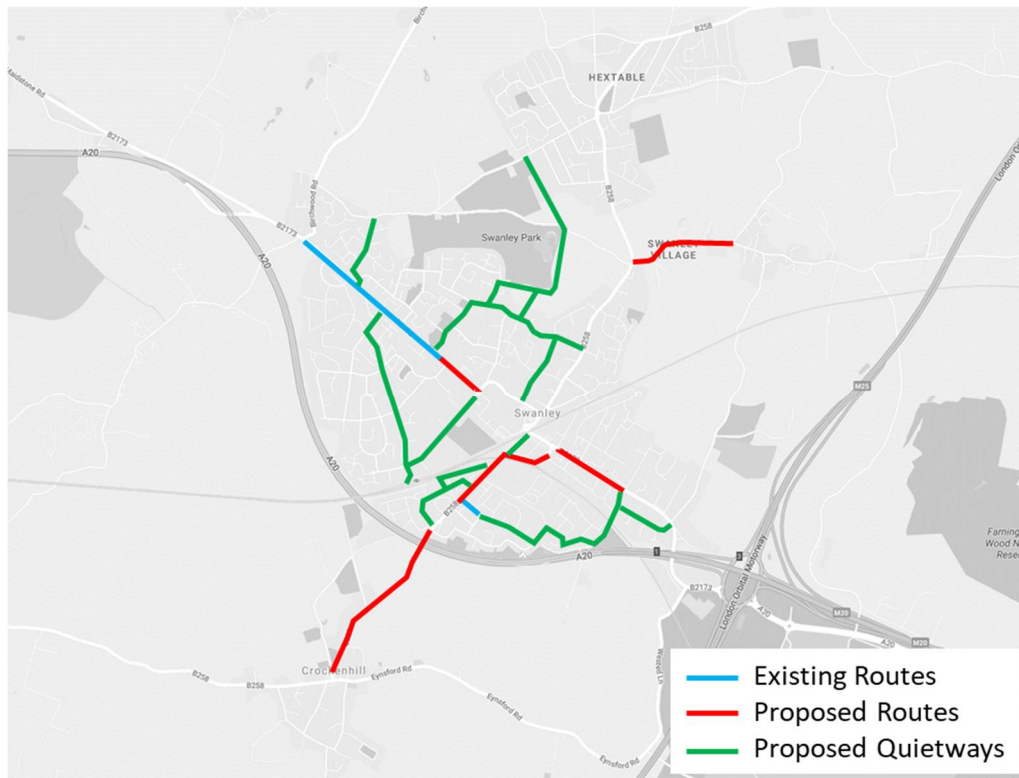
5.2. Context

- 5.2.1. As outlined in Section 11.1 of the Sevenoaks District Strategy for Transport, Sevenoaks District has some of the lowest percentages of population walking/cycling to work/education in the County with only 8.2% compared to an average of 12.6% for the County. However, the objectives of the Strategy for Transport aim to address this by improving the walking and cycling environment to make these modes more attractive to enable people to be less dependent on cars for their travels. This is supported by the Sevenoaks District Cycling Strategy which sets out a plan for developing cycling infrastructure which this Transport Strategy supports and builds upon.
- 5.2.2. Promoting active travel (walking and cycling) is also a key component of the County's Joint Health and Wellbeing Strategy which seeks to improve people's lifestyles and thus their long-term health.
- 5.2.3. Encouraging active travel can be a key initiative in promoting a healthier lifestyle across the study area. One specific initiative is the 'Green Infrastructure' Network which is *'a planned and managed network of green/open spaces, ranging from formal parks/gardens in town centres, outdoor sports facilities and natural greenspace to allotments, church yards and accessible countryside on the fringes of settlements. One of the functions of Green Infrastructure is to conserve and enhance biodiversity, as well as reflecting local character and contributing to quality of life'*. This is not simply about creating routes between locations but ensuring the urban environment is of a sufficient quality to encourage outdoor activities.
- 5.2.4. The evidence gathered from the previous studies is clear that the need to create the right environment and reduce barriers to movement is critical (infrastructure provision), as well as the need to influence travel choices to promote health and reduce emissions (travel demand management measures).

5.3. Study-Wide Infrastructure Provision

- 5.3.1. Improving the cycle and walking network are key elements to encourage more active travel. Swanley's rail and bus links, are dominated by east/west movement whilst road movement north/south is of a comparable level to east/west movement. The existing cycle infrastructure within the study area is also focused on east/west movement.
- 5.3.2. The Borough's cycling strategy has considered a range of options for enhancing the cycling network. In addition to the previously proposed cycling infrastructure, this Transport Strategy has identified additional cycle routes that would further extend and enhance the cycle network to ensure all areas are well served. Notably, the provision of a cycleway between Swanley and Crockenhill along the B258 Goldsel Road, a shared-use footway/cycleway along the B2173 London Road through east Swanley and an on-road facility on the B2173 London Road (west) to link the existing cycle route with the town centre. Potential concept plans for these cycle infrastructure schemes are included within **Appendix C** of this report. It is important to reiterate that these schemes are concept schemes and thus would be subject to detailed design and assessment as part of separate study.
- 5.3.3. The resultant future cycle route map presented in **Figure 5.1** illustrates the potential future cycle infrastructure provision.

Figure 5.1 – Future Cycle Network



- 5.3.4. In addition to the above identified routes, it is recognised that Swanley Village lacks dedicated cycle routes and infrastructure. Therefore, in order to address this significant gap in the network, it is recommended that the provision of a formal cycle route between Swanley Village and Swanley Lane to the west be investigated. This could potentially be provided in the form of a shared use footway/cycleway to address existing footway issues along this section of highway. However, the available highway infrastructure along Highlands Hill is constrained and as such the type and location of this new infrastructure may be subject to third party land acquisition. Therefore, the feasibility, deliverability and affordability of such a route would be subject to a separate study.
- 5.3.5. The cycle infrastructure measures identified can be summarised as follows:
- Existing route upgrades – upgrades to existing signed cycle routes within the study area to achieve a good or better level of service.
 - Quietways – develop and implement a denser network of continuous and convenient cycle routes on less-busy residential streets throughout the study area.
 - New cycle routes – develop and implement new cycle infrastructure and routes so that all areas in the study area are accessible.
- 5.3.6. All of these measures will deliver enhanced connectivity and encourage more cycling, thus encouraging sustainable travel which is a core objective of this Transport Strategy.
- 5.3.7. Building on the cycle infrastructure measures outlined above, this Transport Strategy will develop an approach that has an equal emphasis on walking (building on the Green Infrastructure Network strategy) as well as cycling. A comprehensive set of study-wide active travel infrastructure measures are proposed:
- Ensure all existing pedestrian crossing facilities and bus stops comply with current DDA requirements.
 - Enhance pedestrian footways and crossings throughout the study area to provide a connected, permeable and safe pedestrian environment that will help encourage modal shift away from the car.
 - Ensure that the current and future cycle route network conforms with currently applicable Cycle Design Standards upgrading where necessary.
 - Enhance connectivity through the provision of new cycle routes which enhances connectivity within the study area, prioritising routes between Swanley and Hextable / Crockenhill / Swanley Village, Green Infrastructure areas and development areas to encourage modal shift away from the car.
 - Ensure safer cycling is developed across all wards using a systematic approach to ensure consistency in standard of provision.
 - Support the implementation of quietways throughout the study area to reduce any network gaps.
 - Ensure sufficient off-road cycle parking is provided at key destinations within the study area, such as Swanley town centre and rail station, and is made available as part of developments to remove barriers to the uptake of cycling.

- Use the planning process to ensure sufficient active travel infrastructure is provided through developer funding.

5.3.8. Comprehensive evaluation of the existing pedestrian and cycle infrastructure within the study area would be required to establish specific locations where improvements are required, for example along Highlands Hill, and a subsequent priority for implementation. These additional studies could utilise TfL’s PERS (Pedestrian Environment Review Study) and CERS (Cycle Environment Review Study) methodology to ensure a consistent approach to audit, scheme development and implementation.

5.3.9. The design of any improvements and new infrastructure should be such that it takes account of the surrounding environment to minimise its visual impact and intrusion. For example, any new infrastructure provision to enhance the pedestrian/cycle route along the Avenue of Limes should be such that it does not detract from, or impact upon, the visual and environmental quality of this route and that suitable access restrictions are provided.

Key Infrastructure Solutions

5.3.10. The key walking and cycling infrastructure measures are summarised in Table 5.1. The locations of where infrastructure improvement measures are recommended is illustrated in Appendix D, included at the end of this report. An interactive Options Map is available via the following weblink:

<https://drive.google.com/open?id=1VsU1vg8bZaO7pdyTJpkyDly8j3Q6plZA&usp=sharing>

Table 5.1 – Key Walking and Cycling Infrastructure Solutions

Infrastructure Measures Across the Study Area
Improve the quality of pedestrian and cycle routes by enhancing existing routes and infrastructure and providing new routes/infrastructure where required
Upgrade existing pedestrian crossing facilities to provide enhanced control and DDI compliant facilities
Declutter existing footways to provide additional footway width to improve the pedestrian environment
Delivery the new cycle routes within the study area
Enhance increase cycle parking provision at key destinations to facilitate cycling growth

5.4. Travel Demand Management

5.4.1. Travel Demand Management (TDM) is a way of influencing individual travel behaviour and providing expanded options to reduce the actual demand, or number of vehicles, placed on transportation facilities and exploit areas of the transport network which could be better utilised. Through the implementation of a variety of measures, TDM informs users of their current choices, the impacts choices have on journey times and mode availability, and how changing these choices can improve travel and health. As such, TDM can play an important role in

meeting business and community transportation goals by reducing the strain on the existing highway and parking infrastructure.

5.4.2. TDM typically utilises the '4R Principle' of Reduce, Re-mode, Re-time and Re-route to encourage the following, for example:

- Reduce (the need to travel):
 - Flexible working
 - On-line shopping
- Re-mode:
 - Use alternative means of travel e.g. walk, cycle, public transport, car share.
- Re-time:
 - Travel at a different time of day to avoid congested periods.
- Re-route:
 - Travel a different route to avoid congestion.

5.4.3. A targeted communication campaign would need to reach a range of different audiences, such as residents and commuters, whilst also considering the needs of differing age, ethnic and socio-economic groups. Recognising and supporting the different needs of the residents and visitors across the study area, as well as the characteristics of the wards within it, will be an important element of the active travel measures to encourage active travel through focusing on movement and place.

5.4.4. SDC already encourages walking and cycling through a range of travel demand management measures:

- Providing Bikeability cycle training courses at primary and secondary schools for children in year 4 and above to give children the skills and confidence to ride a bike safely on the road.
- Cycle training for adults to given them the skills and confidence to cycle more often for leisure and work. Courses include:
 - Learn to Ride – Off-road course for those wanting to start to ride a bike but have never learnt before.
 - Confident Road Cycling – Aimed at current cyclists to improve their cycling abilities and give the skills and knowledge to share the road safely with others.
 - Advanced Cycling – For those who cycle regularly on the road but want to advance cycling onto busy roads and through complex junctions.
- 'Kent Connected' initiative which is a web-based travel planning tool which provides you with your smarter travel choices for the journey you are seeking to take.

- Walking Bus Guidance to encourage school children to walk to school in the safety and security of an adult supervised group.
- 5.4.5. The level of forecast growth within the study area makes TDM a key principle in supporting the delivery of the Local Plan. The level of infrastructure provision required to meet forecast growth is simply not achievable and the management of demand across modes will be critical to ensure the infrastructure that is available is used efficiently.
- 5.4.6. Study area wide TDM measures will include:
- Child and adult cycle training, including the promotion of existing initiatives such as bikeability and school sports partnerships, as well as the provision of cycle courses local to Swanley.
 - Develop and support the Kent Connected website to ensure it is kept up to date and relevant.
 - Use the travel planning process to promote active travel to new residents, new businesses and new employees to the study area.
 - Promote local community health walks and active travel initiatives such as National Walking Month and bike week.
 - Work with Kent Police to help minimise cycle theft. Run awareness campaigns for cyclists to increase their safety perception, encouraging cycling.

Key TDM Solutions

- 5.4.7. The key TDM initiatives to be delivered as part of the TDM strategy are summarised in **Table 5.2**.

Table 5.2 – Key TDM Solutions

TDM Solutions Across the Study Area
Develop and promote personal journey planning tools, such as Kent Connected, to inform people of their travel options and the impacts of the choices they make
Promotion of the existing and new footway and cycle routes, including the distribution of public right of way and local cycle route maps to help encourage active travel modes
Promote and develop the cycle training offer available within the study area
Expand and develop school, workplace and area travel plans to raise awareness of travel choices for existing developments
Work with developers to ensure that new residents and employees have the information available about active travel and that it is promoted and encouraged. This can be enforced through travel plans.

5.5. Cycle Parking Standards

- 5.5.1. The current applicable cycle parking standards employed by the District are the those set out within the Kent Vehicle Parking Standards, set out in the Kent and Medway Structure Plan, Supplementary Planning Guidance (SPG) 4 document. Unlike the car parking standards, the cycle parking standards make no allowance for location of development however, the standards take account of the differing needs of cyclists' subject to the purpose of trip.
- 5.5.2. In order to remove barriers to cycling and create a healthy environment in which people choose to cycle, development plans and development proposals should support the delivery of new routes and improved infrastructure. They should also secure the provision of appropriate levels of cycle parking which should be fit for purpose, secure and well located. The level of cycle parking should be in accordance with the minimum standards, with a greater provision encouraged.
- 5.5.3. Inadequate cycle parking spaces and supporting infrastructure discourage people from cycling and thus could encourage a higher level of private car trips. The projected level of housing and employment growth is expected to increase pressures on the highway network, as discussed in detail within the Phase 1 report. In order to avoid significant congestion, especially within Swanley town centre, it will be imperative to encourage alternative means of travel to the private car, such as cycling. Other factors that influence the choice of travel mode to non-residential land uses include facilities such as showers and lockers as well as secure and convenient cycle parking.
- 5.5.4. The projected impact of future growth upon highway congestion and air quality by 2035 would support a review of the residential and non-residential cycle parking standards, which are dated 2006, to reflect current best practice with regards encouraging alternative modes of travel and the increased travel choice available. This will ensure that the parking standards provide the means of reducing potential levels of private car trips thus, reducing the impact of future housing and employment growth upon the operation of the highway network. Ultimately planning applications will need to include an assessment of the cycle parking provision, including a review of cycle route infrastructure and facilities, and impacts to demonstrate that the proposed development will provide cycle parking that is fit for purpose, secure and well located.

5.6. Summary

- 5.6.1. The active travel and TDM measures have been developed in line with the regional and local planning policies to facilitate and promote the benefits of active travel. There is a recognised need for a denser cycling network across the study area to increase the permeability of cycling, coupled with the need for enhancements to create a safer urban realm.
- 5.6.2. Health is a key issue across the study area and thus, it is important that active travel initiatives and measures are prioritised to improve the areas' health and wellbeing for the future. **Table 5.3** provides a summary of the potential measures identified for active travel for the whole study area.

Table 5.3 – Summary of Potential Active Travel Measures

Infrastructure and Travel Demand Management
Improve footway condition and infrastructure within the study area (Swanley, Hextable, Crockenhill and Swanley Village)
All pedestrian crossings to be upgraded to meet all current DDA requirements
Remove unnecessary guard railing and general declutter of street furniture
Improve lighting and feel of Azalea Drive alleyway
Improve streetscape of Station Road as part of an "Old Town" concept
Upgrade / change pelican crossing facility on High Street to a puffin crossing
Provide a dedicated pedestrian/cycle route between Swanley and Hextable - through Swanley Park and Avenue of Limes
Enhance pedestrian linkages into and through the town centre through widening of footways, implementation of shared spaces
Cycle hub at the station - secure parking with links to dedicated cycleways
Provision of shared use footway/cycleway and associated infrastructure along Highlands Hill
Provision of a shared use footway/cycleway or on-road cycle lanes between Swanley and Crockenhill (on Goldsel Road)
West-east "quiet-way" cycle link along Harts Dyke Road and surrounding residential streets to provide a connection between (London Road and St Mary's Road) to provide improved connections to the station and town centre
Provision of a shared-use footway/cycleway along the B2173 London Road through east Swanley
Provision of an on-road cycle route and accompanying infrastructure on the B2173 London Road (west) to link the existing cycle route with the town centre.
Support implementation of Cycling Strategy Routes
Upgrade London Road Pelican crossing (adjacent to Oliver Road) to a toucan crossing
Improve/increase cycle parking provision at key destinations
Improving wayfinding including signing through the town centre, to green space including Swanley Park and other key attractors
Review cycle parking standards for new developments in Swanley and surrounding villages and towns

6. Public Transport

6.1. Introduction

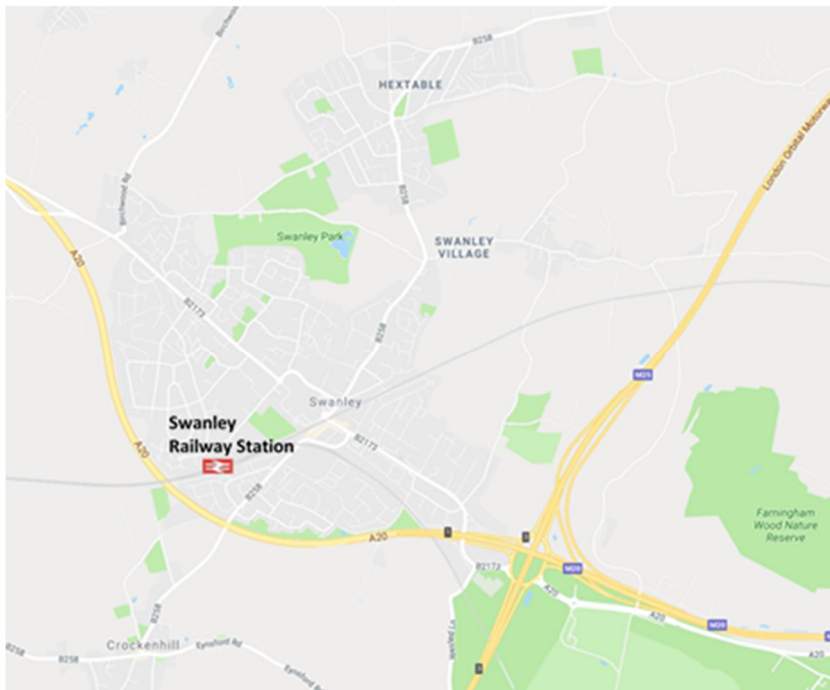
6.1.1. The Phase 1 Report highlighted that public transport is an underutilised mode of transport, particularly for commuter trips, with just 13% of trips from within the study area being made by rail or bus. Of these public transport trips, an average of 83% were by rail highlighting the reliance on rail, which has the second highest modal share behind car. Whilst the modal share would indicate spare capacity on the public transport network, it does indicate that perhaps the existing services, particularly bus, offer a limited coverage.

6.1.2. With the pressures that will be placed on the highway network as a result of the projected housing and employment growth in the study area, the role of rail and buses will become particularly important as a means of transporting higher volumes of people across the study area and wider Borough in a sustainable manner. This will require significant investment in public transport provision.

6.2. Rail Provision

6.2.1. Swanley rail station is the only station within the study area and is managed by Southeastern. It is located to the southwest of Swanley town centre, approximately 700m or 9 minutes' walk from the town centre. **Figure 6.1** shows the location of the train station.

Figure 6.1 – Location of Swanley Rail Station



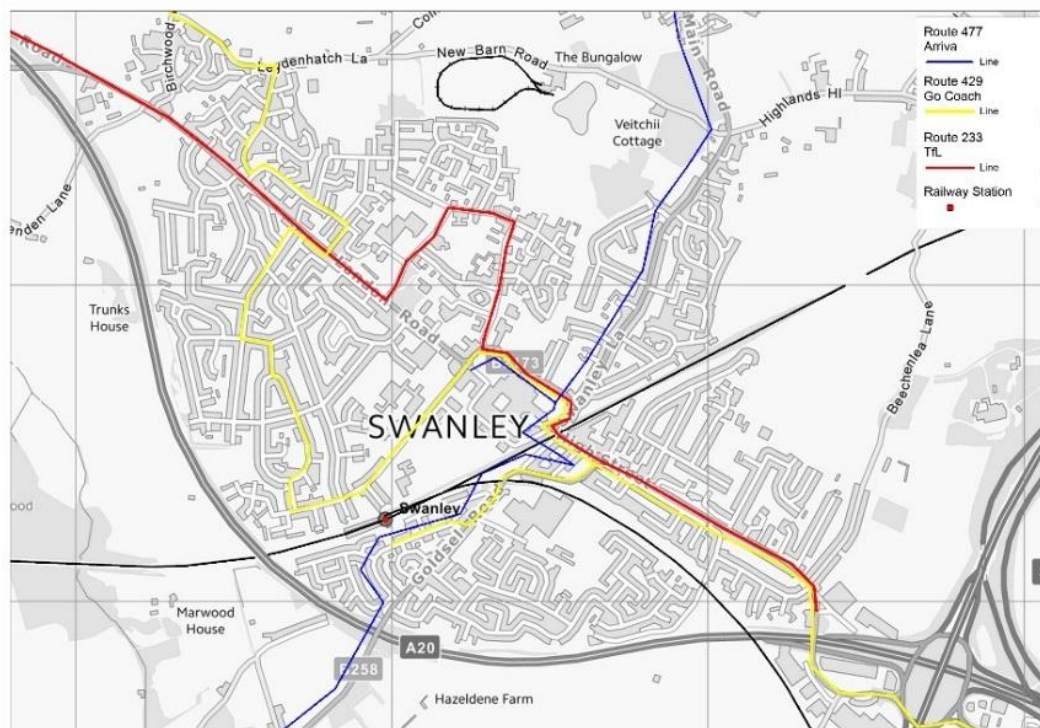
- 6.2.2. Two train operating companies, Southeastern and Thameslink, operate on the rail network servicing Swanley rail station. The Southeastern and Thameslink services provide frequent and direct services to London Victoria via Bromley South and Sevenoaks, with three services per hour throughout the day. The journey time to London Victoria is approximately 30 minutes. Similarly, the Thameslink services from Sevenoaks serve other key destinations within London including Elephant and Castle, London Blackfriars, City Thameslink, Farringdon and St Pancras International. The Thameslink services are available twice an hour in the morning and evening peak times with an average journey time of approximately 50 minutes, into central London.
- 6.2.3. Swanley Station is within TfL Zone 8 and as such, the station is linked with the Oyster Card and contactless payment system which is available across the London Zone 1 to 9. This has acted to simplify commuting into and out of London as well as reducing the price of rail fares for these journeys. As a result, Swanley Station has become a more attractive station for commuters living outside the study area, resulting in increased off and on-street parking pressures within the study area. For journeys to the east and south of Swanley national rail fares apply which may be prohibitive to encouraging rail as an attractive mode for shorter, localised journeys.
- 6.2.4. Most opportunities for enhancing rail provision are restricted to track capacity (generally linked to signalling) and the capacity of the train carriages. The Southeastern rail franchise was retendered in November 2017 and will be run by a joint team from the operator and Network Rail under a single director, responsible for day-to-day performance and accountable to passengers. The franchise requirements specified by the Government stated that the next operator must provide the following improvements (inter alia) by 2022:
- Longer trains and upgrade or replace older trains, creating more space for at least an extra 40,000 passengers.
 - Introduce fast Wi-Fi on all services, making journeys more productive and enjoyable to passengers.
 - Introduce new smart ticketing systems, including a pilot pay-as-you-go.
- 6.2.5. As part of RailPlan 20/20, the Thameslink network has been subject to extensive transformation and modernisation to provide greater capacity, more frequent services with fewer interchanges and access to more destinations. From 2019 the Sevenoaks line into London joins central London up to Welwyn Garden City. In addition, there will be a new twice hourly Thameslink service throughout the day which will reinstate a direct line between Maidstone East and London Bridge, and from there on to Blackfriars and across central London. All of the planned improvements will combine to provide simplified services and new travel opportunities, with increased passenger capacity.
- 6.2.6. KCC and SDC are working in partnership with Southeastern to develop station improvements at Swanley Station to improve accessibility to the station and to make it feel more open and welcoming, so creating a better gateway to Swanley. Improving the interchange between the station and sustainable travel modes such as public transport, walking and cycling will be key to encouraging sustainable travel patterns and thus, a shift from the private car.
- 6.2.7. These planned changes to the rail network and station are, obviously, not within direct control of the Borough and are dependent upon wider network planning by National Rail and the rail

operators. However, their implementation, alongside improvements to interchange with buses and to the pedestrian/cycle environment, is considered critical to the sustainable delivery of housing and employment growth in the study area. The introduction of simplified and cheaper fares would also act to make rail travel more attractive, particularly for shorter localised journeys.

6.3. Bus Provision

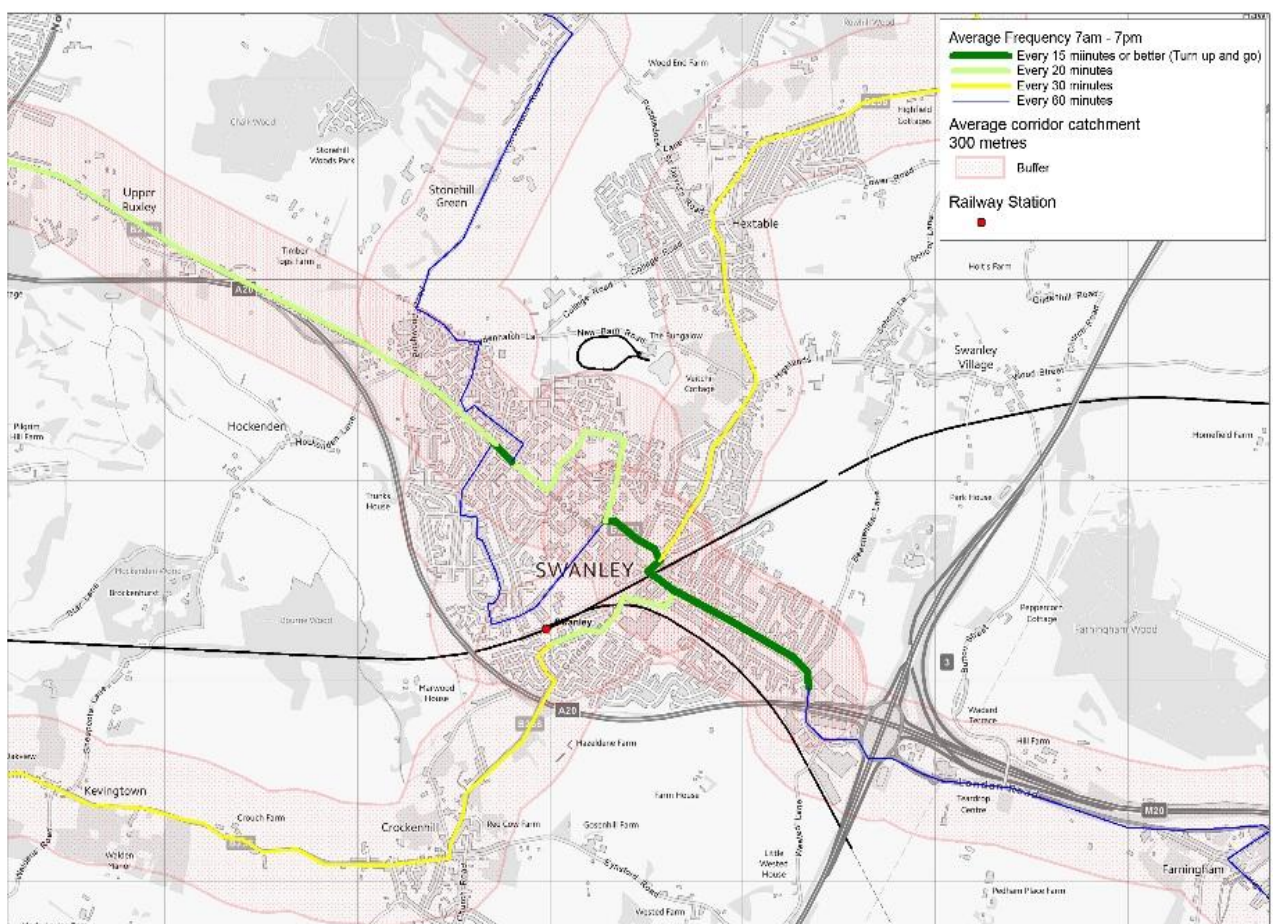
- 6.3.1. The role of buses as part of the wider public transport network is considered very important, not just in terms of its potential to transport a larger volume of passengers but also the type of market served. Buses have the potential to provide a more flexible service to enable penetration within residential and employment areas, as well as to directly service important public service institutions, such as hospitals and education facilities, as well as leisure facilities and rail stations. Therefore, good bus service provision will be key to ensuring the sustainable delivery of housing and employment growth.
- 6.3.2. The study area is currently served by three core bus routes, the 233 (operated by TfL), 429 (GO-Coach Hire) and 477 (Arriva), all of which serve Swanley town centre via Bartholomew Way in the AM, Interpeak and PM time periods. The routes of these three services are shown on **Figure 6.2** below. It can be seen from **Figure 6.2** that Routes 429 and 477 serve Swanley rail station, whilst Route 477 serves Hextable and Crockenhill.

