



# Town-centre Redevelopment Improvement Project (TRIP)

## National Productivity Investment Fund



# National Productivity Investment Fund for the Local Road Network Application Form



Department  
for Transport

The level of information provided should be proportionate to the size and complexity of the project proposed. As a guide, for a small project we would suggest around 10 -15 pages including annexes would be appropriate.

One application form should be completed per project and will constitute a bid.

## **Applicant Information**

**Local authority name(s)\*:** Southend-on-Sea Borough Council

*\*If the bid is for a joint project, please enter the names of all participating local authorities and specify the lead authority.*

**Bid Manager Name and position:** Paul Mathieson – Group Manager

*Name and position of officer with day to day responsibility for delivering the proposed project.*

**Contact telephone number:** 01702 215321 **Email address:** paulmathieson@southend.gov.uk

**Postal address:** Department for Place  
Southend-on-Sea Borough Council  
Civic Centre  
Victoria Avenue  
Southend-on-Sea  
SS2 6ER

## **Combined Authorities**

*If the bid is from an authority within a Combined Authority, please specify the contact, ensure that the Combined Authority has provided a note ranking multiple applications, and append a copy to this bid.*

**Name and position of Combined Authority Bid Co-ordinator:** N/A

**Contact telephone number:** N/A **Email address:** N/A

**Postal address:** N/A

When authorities submit a bid for funding to the Department, as part of the Government's commitment to greater openness in the public sector under the Freedom of Information Act 2000 and the Environmental Information Regulations 2004, they must also publish a version excluding any commercially sensitive information on their own website within two working days of submitting the final bid to the Department. The Department reserves the right to deem the business case as non-compliant if this is not adhered to.

**Please specify the weblink where this bid will be published:** [www.southend.gov.uk](http://www.southend.gov.uk)

## **SECTION A - Project description and funding profile**

**A1. Project name:** Town-centre Redevelopment Improvement Project (TRIP)

**A2 :** *Please enter a brief description of the proposed project (no more than 50 words)*

Improving local access to the town centre, bus interchange and rail stations by redirecting car parking traffic, improving public realm and modifying the highway. The proposals facilitate a wider network redistribution by ensuring the most appropriate travel routes and smart guidance making the area more viable for new development opportunities

**A3 :** *Please provide a short description of area covered by the bid (no more than 50 words)*

The area is within the Borough of Southend-on-Sea focussing on the Town Centre. This represents a key location for leisure, tourism, commercial, residential and business activity and identified within the Southend Central Area Action Plan (SCAAP).

OS Grid Reference: **TQ 88293 85614**

Postcode: **SS1**

Please append a map showing the location (and route) of the project, existing transport infrastructure and other points of particular relevance to the bid, e.g. housing and other development sites, employment areas, air quality management areas, constraints etc.

**A4.** *How much funding are you bidding for? (please tick the relevant box):*

**Small project bids** (requiring DfT funding of between £2m and £5m)

**Large project bids** (requiring DfT funding of between £5m and £10m)

**A5.** *Has any Equality Analysis been undertaken in line with the Equality Duty?*

Yes  No

Equality Analysis is being considered throughout the consultation process, the formal Equality Analysis is scheduled to be completed by December 2017

**A6.** *If you are planning to work with partnership bodies on this project (such as Development Corporations, National Parks Authorities, private sector bodies and transport operators) please include a short description below of how they will be involved.*

Local bus operators and the train operating companies will be included in the project delivery to ensure that the benefits can be realised in increasing passenger numbers to support growth. The Southend Business Improvement District (BID) will be involved to ensure business representation in the project

*A7. Combined Authority (CA) Involvement*

Have you appended a letter from the Combined Authority supporting this bid? N/A

*A8. Local Enterprise Partnership (LEP) Involvement and support for housing delivery*

Have you appended a letter from the LEP supporting this bid?  Yes  No

For proposed projects which encourage the delivery of housing, have you appended supporting evidence from the housebuilder/developer?