Figure 6.2 – Bus Services within Swanley



6.3.3. **Figure 6.3** illustrates the coverage of the existing bus services within Swanley based on a notional 300 metre buffer from routes, which results in a maximum walking distance of 400 metres (based on the Chartered Institution of Highways and Transportation (CIHT) Buses in Urban Developments Guidance (2018)). **Figure 6.3** shows that, for the most part, Swanley has strong bus corridor coverage. However, there are gaps in the service in west Hextable and south east Swanley. Furthermore, as highlighted in the Phase 1 report, the town settlement pattern and railway severance means that, in order to attain wider coverage in the area, each of the bus routes has at least one indirect diversion to increase its coverage.

Figure 6.3 – Existing Bus Route Coverage within the Study Area



6.3.4. Only a short section of London Road offers “turn up and go” frequencies, i.e. bus services approximately every 15 minutes. However, it is noted that the Route 233 has a minimum frequency of every 20 minutes which represents a good rural service frequency. North west and south west Swanley are only served by one bus per hour (Route 429). Hextable is only served

by approximately one bus every 30 minutes (Route 477). The rail station is only served by one service every 30 minutes. Route 233 offers a frequent evening service towards Sidcup and Eltham. Route 477 offers limited evening services between Swanley and Bluewater. However, there is no evening service for Swanley railway station or Crockenhill.

- 6.3.5. The Phase 1 report highlights that the existing bus route network is mainly used to connect Swanley to local urban centres and areas that are not directly connected by rail. However, infrequent indirect services currently limits the attractiveness to use the bus, particularly for wider local trips. This is reflected in the low bus modal share figures set out in the Phase 1 report.
- 6.3.6. Therefore, a continual enhancement programme will be required in order to ensure that bus service coverage and frequencies meet increasing demand as the population and jobs increase across the study area and also to ensure that the network operates efficiently.
- 6.3.7. Potential measures to enhance the bus network are summarised below:
- Focused bus service changes on key corridors that improve directness, journey time and reliability of the routes so that they can compete better with the car. This will, in turn, support an increase in service frequencies over the whole day and ensure that the bus is a feasible alternative at all times of the day. An example of this approach can be seen in Ashford with their 'Little & Often' fixed route, high frequency service.
 - Identify a location for a potential 'flagship' stop in central Swanley to allow for seamless, safe and quick interchange between core bus services.
 - Alongside core bus services, develop an on-demand hybrid taxi/bus service with greater Swanley area coverage offering wider connectivity to the market and town centre, railway station and business parks from local areas.
 - Greener buses and where necessary, match capacity to demand to reduce excess vehicle emissions.
- 6.3.8. The attractiveness of buses is also influenced by the quality of facilities at bus stops and the availability of timetable and fare information. Measures to improve the quality of the offering by bus may include:
- Provision of new or improved shelters.
 - Legible timetable and fare information at every stop, including how to obtain real-time information on mobile devices and telephones. This could include developing a local fare zone for Swanley, with easier contactless mobile and card payment systems.
 - Bus kerbs to ensure that each stop is fully accessible in accordance with current DDA requirements.
 - Real time displays at key stops, interchanges and destinations within the study area – to include rail information where possible.

- Development and promotion of easily accessible bus network route maps, timetable information and realtime information online, as well as in App form.
- 6.3.9. The constrained nature of the existing highway network means that the opportunity to provide measures to prioritise bus movements across the highway network are limited. However, it is recognised that the delivery of enhancements to the pedestrian and cycle infrastructure and rail services offer the potential to reduce the level of car trips on the highway network. A reduction in car trips on the highway network offers an opportunity to re-optimize bus service provision and utilise improved highway network capacity for better bus provision.
- 6.3.10. App based demand responsive bus services are beginning to occur in the UK. Typically, by using an app, the person is picked up within 10 minutes of calling the service or at an allotted time, by a high specification mini bus with allocated leather seats and USB chargers. The app allows prospective passengers to identify a pick up and drop off point. Charges have been shown to vary between £1 per mile to £2.50 per trip. The majority of operators use the software of global ride sharing firm Via to route vehicles in real time to find the optimal route for their trip. Newly established operations include:
- **Sittingbourne (Kent)** – Arriva Click (operated by Arriva);
 - **Oxford** - Pick Me Up (operated by Oxford Bus Company / Go Ahead); and
 - **Bristol** – Slide (operated by RATP Dev).
- 6.3.11. General characteristics for demand responsive services include:
- they operate within an identified boundary of approximately 5km radius;
 - they are anchored by key trip generators such as central railway stations, town centres, and business parks; and
 - they operate all day but do not have a fixed route or timetable.
- 6.3.12. The core role we would see for such a service in Swanley would be for it to connect the core trip generators of the railway station and primary employment areas to the more dispersed local residential population. There is also see scope to connect the local residential areas away from core bus corridors to the town centre and any potential bus hubs. It is considered that such a bus service as a better fit to serve local trips in the area due to the dispersed nature of residential development, often located away from direct corridors and requiring time consuming diversions for fixed bus routes. In turn, adopting such a service would provide scope to allow the core bus services to focus on developing more direct high demand links between Swanley and other urban centres and trip generators in the region. Upon adoption of this system, it is recommended that the use of a surcharge, as used in Oxford, whereby an additional fare is added where a requested demand responsive journey could have been reasonably undertaken by the core bus network. This would ensure the continuing viability of the core bus services.
- 6.3.13. Typical physical measures to prioritise bus movements include bus lanes, bus gates or bus only routes and bus priority measures at junctions. However, the constrained nature of the existing highway network means that the provision of such facilities is unlikely to be feasible or deliverable within the extents of public highway. Similarly, whilst consideration could be given

to the diversion of buses along Asda Walk as part of a bus only route, it was noted that the bus operators were not supportive of the proposal to divert buses along Nightingale Way and would have similar concerns about Asda Walk. As such, the transport strategy for buses will focus on enhancements to kerbside controls and to remove or limit obstructions to bus movements, with the implementation of wider transport measures that will ease congestion in turn improve bus journey times.

- 6.3.14. New developments should make reference to the Chartered Institution of Highways and Transportation (CIHT) Buses in Urban Developments Guidance (2018). Where the development is of sufficient size, the application should outline how it is being developed as a ‘Bus-orientated development’ with developments planned around bus stops, stops are easily reached by a network of footpaths and stops no more than 600 metres apart. All developments should ensure high quality direct access from all of the development to the local bus stops with high quality paving and sufficient footway widths for waiting and passing pedestrians, with an avoidance of parking or loading in the vicinity of the stop.
- 6.3.15. The process for identifying service frequency and routing enhancements, new services or increases in vehicle capacities, along with bus stop enhancements and bus priority measures will need to be undertaken through detailed analysis of development over time and will be led by KCC and the bus operators. Furthermore, enhancements to the bus network will need to complement additional rail service provision to provide a comprehensive public transport network to meet the needs of residents and workers within the study area.

6.4. Summary

- 6.4.1. **Table 6.1** provides a summary of the potential measures identified for active travel for the whole study area.

Table 6.1 – Summary of Potential Public Transport Measures

Potential Public Transport Measures
Improve existing bus routes including enhanced frequencies, hours of service and coverage within Swanley to better serve key facilities and destinations such as Swanley Station and Bluewater
New market day bus service to provide an accessible alternative to the car to mitigate congestion and air quality issues on market days
Greener buses and where necessary, vehicle capacity enhancements to improve air quality and match capacity to demand to reduce excess vehicle emissions (i.e. more frequent but smaller buses).
Improve bus stop facilities including the provision of shelters, bus kerbs and legible timetable and fare information
Provision of a new bus interchange (flagship) facility that better serves the town centre
Develop on-demand hybrid taxi/bus service for greater Swanley area coverage.
Quality bus partnerships and total transport initiatives

7. Highways, Parking and Freight

7.1. Introduction

- 7.1.1. The highway network is an integral part of the transport provision within the study area, providing both strategic connections as well as local access. It serves both private car trips, but also encompasses a primary role for the movement of goods. The Phase 1 report has identified existing issues and problems with congestion and air quality and the need to ensure mitigation measures are introduced to not only improve current conditions, but to ensure that future projected growth in housing and employment can be sustainably delivered.
- 7.1.2. The provision of parking is connected to private car use and is one of the number of influencing factors in the levels of car ownership and car usage. Off-street parking is provided within both private developments (most notably Asda and Nightingale Way) and public car parks, whilst managed on-street parking is available on County and District roads.
- 7.1.3. A changing market for freight deliveries and servicing that reflects changes in technology and lifestyles means that the management of freight servicing and deliveries, particularly within high density developments, is a key challenge to facilitating projected growth in the study area.
- 7.1.4. All of these elements combine to influence the level of traffic, congestion and emissions across the highway network within the study area. Providing an integrated strategy for managing these elements will be an important component of the overall Transport Strategy for Swanley.

7.2. Highways

- 7.2.1. Resilience of the network to incidents and disruption, and air quality are the key themes that relate specifically to future highway provision.

Infrastructure Provision

- 7.2.2. Opportunities within the study area for large-scale highway infrastructure measures, such as a new crossing over the railway line as part of a northern perimeter road, are limited both in terms of policy as well as physical delivery.
- 7.2.3. In the wider regional context, the Lower Thames Crossing is a well-developed scheme that will provide a new crossing of the Thames Estuary linking Kent with Essex. The aim of the new crossing is to provide a safer, faster, more reliable road that will improve the resilience of the wider road network and relieve the congested Dartford Crossing and approach roads. The project is currently at consultation stage with an expected opening date of 2027, which is within the Local Plan period.
- 7.2.4. Highways England's Improvement Programme also includes improvements at M25 Junction 2 to improve the interchange with the A2, thus increasing capacity at the junction. These improvement proposals are still subject to a planning application and as such, has a timeline of 4-5 years. However, the projected completion date of 2022/2023 is within the Local Plan period.

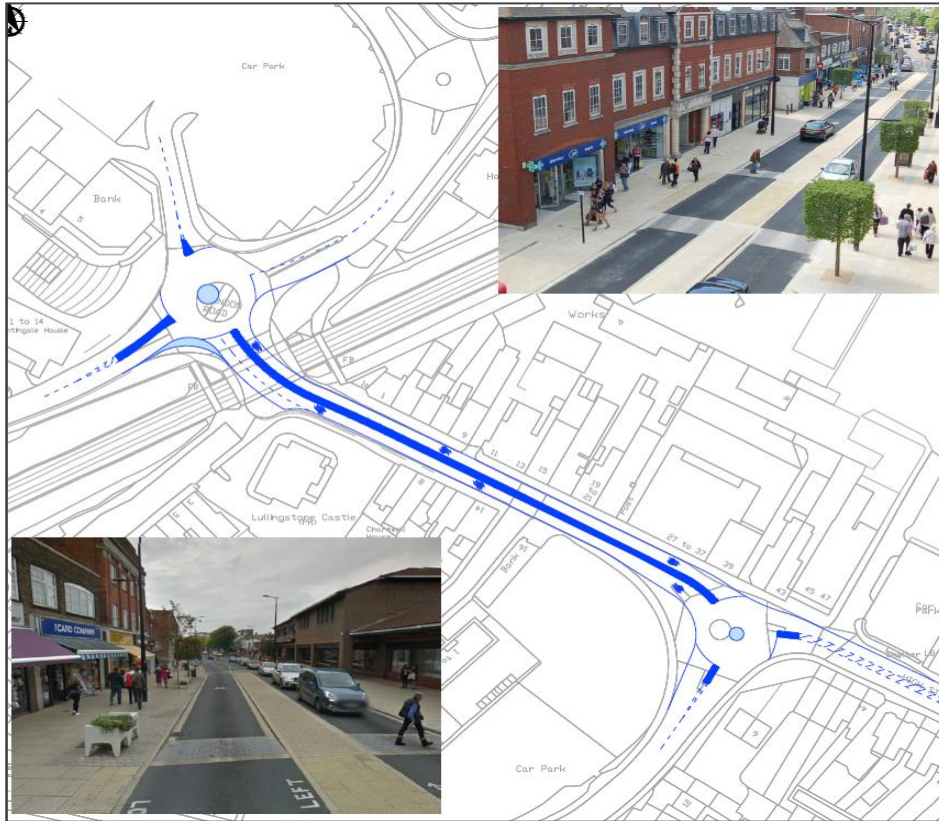
- 7.2.5. The lack of an all movement access junction to and from the A20 to the west of Swanley was highlighted in the Phase 1 report as a key factor which influences traffic movements, and thus volumes, through Swanley town centre in particular. Similarly, it was identified within Phase 1 that congestion on the northbound M25 exit slip at Junction 3 could potentially be relieved through the provision of a new link between the slip road and Wested Lane which would allow drivers to bypass the junction, particularly those wishing to travel via Crockenhill, or the provision of a slip road directly between the M25 northbound carriageway and the westbound A20 removing traffic from the existing roundabout.
- 7.2.6. The Phase 1 Report highlighted that the existing highway network through Swanley town centre, specifically the B2173 and B258, currently operates within its theoretical capacity and that congestion is primarily caused by incidents and delays on the surrounding strategic road network resulting in high volumes of traffic diverting through Swanley. As such, existing levels of congestion could be significantly alleviated by the implementation of large scale highway improvement works, such as those discussed above. The implementation of such schemes is outside the control of SDC and KCC and thus would need partnership working and agreement with Highways England, who are the highway authority for the A20. Third party land ownership issues are also likely to impact the deliverability and affordability of such a scheme and as such, a detailed assessment of the feasibility of this proposal and its impacts would be required subsequent to this study.
- 7.2.7. Notwithstanding, the future year traffic modelling undertaken previously (as outlined in the Phase 1 report) indicated that the existing highway network may have insufficient resilience to accommodate the forecast future traffic growth through the area. As a result, traffic capacity issues are forecast on the B2173 and B258 into and through Swanley, particularly at the following key junctions within the town centre:
- B2173 London Road / B258 Goldsel Road / B258 High Street roundabout junction
 - B258 High Street / Nightingale Way/Asda Car Park Access/B258 Swanley Lane roundabout junction
 - B258 Swanley Lane / B2173 Batholomew Way roundabout junction
- 7.2.8. These areas of localised congestion could be relieved through junction capacity enhancements and local network management.
- 7.2.9. In addition, a major housing allocation at Pedham Place could require further enhancements to Junction 3 of the M25 and Crockenhill Lane, Wested Land and Eynsford Lane. The transport requirements for this potential major housing site should be the subject of a dedicated study, including discussions with Highways England, and are not considered further in this report.

Junction Capacity Enhancements

- 7.2.10. Junction capacity enhancements could involve physical works to change the overall geometry and layout of a junction to provide additional carriageway space to increase the volume of traffic it can accommodate, or it could involve changing the operation of the junction, for example providing traffic signal control as a means of managing traffic flow through a network.

- 7.2.11. Mitigation tests were undertaken to assess potential junction capacity enhancement measures on the section of highway network outlined in Paragraph 7.2.7 above. With reference to the modelling work discussed within the Phase 1 report, it was considered that major physical works to the existing roundabout junctions would provide minimal benefits, with negligible reductions in highway delays. Indeed, it has been proven that the provision of increased capacity for vehicles acts to encourage more car trips and as such, any benefits would be offset by negative impact on cyclists and pedestrians, not only in terms of permeability but also with regards safety and quality of environment. This is contrary to the objectives of the Transport Strategy.
- 7.2.12. The provision of traffic signal junctions along this section of highway was tested using the industry modelling tool Linsig. This assessment work indicated that congestion and delays would be significantly increased with the introduction of traffic signals and as such, this potential capacity enhancement measure was discounted from the transport strategy.
- 7.2.13. The junction capacity assessments have reiterated the importance of both travel demand measures and sustainable transport enhancements to be able to sustainably deliver the projected growth in housing and employment. As such, whilst there is little scope for, or benefit to, providing major physical junction capacity enhancements, there is potential to enhance the streetscape and infrastructure for pedestrians and cyclists. This is particularly true for the High Street.
- 7.2.14. A potential streetscape improvement scheme is illustrated in **Figure 7.1** This concept scheme includes the provision of a shared surface with dedicated cycle lanes and a central pedestrian refuge strip which combine to provide greater priority to pedestrians and cyclists. The scheme illustrated in Figure 7.1 includes minor layout enhancements to the two roundabouts that will smooth vehicle flow through this section of the highway by removing inconsiderate parking and loading activity and potentially removing the signalised pedestrian crossing. Vehicular capacity at the roundabouts is theoretically more than sufficient and will be maintained, and by removing the main reasons for congestion and improving the pedestrian and cycle environment, benefits will be enjoyed by all road users.

Figure 7.1 – High Street Streetscape Improvement Measure



7.2.15. These highway improvement works are concepts at this stage and thus would be subject to detailed design and assessment as part of a separate study. However, as shown in Figure 7.1, these types of layouts have been successfully implemented in similar town centres in south east and east London such as Bexleyheath and Hornchurch.

7.2.16. This streetscape improvement concept could also be implemented on London Road to the west of the town centre, thus providing defined gateways into Swanley town centre.

Network Management

7.2.17. With only a limited range of opportunities to significantly enhance network capacity through new infrastructure provision or enhancements to the strategic road network, the effective management of the existing localised highway network within the study area becomes essential. There are a range of network management tools available from physical measures, through to information and technology.

7.2.18. Physical interventions can include measures such as banned turns and restrictions to access to reduce conflicts of traffic movements, physical junction improvements to reallocate road space more efficiently, localised widening or the provision of passing places to enhance the safety of

users of a road or on-street waiting and loading restrictions to free up carriageway space to ease traffic flow. Physical interventions would need to be considered at a localised level with local junction or network micro-simulation modelling to test the implications of proposed changes.

- 7.2.19. The network of country lanes which weave through the study area represent alternative routes from the primary road network to access Crockenhill, Swanley Village and Hextable. However, many are insufficient for the safe passage of vehicles, along with width constraints resulting from railway infrastructure (both bridges and tunnels). As a result, it is recommended that the Transport Strategy includes a measure to investigate where potential improvements, such as localised carriageway widening, the provision of additional formal passing places/improvements to existing passing places and regular maintenance of adjoining hedgerows and vegetation, should be implemented. This work should consider footway improvements too.
- 7.2.20. All of the Local Distributor Roads identified within Section 5.4 of the Stage 1 Report would be included however, it is considered that the following routes would benefit from enhancements:
- Wested Lane / Eynsford Road (Crockenhill)
 - Beechenlea Lane (Swanley Village)
 - Lydenhatch Lane (Swanley)
 - College Road (Hextable)
 - New Barn Road (Swanley)
- 7.2.21. Improvements to the above routes would enhance accessibility to the surrounding villages and Swanley Park by providing viable alternative routes to travelling through Swanley Town Centre, which in turn would help to improve resilience of the primary road network. However, any improvements measures and resultant re-distribution of traffic, particularly 'rat-running' traffic, must not be to the detriment of existing and future residents by creating unacceptable levels of traffic on these country lanes. Therefore, the traffic and environmental impacts of any improvement works would also need to be tested.
- 7.2.22. The traffic and environmental impacts will be a primary consideration for any future planning applications, particularly those that would seek to utilise the network of local distributor roads as their primary means of access. Any impacts will need to be adequately assessed and mitigated, including the provision of improved infrastructure where required, to ensure that the proposed development will not have a detrimental impact on existing residents as well as future.
- 7.2.23. Technology can play a major role in the management of traffic. There are four primary, and inter-connected, elements that can be applied:
- Network Monitoring – real-time monitoring of traffic movements, congestion and emissions to permit 'live' evaluation of performance
 - Communications – communicate information to the highway user
 - Traffic Network Control – real-time control of traffic signals to mitigate against poor traffic conditions
 - Data Management – Processing information

7.2.24. These elements are discussed in greater detail within Chapter 8 – Intelligent Mobility.

Demand Management

7.2.25. In addition to the management of the use of the network, measures can be implemented that seek to manage overall levels of demand for highway trips. These measures can be categorised into three broad approaches to dis-incentivise car travel, incentivise alternative modes of travel or to manage overall level of demand for travel.

7.2.26. Measures to incentivise alternative modes of travel and manage the overall level of demand for travel have been set out in the previous chapters on Active Travel (Chapter 5) and Public Transport (Chapter 6). Further measures will also be set out in the chapter on Intelligent Mobility (Chapter 8). Methods of dis-incentivising car use typically focus upon increasing the relative cost of travel by car such as the cost of insurance, fuel prices, maintenance etc. In many cases, the costs of car travel and ownership relate directly to national policies, taxes and tariffs and thus, are out-with the influence of the Borough and County authorities.

7.2.27. Parking policy can have some influence over car ownership levels, and hence the level of car trips. This is discussed further in the section below.

7.3. Parking

7.3.1. The management of parking provision, both on and off-street, can have an important influence over the level of private car ownership and the role of the private car. The potential for minimising the role of the private car for all but essential trips will be influenced by the level of public transport provision and the quality of the pedestrian and cycle environment. Consideration also needs to be given to the semi-rural nature of the study area and the demographic of those who live and work in it. As such, a balance needs to be reached between society’s desire for easy convenient forms of transport, such as the private car, and the potential harm private car travel can impart on the environment.

7.3.2. The Active Travel Strategy chapter has already highlighted the potential to encourage more short-distance trips to be undertaken by non-motorised rather than motorised modes. Whilst most of the “active travel” measures can be considered to be ‘carrots’ to encourage sustainable travel, it is also important to ensure there are sufficient disincentives placed upon motorised travel so that individuals make informed choices between modes.

7.3.3. Parking management can provide an important tool in controlling and managing the level of private car usage. SDC and KCC has three main approaches to controlling parking provision, either through the parking standards that apply to new developments, through off-street parking tariffs and through on-street parking controls.

Parking Standards

7.3.4. The current applicable parking standards employed by the District are the Kent Parking Standards. The residential car parking standards are set out within KCC’s Interim Guidance Note 3 to the Kent Design Guide 2008. The level of permitted parking is linked to two key

influences on vehicle ownership, namely dwelling size, the smaller the property the less parking is permitted, and location.

- 7.3.5. In terms of location, the parking standards are linked to whether the dwellings are located within a 'City/Town Centre', 'Edge of Centre', 'Suburban' or 'Suburban Edge/Village/Rural' location. As such, the absolute difference will vary considerably with locations. Furthermore, the standards for 'City/Town Centre' and 'Edge of Centre' standards are maximum whilst the standards for the other locations are minimum, which implies that a higher level of provision could be provided subject to the justification provided.
- 7.3.6. The primary concern with the provision of unrestrictive parking standards is that high levels of car parking availability encourages private car trips. The projected level of housing growth is expected to increase pressures on the highway network, as discussed in detail within the Phase 1 report. In order to avoid significant congestion, especially within Swanley town centre, it will be imperative to encourage alternative means of travel to the private car. Restricting car parking provision will have an important role to play in this process, as well as providing the alternative means of travel.
- 7.3.7. Similarly, parking availability at non-residential land uses influences modal choice with high levels of car parking provision encouraging car trips by visitors.
- 7.3.8. The projected impact of future residential and employment growth upon highway congestion and air quality by 2035 would support a review of the residential and non-residential car parking standards, which are dated 2008, to reflect current best practice of encouraging alternative modes of travel. This will ensure that the parking standards provide the means of reducing potential levels of private car trips thus, reduce the impact of future housing and employment growth upon the operation of the highway network. Ultimately planning applications will need to include an assessment of the parking provision and traffic impacts.

Parking Management

- 7.3.9. The public parking supply within the study area is a mixture of off-street car parks (both privately owned and publicly owned) and on-street parking controls.
- 7.3.10. As described in the Phase 1 report, much of Swanley is within a Controlled Parking Zone (CPZ) including the streets surrounding the town centre and the residential streets in close proximity to the rail station, extending to the residential areas within east Swanley. Within the CPZ, parking is managed through the provision of formal parking bays which are for resident permit holders or pay and display for non-permit holders. Outside of these formal parking areas, on-street parking is managed by time limited single yellow line restrictions (typically 7am-10am) and some permit holder restrictions.
- 7.3.11. The formal on-street parking bays located adjacent or within the town centre, and thus would be expected to predominantly serve visitors to the town centre amenities, are typically free with maximum duration of stay restrictions. The on-street parking tariffs that currently apply within Swanley are set out below. Payment for on-street parking is done so via parking meters or via "Parkmobile", which allows people to pay via their mobile phones.

- 0-30 mins – 20p
- 30mins – 1hr – 60p
- 1-2hrs - £1.30
- 2-4 hrs - £2.40
- All day (10hrs) - £3.50

7.3.12. Analysis of the on-street parking demand within Swanley, as set out in the Phase 1 report, indicated that the CPZ works well during the standard operating hours of the day (7am – 7pm), with parking occupancy levels rarely exceeding 60% of capacity across the towns’ CPZ, including on market days and a Saturday. The overnight parking demand, typically associated with residents returning from work, was similar to the daytime demand at around 56%. This pattern indicates that a large proportion of the on-street parking that occurs during the day is associated with visitors to the town, such as commuters who are driving to Swanley to access the rail station.

7.3.13. There are currently eight off street car parks within Swanley. As described in the Phase 1 report, these are a mixture of short stay town centre car parks and long stay commuter car parks all of which combine to provide some 1,065 spaces. A review of these car parks highlighted an imbalance and inconsistency in tariff structure and conditions of use across the off-street car parks as illustrated in **Table 7.1**.

Table 7.1 – Off-Street Parking Tariffs and Conditions of Use

Car Park Name	No. of Spaces	Applicable Tariff		Conditions of Use
Asda	430	Mon 7am – Sat 10pm Sun 10am – 4pm	Free – customers only	Maximum stay 3 hours
Aldi	70	Mon 8am – Sat 10pm Sun 10am – 4pm	Free – customers only	Maximum stay 1.5 hours
Nightingale Way	331	24hr	0-1hr – 65p 1-3hrs - £2.50 3-9hrs - £3.00 All Day - £4.00	N/A
Station Road	48	Mon – Fri 08:30am – 6.30pm Sat/Sun/Bank Holidays – Free	0-30mins – 30p 30mins-1hr – 50p 1-2hrs – 70p 2-4hrs - £1.10 All Day (10hrs) - £4.00	No return within 1 hour

Car Park Name	No. of Spaces	Applicable Tariff		Conditions of Use
Bevan Place	80	Mon – Fri 08:30am – 6.30pm Sat/Sun/Bank Holidays – Free	0-30mins – 30p 30mins-1hr – 50p 1-2hrs – 70p 2-4hrs - £1.10 All Day (10hrs) - £4.00	N/A
Swanley Station	43	Mon-Fri	Daily Ticket - £6.70 Off peak after 2.30pm - £6.00 After 6pm - £1.50	N/A
		Saturday	All Day - £4.40	
		Sun/Bank Holidays	All Day - £1.00	
		Monthly - £104.20 Quarterly - £310.80 Six Monthly - £621.60 Yearly - £1126.70		
Park Road	34	Mon – Fri 08:30am – 6.30pm Sat/Sun/Bank Holidays – Free	0-30mins – 20p 30mins-1hr – 40p 1-2hrs – 60p 2-4hrs - £1.00	N/A

- 7.3.14. An analysis of the off-street car parking usage, as discussed in the Phase 1 report, revealed that the inconsistent car parking charges within the town centre has resulted in the free car parks (Asda and Aldi) being overutilised and the Nightingale Way car parks being underutilised. This frequently results in queueing at the Asda car park which has an impact on the surrounding highway network. Whilst free car parking is likely to be a primary contributing factor as to why the Asda and Aldi car parks are more popular, the different levels in use could also be attributed to the Nightingale Way car parks having poor access arrangements and wayfinding, limited natural surveillance and poor pedestrian links. The perception of personal security is generally poor. Improvements to this part of the town centre would need to include measures to address these issues.
- 7.3.15. Parking within the surrounding villages of Hextable, Swanley Village and Crockenhill is primarily unrestricted, with on-street car parking available throughout the villages. Within Hextable and Crockenhill in particular, this has led to indiscriminate part-footway parking which has a negative impact on safe and convenient access for pedestrians. It is therefore recommended that the parking strategy includes a study of unrestricted on-street parking as a means of mitigating this issue.
- 7.3.16. The availability of parking within Swanley contributes to the high level of vehicle trips to and from the town centre and indeed, the low parking tariffs across the town do nothing to dis-incentivise car travel. The Active Travel and Public Transport Strategies will provide people with an

alternative choice but should car travel continue to rise then additional parking management measures may be required to discourage car travel. Potential measures include:

- Increasing parking charges.
- Introduce more restrictive on-street parking controls.
- Extend the CPZ to the whole of Swanley
- Prevent new residents from applying for resident parking permits to discourage car ownership, particularly multiple car ownership, within the town centres.
- Enforce more restrictive parking standards for new developments in areas with good levels of public transport accessibility or within town centre locations.

7.3.17. As pressures on the highway network increase, there is merit in introducing such measures to dis-incentivise private car travel. In conjunction with active travel and public transport strategies, such measures will actively incentivise people to adopt alternative travel modes and travel patterns. As such, it is recommended that a comprehensive parking study is conducted which analyses the feasibility and deliverability of parking management measures and their impacts on the residents of, and visitors to, the study area.

7.3.18. As the Borough does not directly control the town centre car parks, implementation of the Parking Strategy will require active engagement with third party land owners. It is also recommended that planning consents associated with future developments within the study area, particularly within the town centre, are subject to planning conditions and obligations that restrict parking levels and stipulate car park management conditions. The planning permissions should also secure appropriate improvements to the pedestrian/cycle environment and infrastructure.

Car Clubs

7.3.19. Linked to the provision of on-street parking, the management of car ownership, and encouraging mode shift, the role of car clubs within the study area will be important in the future.

7.3.20. There are currently no schemes operating within the District. However, with a range of car club models available that provide greater flexibility, with cars not being tied to individual parking bays and rather picked up and dropped off at different locations with a mapping app used to identify cars across boroughs, there is scope for the introduction of a car club scheme within Swanley. Whilst SDC cannot directly influence the provision of car clubs, it can work with operators to introduce pilot schemes within Swanley with a view to long term schemes operating in the area. Sweco have liaised with Zipcar about the potential for future car club cars in Swanley and a pilot scheme with a car at Swanley Town Hall should be investigated further.

7.3.21. Furthermore, there is potential for wider transport policies to include the provision of car club spaces at new developments.

7.4. Freight

Introduction

- 7.4.1. The Sevenoaks District Strategy for Transport (SDST) recognises the need for more sustainable freight distribution within the Borough and across Kent, within the context of an integrated transport and land use policy. The SDST sets out the vision for sustainable freight within the Borough and the freight and heavy goods initiatives that will be implemented to help achieve this.
- 7.4.2. Sustainable Freight Distribution can be defined as the balanced management and control of the economic, social and environmental issues affecting freight that:
- Complies with or exceeds environmental regulations, standards or targets aimed at reducing emissions of climate change gases, improving air quality and minimising the impacts from accidents, spillages or wastes.
 - Ensures freight is run efficiently, reducing unnecessary journeys, minimises journey distances and maximises loads with effective planning.
 - Complies with labour, transport and human rights regulations and standards ensuring that employees and communities affected by freight can function in a healthy and safe environment.
 - Minimises the negative impacts of freight activities on local communities.
- 7.4.3. Building upon the SDST, the development of an overarching freight strategy for Swanley could encompass a range of potential focused measures as discussed below.

Freight Access and Movement

- 7.4.4. Kent is a major gateway for the movement of international freight with some 3.5 million lorries crossing the Channel every year. As a consequence, disruptions to cross Channel crossings results a backlog of vehicles on the M20/A20 with the resulting closure of the M20/A20 having a knock-on effect on the wider motorway network in Kent, including the M25. Furthermore, the increasing volume of freight traffic on the M25 is also an issue as general traffic levels frequently exceed design capacity, causing delays and the diversion of traffic onto adjoining roads. This, in turn, severely disrupts local traffic movements through sensitive areas, such as Swanley, as discussed in the Phase 1 report.
- 7.4.5. In recent years there has been a general rise in the volume of delivery vehicles for traditional servicing, coupled with the rise in the popularity of online shopping for home deliveries of groceries and goods. As such, issues do not just stem solely from “traditional” servicing activity, but also from home grocery / Amazon-style deliveries.
- 7.4.6. This negatively impacts the area by adding additional vehicles onto the highway network and resulting in congestion. Noise and air pollution is a particular issue associated with freight and construction vehicles and in the long run will negatively affect health and wellbeing.

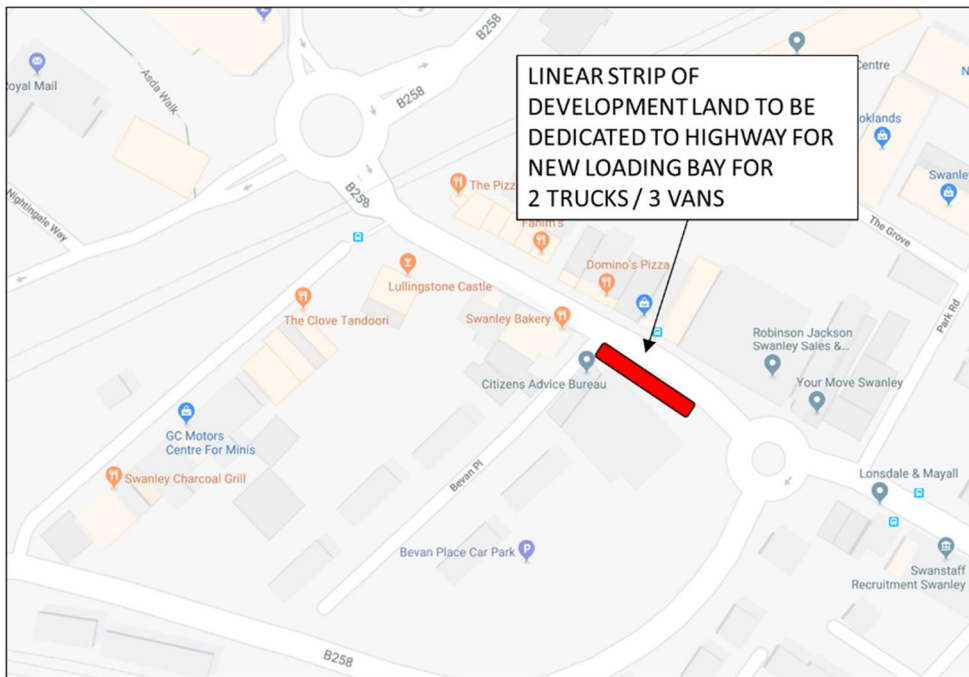
- 7.4.7. Freight movements through the study area are relatively unrestricted, especially through the town centre. The only Traffic Regulation Orders currently in place which restrict freight movements are:
- Asda Walk - 'pedestrian zone, except for loading on Wednesday 5 am – 9am and 3pm – 6pm – clearway at any time'.
 - Beechenlea Lane – 'Weight limit 20 tonnes – unsuitable for heavy goods vehicles – alternative route via B258'.
- 7.4.8. Along the B2173 London Road/B258 High Street corridor, on-street loading activity is restricted with no loading permitted between 8am-9.30am and 4.30pm-6pm Monday to Saturday. On-site observations have indicated that on-street loading activity outside of these hours restrict the free-flow of traffic along this key section of the highway network, which is exacerbated by illegal loading activity during the network peak hours. Kerbside deliveries can also be obstructive to pedestrian and cycle movements.
- 7.4.9. As described in the Phase 1 report, the study area is crisscrossed by a network of narrow rural lanes that are potentially unsuitable for servicing and delivery vehicles. Whilst Highlands Hill (at the junction with Swanley Lane), Leydenhatch Lane (at the junction with Birchwood Road) and Wested Road are signed as being unsuitable for heavy goods vehicles, there are no formal weight or width restrictions in place for these roads. This reflects the need for deliveries to properties along these roads to be maintained.
- 7.4.10. Unrestricted and uncontrolled freight movements can have a negative impact upon the local environment and sense of place in the urban areas. Whilst deliveries to local businesses, retailers and residents need to be maintained, there are options to minimise the impact through access restrictions at certain times of the day or to specific areas. Therefore, the Transport Strategy should include a measure that will positively reinforce the unsuitable nature of these roads for larger vehicles through the provision of more formal restrictions where appropriate, or the provision of information signage such as "Do Not Follow Sat Nav" signage.
- 7.4.11. A range of potential freight measures can be considered, alongside more general highway measures such as those outlined above, to manage the movement of freight within and through the study area. These potential measures are set out in the following sub-sections.

Off-Highway Provision for Deliveries

- 7.4.12. Kerbside deliveries can cause obstruction to both pedestrians as well as other road users, particularly cyclists as conflicting demands for kerbside space are created. As the level of traffic on the highway network within the study area is anticipated to grow, these types of ad hoc delivery arrangements will begin to have a more significant impact upon the operation of the local highway network. In the case of the existing London Road/High Street corridor, existing issues will be exacerbated.
- 7.4.13. A potential measure to address the impact of delivery vehicles on High Street is the provision of formal loading bays to allow vehicles to undertake loading activity off the highway. A potential concept scheme is illustrated in **Figure 7.2**. The implementation of this measure would be subject to consultation to revise existing traffic regulation orders and space being freed up within

the Bevan Place development land to allow the provision of a suitable footway. However, as this scheme would free up carriageway space, thus aiding the free flow of traffic on the highway, it offers significant benefits in terms of helping to reduce congestion and delay on this part of the network.

Figure 7.2 – High Street Loading Bay Measure



7.4.14. The provision made within developments for where servicing and delivery activities will take place is also critical, particularly as the level of delivery activity increases. For the reasons outlined above, the design of new developments should ensure that adequate provision is made for deliveries that does not cause conflict with, or impede the safe movement of, other road users particularly pedestrians and cyclists. Therefore, it is recommended that the design and location of servicing arrangements becomes a key consideration of the planning process.

Delivery and Servicing Plans

7.4.15. A Delivery and Servicing Plan (DSP) is a logistics management tool that can be used to manage freight delivery and servicing activity that takes place at a site or a collection of sites within a local area. A DSP is likely to focus on activities such as parcel, package delivery and collection, servicing trips such as waste collection and general maintenance activities. If the plan is implemented correctly it can assist organisations to proactively manage deliveries to reduce the number of delivery and servicing trips and identify and promote areas where safe and legal loading can take place. Typically, DSP's seek to improve the safety, efficiency and reliability of deliveries to and from sites by using a suite of tools and techniques that suit that business.

7.4.16. The benefits of implementing a DSP include achieving financial savings through improved efficiencies, improved safety, improved reliability and a reduction in an organisations' impact on the environment. The process for developing a DSP includes:

- Understanding the current situation by gathering data on all the delivery and servicing trips to and from the building and reviewing tenant's business operations to understand how they work in terms of procurement, ordering and their supply chain.
- Analysing the collected data to produce a detailed profile of the delivery and servicing activity and start identifying opportunities for change.
- Considering a wide range of tools and techniques including measures that cover managing deliveries and reviewing supply chain operations and procurement practices. Short, medium and long-term measures are then identified that reflect the characteristics of the tenants and their delivery and servicing requirements.
- Monitoring through collecting delivery and servicing data would then allow any reduction in vehicle trips to be identified.

7.4.17. Key activities for the DSP's may include:

- Understanding through detailed surveying and analysis, the number and type of delivery and servicing trips received across potential sites within the study area.
- Identifying opportunities to reduce delivery and servicing trips through working with tenants to promote measures such as collaborative ordering of goods and services and allocating storage space to allow bulk ordering of consumables such as stationary.
- Investigating on-site delivery handling and storage to improve turnaround time for deliveries
- Investigating more efficient operation of the loading bay and capacity to accommodate more vehicles when loading and unloading (to include swept path analysis).

7.4.18. DSPs consist of a range of tools, actions and interventions aimed at reducing and re-timing deliveries, redefining building operations and ensuring procurement activities account for vehicle movement and emissions. They should be required as part of planning applications.

Construction Logistics Plans

7.4.19. The construction phase of developments is likely to have significant impacts on the transport network. The construction impacts of developments can vary in significance, but for those large-scale developments that may take many months or years to complete, the impacts during the construction phase can be as significant as the operational phase.

7.4.20. For new developments, the Construction Logistic Plans (CLP) provides a tool for establishing whether the Transport Assessment (TA) has fully considered the freight implications of the construction phase of a development. Scope for the use of more sustainable modes for the

transportation of construction materials (e.g. by rail or water) should be considered from the outset of the TA and incorporated into the CLP, where feasible.

- 7.4.21. A CLP provides the framework for understanding and managing construction vehicle activity into and out of proposed developments. A full assessment of the construction phase should be included, detailing the levels of construction traffic generated along with the routes the traffic will use and any significant traffic management that may operate in order to construct the development. Particular attention should be paid to the need to identify routes for construction vehicles that avoid sensitive routes in the borough.
- 7.4.22. Ultimately, if CLPs are used correctly across all construction activity, they will reduce the volume and impact of construction freight, consolidate and control material and waste movements, see deliveries retimed to less congested times of day and where appropriate, shift road freight to rail or water. Therefore, CLPs should be required as part of planning applications.

Out-of-Hours/Overnight Delivery Schedules

- 7.4.23. Businesses, or other substantial traffic generators, should be encouraged to introduce out of hours deliveries. The main impact would be to lower volumes of daytime goods vehicle traffic in and through the study area leading to less congestion on the local and wider road network. It could also result in reduced journey times for goods vehicle drivers by avoiding day time stop-start traffic, particularly at peak times, which will reduce air pollutant and green-house gas emissions. To allow deliveries during unsocial hours, delivery vehicles will need to operate to strict noise limits. This would be aided through the use of quieter, electric vehicles.

Delivery Booking Systems

- 7.4.24. Delivery vehicle movements to and from a site can have a negative impact upon nearby neighbours, local businesses, pedestrians and other road users. These movements can potentially affect traffic flow and congestion within a localised area, local parking availability, road safety and can generally cause inconvenience if not managed efficiently.
- 7.4.25. The use of online delivery booking systems can help to reduce the impact of servicing activity associated with a development, particularly those comprising large scale employment or residential areas. Such systems help to ensure that deliveries are equally distributed across the week and across delivery hours, helping to avoid arrivals and departures during standard network peak hours and other sensitive time periods (such as school drop-off and pick-up times if a site is located in close proximity to a school).
- 7.4.26. Under a booking system, deliveries are not accepted outside of their designated time-slot, and such deliveries are asked to re-book. Online booking systems provide numerous benefits, including:
 - Facilitating bookings to be made via mobile smart phones;
 - Bookings can be made in real time, providing information on what delivery slots are available and when;
 - Supervisors can check contractor operations remotely;

- Specific site information and delivery instructions are made available to delivery companies;
- Provides facilities for centralised control of bookings;
- Prevents double bookings and multiple delivery vehicles arriving at a site at once;
- Facilitates deliveries to be timed to occur at quieter times of the day; and
- Can be used to record vehicle emissions

Operator Recognition Schemes

7.4.27. The Freight Operators Recognition Scheme (FORS) is an industry-led accreditation scheme that promotes best practice for commercial vehicle operators. FORS encompasses all aspects of safety, efficiency and environmental protection by encouraging and training fleet operators to measure, monitor and improve performance. FORS works with freight operators to assist in making their businesses safer, smarter and greener by improving vehicles, drivers, management and operations.

7.4.28. FORS offers best practice toolkits and advice, which include:

- FORS performance management system - demonstrates safety and efficiency improvements and progress through the FORS accreditation levels
- Penalty Charge Notice toolkit - monitor, manage and reduce the number of penalties your business receives
- Fuel use tracker - record and track fuel usage, monitor miles per gallon, CO2 and efficiency improvements
- Cycle safety toolkit - minimise the risk of collisions between your vehicles and vulnerable road users
- Congestion toolkits - improve delivery plans and reduce the amount of time spent in traffic
- Collision reporting and investigation tool - capture, investigate, analyse and reduce collision

7.4.29. SDC and KCC as highway authority should support FORS and promote it to relevant businesses within the borough.

Local Consolidation Centres with Low Emissions Vehicles

7.4.30. Freight Consolidation Centres are distribution centres, situated close to a town centre, shopping centre, delivery hubs or construction sites, at which loads are consolidated and from which a lower number of consolidated loads are delivered to the target area. The most common objective of freight consolidation is to reduce congestion and vehicle emissions within the area that the consolidation centre serves. Other objectives can include:

- Reduce conflicts between delivery vehicles and other road users, including pedestrians;
- Improve the delivery service provided to retailers;
- Reduce costs to retailers, both in terms of transport and staff; and
- Contribute to a reduction in traffic pollution and vehicle emissions, and improve air quality.

7.4.31. It is recognised that the implementation of consolidation centres is not straightforward in terms of up-front funding and on-going financing, as well as management to ensure that it meets the desired objectives. This includes the specifics of load consolidation to ensure that appropriate vehicles are used for final deliveries. At this stage, no specific sites have been identified, and it is likely that any options will need to be developed alongside a major private sector development.

7.4.32. However land near junction 3 of the M25, within the study area, is potentially a very good location for a consolidation centre that could benefit the towns of Sevenoaks District, Kent and south east London. Such a consolidation centre would also provide local jobs.

7.4.33. Consolidation during the construction phase should also be considered and implemented where feasible. Details of construction consolidation should be included within a CLP.

Low Emission Freight

7.4.34. As set out in the SDST, SDC should proactively engage and work in partnership with local hauliers/distributors/public transport operators and taxis to replace vehicle fleet with Low Emission Vehicles (LEV) and incentivise local business, through business rate discounts for example, to utilise LEVs. It is important to encourage local businesses and retailers to work in partnership to coordinate deliveries, particularly in outlying areas, to eliminate duplicated trips and reduce emissions.

'Click and Collect' Services

7.4.35. The growth of e-commerce has led to the development of new delivery services, which consolidate deliveries from “e-tailers” to a single location with collections by the customer. A growing number of retailers are offering Click & Collect services within their stores and businesses because it encourages consumers to order online and visit their stores to collect their deliveries. This practice reduces retailers e-fulfilment costs as the customer assumes the responsibility for getting the parcel to its end destination by collecting and transporting the item themselves. The benefit to customers of this arrangement includes more flexibility and security. Click & Collect services also reduce the number of delivery vehicles on the road as items are sent in bulk to collection points. However, this may also result in an increase number of consumer vehicles as not all trips are carried out by environmentally friendly forms of transport.

7.4.36. Within Swanley, there are the following designated “Click and Collect” locations:

- Collect+ facilities located within Londis Stores on Azalea Drive and Lynden Way.
- Amazon Pick Up Locations at:

- Swanley Post Office, Swanley Library
- Royal Mail Enquiry Office, London Road
- Hextable Post Office
- Crockenhill Post Office
- Asda store provides a click and collect service which allows parcels from other retailers to be collected from their store.

Freight Quality Partnerships

- 7.4.37. The development and implementation of effective freight measures will be dependent on engagement with businesses and stakeholders within the study area. Businesses will need to ‘buy-in’ to the improvement measures planned and it will be important to have some organisations take ownership and lead individual actions. One way of instigating this approach is through a Freight Quality Partnership (FQP).
- 7.4.38. An FQP is a partnership between the freight industry, local government, local businesses, the local community, environmental groups and others with an interest in freight. FQPs aim to develop an understanding of freight transport issues and problems, and then, to promote constructive solutions for both freight operators and localities. The development of local FQPs is considered to be an important measure to address local issues, as recognised in the SDST.
- 7.4.39. To establish a FQP a set of ‘Terms of Reference’ and a programme of work is required, comprising measures to tackle local freight issues using local knowledge of local partners. The FQP should meet regularly (at least quarterly, more frequently initially for set-up) and oversee a portfolio of activities to help raise visibility of the importance of better freight movement and management locally.
- 7.4.40. Types of measures that could be promoted by FQPs include:
- Fleet Recognition Scheme
 - An FQP programme of work could promote the uptake of FORS (discussed above). This would engage and recruit business members running their own fleets and provide them with credit and visibility for what they currently do and to then support them with a road map of improvement measures. This is a strong and potentially effective measure to help the Borough work with local businesses for the longer term, proactively supporting local fleet efficiency and environmental performance.
 - Driver Training – Van and HGV SAFED
 - This would involve training, delivered through an approved training school for local businesses running vans and HGVs. SAFED is designed to enhance driver awareness of safe and fuel-efficient driving techniques, which would improve local air quality and safety in the area. It is a key intervention recommended to enhance driver skills, helping to reduce fuel

consumption and operating costs, thereby linking in to the FORS Scheme above.

- Corporate Social Responsibility and Neighbourly Co-operation
 - Building on work that an FQP undertakes, businesses should engage with schools and local communities to set out their CSR policies. This engagement may also lead to work placements for local students and residents as well as visits by local schools and community groups to show how the industry works and how goods move.

7.5. Summary

7.5.1. **Table 7.2** provides a summary of the potential measures identified for highways, parking and freight.

Table 7.2 – Summary of Potential Highways, Parking and Freight Measures

Potential Highways, Parking and Freight Measures
Area Wide Measures
Demand Management Measures (<i>cross-reference with “Active Travel”, “Public Transport” and “Intelligent Mobility” chapters</i>)
Network Management Measures (<i>cross-reference with “Intelligent Mobility” chapter</i>)
Review of parking standards
Freight Management Measures (including DSPs, CLPs)
Corridor study of lanes around Hextable, Swanley and Crockenhill to establish where improvements can be made to facilitate the safe movement of vehicles to provide alternative routes to the town centre
Regular maintenance of footway infrastructure - surfacing, lighting, signage
Planting of trees to alleviate air quality issues
Car Parking Review Study to aid the development of a Parking Strategy that enables consistency of pricing and duration of stay restrictions whilst balancing the need to promote sustainable travel with the demand for parking.
Enforce on-street car parking restrictions - particularly Double Yellow Line restrictions within the town centre
Promotion and partnership working with car clubs
Review of footway parking and its impact on the permeability and safety for pedestrians and cyclists
Promote the use of small capacity powered two wheelers (PTW) and provide enhanced facilities at key destinations
Consider allocating land in the Local Plan near junction 3 of the M25 as a consolidation centre, to move goods onto smaller vehicles for delivery to town centre destinations.

Potential Highways, Parking and Freight Measures
Provision of new or improved signage to positively reinforce large vehicle restrictions, particularly along the country lanes
Site Specific Infrastructure Measures
Provision of a new all-movement junction on the A20 to the west of Swanley
Provision of an eastbound off-slip access from A20 onto the B2173
New link road from Birchwood Road to the B2173 to avoid narrow section at the southern end on approach to junction with B2173
Streetscape and highway layout improvement works on London Road/High Street to provide gateway into each end of Swanley town centre
Introduce physical measure on Salisbury Avenue to prevent through movement and thus rat running from B2173 London Road
Improve road markings at the Birchwood Road / B2173 junction and undertake a study to investigate the potential for junction layout and operation improvements
Move "No Entry" signage on Nightingale Way to adjacent to Asda access to clarify that there is no vehicular access on Nightingale Way and pedestrianised area
Provision of formal loading bay facilities on High Street/Bevan Road

8. Intelligent Mobility

8.1. Introduction

8.1.1. Global transport systems are entering a period of radical change, driven by rapid technological advances in wireless communications, Artificial Intelligence (AI), alternative power trains, open data, the “Internet of Things” (IoT) and the rise of autonomous systems. Peoples’ attitudes, expectations and behaviours are changing in response. As resources are increasingly pressed, infrastructure capacity is constrained and systems are becoming increasingly more complex and inter-connected. There is also significant pressure to reduce emissions and improve environmental outcomes.

8.1.2. Intelligent Mobility (IM) is a new way of thinking developed to drive a radical overhaul of transport systems. It considered ways in which data and technology can be used to connect people, places and goods across all transport modes. IM and the related Mobility as a Service (MaaS) have become bywords for a major shift in the transport industry, embodying a change that will have wide reaching effects. As noted by Transport Systems Catapult, the UK’s innovation centre for IM:

“Encompassing everything from autonomous vehicles to seamless journey systems and multi-modal modelling software, Intelligent Mobility uses emerging technologies to enable the smarter, greener and more efficient movement of people and goods around the world.”

8.1.3. IM takes a different approach to the challenges that have traditionally beset the transport sector, whether it be congestion, pollution or a lack of “joined up” thinking between different modes of transport. By focusing on new and emerging technologies, IM also helps the transport industry to address the wider societal trends such as population growth, an aging population, climate change, the rapid depletion of our traditional energy resources, and increasing urbanisation.

8.1.4. It is recognised that there are no straightforward solutions that mitigate against the issues of congestion (for all modes) and the unreliability of journey times during network peak periods, with limited opportunities to further increase capacity. Across the United Kingdom, increasing emphasis is now being placed on the management of transport networks through the use of telemetry, and IM provides both the data and tools for Active Traffic Management.

8.1.5. Active Multi-Modal Management has four primary interconnected elements:

- Network Monitoring
- Communications
- Traffic Network Control
- Data Management

8.1.6. A further outcome is MaaS, which is a new concept offering consumers access to a range of vehicle types and journey experiences through the development of mobility platforms that help make sustainable travel the natural choice for people.

- 8.1.7. Intelligent Mobility has the potential to help resolve, ameliorate and mitigate against a number of the identified transportation issues within the study area without the need for large scale, economic intensive infrastructure projects or increases in network capacity. This chapter of the report sets out the ways in which IM can play a role in ensuring the sustainability of the transport network in the study area, particularly when considering the anticipated housing and employment growth in upcoming years that will place increasing pressures on all modes of the transport network.
- 8.1.8. As discussed previously, a hierarchical approach has been taken in the development of this Transport Strategy that places the greatest levels of priority on active travel (walking and cycling). As such, this chapter presents a range of Intelligent Mobility measures that can be implemented within the study area for each of these hierarchical levels.

8.2. Intelligent Mobility Vision

- 8.2.1. The principal aim of IM and MaaS is to look comprehensively at an area, including arterial / strategic roads, adjacent streets, parking, travel demand, trip generation, etc. and consider all opportunities to move people and goods in the most efficient and safest way possible. The vision is for a total system to be managed as an integrated and cohesive whole. This requires a package of measures that work together towards the following aims:
 - Reduce congestion and improve mobility, travel-time reliability, safety, and system efficiency along key corridors;
 - Make better use of existing capacity across all transport modes (pedestrian, cycle, bus, train and car) to increase the efficient and safe throughput of people, vehicles and goods with minimal new infrastructure;
 - Improve the availability and quality of data on travel conditions in key corridors and hotspots with low resilience to better understand corridor behaviour and improve performance;
 - Bring together key stakeholders to create an environment for mutual cooperation, including sharing knowledge, developing working pilots, and researching and resolving key issues;
 - Provide corridor users with timely, accurate information that allows them to make informed choices about when, how, and by what route to travel;
 - Equip highway officers with the information and tools necessary to make real-time decisions and quickly improve the flow of users of all transport modes along key corridors; and
 - Foster positive, collaborative, ongoing corridor management practices.

8.3. IM – Active Travel (Walking and Cycling)

Cycle Junction Priority

- 8.3.1. At the signalised junction of B2173 London Road/Birchwood Road cyclists are directed off the road onto the footway towards a Toucan Crossing facility on Birchwood Road, before linking up again with the off-road cycle lane along London Road. However, it is noted that the western footway along Birchwood Road is particularly constrained and as such, cyclist may be required to walk their cycles making the route less convenient and increasing journey times.
- 8.3.2. As such, the provision of an Advanced Stop Line (ASL) for cyclists on the London Road (west) arm, so that cyclists do not need to divert off the carriageway in order to travel through the junction, should be considered. The provision of an ASL could be implemented in conjunction with the use of new technology that allocates additional green time at the signals to cyclists depending on real-time demand and usage, such as radar based technology or thermal based technology, which detects the heat of riders as they pass a detection zone. Such technologies allow the timings of signals to reflect demand on a second-by-second basis, and allows greater priority to be given to users of active travel ahead of vehicle users.

Pedestrian/Cycle Priority Strategy

- 8.3.3. Upgrading stand-alone Pelican Crossings to Puffin and/or Toucan crossings could improve pedestrian and cycle flow in areas where pedestrian footfall is highest and where cyclists are expected to cross. These crossings would then be managed through the implementation of Pedestrian Scoot (Split Cycle Offset Optimisation Technique) which makes use of video camera technology to automatically detect how many pedestrians/cyclists are waiting at crossings, and automatically adjusts signal timings to reflect real-time demand.
- 8.3.4. Such technology could help to improve the pedestrian and cycle environment on key desire lines such as at the existing crossing points on High Street and London Road.
- 8.3.5. As with the cycle timing technology set out above, this measure provides a greater level of priority for active travel users ahead of vehicular travel, and fits in with the aspired hierarchical approach to travel within the study area.

Intelligent Lighting

- 8.3.6. Energy efficient lighting systems that trigger the provision of lighting on certain links when pedestrian and cyclists enter a detection zone provide additional security and can help promote active travel.
- 8.3.7. Such infrastructure could be applied in areas with lower levels of pedestrian and cycle infrastructure where lower perceived levels of safety exist, such as the link between Azalea Road and Station Approach and other sections of off-road public rights of way that may form key pedestrian and cycle routes in the future. Investing in such public realm improvements can help turn public spaces into public places where people feel safe.

Walking and Cycling Wayfinding ‘Apps’

- 8.3.8. Web-based tools such as the free journey planner “Kent Connected” offer A to B journey planning incorporating real-time information for all modes of transport including walking, cycling, bus, rail and taxi. The Kent Connect App uses GPS to show current location and trip progress. It shows live bus and train times, and provides different route suggestions for walking and cycling and includes an integrated walking and cycling map. It also provides information and statistics on pollution, calories and carbon emissions to help empower people to make smarter travel choices with their health, time and environment in mind.
- 8.3.9. The data generated by such Wayfinding applications is a powerful tool for assisting people to make an informed choice and providing planners with data on planned and undertaken trips. Other such tools include “walkit.com” the urban walking route planner and “cyclestreets.net” which is a UK-wide cycle journey planner system catering for the needs of both confident and less confident cyclists. The cyclestreets.net website allows cyclists to provide feedback on different routes available and the infrastructure provided.
- 8.3.10. Liaising with the developers of such Apps and web-based tools to access their data can provide a clear evidence base for schemes to improve well used routes and indeed identify less well used routes which could be improved and promoted.

Social Media

- 8.3.11. Social media tools such as Twitter and Facebook also give people a useful platform to provide feedback and concerns on the transport network which can then be logged by asset management tools and mitigating actions can be planned. Mobile phone data can also be used to map the movement and place interaction of individuals, particularly linked to town centre car parks and rail station as key destinations, gateways within Swanley.
- 8.3.12. The Borough could harness social media to provide real-time information on particular transport issues, suggesting alternative routes where feasible.

Cycle Hire Scheme

- 8.3.13. There are currently no formal cycle hire schemes operating within the study area. However, with many urban journeys consisting of short journeys, cycling can be quicker than walking and cycle hire can often be cheaper and more convenient than public transport, with the added benefit that that users exercise. Furthermore, cycle hire schemes offer a flexible choice to cycling without the need to own and maintain a personal cycle, which is particularly useful where the storage of a cycle at home or at work is a logistical issue.
- 8.3.14. Through the Local Sustainable Transport Fund, the Kent Connected initiatives for schools and businesses include Brompton bike hire schemes. This scheme allows users to reserve a Brompton bike for any use, including commuter trips and leisure trips, and for as long as they need it for. There is potential for Brompton bike docks to be located at Swanley Station to allow commuters the option of cycling to and from the station without the need to own a cycle and indeed, the need for the provision of dedicated cycle storage sheds at their homes. Equally,

docking stations at the station would allow pupils and employees commuting to Swanley to complete their journey by cycle providing an alternative to travelling A to B by private car.

Bike Share Scheme with Smart Cycle Locks (Dockless)

- 8.3.15. Bike share schemes have been extremely successful within London. However, these schemes can often have high set up costs due to the level of on-street infrastructure required to facilitate the bike docking, whilst obtaining planning permission and electricity supplies can also be barriers to the implementation of such schemes. As a result, bike share schemes are increasingly looking to use technology such as Smart Cycle Locks to reduce the reliance on infrastructure.
- 8.3.16. The technology uses a smart phone to locate, release and pay to unlock the Smart Cycle to give access to the bike. Users can select bikes in their chosen location from their phones and then release the bike by pressing a button on their phone and the lock simultaneously. Smart locks can either be used with a uniform fleet of bikes or alternatively, with a mix of pool bikes and users' own bikes.
- 8.3.17. When the rider has completed their journey the rider simply parks the bike and uses their phone to lock the bike and log completion of the journey. With the technology contained within the bike this allows for increased flexibility compared to traditional bike sharing schemes. Smart Cycle locks enable users to access a range of bikes without the worry of taking a lock or finding a docking station unlike traditional bike hire schemes.

8.4. IM – Public Transport

Real-Time Information

- 8.4.1. Web-based journey planner tools provide travel options based on existing timetables but these could be developed further to allow users to gain real-time information on current levels of potential wait times at public transport stations, interchanges and on particular services, and provides recommendations on alternative travel routes that may provide both a quicker and more comfortable journey.
- 8.4.2. Real-time information boards which detail anticipated arrival and departure times are already provided at Swanley Rail Station. However, the implementation of such technology and the provision of real-time information relating to train departures and bus arrival times at key stops would be of particular use within areas of high footfall in the town centre. These facilities would allow people to time their own arrival at the rail station or bus stop to keep waiting times to a minimum, thus freeing up their time for other activities.

Payment of Fares

- 8.4.3. Within the TfL travel zones, the Oyster card has provided users with a singular payment option with integrated ticketing systems combining trains, underground, bus and river services. Indeed, contactless payment on bank cards and smart cards in transport also allow a singular payment option on the TfL network, which includes at Swanley rail station and on the Bus Route 233 which is operated by TfL.

- 8.4.4. On the other services operating within the study area, multi-trip tickets can be bought via an individual's mobile phone as m-tickets, or individuals can buy them on-line and have them delivered to your phone. However, single and return trips still require the passenger to pay the driver cash to purchase these tickets.
- 8.4.5. Mobile companies are increasingly incorporating payment technologies on smartphones and Google also provide a platform for third parties to use the capabilities. Therefore, the future of mobility lies in a multi modal dynamic solution combining a journey from A to B through seamless integration of different forms of transport and with one single 'digital ticket', including contactless payment for taxis and ride-hailing services, and the continual development and implementation of contactless payment can be considered as a further step towards this.

8.5. IM – Highways, Parking and Freight

- 8.5.1. As set out in the Phase 1 report, Swanley suffers from increasing traffic congestion. Addressing the resultant increases in delay and journey times is an important priority for the transport strategy, alongside minimising the impacts of any disruptions caused by incidents, both of which can be achieved through maximising the efficiency of the highway network.
- 8.5.2. Issues of congestion and network resilience are of primary concern in and around Swanley town centre, particularly when there are incidents and delays on the strategic road network. Intelligent Mobility technologies can help to provide a soft approach to minimising traffic congestion and improving vehicle flows, bettering existing issues of network resilience.

Digital Road Signs

- 8.5.3. Digital road signs provide road users with real-time information on journeys, typically journeys using the strategic road network.
- 8.5.4. There is potential for technologies such as advance variable message signs to be employed across the strategic and local road network to improve driver navigation when congestion and other issues arise. Such signs would warn drivers to divert and change route, and make use of the provision of real-time information to better manage the network.
- 8.5.5. Advanced variable message signs can also be used to provide drivers with real-time information on the remaining capacity of car parks in advance of arriving at the car parks. Examples of where these signs could be located would be on B258 Swanley Lane prior to the junction with Bartholomew Road, B2173 London Road (west) and the B2173 High Street. Such signs would allow drivers to select a car park where there are spaces available and thus reduce the requirement to hunt for a space, in turn reducing the potential for congestion on the surrounding highway as a result of vehicles queuing to enter a particular car park.

Autonomous Vehicles

- 8.5.6. Partially automated technology, such as automated parking, and driverless autopilot systems, have been a feature in cars for a number of years. However, the rapid development in driverless and particularly autonomous car technology means that any future scenario needs to consider how intelligent transport systems (ITS) can facilitate connected and autonomous vehicles. This

includes consideration of Vehicle to Infrastructure (V2I) communications, allowing a wireless exchange of critical real-time safety and operational data between vehicles and roadway infrastructure, such as road conditions, traffic congestion, accidents, roadworks and parking availability. Likewise, traffic management supervision systems can use infrastructure and vehicle data to set variable speed limits and adjust traffic signal phase and timings to increase fuel economy and traffic flow.

Freight Management

8.5.7. Intelligent Mobility also has an important role to play in the freight sector as operators, transport authorities and consumers look to new technologies and business models to achieve better efficiency and reduce the impact of freight activity on the transport network. As such, IM has the capability to help deliver less congestion, safer streets and economic growth.

8.5.8. As IM helps to drive innovation in the freight industry, it is expected that freight operators will offer a more integrated and consumer centric service which will lead to highly individualised delivery options, reverse delivery services (where you can “send from your door”) and new ways of supporting the brand value of products delivered. The current IM market opportunities in the freight sector include the growth of peer to peer delivery platforms and innovations such as:

- Shufl – a service which offers a platform for buying and selling empty space on freight vehicles. The platform gives people control over their deliveries by aggregating availability across a network of local delivery firms nationwide meaning that local deliveries can be made at a cost that is comparable to standard delivery prices. Shufl is already available from leading retailers across the UK.
- CycleEye – a road user safety technology which uses sensors to identify cyclists in potentially dangerous proximity to larger freight vehicles, improving cyclist safety.

“Last Mile” Solutions

8.5.9. “Last mile” logistics refers to the last leg of a shipments’ journey before it arrives on the customer’s doorstep. This last leg of the supply chain is often less efficient and can make up 28 percent of a shipments total costs. This last mile problem can also include the challenge of making deliveries in urban areas where retail stores, restaurants and other merchants in a central business district often contribute to congestion and safety problems.

8.5.10. The growth of e-commerce will further increase the demand on last mile logistics as people pay premiums for better last mile services such as same day or instant delivery. Solutions to help alleviate last mile delivery issues could include:

- Optimisation Techniques – By factoring in variables like driver availability, location proximity, delivery windows, traffic conditions, weight capacity etc., route optimisation ensures that drivers complete most deliveries in the most time and fuel-efficient manner.
- Convenient Lockers – Lockers in accessible places by-pass the problem of costly single-package deliveries by providing the customer the opportunity to pick the

package up as part of a combined journey, for example on the way home from work.

- Cargo Bikes – With the ability to carry payloads up to 250kg, cargo-bikes offer an effective emission-free solution, particularly in compact and congested towns and cities. They can also be adapted to use electric-assist technology for further vehicle power.
- Automated Deliveries – Rapid technological advances have facilitated the development of autonomous deliveries, whether that be via drones or grounded self-driving delivery robots. The use of such technology can help to reduce the economic cost of goods delivery, and reduce the number of delivery vehicles travelling on the local highway network.

8.6. IM – Overarching (Building a Smart Choice Architecture)

Data Management and Systems Development

- 8.6.1. Combined data from smart card ticketing, mobile phone usage, parking and permits, V2I communication and Vehicle to Vehicle (V2V) communication will provide rich layers of data, informing when and how people move around during both normal and abnormal periods, e.g. major events. In addition, a further layer can be added to encompass feelings and thoughts, sentiment mapping of social media e.g. Twitter can be used to provide heat maps of problems alerting controllers of any major or common issues.
- 8.6.2. All of this data will require a clear data management strategy. There should be interoperability between datasets, with standardisation of systems and service architecture, a Kent Transport Data Hub could be established to manage this process. The data itself should be handled securely and anonymised before it is used; where feasible the anonymised data should be made open source allowing developers access and providing a platform for innovation.

Active Multi-Modal Management Strategy

- 8.6.3. Development of an active multi-modal management strategy which aims to help the public improve the timing, mode choice and routing of their journeys. Feeding off the details in the section above, an active multi-modal management strategy would have the following key components:
- VMS signs;
 - LED Message boards at key hubs to publicise expected corridor journey times and the benefit of delaying your journey;
 - Monitoring social media feeds to identify major and common issues;
 - Communication strategy to feedback to users;
 - A platform for users to feedback on the network; and
 - A data management strategy.

Mobility as a Service

- 8.6.4. Enhanced mobility creates greater accessibility to jobs, housing, and social activities. By building a smart multi-modal choice architecture, wider lifestyle choices framed around the end to end journey are possible. From this perspective, Mobility as a Service (MaaS) can be seen as delivering the transport platform by which wider lifestyle choices can be made.
- 8.6.5. MaaS is a relatively new concept within transport planning bringing together all modes of travel and encompassing different operations within a single mobility platform, accessing multiple applications. However, consumers in many parts of the UK are already making use of MaaS related services. These are associated with navigation, journey information, cashless payment as well as managed access to transport services including taxi, bus, rail and shared transport journeys.
- 8.6.6. MaaS recognises the increasing influence of mobile data, real-time information, and associated Apps on the way people make decisions about travel and presents integrated end to end purchase options, with fees linked to not only the journey you take but also your experience of the service you receive. In addition, MaaS will provide / sell added value services off the back of your mobility, with both transport (and non-transport) organisations using your mobility as an interaction point to promote additional services.
- 8.6.7. The ultimate goal of MaaS is that residents / employees subscribe to an area-wide service that allows easy access to public transport, car sharing, taxis and bike sharing through a universal payment system accessed through an app on smartphones. To attract subscribers the mobility service will have to be reliable, cost-effective and easy to use, it will present mobility packages covering weekly, monthly, annual and pay as you go option.
- 8.6.8. Personal user profiles will be built up over time allowing the system to automatically plan for – in real time – and mitigate against planned and unplanned disruption; sending you notifications of changes to your journey. Influence Travel Behaviour Campaigns will be segmented to users, providing a greater propensity for behaviour change incentives.
- 8.6.9. Such planning will improve accessibility for all segments of society, providing a two-way flow of communication which also benefits the Operators and the Local Authority. By analysing the data, providers of mobility services can predict usage and maintain the necessary supply of bikes, cars and public transport to meet demand in specific locations allowing optimisation of capacity in the network.
- 8.6.10. MaaS will emerge over time and increase as people appreciate the benefits. The greater the number of subscribers the more comprehensive and valuable the information collected. The information will drive service improvement that in turn attracts more people.
- 8.6.11. MaaS could transform towns and cities. Streets will have less traffic making them pedestrian friendly and making cycle lanes more possible. Air quality improves because traffic congestion has reduced. The streets are no longer lined with parked cars and local authorities no longer spend so much money to maintain and build infrastructure for cars and is able to invest in cycle lanes, paths and parks with pedestrian walkways.

8.6.12. A potential use case for a suburban family is provided in **Figure 8.1**. It describes a scenario of how customers may derive value from MaaS.

Figure 8.1 – MaaS Use Case: A Day in the Life of a MaaS Customer

Melinda is 35 years old and lives with her husband and two children in Tyldesley, a semi-rural area about 12 miles north-west from Manchester, where the most convenient transport mode option is the private vehicle. Melinda’s household owns two cars. Her husband, Tom, uses one of the vehicles every day to commute to his workplace at Salford, which is 10 miles away and usually takes him a minimum of 35 minutes, but in some cases, up to 60 minutes. Melinda uses their other vehicle to drop the children at school in Bolton and then drives back to Tyldesley to her workplace. Both Melinda and her husband suffer a lot of traffic problems when driving and decide they want a change.

Melinda’s family subscribe to a MaaS offering in an attempt to make their daily travels less stressful. She first downloads the MaaS Provider’s app to her and her husbands’ smartphones, and opens their family account. During the registration, she answers a number of questions and the MaaS app offers her and her husband a ‘Family Package’; which she finds very appealing. The package includes national rail, bus, on-demand mini-bus and bike sharing.

The next day, Melinda has a look at the options she has for taking the children to school. She types in the address of the school and sees that the MaaS operator offers an on-demand school bus that can pick her children up and take them straight to school. She hits ‘submit’ and can see the real-time location of the bus, its predicted arrival time, its registration plate and driver. The school bus arrives at her front door 15 minutes later. She uses the MaaS app to log that her children have boarded the bus. As Melinda saved time from not driving her children to school, she decides to have a pre-work coffee with her co-workers.

Melinda’s husband Tom also plans his journey to work in the morning. He orders the mini-bus, which shortly arrives. As he boards the mini-bus the MaaS app starts counting the distance travelled. When the mini-bus arrives at the train station, Tom uses the MaaS app as a virtual ticket. Arriving at Salford, Tom receives a message that the route he was planning on taking with a bike is closed due to an accident and that he is better off walking an alternative route. He still gets to his office 15 minutes earlier than yesterday.

After a month of using MaaS, Melinda’s family life has completely changed. They have sold Melinda’s car and offer the other car for short term rental using the MaaS operator’s website (community car club). In exchange Melinda’s family gets credit in their MaaS account, which they use to buy mobility services. Due to the time they save on their daily commutes they now have more time to have family breakfasts and have saved money by selling their cars.

Transport Systems Catapult – Exploring the Opportunity for Mobility as a Service in the UK (July 2016)

8.7. Summary

8.7.1. A summary of the potential measures identified for intelligent mobility, encompassing active travel, public transport, and highways, parking and freight measures, is provided in **Table 8.1**. This table also summarises more generic requirements for a supporting system structure to aid the implementation of the broader measures.

Table 8.1 – Summary of Potential Intelligent Mobility Measures

Transport Mode/Area	Intelligent Mobility Measure
Active Travel	Investigate the provision of cycle junction priority at the B2173 / Birchwood Road junction
	Pedestrian/Cycle Priority Strategy (SCOOT)
	Intelligent Lighting
	Walking and Cycling Wayfinding 'Apps'
	Social Media
	Cycle Hire Scheme
	Bike Share and Smart Cycle Lock Schemes
Public Transport	Real-Time information
	Payment of fares
Highways, Parking and Freight	Digital Road Signs (VMS)
	Autonomous Vehicles
	Freight Management
	Last Mile Solutions
Overarching (Building a Smart Choice Architecture)	Data management and systems development
	Active multi-modal management strategy
	Mobility as a Service (MaaS)

9. Option Appraisal

9.1. Introduction

9.1.1. This chapter presents the development and assessment of potential intervention measures for Swanley. It outlines the methodology adopted and summarises the results of the option appraisal process, detailing schemes discounted and highlighting the better performing options for inclusion in the prioritised list.

9.1.2. It is important to note, however, that during Phase 2 all options are considered as concepts only. Site investigation, beyond initial site visits and desk top studies, and detailed design work will not be undertaken as part of this study. This work would need to be undertaken as potential solutions are prioritised and taken forward for delivery.

9.2. Option Appraisal Methodology – Appraisal Framework

9.2.1. The assessment of the potential options described in Chapter 3 and in Appendix A has been carried out using a bespoke appraisal framework tool. This framework tool has been developed to assess identified options based on their ability to contribute to the following criteria:

- Identified transport and traffic issues and opportunities (as described in Section 2.3);
- Study Objectives (as described in Section 2.4); and
- Supporting Analysis: High level assessment of scheme Deliverability, Feasibility and Affordability.

9.2.2. Consideration has also been given to potential costs and timescales for implementation. These have been estimated based on experience of similar schemes and with reference to the Master Vision and Local Plan time frames.

9.2.3. The appraisal framework aims to provide an efficient, robust and easily presentable means of identifying legitimate options to be considered further. It has been developed with consideration of the DfT's Early Assessment and Sifting Tool (EAST) and supports the 'Scale of Impact' and 'Fit with other Objectives' criteria within the DfT Tool.

9.2.4. The framework spreadsheet includes an option specific reference and conceptual description. An outline cost and indicative timeframe have also been included, broad categories of which are defined in **Table 9.1**. These categories are indicative and aim to assist the prioritisation of the options for implementation. Estimates are based on Sweco and KCC experience of the timescales and costs associated with implementing similar schemes but should not be used for any purpose other than this initial sifting exercise.

Table 9.1 – Cost and Timeframe Categories for Phase 2 Option Appraisal

Outline Cost	Timeframe		Definition
<£1m	Short Term		0 to 5 years
£1m-5m	Medium Term		5 to 10 years
>£5m	Long Term		10 to 15 years

9.2.5. Each option has been scored on a five-point scale, as outlined in **Table 9.2**, against the identified Issues and Opportunities (reference Section 2.3) and the Study Objectives (reference Section 2.4). The scoring process is based on existing evidence, where available, and judgements based on experience to allow a qualitative approach to be adopted. This simple numerical assessment aims to provide consistence in the approach to appraising each option.

Table 9.2 – Qualitative Assessment Scoring System

2	Large beneficial impact
1	Beneficial impact
0	Neutral / marginal impact
-1	Adverse impact
-2	Large adverse impact

9.2.6. Each option has also been assessed against a series of supporting analysis criteria to ensure it is appropriate for further consideration as part of the study. The broad criteria on which this sifting process focused includes deliverability, feasibility and affordability, descriptions of which are set out in **Table 9.3**, with outcomes classified as ‘likely’, ‘likely (with challenges)’ and ‘unlikely’.

Table 9.3 – Supporting Analysis Criteria

Supporting Analysis Criteria	Description
Deliverability	Consideration of issues around deliverability e.g. in terms of political, planning, timescale or third-party issues
Feasibility	Consideration of practicalities which may present issues in delivery e.g. physical constraint, land availability and design standards
Affordability	Assessing what extent of additional funding would be required to deliver the scheme and whether this is likely to be available through existing funding sources

9.2.7. The appraisal results for each of the options put forward were used as the basis for selecting and prioritising the most appropriate solutions. Initial sifting criteria has looked to identify options that:

- Have an overall moderate impact or greater against the identified issues and opportunities (based on total qualitative score converted to an EAST 5-point rating as set out in **Table 9.4**);
- Have an overall moderate fit or greater with the study objectives (based on a total qualitative score converted to an EAST 5-point rating as set out in **Table 9.4**);
- Are likely to be deliverable (with or without challenges)
- Are likely to be feasible in theory; and
- Are likely to be affordable.

Table 9.4 – EAST Conversion

Issues (Scale of Impact)		Objectives (Fit with Study Objectives)	
Appraisal Score	Rating	Appraisal Score	Rating
≤0	Very small impact	≤0	Poor fit
1	Minor impact	1	Low fit
2			
3		Reasonable fit	
4	Good fit		
5			
6		Significant Impact	7
7			
8	Fully addresses identified issues		8
9			
10			

9.2.8. Total scores against identified issues and opportunities and study objectives have been combined to produce an overall score for each option to identify the better performing options that will then form part of the final transport strategy.

9.3. Scheme Assessment

9.3.1. The individual list of scheme mitigation measures identified within each of the four sub-strategy areas have each been appraised against the appraisal framework criteria set out in Chapter 9 of this Report. Some measures represent specific outline schemes, others collective groups of schemes or concepts that could be deployed across the study area in line with growth, or studies to help establish the extent and design of improvements to be implemented. The following number of measures have been identified within each category:

- Active Travel and Travel Demand Management – 22 measures
- Public Transport – 6 measures
- Highways, Parking and Freight – 19 measures
- Intelligent Mobility – 16 measures

9.3.2. Each individual measure has been assessed against the individual criteria in isolation. The cumulative rankings are then considered so as to bracket schemes into high and low performing groups to assist the overall scheme prioritisation process.

9.4. Outputs

9.4.1. The results of the option appraisal analysis are presented within **Appendix E** and provide the detail of the scoring applied to each scheme mitigation measure.

9.4.2. A total of 21 measures were identified as 'high-scoring' schemes that should form the underlying basis of the package of transport mitigation measures. These schemes breakdown as follows. The following does not represent a prioritised list or hierarchy of measures:

- Active Travel – 14 measures
- Public Transport Infrastructure – 1 measure
- Highways, Parking & Freight – Area Wide – 4 measures
- Intelligent Mobility – 2 measures

9.4.3. A further 18 measures scored well and form part of the wider package of transport strategy measures; but may have a lower implementation priority because their deliverability and feasibility is considered to be "Likely with Challenges".

9.4.4. A further 22 measures were identified as third-tier schemes that, whilst potentially offering benefits, may be more challenging to implement. Alternatively, they may be considered to offer lower impact on the study issues and opportunities and objectives.

9.4.5. Only 2 measures were considered likely to perform insufficiently well, or have insufficient information at this time, to not warrant a definitive recommendation at this time.

10. Prioritised Action Plan

10.1. Introduction

10.1.1. This chapter sets out the prioritised Action Plan for the delivery of transport enhancements and measures throughout the lifetime of the new Local Plan.

10.2. Overview

10.2.1. The evidence base and assessment of the growth impacts has identified a requirement for significant investment in active travel and public transport to facilitate sustainable delivery of the projected housing and employment growth, particularly under the Scenario which includes the Beechenlea Lane development. This will take the form of both infrastructure investment and enhanced service provision, but will also require wider operational strategies to promote and encourage sustainable travel.

10.2.2. The effective management of the highway network will also be required to alleviate specific areas of congestion and provide greater resilience to traffic incidents on the strategic network. The network management measures must also tackle the challenge of improving local air quality. These improvements can, again, be partly delivered by targeted infrastructure provision and development management measures but will also require some operational strategies, such as the management of kerbside parking, waiting and loading.

10.2.3. A summary of the prioritised package of measures is presented within **Tables 10.1 to 10.3**. This classifies the mitigation measures within the four categories set out below, listed based on the priority of the measures.

- Infrastructure
- Development Management
- Service Provision
- Operational Strategy

10.2.4. Table 10.1 also sets out the 'Lead' or responsible organisation(s) for delivery and the potential costs and timescales for potential delivery. Tier 1 measures are designed to be relatively quick to implement. Tier 2 include more ambitious schemes which have the potential to provide more benefits. Tier 3 are schemes that are worth a place within the transport strategy but are lower priority.

Alternatively, there is potential for a number of measures within common categories to be grouped in relation of mode and category. For example, the improvements recommended for the High Street corridor which include active travel and highways infrastructure measures could be grouped into one package for funding and implementation. Similarly, the cycle route proposals could also be grouped together into a single package of measures and once funding has been secured, they could be implemented in phases. The anticipated funding streams are likely to be Government grants, Local Authority funding streams and developer contributions through S106 Agreements and CIL Payments.

Table 10.1 – Prioritised Package of Mitigation Measures – 1st Tier Schemes

Category	Mode	Scheme Description Summary	Lead	Timescale	Cost
Infrastructure	Highways, Parking & Freight	Improve the road markings Birchwood Road / London Road (B2173) junction and review the operation of the traffic signals to ease observed queuing during peak times	KCC	0-5yrs	<£1m
		Provision of new or improved signage to positively reinforce large vehicle restrictions, particularly along the country lanes	KCC	0-5yrs	<£1m
	Walking and Cycling	Replace/upgrade the existing pelican crossing facility on High Street for a Puffin Crossing	KCC	0-5yrs	<£1m
		Upgrade London Road Pelican crossing (adjacent to Oliver Road) to a toucan crossing	KCC	0-5yrs	<£1m
		Improve the key pedestrian alleyway between Azalea Drive and Station Approach	KCC	0-5yrs	<£1m
		Footway provision - A focused review of the main pedestrian desire lines to ensure consistency between the main pedestrian routes and actual desire lines. Ensure that pedestrians are adequately catered for in the highway infrastructure, i.e. aligned sets of dropped kerbs, tactile paving, adequate lighting and surfacing and minimal street clutter	KCC/SDC	0-5yrs	<£1m
		Provision of a west-east "quietway" cycle route along Harts Dyke Road and surrounding residential streets to provide a connection between (London Road and St Mary's Road) towards the rail station	KCC	0-5yrs	<£1m



Category	Mode	Scheme Description Summary	Lead	Timescale	Cost
		Review of wayfinding and visibility of key routes and attractors such as the rail station, town centre and Swanley Park	KCC/SDC	0-5yrs	<£1m
		Crossing Provision - All pedestrian crossings to be upgraded to meet all current DDA requirements	KCC	0-5yrs	<£1m
		Remove unnecessary guard railing and general declutter of street furniture	KCC	0-5yrs	<£1m
		Pedestrian/Cycle Priority Strategy (SCOOT)	KCC	5-10yrs	£1m-£10m
	Public Transport	Improve bus infrastructure provision and visibility within the study area including the provision of new or improved shelters, bus kerbs and legible timetable and fare information	KCC/SDC /Bus Operators	0-5yrs	£1m-£10m
Development Management	Highways, Parking & Freight	Promotion and partnership working with car clubs	KCC/SDC	0-5yrs	<£1m
	Cycle	Review of cycle parking standards for new developments within the study area	KCC	0-5yrs	<£1m
		Promote and develop the cycle training offer available within the study area	SDC	Continual	<£1m
	Travel Demand Management	Work with developers to ensure that new residents and employees have the information available about active travel and that it is promoted and encouraged. This can be enforced through the securing of travel plans through appropriate planning conditions and obligations	SDC	Continual	N/A

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Category	Mode	Scheme Description Summary	Lead	Timescale	Cost
		Expand and develop school, workplace and area travel plans to raise awareness of travel choices for existing developments	SDC	Continual	<£1m
		Local marketing/promotional campaign to encourage people to walk to their local shops, schools, leisure facilities and Swanley town centre. Including the distribution of public rights of way and local cycle route maps to help encourage active travel modes	SDC	Continual	<£1m
		Develop and promote personal journey planning tools, such as Kent Connected, to inform people of their travel options and the impacts of the choices they make	SDC/KCC	Continual	£1m-£10m
	Intelligent Mobility	Walking and Cycling Wayfinding 'Apps'	SDC/KCC	Continual	£1m-£10m
Operational Strategies	Highways, Parking & Freight	Enforcement of on-street car parking and loading restrictions	KCC/SDC	Continual	<£1m

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Table 10.2 – Prioritised Package of Mitigation Measures – 2nd Tier Schemes

Category	Mode	Scheme Description Summary	Lead	Timescale	Cost
Infrastructure	Highways, Parking & Freight	Provision of streetscape and highway layout improvement works on High Street and London Road (west)	KCC	5-10yrs	£1m-£10m
		Provision of formal loading bay facilities on High Street/Bevan Road	KCC	5-10yrs	<£1m
		Regular maintenance of highway infrastructure - surfacing, lighting, signage	KCC	Continual	£1m-£10m
Walking & Cycling	Walking & Cycling	Provide a dedicated pedestrian/cycle route between Swanley and Hextable - through Swanley Park and Avenue of Limes	KCC	5-10yrs	£1m-£10m
		Cycle Infrastructure - Support the implementation of the existing Cycling Strategy routes	KCC	5-10yrs	£1m-£10m
		Provision of a shared use footway/cycleway along the B2173 London Road through east Swanley	KCC	5-10yrs	£1m-£10m
		Provision of a shared use footway/cycleway or on-road cycle lanes between Swanley and Crockenhil (on Goldsel Road)	KCC	5-10yrs	£1m-£10m
		Provision of shared use footway/cycleway and associated infrastructure along Highlands Hill	KCC	5-10yrs	£1m-£10m
		Review of public cycle parking provision adjacent to at key destinations and attractors, and provide new/increased provision where necessary	KCC	0-5yrs	<£1m
		Improve streetscape of Station Road as part of "Old Town" concept to provide an environment that give priority to pedestrians and cyclists over motor vehicles	KCC	5-10yrs	£1m-£10m



Category	Mode	Scheme Description Summary	Lead	Timescale	Cost
	Intelligent Mobility	Intelligent Lighting	KCC/SDC	0-5yrs	£1m-£10m
		Digital Road Signs (VMS)	KCC	5-10yrs	£1m-£10m
		Real-Time information	KCC/SDC /Bus Operators	0-5yrs	£1m-£10m
Development Management	Highways, Parking & Freight	Freight Management Measures (including DSPs, CLPs)	KCC/SDC	Continual	N/A
		Review of car parking standards for new developments within Swanley (and other towns/villages)	KCC/SDC	0-5yrs	<£1m
Service Provision	Public Transport	Develop on-demand hybrid taxi/bus service for greater Swanley area coverage	KCC/Operators	5-10yrs	£1m-£10m
Operational Strategies	Highways, Parking & Freight	Undertake a Car Parking Review Study to aid the development of a Parking Strategy that enables consistency of pricing and duration of stay restrictions whilst balancing the need to promote sustainable travel with the demand for parking.	KCC/SDC	0-5yrs	<£1m
		Undertake a review of footway parking and its impact on the permeability and safety for pedestrians and cyclists	KCC/SDC	0-5yrs	<£1m

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Table 10.3 – Prioritised Package of Mitigation Measures – 3rd Tier Schemes

Category	Mode	Scheme Description Summary	Lead	Timescale	Cost
Infrastructure	Highways, Parking & Freight	Investigate the potential for a new link road from Birchwood Road to the B2173 to avoid narrow section at the southern end on approach to junction with B2173.	KCC	10-15yrs	>£10m
		Investigate potential for improvements to the corridor of lanes around Hextable, Swanley and Crockenhill	KCC	5-10yrs	£1m-£10m
		Investigate potential for a new all-movement junction on the A20 to the west of Swanley	EH/KCC	10-15yrs	>£10m
		Investigate potential for an eastbound off-slip access from A20 onto the B2173	EH/KCC	10-15yrs	>£10m
		Introduce physical measure on Salisbury Avenue to prevent through movement and thus rat running from B2173 London Road	KCC	0-5yrs	<£1m
		Move "No Entry" signage on Nightingale Way to adjacent to Asda access	KCC/SDC	0-5yrs	<£1m
		Cycling	Provision of a Cycle Hub facility to provide a dedicated and secure cycle parking facility with links to identified cycle routes	KCC/SDC	5-10yrs
Public Transport	Investigate the provision of a bus interchange (flagship) facility in close proximity to the town centre	KCC/Bus Operators	5-10yrs	£1m-£10m	
Intelligent Mobility	Bike Share and Smart Cycle Lock Schemes	SDC/ Scheme Operators	5-10yrs	<£1m	



Category	Mode	Scheme Description Summary	Lead	Timescale	Cost
		Cycle Hire Scheme	SDC/ Scheme Operators	5-10yrs	<£1m
		Investigate the provision of cycle junction priority at the B2173 London Road/Birchwood Road junction	KCC	0-5yrs	<£1m
Development Management	Highways, Parking & Freight	Planting of trees to alleviate air quality issues - Future Policy should ensure that any new developments adjacent to public highways, particularly strategic highways such as the A20, or within AQMA's should include the planting of trees to mitigate air quality impacts. Equally, the removal of existing healthy trees should not be permitted unless trees will be appropriately re-provided	SDC	Continual	N/A
Service Provision	Public Transport	New market day bus service	KCC/Bus Operators	5-10yrs	£1m-£10m
		Review existing bus routes to establish the feasibility and requirement for enhanced frequencies, hours of service and coverage	KCC/Bus Operators	5-10yrs	£1m-£10m
Operational Strategies	Highways, Parking & Freight	Promote the use of small capacity powered two wheelers (PTW) and provide enhanced facilities at key destinations	KCC/SDC	Continual	<£1m
	Public Transport	Quality Bus Partnerships and Total Transport	KCC/Bus Operators	Continual	£1m-£10m
	Intelligent Mobility	Data management and systems development	SDC/KCC	Continual	£1m-£10m
		Active multi-modal management strategy	SDC/KCC	Continual	£1m-£10m

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Category	Mode	Scheme Description Summary	Lead	Timescale	Cost
		Mobility as a Service (MaaS)	KCC/SDC /Service Providers	Continual	£1m-£10m
		Freight Management Strategy, including initiatives such as Last Mile Solutions	Freight Operators /KCC	Continual	<£1m
		Social Media	KCC/SDC	Continual	<£1m

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Appendix A – Option Identification Spreadsheet

DRAFT FOR COMMENT

Reference	Source	Measure / Option Description	Take forward as part of ITP	Reasoning / Comments
Improve Air Quality				
AQ1	Phase 1 Workshop	Planting of trees to alleviate air quality issues - Future Policy should ensure that any new developments adjacent to public highways, particularly strategic highways such as the A20, or within AQMA's should include the planting of trees to mitigate air quality impacts. Equally, the removal of existing healthy trees should not be permitted unless trees will be appropriately reprovided	Yes	It was noted from discussions at the workshop that there was particular concern about air quality adjacent to the A20 as such, in the short term an area wide study should be undertaken to identify where air quality could be improved through the provision of additional or replacement planting. As part of an overall strategy, tree planting or equivalent in sensitive areas should be conditioned as part of any planning consent. This measure is considered to be deliverable, feasible and affordable. As such, it is recommended to be taken forward as part of this study.
Highway Infrastructure Improvements				
HI1	Phase 1 Workshop	Provision of a new all-movement junction on the A20 to the west of Swanley to help alleviate congestion within the town centre by providing an alternative route to western Swanley and areas to the north such as Dartford, without having to route through Swanley Town Centre or double back from Sidcup	Yes	This is a long term strategy that would require further detailed investigation and assessment beyond this study, including an environmental assessment. Its deliverability and feasibility would also be subject to third party engagement, such as Highways England, and land ownership. The affordability may also be subject to securing appropriate third party funding, which could be assisted by development contributions. However, the potential benefits are considered to warrant the measure being taken forward as part of this study.
HI2	Phase 1 Workshop	Provision of an eastbound off-slip access from A20 onto the B2173 to help alleviate congestion within the town centre by providing an alternative route to western Swanley and areas to the north such as Dartford, without having to route through Swanley Town Centre or Sidcup	Yes	As with HI1 above, this is a long term strategy that would require further detailed investigation and assessment beyond this study, including an environmental assessment. Its deliverability and feasibility would also be subject to third party engagement, such as Highways England, and land ownership. The affordability may also be subject to securing appropriate third party funding, which could be assisted by development contributions. However, the potential benefits are considered to warrant the measure being taken forward as part of this study either as a stand alone measure or as an alternative to HI1.
HI3	Phase 1 Workshop	New link road from Birchwood Road to the B2173 to avoid narrow section at the southern end on approach to junction with B2173. This measure would be designed to alleviate congestion and improve safety at the Birchwood Road/B2173 signalised junction.	Yes	This is a long term strategy that would require further detailed investigation and assessment beyond this study, including an environmental assessment. Its deliverability and feasibility would also be subject to third party engagement and land ownership. The affordability may also be subject to securing appropriate third party funding, which could be assisted by development contributions. It is considered that this measure would compliment HI1 and HI2 and thus, should be considered in conjunction with both of these measures. Notwithstanding, the potential benefits are considered to warrant this measure being taken forward as part of this study.
HI4	Phase 1 Workshop	Provision of a westbound off-slip from the M25 to the A20 (southeast of Swanley)	No	Works to the M25 are outside of the study area and scope. Such works would be brought forward by Highways England and as such are outside the control of KCC/SDC. Therefore, this measure is not recommended to be taken forward by part of this study. <i>It is noted that there are improvements programmed at M25 Junction 3 for 2018-2019 which are aimed at alleviating congestion at the roundabout which will have a positive impact on traffic movements into and out of Swanley.</i>
HI5	Phase 1 Workshop	Corridor study of the lanes around Hextable, Swanley and Crockenhill to establish where improvements can be made to facilitate the safe movement of vehicle along these roads for existing and future users. The improvements measures are likely to include improved maintenance of existing hedgerows and verges to increase the effective carriageway width, the provision of additional formal passing places and carriageway widening. Improving the country lanes within the study would assist in redistributing existing and future traffic away from Swanley Town Centre helping to alleviate congestion and improve air quality within the AQMA	Yes	The undertaking of a corridor study to identify improvement opportunities and the undertaking of maintenance of the existing routes is considered to be a short term measure. The provision of physical improvements such as carriageway widening and formal passing places would be subject to highway ownership boundaries and third party land constraints as well as environment constraints which would impact the feasibility and deliverability of such works. The environmental and capacity impacts of the redistribution of traffic through the country lanes would also need to be assessed as part of a separate study. However, the potential benefits for the town centre are considered to warrant this overall measure being taken forward as part of this study. An area wide corridor study would assess all roads within the study area but the primary routes that offer the greatest potential for the redistribution of traffic or the roads that current act so local distributor roads that require improvements are listed separately. This list is not exhaustive and will be reviewed throughout the period of the strategy.
	HI5(a)	Improve Beechenlea Lane - General maintenance of existing hedgerows/verges to increase effective carriageway width, improved surfacing and signage, carriageway widening, provision of additional formal passing places		
	HI5(b)	Improve Wested Lane/Eynsford Road - General maintenance of existing hedgerows/verges to increase effective carriageway width, improved surfacing and signage, carriageway widening, provision of additional formal passing places		
	HI5(c)	Improve Lydenhatch Lane - General maintenance of existing hedgerows/verges to increase effective carriageway width, improved surfacing and signage, carriageway widening, provision of additional formal passing places		
	HI5(d)	Improve College Road - General maintenance of existing hedgerows/verges to increase effective carriageway width, improved surfacing and signage, carriageway widening, provision of additional formal passing places		
	HI5(e)	Improve New Barn Road - General maintenance of existing hedgerows/verges to increase effective carriageway width, improved surfacing and signage, carriageway widening, provision of additional formal passing places		
	HI5(f)	Improve Highlands Hill/Swanley Village Road/Wood Street/Ship Lane - General maintenance of existing hedgerows/verges to increase effective carriageway width, improved surfacing and signage, carriageway widening, provision of additional formal passing places		

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Reference	Source	Measure / Option Description	Take forward as part of ITP	Reasoning / Comments
HI6	Phase 1 Workshop	Widen Birchwood Road - provision of passing places. Improved maintenance	No	Physical constraints would prevent widening of existing road at southern end and thus this measure is not considered to be feasible or deliverable without considerable impact on third parties and thus costs. The remainder of Birchwood Road considered adequate in its current form. Improvements to the southern section of Birchwood Road are considered within HI3 and as such, this measure is not recommended to be taken forward as part of this study.
HI7	Phase 1 Workshop	Improve junction of College Road / New Barn Road	Yes	Whilst no specific collision issues were noted at this junction, it was established from stakeholder discussions that this junction layout could be improved. It is considered that the junction would benefit from improved road markings and potentially signage, as well as maintenance of adjacent hedgerows to increase the overall visibility of and at this junction. All of these improvements could be implemented in the short term at minimal cost and as such, it is recommended that this measure be taken forward as part of this study. In the mid to long term, land ownership boundaries could be reviewed to establish whether physical layout improvements would be feasible and deliverable.
HI8	Phase 1 Workshop	Crossing over the railway line to the north of Swanley - suitable for all modes of transport	No	It is considered that such a proposal could only be supported by transformational development scale which is not currently the strategy for Swanley. Furthermore, the potential environmental impacts may outweigh the benefits within the town centre and as such, it is considered that funding could be better spent improving existing highway infrastructure and improving sustainable travel modes as a means of alleviating congestion within Swanley, rather than providing a new road that may not meet the study objectives. Furthermore, its feasibility and deliverability would be subject to third party land ownership constraints and costs. As a result, this measure is not recommended for further consideration as part of this study.
HI9	Swanley Master Vision	Corridor study to establish junction improvement measures to ease congestion and vehicle flow through the Bartholomew Way/Swanley Lane/High Street/London Road corridor within Swanley Town Centre.	Yes	No specific schemes were established by the baseline study and indeed, it was noted that the TA for the U+I planning application concluded that the existing junctions would operate within theoretical capacity in the future baseline and future with development scenarios and as such, no physical improvements were proposed. In the mid-longer term, the implementation of highway improvement works would need to be accompanied by a comprehensive capacity analysis and detailed design which could be related to development application submissions and associated financial contributions. As part of this study, Sweco are investigating whether the physical layouts of the junctions and their operation, i.e. the provision of traffic light control, could be improved to ease congestion through this part of the town centre highway network. These potential improvements are also being investigated with a view to improving pedestrian and cycle infrastructure and movement to create a gateway route into the town centre that is focused on ease of movement of pedestrians and cyclists over vehicles. Subject to the outcomes of this high level assessment, specific improvement measures will be set out during the Stage 2 work.
HI10	Sweco	Amendments to the physical layout and surfacing of London Road on the approach to the St Mary's Road/Bartholomew Road junction	Yes	With reference to HI9, Sweco are investigating whether the layout and surfacing of the western section of London Road can be improved to create a gateway route into the town centre that is focused on ease of movement of pedestrians and cyclists over vehicles, including the provision of enhanced pedestrian and cycle infrastructure. Subject to the outcomes of this high level assessment, specific improvement measures will be set out during the Stage 2 work.
HI11	Phase 1 Workshop	Traffic calming around the station	No	This measure has not been recommended for further consideration as part of this study as works in the vicinity of the station, including improvements to Station Approach are being implemented by others as part of the programmed Station Improvement Works currently being prepared by Southeastern in partnership with Sevenoaks District Council. Notwithstanding it is recommended that the wider strategy includes that any future works at the station be monitored and that SDC/KCC propose additional works to be identified to be necessary subject to future development impacts and funding.
HI12	Phase 1 Workshop	Improve the access arrangements to Asda as part of any planning application that comes forward for that site. Create a multi-storey car park on the western car park to free up space for highway improvements at access.	No	Whilst it will be important that any future applications at the Asda site include a comprehensive assessment of the access arrangements and impact on the surrounding highway network, this is a third party site and thus outside the control of SDC/KCC. Therefore, as works are reliant on third party proposals and funding, it is considered that this measure should be excluded from the study.
HI13	Phase 1 Workshop	Rearrange the western access into Asda	No	For the reasons noted above for HI21, it is recommended that this measure is not taken forward as part of this study.
HI14	U+I Application	Minor amendments to kerbing on Nightingale Way to accommodate larger vehicles on Nightingale Way and to give back some carriageway space to pedestrians	No	The implementation and funding of this measure is associated with third party land and thus tied into redevelopment of town centre which is outside the control of SDC/KCC. Therefore, whilst any town centre development application should include an proposals to mitigate potential impacts, as a stand alone measure it is felt that these works should not be taken forward as part of this study.
HI15	Phase 1 Workshop	Open up Bevan Lane to provide two-way route	No	It is considered that this measure would create a rat run between Goldsel Road and High Street used to avoid the roundabout. This is turn would create additional vehicle traffic on Bevan Road to the detriment of existing residents as well as safety issues at the give-way junctions at either end and as such, this measure would not contribute to the vision of creating a gateway into the town centre along the High Street corridor. The measure would also not score positively against the assessment criteria. Therefore, it is recommended that this measure is not taken forward as part of this study.

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Reference	Source	Measure / Option Description	Take forward as part of ITP	Reasoning / Comments
Traffic Management Measures				
TM1	Sweco	Make New Barn Road / College Road part of a one-way system	Yes	With reference to H15 measures, the potential to widen the country lanes may not be feasible subject to highway boundary and land ownership constraints. However, as these roads will continue to function as key distributor roads from Hextable and north Swanley as well as for access to Swanley Park, further measures to ease vehicle movements on these narrow roads should be investigated. The measure being proposed for inclusion within the study is the provision of one-way system which would reduce two-way vehicle movements on the narrowest sections of highway.
TM2	Phase 1 Workshop	Introduce physical measure on Salisbury Avenue to prevent through movement and thus rat running from B2173 London Road	Yes	It is considered that a physical feature could be provided in Salisbury Avenue that would still allow residential access but would prevent east-west through flow and thus, stop Salisbury Avenue from being a rat-run to avoid congestion on London Road. This would have significant safety, air quality and noise benefits for local residents that would outweigh any impacts resulting from having to re-route between the B2173. The exact location of this measure would need to be investigated to limit impacts on residents. As this measure could be implemented in the short term at minimal expense, it is recommended that it be taken forward as part of this study.
TM3	Phase 1 Workshop	Remove one-way section of Nightingale Way between the car park and London Road to provide a pedestrian/cycle only link	Yes	This measure would create a pedestrian only link from the recreation ground, Aldi and onto St Mary's Road by preventing vehicle movement along the section of Nightingale Way between the car park and London Road. It would result in vehicles having to re-route via the B258/Asda Access/Nightingale Way roundabout potentially increasing traffic movements through this already busy section of highway. However, it is considered that the enhancements to the pedestrian environment and safety along this key pedestrian route would outweigh any potential impacts on traffic. The measure would also score well against the appraisal criteria and thus, it is recommended that it be brought forward as part of this study. Notwithstanding, it is acknowledged that the ownership of this section of highway would need to be established and as such, the feasibility and deliverability may be subject to third party agreement or tied into any town centre planning application.
TM4	Sevenoaks District Strategy for Transport 2010 - 2026 / U+I Application	Develop a Traffic Management Control system and introduce Intelligent Transport Systems that cover the high volume main road network, including in Swanley town centre	Yes	It is considered that this measure would include the provision of Variable Message Signage (VMS) on the main roads into the town centre which provide information on the capacity of the car parks assisting people making early decisions on which car park to use. By informing drivers of their choices early, the requirement to search in busier car parks will be reduced, which will in turn redistribute car parking usage and vehicle trips evenly throughout the town centre. The strategy would also include the provision of information signage from strategic roads to inform people of delays on the strategic network as well as delays within the town centre so that alternative routes can be chosen. It is recommended that this measure be taken forward as part of this study and as part of the Stage 2 work. Sweco will investigate suitable locations and systems for Swanley.
Highway Safety Measures				
HS1	Phase 1 Workshop	Frequent and adequate maintenance of verges and hedgerows	Yes	It is considered that this should form part of a wider, potentially improved, KCC/SDC maintenance strategy that Swanley will form part of. The regular maintenance of hedgerows and verges will assist in maintaining adequate effective carriageway and footway widths and visibility, which in turn will improve safety for all road users through the study area. As such it has been recommended to be brought forward as part of this study.
HS2	Phase 1 Workshop	Improve existing traffic calming chicanes on Top Dartford Road through the provision of enhanced lighting, signage, bollards, road markings etc. as appropriate and the cutting back of vegetation so that signage and lighting is not obscured	Yes	The key stakeholder consultation suggested that the existing traffic calming chicanes should be removed on safety grounds. However, a review of the previous five years of collision data did not reveal any accident patterns or blackspots that would be attributable directly to the existing traffic calming features along this corridor. As such, the removal of these features are not recommended by this study. Alternatively, it is recommended that the measure brought forward is for the layout and physical infrastructure provided at each traffic calming chicane be reviewed and improvements provided as necessary. This would be a short term, relatively inexpensive measure that will ensure that the traffic calming features are fit for purpose, thus helping to maintain good levels of highway safety along this stretch of highway.
HS3	Phase 1 Workshop	Regular maintenance of footway infrastructure - surfacing, lighting, signage	Yes	As with HS1 above, it is considered that this should form part of a wider, potentially improved, KCC/SDC maintenance strategy that Swanley will form part of. The regular maintenance of hedgerows and verges will assist in maintaining adequate effective carriageway and footway widths and visibility, which in turn will improve safety for all road users through the study area. As such it has been recommended to be brought forward as part of this study. During Stage 2, particularly areas of deficiency will be identified and site specific measures suggested.
HS4	Sevenoaks District Strategy for Transport 2010 - 2026	Promoting low speed limit regimes in built-up residential areas	No	It is considered that this should not be included as a specific measure within this study, but should be incorporated as part of a wider strategy of monitoring and continual review so that they are implemented where a specific need is identified.
HS5	Sevenoaks District Strategy for Transport 2010 - 2026	Targeting measures to calm traffic in areas of high pedestrian activity including school entrances and shopping areas	No	It is considered that this should not be included as a specific measure within this study, but should be incorporated as part of a wider strategy of monitoring and continual review so that they are implemented where a specific need is identified.
Collision Reduction and Incident Management Measures				
CR1	Sweco	Investigate the potential for junction layout and operation improvements at the Birchwood Road / B2173 junction to reduce collision rates	Yes	The review of the previous five years collision data revealed a cluster of accidents at the Birchwood Road/B2173 signalised junction and adjacent Hockenden Lane junction. As such it is recommended that the layout and operation of these junctions be reviewed to see if they can be amended to improve safety and reduce casualties at this junction.

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Reference	Source	Measure / Option Description	Take forward as part of ITP	Reasoning / Comments
Signage and Road Markings Improvements				
SRM1	Phase 1 Workshop	Provision of yellow box / "Keep Clear" Marking in the Goldsel Road / High Street roundabout junction to prevent queuing vehicles from blocking the roundabout to help ease congestion and delay	Yes	It is considered that the provision of "Keep Clear" markings would be most appropriate at the roundabout junction. The provision of these road markings would represent a short term, inexpensive improvement measure that would have an instant impact on the operation of the junction. It would not prejudice the provision of HI19 discussed above and this, it is recommended that this measure be taken forward within this study.
SRM2	Phase 1 Workshop	Move "No Entry" signage on Nightingale Way to adjacent to Asda access to clarify that there is no vehicular access on Nightingale Way and pedestrianised area	Yes	From the stakeholder consultation it was noted that the current location of the signage creates confusion and unnecessary vehicular turning manoeuvres or vehicles ignoring the signage and travelling the wrong way up the one-way section of Nightingale Way all of which increase the potential for vehicle-pedestrian conflicts along this key pedestrian route to/from the town centre from the south. This measure, which could be implemented in the short term at minimal expense, could improve safety within this area of the town centre and as such, it is recommended that it be taken forward as part of this study.
SRM3	Swanley Master Vision	Improving wayfinding including signing to car parks, Swanley Park and other key attractors	Yes	To be split down further into more specific measures looking at each element/mode
Inclusive Mobility Improvements				
IM1	Phase 1 Workshop	Provision of step free access at both entrances into the rail station	No	This measure has not been recommended for further consideration as part of this study as works in the vicinity of the station would the responsibility of Southeastern and Network Rail and thus, outside the control of KCC/SDC. It is noted however that step free access within the station has been improved in recent years and there are programmed improvements at each entrance into the station. As such, it is recommended that the wider strategy includes that any future works at the station be monitored and that SDC/KCC propose additional works to be identified to be necessary subject to future development impacts and funding.
IM2	Sevenoaks District Strategy for Transport 2010 - 2026	All pedestrian crossings to be upgraded to meet all current DDA requirements	Yes	It is recommended that this measure be taken forward as part of this study, although no specific sites have been identified in the studies undertaken to date. As part of this study, Sweco will undertake a high level audit of the pedestrian environment and infrastructure provision along key corridors/desire lines and identify specific sites where improvements are required to meet current DDA requirements. These will be detailed within the Stage 2 appraisal work.
IM3	Sevenoaks District Strategy for Transport 2010 - 2026	Bus stops along key transport corridors will have raised kerbs installed	Yes	It is recommended that this measure be taken forward as part of this study, although no specific sites have been identified in the studies undertaken to date. As part of this study, Sweco will undertake a high level audit of the bus stop infrastructure and identify specific sites where improvements are required to meet current DDA requirements. These will be detailed within the Stage 2 appraisal work.
Car Parking Measures				
CP1	Sevenoaks District Strategy for Transport 2010 - 2026 / Phase 1 Workshop	Develop a parking strategy that balances the need to promote sustainable travel with demand for parking and the desire to promote good design and the efficient use of land Car Parking Review - consistency of pricing and duration of stay restrictions	Yes	It is recommended that the Swanley Transport Strategy includes a review of the town centre car parks and on-street parking provision to establish consistency throughout Swanley, particularly within the town centre, with regards tariffs and restrictions to help eliminate large swathes of underused car parking areas or indeed, assist in establishing where car parking provision could be reduced to enhance pedestrian and cycle environment and connectivity. However, this would require a detailed study of car parking utilisation and key stakeholder engagement and negotiation, including with third parties (U+1 and Asda), to be undertaken which is considered to be outside the scope of this study.
CP2	Phase 1 Workshop	Enforce on-street car parking restrictions - particularly Double Yellow Line restrictions within the town centre	Yes	It is considered that the effective enforcement of parking restrictions would assist in the efficient use of road space and car parking, whilst enhancing and environment and safety for other road users. As such, it is recommended that this measure be taken forward for inclusion as part of an area wide strategy.
CP3	Phase 1 Workshop	Increase car parking at station	No	It is widely acknowledged that the availability of car parking influences the level of car trips and therefore, it is considered that an increase in car parking at the rail station would simply increase the level of vehicle trips to and from the station, rather than remove on-street commuter parking. This would be contrary to the objective of the study which is to reduce congestion and improve air quality. Similarly, improvements to sustainable transport infrastructure and access will act to reduce the demand for car parking at the station by getting people out of their cars and using alternative modes to access the station. As a result, it is not recommended that this measure is taken forward as part of this study.
CP4	Phase 1 Workshop	Increase car parking at Swanley Park	No	With reference to CP3 above, the provision of additional car parking at the park is considered to be contrary to the objectives of the study. Through the implementation of the measures to improve access to and from the park by sustainable transport modes, it is considered that the demand for car parking would reduce as people choose alternative modes to access the park. As a result, it is not recommended that this measure be taken forward as part of this study.
CP5	Phase 1 Workshop	Introduce charging in Asda car park	No	Amendments to parking charges and restrictions within third party land is outside the control and power of KCC / SDC. Similarly, it is understood that car parking charges are a very politically sensitive issue and as such, this measure is unlikely to be feasible and deliverable on these grounds. As such, it is not recommended that this measure be taken forward as part of this study.
CP6	Phase 1 Workshop	Reducing permitted duration of stay within Asda car park	No	As such, it is not recommended that this measure be taken forward as part of this study.
CP7	Phase 1 Workshop	Introduce on-street car parking restrictions in area west of the railway	Yes	It is noted that there are extensive on-street parking restrictions within the residential area to the east of the station, but not the same level of restrictions to the west of the rail station, which is potentially resulting in high levels of on-street commuter parking. As such, it is recommended that the requirement for on-street parking restrictions, in line with the existing Swanley CPZ be investigated and implemented where a need is identified. The detailed study required would be a separate piece of work to this study as it would require surveys and consultation with key stakeholders and local residents.

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Reference	Source	Measure / Option Description	Take forward as part of ITP	Reasoning / Comments
CP8	U+I Application	Provision of car club spaces within the town centre	Yes	Studies of car club usage have shown that the provision of car clubs reduce the level of car ownership in the locality of the facilities. As such, the provision of car club spaces within the town centre and at new developments throughout Swanley will make a positive contribution to controlling car ownership levels which in turn, will help to ease congestion within the study area. Therefore, it is recommended that the provision of car club spaces be included as a measure within this study and taken forward into Stage 2. As part of this study, Sweco have engaged with a Car Club operator to establish the potential for car clubs within Swanley, independent of development obligations. The outcome of this work will be detailed within the Stage 2 report.
CP9	Swanley Master Vision	Review of footway parking on the B258 Swanley Lane and its impact on the usability of the B258 Swanley Lane for pedestrians and cyclists	Yes	Footway parking along Swanley Lane is extensive and in some instances render the footways unpassable by pedestrians as well as making the route dangerous for cyclists. Therefore, the prevention (or similar) of footway parking along this key route through amendments to policy and/or traffic regulation orders along this corridor would contribute towards improving connectivity between Swanley and Hextable along this corridor. Therefore, it is recommended that this measure be taken forward as part of this study.
Public Transport - Bus Infrastructure and Service Improvements				
B1	Phase 1 Workshop	Bus priority measures - FastTrack	No	It is considered that such a proposal could only be supported by transformational development scale which is not currently the strategy for Swanley. Also, physical constraints limit feasibility into and through Swanley and the study area. As such, it is not recommended that this measure be taken forward as part of this study.
B2	Phase 1 Workshop	Quality Bus service to Bluewater - link to FastTrack service from Dartford/Bluewater that ties in with working hours	Yes	It was noted from stakeholder consultation and the baseline study that Bluewater represents a key employer as well as key leisure and retail destination that would benefit from improved bus coverage. As such, it is recommended that this measure be considered as part of this study. This work will also consider the potential for other measures such as integrated ticketing for better integration of services and coverage, such as Dartford Station.
B3	Phase 1 Workshop	Improve (create) services to the hospital	Yes	It was noted from stakeholder consultation and the baseline study that the hospital is a key destination but that the current bus services to/from it do not coordinate with patient visiting times, resulting in cars being the only modal choice available. As such, it is recommended that this measure be considered as part of this study.
B4	Phase 1 Workshop	Improve bus stop facilities - shelters, real-time, lighting etc.	Yes	No specific sites were identified during the workshop and previous studies. However, as part of this study a high level audit of the bus stop facilities within the study area will be undertaken and specific measures to improve bus stop infrastructure will be detailed within Stage 2.
B5	Phase 1 Workshop	Provide a town centre to surrounding village bus service	No	A detailed assessment of bus patronage and origin/destination of the existing passengers, together with future bus patronage, will be required following this study to help establish the key bus desire lines and where improvements to the bus network are required in order to provide a more comprehensive network. Notwithstanding, the work undertaken to date indicates that measures should focus on reinforcing and enhancing existing routing and services rather than create a new service.
B6	Phase 1 Workshop	Provide a young person's bus pass so they have an option to use the buses rather than, or if they cannot, drive.	No	Measures relating to fares could only be implemented as part of a county wide strategy subject to funding and third party (bus operator) engagements. As such, the measure is considered to be outside the scope of this study and thus, is not recommended to be taken forward as part of this study.
B7	Phase 1 Workshop	Provide real-time passenger information at bus stops and key locations within the town centre	Yes	The high level audit of bus stop infrastructure will include a review of timetable/mapping information provided at each stop and improvement measures identified. The provision of real-time digital data at key points within the town centre will also be investigated as part of this study.
B8	Phase 1 Workshop	Provision of a market day bus service - price to be comparable to parking charges	Yes	It is considered that, given the low cost of parking, that bus fares could not be made comparable. The provision of a market day service, including the potential of linking with existing "shopper" services rather than the provision of a new dedicated service, will be investigated as part of this study. However, the feasibility and deliverability will need to be established following a detailed assessment of existing and future patronage that will be required to be undertaken following this study.
B9	Phase 1 Workshop	Review fare structure of bus services, including the provision of OysterCards across all services	No	Measures relating to fares could only be implemented as part of a county wide strategy subject to funding and third party (TfL) engagements. As such, the measure is considered to be outside the scope of this study and thus, is not recommended to be taken forward as part of this study.
B10	Swanley Master Vision / Sevenoaks District Strategy for Transport 2010 - 2026	Improve bus routes, particularly within the residential areas and interchange with Swanley Station	Yes	As part of this study, a review of routes in relation to the Local Plan development areas will be undertaken to help establish whether the volume of development provides sufficient overall density to justify additional services. Any route improvements would need to be linked to overall accessibility improvements.
B11	Swanley Master Vision / Sevenoaks District Strategy for Transport 2010 - 2026	Improve bus reliability and priority particularly in the town centre	No	It is considered that bus reliability is to some extent affected by the existing traffic issues within Swanley and as such, the implementation of the measures set out within this study will help alleviate congestion and thus help to improve bus reliability.
B12	Sevenoaks District Strategy for Transport 2010 - 2026	Kent Freedom Pass / Kentcard / Smartcard Ticketing	No	Measures relating to fares could only be implemented as part of a county wide strategy subject to funding and third party (bus operator) engagements. As such, the measure is considered to be outside the scope of this study and thus, is not recommended to be taken forward as part of this study.

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Reference	Source	Measure / Option Description	Take forward as part of ITP	Reasoning / Comments
B13	Sweco	Provision of a bus interchange (flagship) facility so that people are no longer waiting at the Bartholomew Way stop (improved facilities either end of the town centre on London Road)	Yes	The U+I application discussed the re-routing of buses via Nightingale Way but this proposal was not supported by bus operators and as such, there is no means of getting buses off the congested part of the town centre highway network. However, it is considered that bus users would benefit from the provision of an improved facility that has been connectivity to the town centre rather than through the Asda site. Therefore, in conjunction with the highway infrastructure measures, Sweco are investigating the provision of a new facility at the eastern end of Asda Walk.
B14	Sevenoaks District Strategy for Transport 2010 - 2026	Hybrid taxi/bus service	Yes	This study will investigate the provision of this type of service within the study area and how it could potentially be implemented to fill any identified gaps in the network as an alternative to new bus routes.
Public Transport - Rail Measures				
R1	Swanley Master Vision	Address impact of parking on the station providing greater space for pedestrians, cyclists and better bus / station interchange	No	Station improvements which incorporates this measure are currently being prepared by Southeastern/Network Rail in consultation with SDC. Therefore, as these works will be implemented by others outside of this study they will not be taken forward as part of this study. Notwithstanding it is recommended that the wider strategy includes that any future works at the station be monitored and that SDC/KCC propose additional works to be identified to be necessary subject to future development impacts and funding.
R2	Sevenoaks District Strategy for Transport 2010 - 2026	Provide sufficient off-street parking at stations and controls in nearby streets	No	It is widely acknowledged that the availability of car parking influences the level of car trips and therefore, it is considered that an increase in car parking at the rail station would simply increase the level of vehicle trips to and from the station, rather than remove on-street commuter parking. This would be contrary to the objective of the study which is to reduce congestion and improve air quality. Similarly, the on-street parking controls will be reviewed as set out within CP7. Therefore, it is not recommended that this measure is taken forward as part of this study.
R3	Transport Implementation Plan	Swanley rail station redevelopment	No	Station improvements which incorporates this measure are currently being prepared by Southeastern/Network Rail in consultation with SDC. Therefore, as these works will be implemented by others outside of this study they will not be taken forward as part of this study. Notwithstanding it is recommended that the wider strategy includes that any future works at the station be monitored and that SDC/KCC propose additional works to be identified to be necessary subject to future development impacts and funding.
R4	Phase 1 Workshop / Sweco	Localised rail fares for shorter journeys within Kent	Yes	It is considered that such a proposal would provide greater flexibility and incentive for people to choose rail for shorter journeys within Kent. However, this measure would require extensive consultation with the rail authorities and thus, whilst it is recommended that this measure be incorporated within the transport strategy, the feasibility and deliverability would need to be investigated as part of a detailed study, separate to this study.

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Reference	Source	Measure / Option Description	Take forward as part of ITP	Reasoning / Comments
Pedestrian and Cycle Measures				
PC1	Phase 1 Workshop	Improve footway provision within Hextable	Yes	No specific areas of deficiency identified at the workshop. As part of this study, Sweco will undertake a high level audit of the footway network within Hextable and identify specific measures to be taken forward as part of this study.
PC2	Phase 1 Workshop	Improve lighting and feel of Azalea Drive alleyway	Yes	The existing footpath from Station Approach to Azalea Drive forms part of a key desire line between the station and the nearest bus stops. However, the current environment puts people off from using it due to a feeling of being unsafe. By improving this key pedestrian desire line, this measure would act to encourage people to use alternative modes to access the station. As such, it is recommended that this measure, which is a quick and relatively inexpensive measure, should be taken forward as part of this study.
PC3	Phase 1 Workshop	Improve pedestrian crossing facilities in St Mary's Road - dropped kerb and tactile paving	Yes	No specific areas of deficiency identified at the workshop. As part of this study, Sweco will undertake a high level audit of the pedestrian environment along St Mary's Road, and identify specific measures to be taken forward as part of this study.
PC4	Phase 1 Workshop	Pedestrian crossing bridge over High Street (between the roundabouts)	No	It is considered that this measure would not achieve the ambition of improving pedestrian environment in this area. As such, it is not recommended that this measure be taken forward as part of this study and focus be placed on improving the space so that it is less car orientated and more pleasant environment for pedestrians and cyclists.
PC5	Phase 1 Workshop	Improve streetscape of Station Road as part of "Old Town" concept	Yes	This measure could include a reconfiguration of the on-street parking layout to allow increased footway width outside the commercial properties and the provision of a shared surface environment to improve the pedestrian priority. As this measure would positively contribute to improving the town centre environment, it is recommended that it is taken forward for as part of this study.
PC6	Phase 1 Workshop	Provision of a pedestrian bridge over the railway from Station Approach to town centre / recreation ground	No	It is considered that this measure would not help to achieve the ambition of improving the pedestrian environment which is accessible for all and it would also act to deflect pedestrian footfall away from the commercial properties on Station Rd/High Street. As such, the benefits are unlikely to outweigh the costs and on this basis, it is not recommended to take this measure forward as part of this study.
PC7	U+I Application / Phase 1 Workshop	Upgrade / change pelican crossing facility on High Street	Yes	It has been identified that the existing pelican crossing facility on High Street may be contributing to traffic delays and congestion on this part of the network and that its upgrade to a Puffin would help address this issue. This measure could be taken forward as a stand alone measure that could be implemented in the short term at minimal cost and thus it is recommended that the measure be taken forward as part of this study. During Stage 2, Sweco will review this measure in conjunction with the highway infrastructure improvements on this part of the network.
PC8	Phase 1 Workshop	New link through recreation ground from Station to town centre	No	Whilst this measure may provide a marginally shorter link to the town centre from the station, the impacts on the recreation ground and potential safety issues along the route which would have no natural surveillance may outweigh the benefits. As such, it is considered that it would be more beneficial for funding to be used to improve the existing pedestrian environment along St Mary's Road and Station Approach/Station Road and thus, the measure is not recommended to be taken forward as part of this study.
PC9	Phase 1 Workshop	Provide a dedicated pedestrian/cycle route between Swanley and Hextable - through Swanley Park and Avenue of Limes	Yes	It is recommended that this measure be taken forward as part of this study as it would significantly improve pedestrian and cycle linkage between Swanley and Hextable, which in turn would act to encourage people to use these alternative modes to the car. This measure would need to be implemented in conjunction with improvements to the surrounding approach roads so that access to the route is can be safely achieved.
PC10	Phase 1 Workshop	Cycle hub at the station - secure parking with links to dedicated cycle ways	Yes	The provision of a cycle hub at the station, which includes a cycle shop/doctor bike type facility, would be of benefit to cyclists and as the improved facilities would help to encourage more people to cycle to the station it is recommended that this measure be taken forward as part of this study. However, it is noted that this measure would need to be implemented in partnership with third parties (Southeastern and Network Rail) and space at the station may be limited. As such, Sweco will investigate the provision of a cycle hub within the town centre as an alternative.
PC11	Phase 1 Workshop	Cycling Improvements - new route to the east of Beechenlea Lane (southern stretch from London Rd - The Olympic)	Yes	It is recommended that this measure be taken forward as part of this study for consideration within Stage 2. However, it would need to form part of wider network improvements rather than a stand alone measure.
PC12	Phase 1 Workshop	Provision of cycle routes through St Mary's Ward area of Swanley	Yes	It was noted from the Cycling Strategy that the route network improvements did not include any routes through the residential area to the west of St Mary's Road. As such, it is recommended that the wider cycling strategy network improvements include a quiet route through the western residential streets that will improve linkages to the station and town centre.
PC13	Swanley Master Vision	Local marketing / promotional campaign to encourage people to walk to their local shops, schools, leisure facilities and Swanley town centre	Yes	It is recommended that the transport strategy includes soft measures that advertises and markets the improved pedestrian and cycle environment and promotes the benefits of these alternative modes of transport. This measure would need to be implemented in conjunction with/following physical infrastructure improvements not in isolation.
PC14	U+I Application	Enhance pedestrian linkages into and through the town centre (Nightingale Way) through widening of footways, implementation of shared spaces	Yes	Measures to improve linkages to and through the town centre should be taken forward as part of wider town centre enhancements. However, it is noted that links through the Nightingale Way car parks and the town centre would be subject to third party engagement and approval (U+) potentially as part of a town centre regeneration undertaken by others. As such, this study will focus proposing improvements to the routes leading to the town centre, making recommendations for further improvements to be implemented through appropriate planning permissions where appropriate.

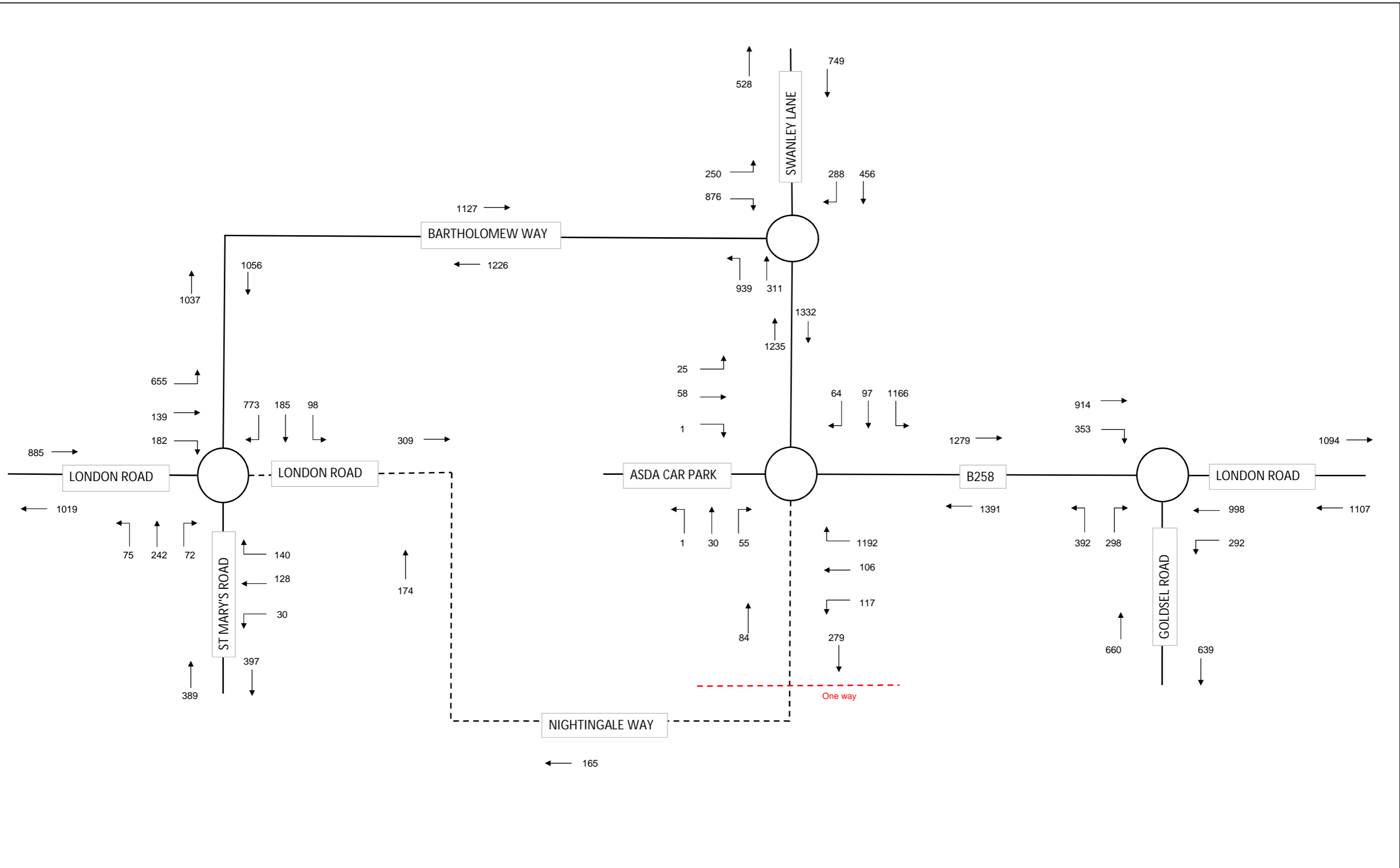
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Reference	Source	Measure / Option Description	Take forward as part of ITP	Reasoning / Comments
PC15	U+I Application	Increased permeability between town centre and recreation ground, leading to southern suburbs and train station via St Mary's Road	No	As noted previously, it is considered that improvements within the town centre are likely to come forward as part of a town centre regeneration scheme partly due to third party land ownership and as such, this measure is not recommended to be taken forward as part of this study. The recreation ground should be subject to a separate landscaping study to improve access from St Mary's Road and town centre, which is outside scope of this study.
PC16	Sevenoaks District Strategy for Transport 2010 - 2026	Promote the health benefits of walking	Yes	It is recommended that the transport strategy includes soft measures that promotes the benefits of walking as a means of encouraging people out of their cars, particularly for shorter journeys. This measure would need to be implemented in conjunction with/following physical infrastructure improvements not in isolation.
PC17	Transport Implementation Plan	Footway Link to 'Tear Drop' Centre	No	It is considered that this measure was not a priority for the study and also, the location is considered to be outside the study area. As such, it is not recommended that this measure be taken forward as part of this study.
PC18	Transport Implementation Plan	New walking and cycling link between Swanley Town Centre and Station	No	With reference to previous comments, it is considered that measures and funding should be focused on improving existing infrastructure and as such, the provision of a new link is not recommended to be taken forward as part of this study.
PC19	Sweco	Provision of shared use footway/cycleways and associated infrastructure along New Barn Road / College Road / Leydenhatch Lane and Highlands Hill	Yes	This measure seeks to provide additional routes to/through Swanley and Hextable and Swanley Village (alternative to route to and through Swanley Park) by improving existing provision and providing new infrastructure where necessary. This measure may be limited by highway boundaries and land ownership, but it is recommended that it be investigated as part of this study.
PC19	SDC Cycling Strategy	Road safety training and promotion of cycling	Yes	It is considered that the promotion of cycling should include measures and schemes which provide enhanced training for cyclists to improve their ability and safety. This soft measure could also include initiatives which promote awareness of cyclists by drivers. These schemes would be implemented as part of wider cycling strategy and cycling campaign.
PC20	Swanley Master Vision / Sevenoaks District Strategy for Transport 2010 - 2026 / SDC Cycling Strategy	Cycle link from existing London Road cycle lane to St Mary's Road (along Oliver Road, Ruxton Close and existing path) - SDC Cycling Strategy Route 14	No	Following a high level audit of the route, it is considered that cyclists would be required to dismount along a large proportion of this route due to the alignment and narrowness of the footpath. As such, it is considered that it would be more beneficial to provide a straight route along London Road to connect existing cycleway directly with the town centre. Therefore, this measure is not recommended to be taken forward as part of this study but that measures which provide an improved cycle environment and infrastructure along London Road as part of the highway infrastructure measures.
PC21	Swanley Master Vision / Sevenoaks District Strategy for Transport 2010 - 2026 / SDC Cycling Strategy	Route across the recreation ground between the town centre and rail station - SDC Cycling Strategy Route 15	No	As noted previously, it is considered that it would be more beneficial to improve existing infrastructure and routes rather than provide a new route through the recreation ground. As such, it is recommended that this measure is not taken forward as part of this study.
PC22	SDC Cycling Strategy	West-east cycle route to the north of the town centre (along Hilda May Avenue, Northview and Woodlands Rise) - SDC Cycling Strategy Route 16	Yes	It is considered that this route would enhance connectivity through this area of Swanley and in conjunction with the off-road cycle route through Swanley Park and The Avenue of the Limes would significantly enhance the cycle route available to Hextable. As such, it is recommended that this measure is taken forward as part of this study.
PC23		Cycle link between Woodlands Rise and town centre (upgrade existing public footpath 0262/SD81/2) - SDC Cycling Strategy Route 17	Yes	This route would enhance connectivity through this area of Swanley and thus, it is recommended that this measure be taken forward as part of this study.
PC24		Cycle link from Swanley to Hextable (through Swanley Park and along existing footpath 0305/SD69/1) - SDC Cycling Strategy Route 18	Yes	This measure is tied in with PC9 discussed above.
PC25		Cycle link to Station from High Street (along Station Road, Goldsel Road and Station Approach) - SDC Cycling Strategy Route 19	No	It is considered that the improvement works discussed above would enhance the route and environment for cyclists within the requirement for a separate cycle route. As such, it is not recommended that this measure be taken forward as part of this study.
PC26		West-east cycle link from station to London Road (along Salisbury Avenue, restricted byway 0262/SD88/1; Glendale; Pinks Hill; Cranleigh Drive; Existing cycleway; Goldsel Road; Azalea Drive and Station Road) - SDC Cycling Strategy Route 20	Yes	This route would enhance connectivity through this area of Swanley and thus, it is recommended that this measure be taken forward as part of this study.
PC27		East-west cycle route to the station from London Road (along Salisbury Avenue, St George's Road, London Road, Goldsel Road and Station Approach) - SDC Cycling Strategy Route 21	Yes	It is considered that an east-west cycle route is required through this area of Swanley. However, rather than a route through residential streets, this study will investigate the provision of a formal segregated cycleway/footway alongside London Road that would provide a straight, visible and direct route into the town centre as an alternative to Route 21.
PC28		Suggested Leisure Route - No. 24 Link between Swanley and Lullingstone Castle	No	The provision of leisure routes is considered to be outside the study area and study scope. As such, it is considered that this route would be implemented as part of a county wide cycling strategy rather than as part of a strategy for Swanley. As such, it has not been recommended for inclusion within Stage 2.
PC29		Sweco	Upgrade London Road Pelican crossing (adjacent to Oliver Road) to a toucan crossing	Yes
PC30	Sweco	Provision of a shared use footway/cycleway or on-road cycle lanes between Swanley and Crockenhill (on Goldsel Road)	Yes	The proximity of Crockenhill to Swanley means that it is within a very reasonable cycle distance, particularly to the rail station. As such, it is considered that the provision of a formal cycleway, and thus a safe and convenient route, between Swanley and Crockenhill would act to encourage a modal shift out of the car in turn, reducing vehicle trips. As such it is considered that this measure be taken forward as part of this study.

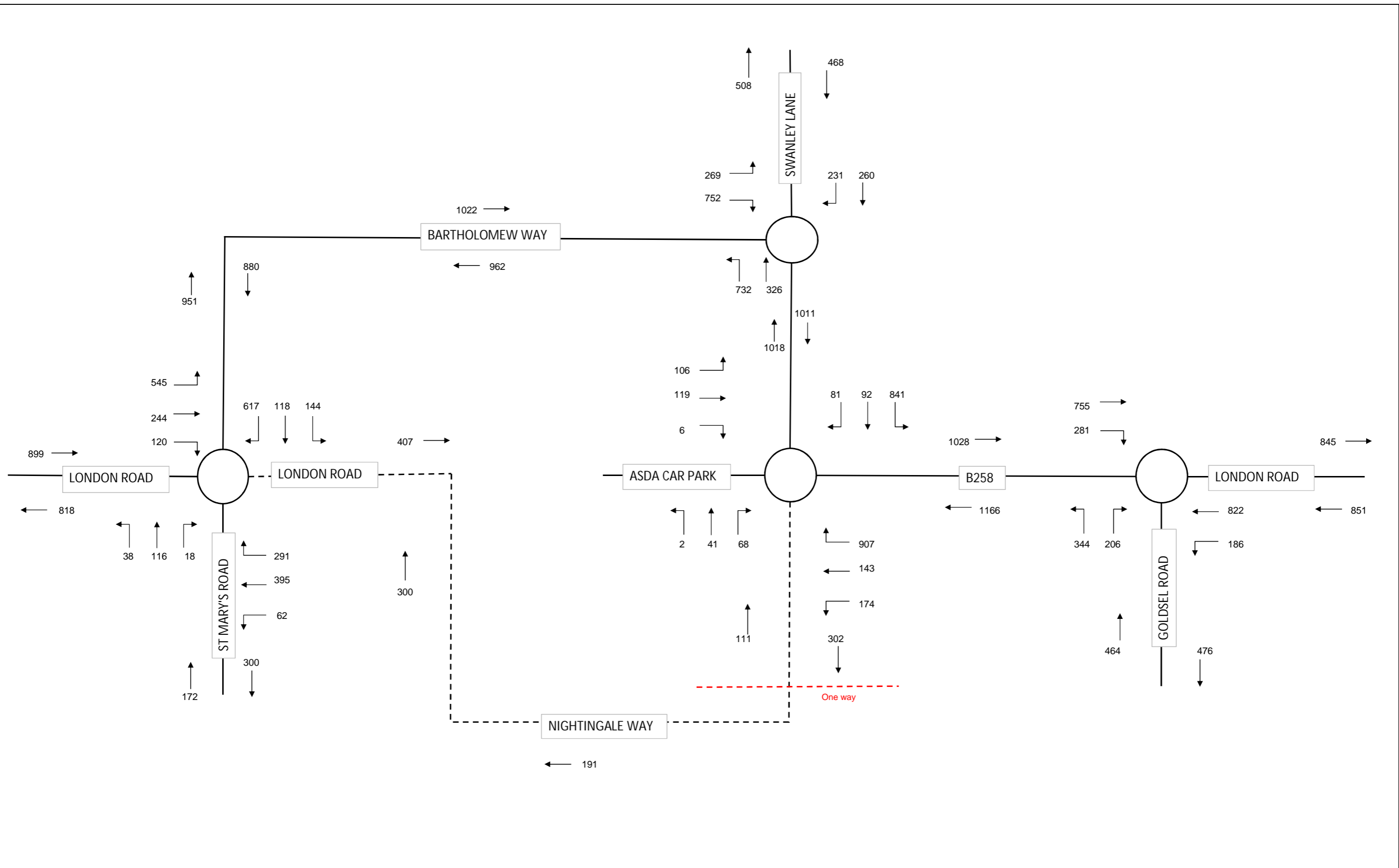
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Reference	Source	Measure / Option Description	Take forward as part of ITP	Reasoning / Comments
PC31	Sweco	West-east cycle link along Harts Dyke Road and surrounding residential streets to provide a connection between (London Road and St Marys Road) to provide a connection to the station	Yes	It was noted that the SDC cycling strategy proposals did not include a route through the residential area to the west of St Mary's Road. As such, it is recommended that this additional route be taken forward as part of this study so that this current gap in the cycle network proposed for Swanley is filled.
Public Realm Improvements				
PR1	Swanley Master Vision	Develop an area / street based palette of materials and street features e.g. lighting, street furniture and planting that reflect and enhance Swanley town centre and Hextable Village	No	It is considered that this measure is outside the scope of this study. However, the principle of the measure is agreed and thus, it should be taken forward as part of a separate streetscape study separate to this work and/or incorporated within the design of any future town centre enhancements/redevelopment schemes.
Smarter Travel Choices / Travel Planning Measures				
TP1	Swanley Master Vision / Sevenoaks District Strategy for Transport 2010 – 2026	Expand school, workplace and area travel planning and raise awareness including through rail station travel plans	Yes	It will be important that each planning application includes the provision of a travel plan which includes measures to promote and encourage sustainable travel patterns. In conjunction with this, existing trip generators such as schools, employment, retail and leisure and rail stations should also provide travel plans which help contribute towards achieving the aims of the transport strategies by making sure that those visiting these facilities are fully aware of their travel choices. As such, it is recommended that this soft measure be taken forward as part of this study.
TP2	Swanley Master Vision / Sevenoaks District Strategy for Transport 2010 – 2026	Better integration of transport and land use planning to reduce the need to travel	No	Local Plan policy include this measure as a keep objective by ensuring that developments are located in areas with good public transport accessibility or where there is potential to enhance public transport and pedestrian/cycle infrastructure. Whilst this study will take account of the Local Plan development allocations as well as the location of committed developments, and thus the principles of this objective, it is considered that this measure would be addressed within Local Plan policy rather than a separate measure within this study.
Powered Two-Wheelers Measures				
PTW1	Sweco	Undertake a review of powered two wheelers (PTW) parking facilities within the study area	Yes	As a more sustainable mode of transport the use of PTW's should be encouraged but in order to do so, like cycling, there needs to be adequate infrastructure in place. As such, it is proposed that this study undertake a review of motorcycle parking at key destinations - town centre, station, leisure centre etc. to ensure that provision is in keeping with policy requirements. Specific improvements measures will be established and detailed within the Stage 2 report.
PTW2	Sevenoaks District Strategy for Transport 2010 - 2026	Promote the use of small capacity powered two wheelers (PTW) as an alternative to the car	Yes	It is recommended that the transport strategy includes soft measures that markets and promotes the use of PTW's as an alternative mode of transport. This measure would need to be implemented in conjunction with following physical infrastructure improvements (as necessary) rather than in isolation.
Freight Measures				
F1	Transport Implementation Plan	Controlling the flows and routing of heavy goods vehicle movements by traffic management measures	Yes	In conjunction with other highway infrastructure and signage measures, a review of HGV traffic through the town centre will be undertaken and where appropriate, specific measures to control movements and loading activities will be set out in Stage 2.
F2	Transport Implementation Plan	District Wide Freight Strategy	No	Being implemented by others as part of a County Wide Freight strategy

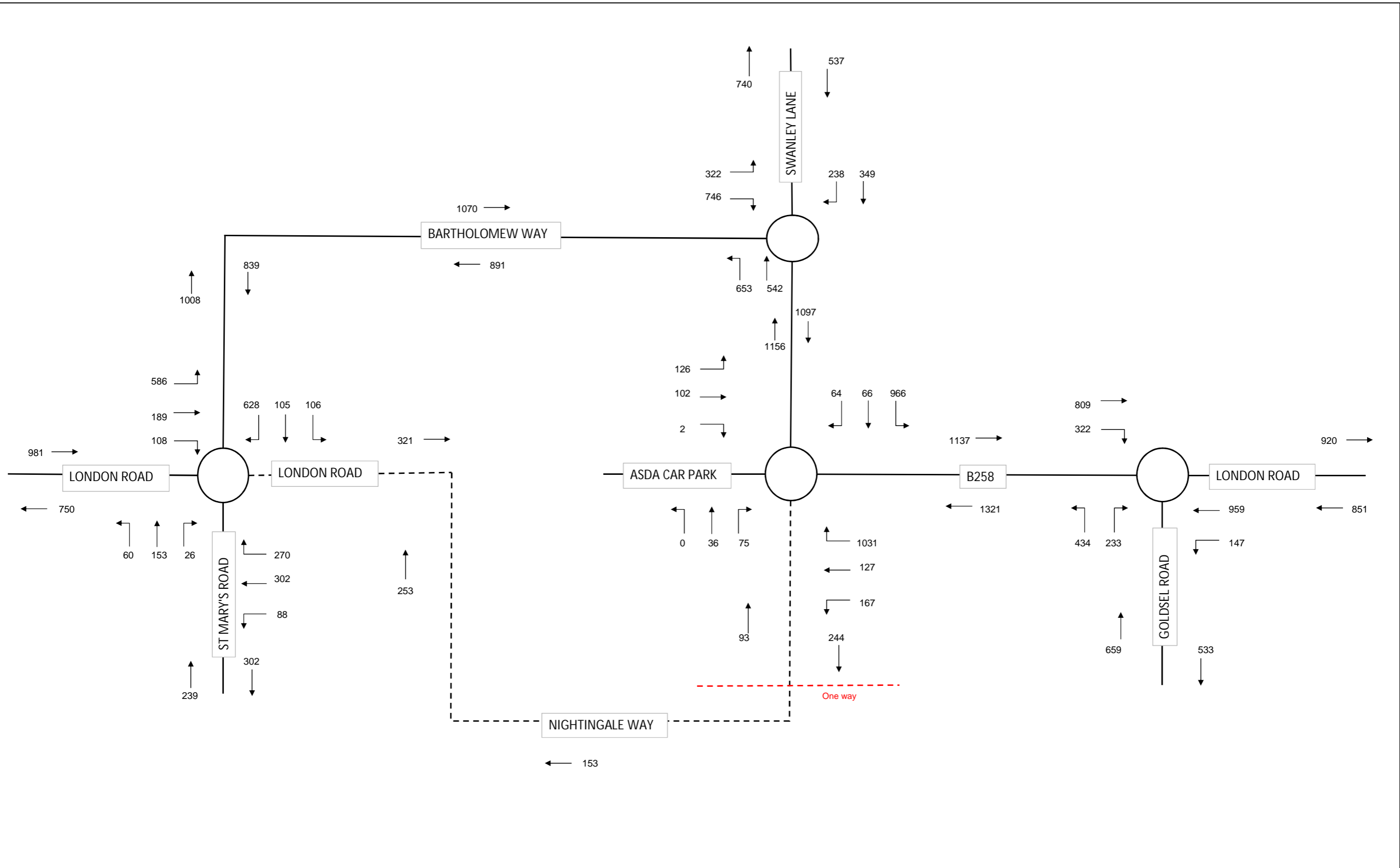
Appendix B – Traffic Flow Diagrams




Drawing Title: (U&I, COMMITTED, SURVEYED GROWTH 2035 AND BEECHENLEA LANE) 2035 TOTAL FLOW (CAR) - AM PEAK (0800-0900)	Client: KENT COUNTY COUNCIL			File Extension: N/A
	Job Title: SWANLEY TRANSPORT STUDY			Designed by: TI Scale: N.T.S. Drawn by: TI 1st Issued: May '18 Ckd/appd: LP/MF Job number: 119856

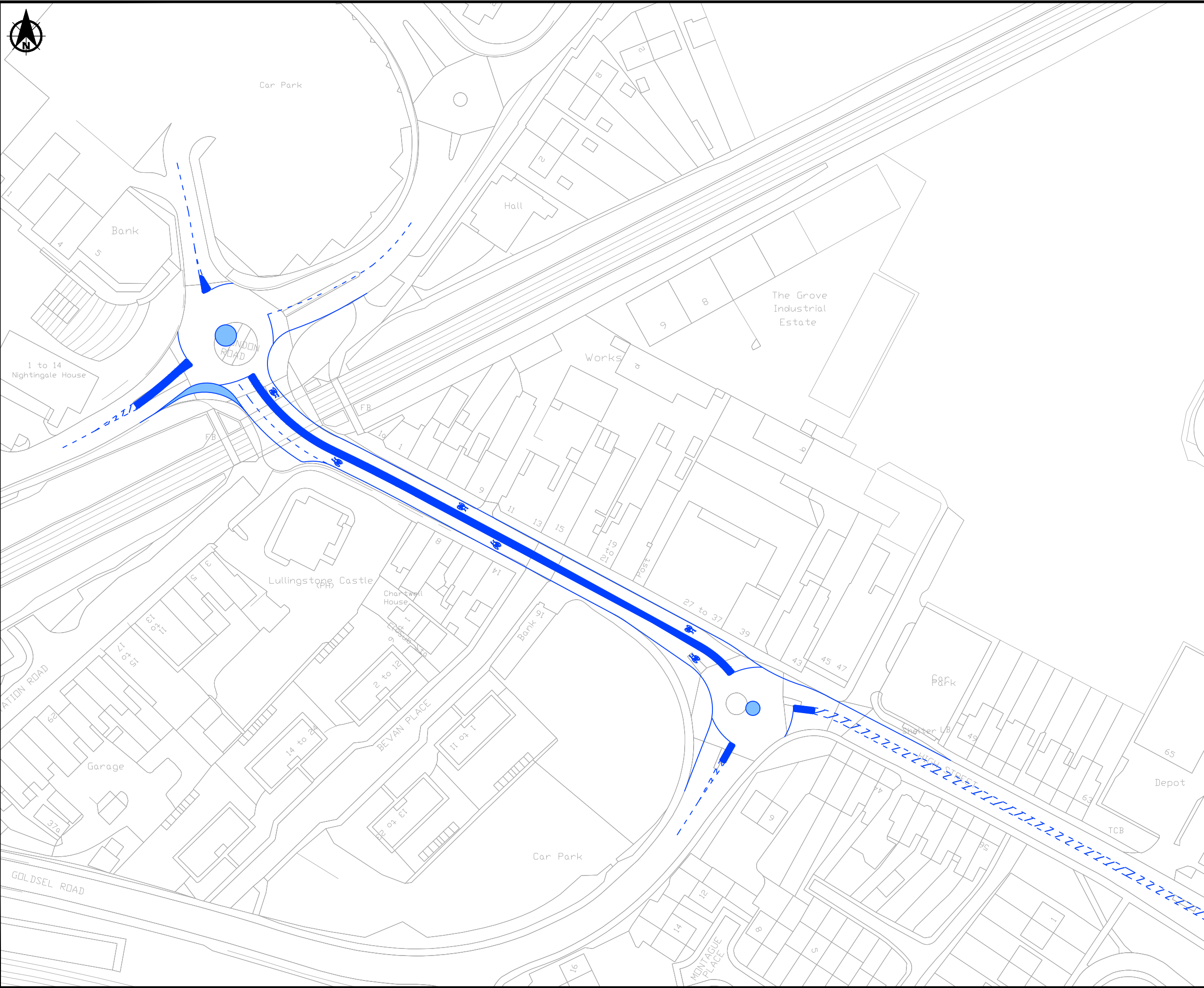


Drawing Title: (U&I, COMMITTED, SURVEYED GROWTH 2035 AND BEECHENLEA LANE) 2035 TOTAL FLOW (CAR) - INTER PEAK (1200-1300)	Client: KENT COUNTY COUNCIL			File Extension: N/A
	Job Title: SWANLEY TRANSPORT STUDY			Designed by: TI Drawn by: TI Ckd/appd: LP/MF



Drawing Title: (U&I, COMMITTED, SURVEYED GROWTH 2035 AND BEECHENLEA LANE) 2035 TOTAL FLOW (CAR) - PM PEAK (1700-1800)	Client: KENT COUNTY COUNCIL			File Extension: N/A
	Job Title: SWANLEY TRANSPORT STUDY			Designed by: TI Drawn by: TI Ckd/appd: LP/MF

Appendix C – Concept Cycling and Town Centre Schemes



NOTES

Rev.	Date	Amendment Details	Drawn	Chk'd	App'd

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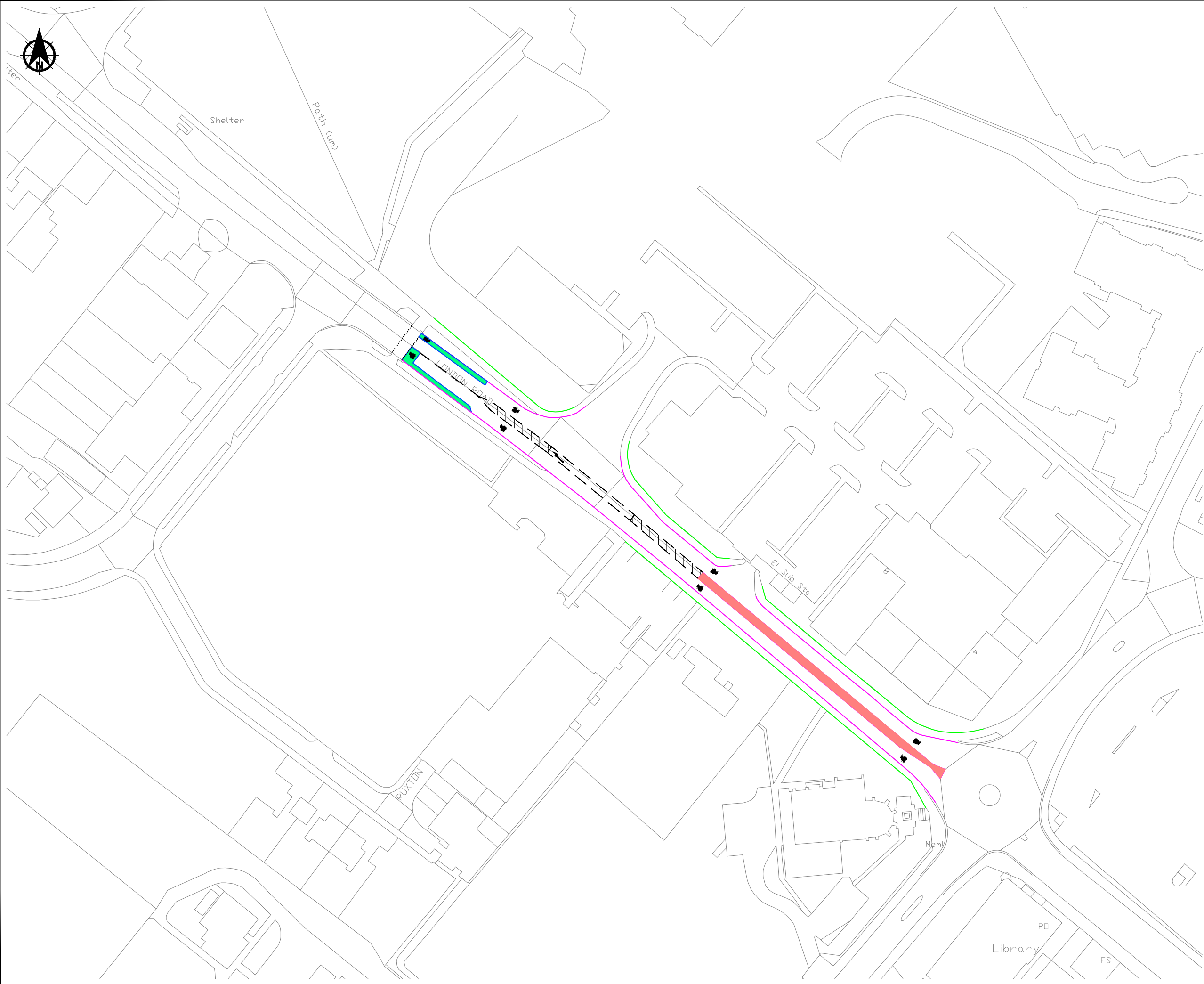
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Project Title
SWANLEY TRANSPORT STUDY

Drawing Title
HIGH STREET IMPROVEMENTS OPTION

Scale	Designed	Drawn	Checked	Approved
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A3	13/07/18	13/07/18	13/07/18	13/07/18

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119856-TP-SK001



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NOTES

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Drawing Status
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Project Title
SWANLEY TRANSPORT STUDY

Drawing Title
**CONCEPT CYCLING
LONDON ROAD (WEST)**

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1:1000	TI	TI	MF	MF
Original Size	Date	Date	Date	Date
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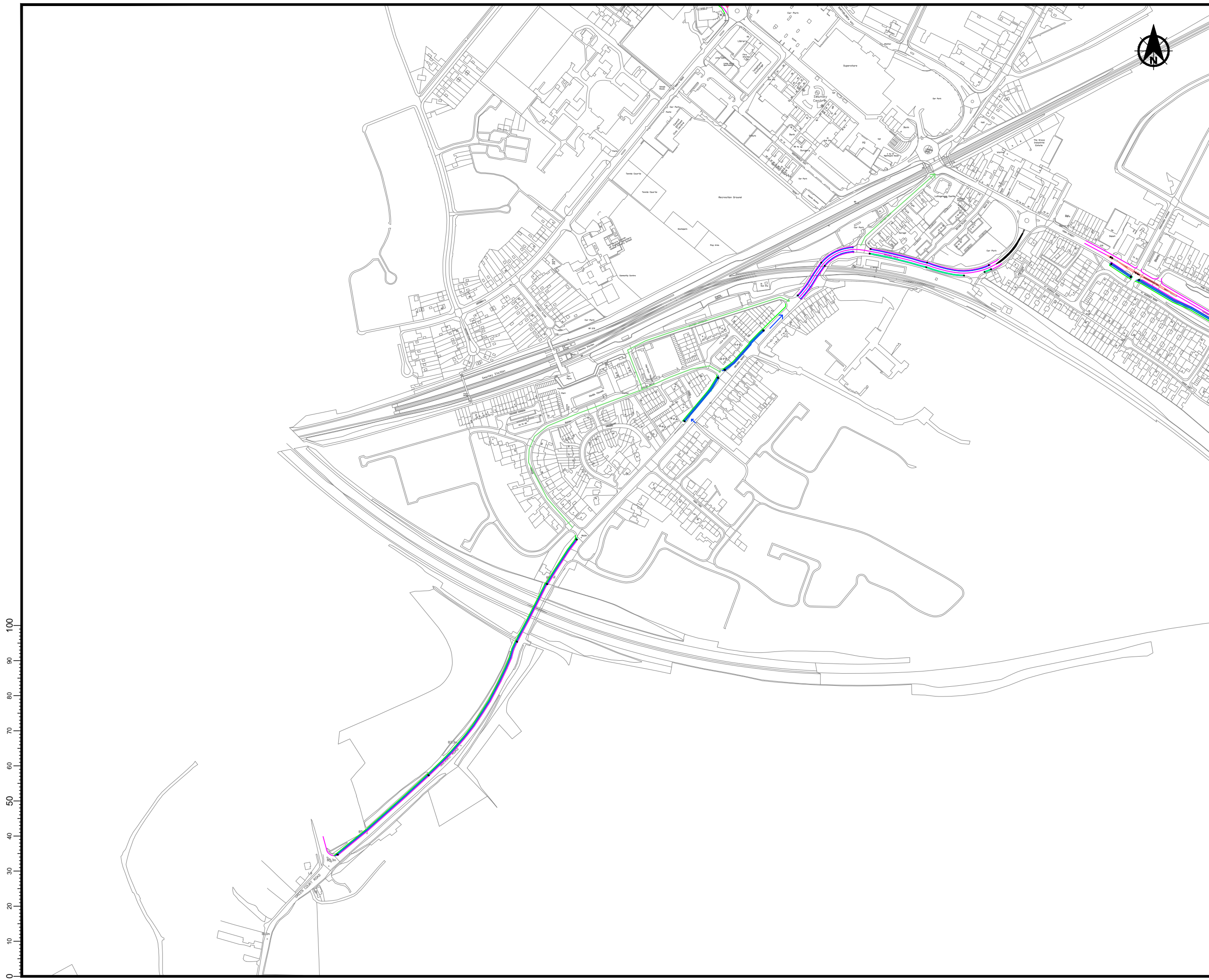
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Project Title
SWANLEY TRANSPORT STUDY

Drawing Title
**CONCEPT CYCLING
LONDON ROAD (EAST)**

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Original Size	Date	Date	Date	Date
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Drawing Number
119856-TP-SK003



NOTES

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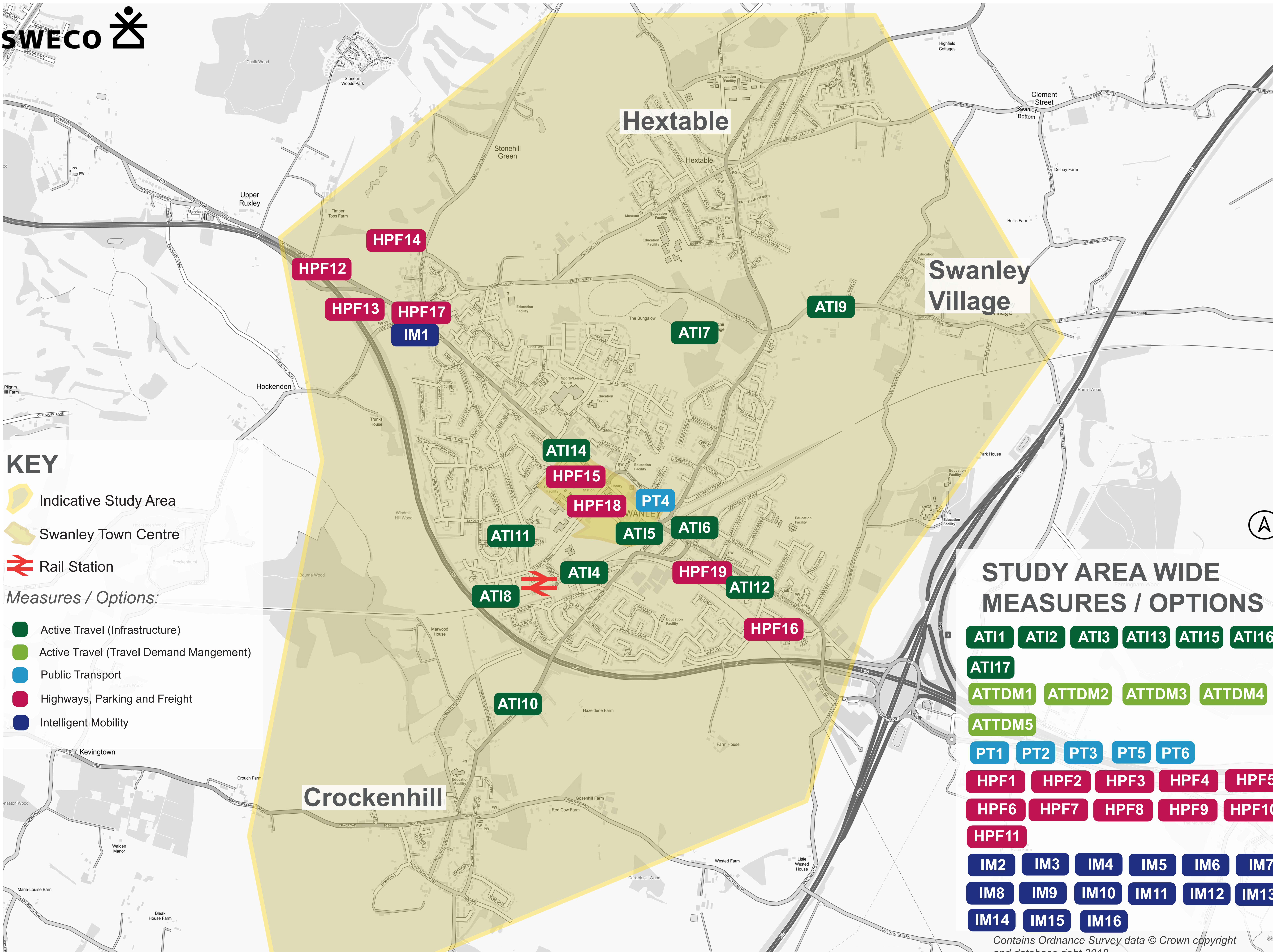
Project Title
SWANLEY TRANSPORT STUDY

Drawing Title
**CONCEPT CYCLING
SWANLEY TO CROCKENHILL**




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Original Size	Date	Date	Date	Date
A3	13/07/18	13/07/18	13/07/18	13/07/18

Drawing Number
119856-TP-SK004






Appendix D – Locations of Measures














































KEY

-  Indicative Study Area
-  Swanley Town Centre
-  Rail Station

Measures / Options:

-  Active Travel (Infrastructure)
-  Active Travel (Travel Demand Mangement)
-  Public Transport
-  Highways, Parking and Freight
-  Intelligent Mobility

STUDY AREA WIDE MEASURES / OPTIONS

-  AT1
-  AT2
-  AT3
-  AT13
-  AT15
-  AT16
-  AT17
-  ATTDM1
-  ATTDM2
-  ATTDM3
-  ATTDM4
-  ATTDM5
-  PT1
-  PT2
-  PT3
-  PT5
-  PT6
-  HPF1
-  HPF2
-  HPF3
-  HPF4
-  HPF5
-  HPF6
-  HPF7
-  HPF8
-  HPF9
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-  IM11
-  IM12
-  IM13
-  IM14
-  IM15
-  IM16

Appendix E – Option Appraisal

STAGE 2 APPRAISAL FOR REPORT

Outline Cost Estimate	Timeframe	Qualitative assessment against identified issues and Opportunities	Qualitative assessment against identified Objectives
< £1m	Short-Term	1 Large beneficial impact 0 Beneficial impact	1 Large beneficial impact 0 Beneficial impact
£1m - £10m	Medium-Term	0 Neutral / marginal impact -1 Adverse impact	0 Neutral / marginal impact -1 Adverse impact
> £10m	Long-Term	-2 Large adverse impact	-2 Large adverse impact

Deliverability (e.g. political, planning, timescale or third party issues)	Feasibility (e.g. physical constraint, land availability and design standards)	Affordability (e.g. extent of additional funding required and available funding sources)	Initial Sifting Criteria
Likely to be deliverable	Likely to be feasible	Likely to be affordable	1: Overall moderate impact against identified issues and opportunities (Appraisal score >3, see East Conversion)
Likely to be deliverable (with Challenges)	Likely to be feasible (with Challenges)	Likely to be affordable (with Challenges)	2: Overall moderate fit with study objectives (Appraisal score >3, see East Conversion)
Unlikely to be deliverable	Unlikely to be feasible	Unlikely to be affordable	3: Likely to be deliverable
			4: Likely to be feasible in theory
			5: Likely to be affordable

Reference	Measure / Option Description	Reasoning / Comments	Outline Cost	Timeframe	Issues and Opportunities						Objectives						Reasoning for 'Issues & Opportunities' and 'Objectives' Scoring	Deliverability	Feasibility	Affordability	Initial Sifting Criteria					For inclusion in prioritised list
					1	2	3	4	5	-	-	1	2	3	4	5					-	-	Total	1	2	
Highways, Parking & Freight - Area Wide Measures																										
HPF1	Review of car parking standards for new developments within Swanley (and other towns/villages)	The primary concern with the provision of unrestrictive parking standards is that high levels of car parking availability encourages private car trips. The projected level of housing growth is expected to increase pressures on the highway network, as discussed in detail within the Phase 1 report. In order to avoid significant congestion, especially within Swanley town centre, it will be imperative to encourage alternative means of travel to the private car. Restricting car parking provision will have an important role to play in this process, as well as providing the alternative means of travel. Similarly, parking availability at non-residential land uses influences modal choice with high levels of car parking provision encouraging car trips by visitors and staff.	< £1m	Short-Term	2	2	0	0	0	1	5	2	1	2	0	5	Likely to be deliverable (with Challenges)	Likely to be feasible	Likely to be affordable	✓	✓	✓	✓	✓	✓	
HPF2	Freight Management Measures (including DSPs, CLPs)	Building upon the Sevenoaks District Strategy for Transport, the development of an overarching freight strategy for Swanley could encompass a range of potential focused measures subject to individual operational needs. Typical measures include the implementation of Delivery and Servicing Plans (DSP) and Construction Logistics Plan (CLP) that will include initiatives to manage access and movement of vehicles, together with initiatives such as 'Click-and-collect' and delivery consolidation to help reduce the overall number of freight movements. Environmental impacts could also be mitigated through the Freight Operators Scheme which encourage the use of low emission vehicles. All freight measures could be implemented through Freight Quality Partnerships between the District and County Councils and businesses.	< £1m	Short-Term	1	2	0	2	1	1	6	1	1	1	1	4	Likely to be deliverable (with Challenges)	Likely to be feasible	Likely to be affordable	✓	✓	✓	✓	✓	✓	
HPF3	Investigate potential for improvements to the corridor of lanes around Hextable, Swanley and Crockenhill to facilitate the safe movement of vehicles to provide alternative routes to the town centre.	This work could be undertaken in isolation as part of an area wide study to identify improvement works that can be implemented in the short-medium term to address existing issues and provide resilience to accommodate future growth. The provision of physical improvements such as carriageway widening and additional formal passing places would be subject to highway ownership boundaries and third party land constraints, as well as environment constraints which would impact the feasibility and deliverability of such works. The environmental and capacity impacts of the redistribution of traffic through the country lanes would also need to be assessed as part of a separate study. However, the potential benefits for the town centre are considered to warrant this overall measure being taken forward as part of this strategy. Where future development would utilise these routes for access, for example development adjacent to Beecheside Lane, it is expected that the applications will include an assessment of the impact of future development traffic on these routes and the inclusion of appropriate mitigation measures.	£1m - £10m	Medium-Term	1	1	2	1	2	7	2	1	1	2	6	Likely to be deliverable (with Challenges)	Likely to be feasible (with Challenges)	Likely to be affordable (with Challenges)	✓	✓	✓	✓	✓	✓		
HPF4	Regular maintenance of highway infrastructure - surfacing, lighting, signage	This measure should form part of a wider, potentially improved, KCC/SDC maintenance strategy that Swanley will form part of. The regular maintenance of hedges and verges will assist in maintaining adequate effective carriageway, as well as footway, widths and visibility. This will improve safety for all road users through the study area.	£1m - £10m	Short-Term	0	0	2	2	0	4	0	2	0	2	4	Likely to be deliverable	Likely to be feasible	Likely to be affordable (with Challenges)	✓	✓	✓	✓	✓	✓		
HPF5	Planting of trees to alleviate air quality issues - Future Policy should ensure that any new developments adjacent to public highways, particularly strategic highways such as the A20, or within AQMA's should include the planting of trees to mitigate air quality impacts. Equally, the removal of existing healthy trees should not be permitted unless trees will be appropriately reprovided	It was noted from discussions at the workshop that there was particular concern about air quality adjacent to the A20. To address this, an area wide study could be undertaken to identify where air quality can be improved through the provision of additional or replacement planting. As part of an overall strategy, tree planting or equivalent in sensitive areas should be conditioned as part of any planning consent.	£1m - £10m	Medium-Term	0	0	0	0	0	0	0	2	0	0	2	Likely to be deliverable (with Challenges)	Likely to be feasible (with Challenges)	Likely to be affordable (with Challenges)	✗	✗	✓	✓	✓	✓		
HPF6	Undertake a Car Parking Review Study to aid the development of a Parking Strategy that enables consistency of pricing and duration of stay restrictions whilst balancing the need to promote sustainable travel with the demand for parking.	It is recommended that the Swanley Transport Strategy includes a review of the town centre car parks and on-street parking provision to establish consistency throughout Swanley, particularly within the town centre, with regards tariffs and restrictions to help eliminate large swathes of underused car parking areas or indeed, assist in establishing where car parking provision could be reduced to enhance the pedestrian and cycle environment and connectivity. However, this would require a detailed study of car parking utilisation and key stakeholder engagement and negotiation, including with third parties (U+I, Aldi and Asda), to be undertaken which is considered to be outside the scope of this study.	< £1m	Short-Term	1	1	1	1	1	5	1	1	1	1	4	Likely to be deliverable (with Challenges)	Likely to be feasible	Likely to be affordable	✓	✓	✓	✓	✓	✓		
HPF7	Enforcement of on-street car parking and loading restrictions	It is considered that the effective enforcement of parking restrictions would assist in the efficient use of road space and car parking, whilst enhancing the environment and safety for other road users.	< £1m	Short-Term	1	1	0	1	1	4	1	1	0	2	4	Likely to be deliverable	Likely to be feasible	Likely to be affordable	✓	✓	✓	✓	✓	✓		
HPF8	Promotion and partnership working with car clubs	Studies of car club usage have shown that the provision of car clubs reduce the level of car ownership in the locality of the facilities. As such, the provision of car club spaces within the town centre and at new developments throughout Swanley will make a positive contribution to controlling car ownership levels which in turn, will help to ease congestion within the study area. The provision of car clubs at new developments should be conditioned. In addition, SDC should engage with established car club operators to implement a pilot scheme within the town centre.	< £1m	Short-Term	1	1	1	0	2	5	1	1	2	0	4	Likely to be deliverable	Likely to be feasible	Likely to be affordable	✓	✓	✓	✓	✓	✓		
HPF9	Undertake a review of footway parking and its impact on the permeability and safety for pedestrians and cyclists	Footway parking along Swanley Lane is extensive and in some instances, render the footways unpassable by pedestrians as well as making the route dangerous for cyclists. Therefore, the prevention (or similar) of footway parking through amendments to policy and/or traffic regulation orders along this corridor would contribute towards improving connectivity between Swanley and Hextable.	< £1m	Short-Term	0	0	2	2	0	4	0	1	0	2	3	Likely to be deliverable	Likely to be feasible	Likely to be affordable	✓	✗	✓	✓	✓	✓		
HPF10	Promote the use of small capacity powered two wheelers (PTW) and provide enhanced facilities at key destinations	It is recommended that the transport strategy includes soft measures that markets and promotes the use of PTWs as an alternative mode of transport. This measure would need to be implemented in conjunction with following physical infrastructure improvements (as necessary) rather than in isolation. The infrastructure requirements would be established through the undertaking of a separate study into the location, quantity and quality of provision against current and future demand.	< £1m	Short-Term	1	0	1	0	1	3	1	0	1	1	3	Likely to be deliverable	Likely to be feasible	Likely to be affordable	✗	✗	✓	✓	✓	✓		
HPF11	Provision of new or improved signage to positively reinforce large vehicle restrictions, particularly along the country lanes	The study has revealed that the use of the country lanes throughout the study area by inappropriate vehicles frequently cause obstruction, delay, damage and safety concerns. This occurs despite existing signage and restrictions being in place. Therefore, it is recommended that the strategy includes the provision of new, clear and well maintained signage to reinforce, or where appropriate new restrictions, to address the issue.	< £1m	Short-Term	0	1	1	2	1	5	1	1	1	1	4	Likely to be deliverable	Likely to be feasible	Likely to be affordable	✓	✓	✓	✓	✓	✓		

STAGE 2 APPRAISAL FOR REPORT

Outline Cost Estimate	Timeframe	Qualitative assessment against identified issues and opportunities	Qualitative assessment against identified objectives
< £1m	Short-Term	Large beneficial impact	Large beneficial impact
£1m - £10m	Medium-Term	Beneficial impact	Beneficial impact
> £10m	Long-Term	Neutral / marginal impact	Neutral / marginal impact
		Adverse impact	Adverse impact
		Large adverse impact	Large adverse impact

Deliverability (e.g. political, planning, timescale or third party issues)	Feasibility (e.g. physical constraint, land availability and design standards)	Affordability (e.g. extent of additional funding required and available funding sources)	Initial Sifting Criteria
Likely to be deliverable	Likely to be feasible	Likely to be affordable	1: Overall moderate impact against identified issues and opportunities (Appraisal score >3, see East Conversion)
Likely to be deliverable (with Challenges)	Likely to be feasible (with Challenges)	Likely to be affordable (with Challenges)	2: Overall moderate fit with study objectives (Appraisal score >3, see East Conversion)
Unlikely to be deliverable	Unlikely to be feasible	Unlikely to be affordable	3: Likely to be deliverable
			4: Likely to be feasible in theory
			5: Likely to be affordable

Reference	Measure / Option Description	Reasoning / Comments	Outline Cost	Timeframe	Issues and Opportunities						Objectives						Reasoning for 'Issues & Opportunities' and 'Objectives' Scoring	Deliverability	Feasibility	Affordability	Initial Sifting Criteria					For inclusion in prioritised list
					1	2	3	4	5	-	-	Total	1	2	3	4					-	-	Total	1	2	
Highways, Parking & Freight - Site Specific Infrastructure Measures																										
HPF12	Investigate potential for a new all-movement junction on the A20 to the west of Swanley to help alleviate congestion within the town centre by providing an alternative route to western Swanley and areas to the north such as Dartford, without having to route through Swanley Town Centre or double back from Sidcup	This is a long term strategy that would require further detailed investigation and assessment beyond this study, including an environmental assessment. Its deliverability and feasibility would also be subject to third party engagement, such as with Highways England, and land ownership. The affordability may also be subject to securing appropriate third party funding, which could be assisted by development contributions.	> £10m	Long-Term	2	2	1	1	2	8	2	1	1	0	4	This option would significantly improve access to the western portions of Swanley without having to travel through the town centre and thus, has the potential to improve traffic congestion as well as contributing to economic/employment growth. Resilience would also improve by providing more route options. However, the provision of additional road capacity can create more traffic and as such, this measure may have a negative impact on encouraging sustainable travel habits.	Likely to be deliverable (with Challenges)	Likely to be feasible (with Challenges)	Likely to be affordable (with Challenges)	✓	✓	✓	✓	✓	✓	
HPF13	Investigate potential for an eastbound off-slip access from A20 onto the B2173 to help alleviate congestion within the town centre and the wider highway network such as through Sidcup, by providing a direct between the A20 and western Swanley	As with HPF11 above, this is a long term strategy that would require further detailed investigation and assessment beyond this study, including an environmental assessment. Its deliverability and feasibility would also be subject to third party engagement, such as with Highways England, and land ownership. The affordability may also be subject to securing appropriate third party funding, which could be assisted by development contributions.	> £10m	Long-Term	1	1	1	1	1	5	2	1	1	0	4	This option would improve access to the western portions of Swanley without having to travel through the town centre and thus has the potential to improve traffic congestion as well as contributing to economic/employment growth. Resilience would also improve by providing more route options. However, the provision of additional road capacity can create more traffic and as such, this measure may have a negative impact on encouraging sustainable travel habits.	Likely to be deliverable (with Challenges)	Likely to be feasible (with Challenges)	Likely to be affordable (with Challenges)	✓	✓	✓	✓	✓	✓	
HPF14	Investigate the potential for a new link road from Birchwood Road to the B2173 to avoid narrow section at the southern end on approach to junction with B2173. This measure would be designed to alleviate congestion and improve safety at the Birchwood Road/B2173 signalised junction.	This is a long term strategy that would require further detailed investigation and assessment beyond this study, including an environmental assessment. Its deliverability and feasibility would also be subject to third party engagement and land ownership. The affordability may also be subject to securing appropriate third party funding, which could be assisted by development contributions. It is considered that this measure would complement HPF11 and HPF12 and thus, should be considered in conjunction with both of these measures. Notwithstanding, the potential benefits are considered to warrant this measure also being considered as a stand alone measure.	£1m - £10m	Long-Term	1	1	2	2	2	8	2	2	1	0	5	The southern section of Birchwood Road is constrained preventing physical improvements from being achieved. The signalised junction also has a high number of recorded accidents. This option has the potential to reduce congestion and delay, as well as safety improvements, stemming from the potential capacity gains. However, the provision of additional road capacity can create more traffic and as such, this measure may have a negative impact on encouraging sustainable travel habits. Such a scheme could be funded through developer contributions.	Likely to be deliverable (with Challenges)	Likely to be feasible (with Challenges)	Likely to be affordable (with Challenges)	✓	✓	✓	✓	✓	✓	
HPF15	Provision of streetscape and highway layout improvement works on High Street and London Road (west)	The constraint nature of the existing highway network means that there is little scope to provide meaningful physical junction capacity improvements at the existing junctions of Global Road/London Road, High Street/Nightingale Way/Asda Access and Bartholomew Way/Swanley Lane. Furthermore, junction capacity analysis has indicated that the provision of traffic signals would exacerbate traffic congestion and delay. Therefore, it is considered that highway improvement works should focus on enhancing the streetscape and infrastructure to provide "Gateways" into the town centre. These potential works would improve the environment for pedestrians and cyclists without negatively impacting highway network capacity. Further to this study, a comprehensive capacity analysis and detailed design which could be related to development application submissions and associated financial contributions, would be required.	£1m - £10m	Medium-Term	1	0	2	2	0	5	1	2	2	1	6	Potential streetscape schemes that would create "Gateways" into each end of the town centre have been identified by Sweco. These improvement works may not provide additional capacity for vehicles through the network, they will improve the journey to and from the town centre for pedestrians and cyclists helping to encourage a modal shift away from car, thus reducing the volume of traffic on the highway network, which will benefit all road users in the long run. As such, the proposals are not considered to have a negative impact on congestion and delay compared to the existing situation as reflected in the scoring.	Likely to be deliverable (with Challenges)	Likely to be feasible	Likely to be affordable	✓	✓	✓	✓	✓	✓	
HPF16	Introduce physical measure on Salisbury Avenue to prevent through movement and thus rat running from B2173 London Road	It is considered that a physical feature could be provided in Salisbury Avenue that would still allow residential access but would prevent east-west through flow and thus, stop Salisbury Avenue from being a rat-run to avoid congestion on London Road. This would have significant safety, air quality and noise benefits for local residents. The exact location of this measure would need to be investigated to limit impacts on residents.	< £1m	Short-Term	0	0	2	2	0	4	0	2	0	1	3	This option would not address traffic congestion and delay on the main road as cars are physically prevented from finding an alternative route during congested periods. However, it would potentially have significant benefits for the residents of Salisbury Avenue and surrounding streets.	Likely to be deliverable (with Challenges)	Likely to be feasible (with Challenges)	Likely to be affordable	✓	X	✓	✓	✓	✓	
HPF17	Improve the road markings Birchwood Road / London Road (B2173) junction and review the operation of the traffic signals to ease observed queuing during peak times	It was observed that the existing road markings at this junction have almost all gone from the carriageway, particularly on the London Road (east) arm. These should be reinstated to ensure the correct and safe operation of the junction. Furthermore, a review of the previous five years collision data revealed a cluster of accidents at the Birchwood Road/B2173 signalised junction and adjacent Hockenden Lane junction. As such it is recommended that the layout and operation of these junctions be reviewed to see if they can be amended to improve safety and reduce casualties at this junction. This work could form part of the work currently undertaken by Kent Highways.	< £1m	Short-Term	1	1	1	2	1	6	1	2	0	2	5	As this junction has a cluster of accidents, any changes to this junction will result in safety and capacity benefits resulting in less delays and casualties for all road users. This will also improve network resilience and transport infrastructure/management.	Likely to be deliverable	Likely to be feasible	Likely to be affordable	✓	✓	✓	✓	✓	✓	
HPF18	Move 'No Entry' signage on Nightingale Way to adjacent to Asda access to clarify that there is no vehicular access on Nightingale Way and pedestrianised area	From the stakeholder consultation it was noted that the current location of the signage creates confusion and unnecessary vehicular turning manoeuvres or vehicles ignoring the signage and travelling the wrong way up the one-way section of Nightingale Way, all of which increase the potential for vehicle-pedestrian conflicts along this key pedestrian route to/from the town centre. This measure, could improve safety within this area of the town centre to the benefit of all road users.	< £1m	Short-Term	0	0	1	2	0	3	0	2	1	1	4	The No Entry sign is hidden and moving its location will help control vehicle movements within the western portion of the town centre, reducing the need to undertake unnecessary manoeuvres thus, improving safety and potentially air quality within this area of the town centre.	Likely to be deliverable	Likely to be feasible	Likely to be affordable	X	✓	✓	✓	✓	✓	
HPF19	Provision of formal loading bay facilities on High Street/Bevan Road	Kerbside deliveries can cause obstruction to all road users, particularly cyclists as conflicting demands for kerbside space are created. As the level of traffic on the highway network within the study area is anticipated to grow, these types of ad hoc delivery arrangements will begin to have a more significant impact upon the operation of the local highway network. In the case of the existing London Road/High Street corridor, existing issues will be exacerbated. A potential measure to address the impact of delivery vehicles on High Street is the provision of formal loading bays to allow vehicles to undertake loading activity off the highway through the provision of formal loading bays. Allowing delivery vehicles to park off the carriageway would ease blocking of the free flow of traffic thus, helping to ease congestion and delay.	< £1m	Medium-Term	1	2	2	1	1	7	2	1	1	0	4	A potential concept scheme for High Street loading, which includes a formal off-carriageway loading bay on High Street and a formal loading bay on Bevan Road, has been developed by Sweco. The implementation of this measure would be subject to consultation to revise existing traffic regulation orders and space being freed up within the Bevan Place development land to allow the provision of a suitable footway around the bay. However, as this scheme would free up carriageway space, thus aiding the free flow of traffic on the highway, it offers significant benefits in terms of helping to reduce congestion and delay on this part of the network.	Likely to be deliverable (with Challenges)	Likely to be feasible (with Challenges)	Likely to be affordable	✓	✓	✓	✓	✓	✓	

STAGE 2 APPRAISAL FOR REPORT

Outline Cost Estimate	Timeframe	Qualitative assessment against identified issues and Opportunities	Qualitative assessment against identified Objectives
<£1m	Short-Term	2 Large beneficial impact	2 Large beneficial impact
£1m - £10m	Medium-Term	1 Beneficial impact	1 Beneficial impact
>£10m	Long-Term	0 Neutral / marginal impact	0 Neutral / marginal impact
		-1 Adverse impact	-1 Adverse impact
		2 Large adverse impact	2 Large adverse impact

Deliverability (e.g. political, planning, timescale or third party issues)	Feasibility (e.g. physical constraint, land availability and design standards)	Affordability (e.g. extent of additional funding required and available funding sources)	Initial Sifting Criteria
Likely to be deliverable	Likely to be feasible	Likely to be affordable	1: Overall moderate impact against identified issues and opportunities (Appraisal score >3, see East Conversion)
Likely to be deliverable (with Challenges)	Likely to be feasible (with Challenges)	Likely to be affordable (with Challenges)	2: Overall moderate fit with study objectives (Appraisal score >3, see East Conversion)
Unlikely to be deliverable	Unlikely to be feasible	Unlikely to be affordable	3: Likely to be deliverable
			4: Likely to be feasible in theory
			5: Likely to be affordable

Reference	Measure / Option Description	Take forward as part of ITP	Reasoning / Comments	Outline Cost	Timeframe	Issues and Opportunities						Objectives						Reasoning for 'Issues & Opportunities' and 'Objectives' Scoring	Deliverability	Feasibility	Affordability	Initial Sifting Criteria					For inclusion in prioritised list					
						1	2	3	4	5	-	-	Total	1	2	3	4					-	-	Total	1	2		3	4	5		
Intelligent Mobility - Active Travel																																
IM1	Investigate the provision of cycle junction priority at the B2173 London Road/Birchwood Road junction	Yes	At the signalised junction of B2173 London Road/Birchwood Road cyclists are directed off the road onto the footway towards a Toucan crossing facility on Birchwood Road, which results in an indirect and inconvenient diversion, potentially increasing journey times. As such, the provision of an Advanced Stop Line (ASL) for cyclists on the London Road (west) arm so that cyclists do not need to divert off the carriageway should be investigated. This could be implemented in conjunction with the use of new technology that allocates additional green time at the signals to cyclists depending on real-time demand and usage, such as radar based technology or thermal based technology which detects the heat of riders as they pass a detection zone. Such technologies allow the timings of signals to reflect demand on a second-by-second basis, and allows greater priority to be given to users of active travel ahead of vehicle users.	< £1m	Short-Term	1	0	2	1	0					4	1	1	1	0			3	Likely to be deliverable (with Challenges)	Likely to be feasible (with Challenges)	Likely to be affordable (with Challenges)	✓	✗	✓	✓	✓	✓	✓
IM2	Pedestrian/Cycle Priority Strategy (SCOOT)	Yes	Upgrading stand-alone Pelican Crossings to Puffin and/or Toucan crossings could improve pedestrian and cycle flow in areas where pedestrian footfall is highest and where cyclists are expected to cross. These crossings would then be managed through the implementation of Pedestrian Scoot (Split Cycle Offset Optimisation Technique) which makes use of video camera technology to automatically detect how many pedestrians/cyclists are waiting at crossings, and automatically adjusts signal timings to reflect real-time demand. Such technology could help to improve the pedestrian and cycle environment on key desire lines such as at the existing crossing points on High Street and London Road.	£1m - £10m	Medium-Term	1	1	2	1	1					6	1	1	1	1			4	Likely to be deliverable	Likely to be feasible	Likely to be affordable	✓	✓	✓	✓	✓	✓	✓
IM3	Intelligent Lighting	Yes	Energy efficient lighting systems that trigger the provision of lighting on certain links when pedestrian and cyclists enter a detection zone provide additional security and can help promote active travel. Such infrastructure could be applied in areas where lower perceived levels of safety exist, such as the link between Azalea Road and Station Approach and other sections of off-road public rights of way that may form key pedestrian and cycle routes in the future.	£1m - £10m	Short-Term	1	1	2	2	0					6	1	2	2	2			7	Likely to be deliverable (with Challenges)	Likely to be feasible	Likely to be affordable	✓	✓	✓	✓	✓	✓	✓
IM4	Walking and Cycling Wayfinding 'Apps'	Yes	Web-based tools offer A to B journey planning incorporating real-time information for all modes of transport including walking, cycling, bus, rail and taxi. The Kent Connect App uses GPS to show current location and trip progress. It shows live bus and train times, and provides different route suggestions for walking and cycling and includes an integrated walking and cycling map. It also provides information and statistics on pollution, calories and carbon emissions to help empower people to make smarter travel choices with their health, time and environment in mind. The data generated by such Wayfinding applications is a powerful tool for assisting people to make an informed choice and providing planners with data on planned and undertaken trips. Liaising with the developers of such Apps and web-based tools to access their data can provide a clear evidence base for schemes to improve well used routes and indeed identify less well used routes which could be improved and promoted.	< £1m	Short-Term	2	1	0	0	1					4	2	0	2	0			4	Likely to be deliverable	Likely to be feasible	Likely to be affordable	✓	✓	✓	✓	✓	✓	✓
IM5	Social Media	Yes	Social media tools such as Twitter and Facebook give people a useful platform to provide feedback and concerns on the transport network which can then be logged by asset management tools and mitigating actions can be planned. Mobile phone data can also be used to map the movement and place interaction of individuals, particularly linked to town centre car parks and rail station as key destinations, gateways within Swanley. The Borough could harness social media to provide real-time information on particular transport issues, suggesting alternative routes where feasible.	< £1m	Short-Term	0	0	0	0	0					0	0	0	0	0			0	Likely to be deliverable	Likely to be feasible	Likely to be affordable	✗	✗	✓	✓	✓	✓	✓
IM6	Cycle Hire Scheme	Yes	There are currently no formal cycle hire schemes operating within the study area. However, with many urban journeys consisting of short journeys, cycling can be quicker than walking and cycle hire can often be cheaper and more convenient than public transport, with the added benefit that they also mean that users get some exercise. Furthermore, cycle hire schemes offer a flexible choice to cycling without the need to own and maintain a personal cycle, which is particularly useful where the storage of a cycle at home or at work is a logistical issue. There is potential for Brompton bike docks to be located at Swanley Station to allow commuters and other visitors to Swanley to complete their journey by cycle providing an alternative to travelling A to B by private car.	< £1m	Medium-Term	1	1	1	0	1					4	1	0	2	1			4	Likely to be deliverable (with Challenges)	Likely to be feasible (with Challenges)	Likely to be affordable (with Challenges)	✓	✓	✓	✓	✓	✓	✓
IM7	Bike Share and Smart Cycle Lock Schemes	Yes	Technology, such as Smart Cycle Locks, uses a smart phone to locate, release and pay to unlock the Smart Cycle to give access to the bike. Users can select bikes in their chosen location from their phones and then release the bike by pressing a button on their phone and the lock simultaneously. Smart locks can either be used with a uniform fleet of bikes or alternatively, with a mix of pool bikes and users' own bikes. When the rider has completed their journey the rider simply parks the bike and uses their phone to lock the bike and log completion of the journey. With the technology contained within the bike this allows for increased flexibility compared to traditional bike sharing schemes. Smart Cycle locks enable users to access a range of bikes without the worry of taking a lock or finding a docking station unlike traditional bike hire schemes.	< £1m	Medium-Term	1	1	1	0	1					4	1	0	2	1			4	Likely to be deliverable (with Challenges)	Likely to be feasible (with Challenges)	Likely to be affordable (with Challenges)	✓	✓	✓	✓	✓	✓	✓
IM8	Real-Time information	Yes	Web-based journey planner tools provide travel options based on existing timetables but these could be developed further to allow users to gain real-time information on current levels of potential wait times at public transport stations, interchanges and on particular services, and provide recommendations on alternative travel routes that may provide both a quicker and more comfortable journey. Real-time information boards which detail anticipated arrival and departure times are already provided at Swanley Rail Station. However, the implementation of such technology and the provision of real-time information relating to train departures and bus arrival times at key stops would be of particular use within areas of high footfall in the town centre. These facilities would allow people to time their own arrival at the rail station or bus stop to keep waiting times to a minimum, thus freeing up their time for other activities.	£1m - £10m	Short-Term	1	1	2	0	1					5	1	0	2	1			4	Likely to be deliverable (with Challenges)	Likely to be feasible	Likely to be affordable	✓	✓	✓	✓	✓	✓	✓
IM9	Payment of fares	Yes	Within the TIL travel zones, the Oyster card has provided users with a singular payment option with integrated ticketing systems combining trains, underground, bus and river services. Indeed, contactless payment on bank cards and smart cards in transport also allow a singular payment option on the TIL network, which includes at Swanley rail station and on the Bus Route 233. On the other services, multi-trip tickets can be bought via an individual's mobile phone as m-tickets, or on-line and have them delivered to your phone. However, single and return trips still require the passenger to pay the driver cash to purchase these tickets. Mobile companies are increasingly incorporating payment technologies on smartphones, therefore the future of mobility lies in a multi-modal dynamic solution combining a journey from A to B through seamless integration of different forms of transport and with one single 'digital ticket', including contactless payment for taxis and ride-hailing services, and the continual development and implementation of contactless payment can be considered as a further step towards this.	£1m - £10m	Medium-Term	1	1	1	0	1					4	1	0	2	1			4	Unlikely to be deliverable	Likely to be feasible (with Challenges)	Unlikely to be affordable	✓	✓	✗	✓	✗	✓	✓
IM10	Digital Road Signs (VMS)	Yes	Digital road signs provide road users with real-time information on journeys, typically journeys using the strategic road network. Advanced variable message signs can also be used to provide drivers with real-time information on the remaining capacity of car parks in advance of arriving at the car parks. Examples of where these signs could be located would be on B258 Swanley Lane prior to the junction with Bartholomew Road, B2173 London Road (west) and the B2173 High Street. Such signs would allow drivers to select a car park where there are spaces available and thus reduce the requirement to hunt for a space, in turn reducing the potential for congestion on the surrounding highway as a result of vehicles queuing to enter a particular car park.	£1m - £10m	Medium-Term	1	2	1	0	2					6	1	1	0	2			4	Likely to be deliverable	Likely to be feasible	Likely to be affordable (with Challenges)	✓	✓	✓	✓	✓	✓	✓