Yes  No

## **SECTION B – The Business Case**

### **B1: Project Summary**

*Please select what the project is trying to achieve (select all categories that apply)*

#### **Essential**

- Ease urban congestion
- Unlock economic growth and job creation opportunities
- Enable the delivery of housing development

#### **Desirable**

- Improve Air Quality and /or Reduce CO2 emissions
- Incentivising skills and apprentices
  
- Other(s), Please specify -

**B2 :** *Please provide evidence on the following questions (max 100 words for each question):*

a) *What is the problem that is being addressed?*

Around one third of trips to the town centre are made by car, one third by walking and cycling and one third using the bus and train. Traffic arrives along two major routes (A127 and A13) and is then directed around or through the central area. This leads to congestion, especially during high seasonal peaks, which limits economic growth and residential development. Congestion also interferes with the potential to improve facilities for walking, cycling and public transport access. Traffic accessing the main car parks circulates unnecessarily and leads to confusion over access, parking and alternatives.

b) *What options have been considered and why have alternatives been rejected?*

Minor modifications to existing signage have been considered, but rejected because they do not provide the necessary reduction in traffic that would act as a catalyst to encourage the necessary modal shift that can be achieved, as evidenced by the recent SBC LSTF project delivering personalised travel planning. A number of trips to the town centre commence out of town and the current systems and infrastructure tends to route most traffic into the town centre, upgrading capacity in the town centre is not feasible, but the smart management of signage, routeing and access with localised improvements is preferred.

c) *What are the expected benefits/outcomes? For example, could include easing urban congestion, job creation, enabling a number of new dwellings, facilitating increased GVA.*

Redistribution of the inbound Town Centre/Seafront traffic, facilitated by new VMS and car park guidance systems strategy will be supported by the re-configuration to the Town Centre car parks access and associated public realm improvements to the public transport and walking and cycling routes. This directly supports the proposed Better Queensway scheme delivering a minimum of 441 affordable new homes and the Southend Central Area Action Plan ([SCAAP](#))<sup>1</sup> which sets out to deliver a total of 2166 new dwellings and 7250 new jobs up to 2021, including new development sites. The project will also reduce severance and improve air quality.

<sup>1</sup>[http://www.southend.gov.uk/info/200420/development\\_plan\\_documents/391/southend\\_central\\_area\\_action\\_plan\\_scaap](http://www.southend.gov.uk/info/200420/development_plan_documents/391/southend_central_area_action_plan_scaap)

d) *Are there any related activities that the success of this project relies upon? For example, land acquisition, other transport interventions requiring separate funding or consents?*

None

e) *What will happen if funding for this project is not secured - would an alternative (lower cost) solution be implemented (if yes, please describe this alternative and how it differs from the proposed project)?*

A reduced scheme focusing purely on the VMS element of the overall project would be implemented. This element would focus on the routing of vehicles into the town and not address any of the other issues highlighted above.

f) *What is the impact of the project – and any associated mitigation works – on any statutory environmental constraints? For example, Local Air Quality Management Zones.*

The easing of the flow through the AQMA towards the town centre as part of the signing strategy will ease congestion and improve air quality within the AQMA.

**B3 : Please complete the following table. Figures should be entered in £000s**  
(i.e. £10,000 = 10).

**Table A: Funding profile (Nominal terms)**

£000s	2018-19	2019-20
DfT funding sought	515	1235
Local Authority contribution	485	265
Third Party contribution	N/A	N/A
<b>TOTAL</b>	1000	1500

Notes:

- 1) Department for Transport funding must not go beyond 2019-20 financial year.
- 2) Bidders are asked to consider making a local contribution to the total cost. It is indicated that this might be around 30%, although this is not mandatory.

**B4 : Local Contribution & Third Party Funding** : Please provide information on the following questions (max 100 words on items a and b):

- a) Provide an outline of all non-DfT funding contributions to the project costs, the level of commitment, and when the contributions will become available.

By 2018/19 the CIL fund is expected to be approximately £500k. It is anticipated that at least £100k of this money can support this bid.

- b) List any other funding applications you have made for this project or variants thereof and the outcome of these applications, including any reasons for rejection.

A successful bid for Southend Borough Council Capital funding for the signing strategy has been made and forms some of the Local Contribution.

### **B5 Economic Case**

This section should set out the range of impacts – both beneficial and adverse – of the project. The scope of information requested (and in the supporting annexes) will vary, including according to whether the application is for a small or large project.

#### **A) Requirements for small project bids (i.e. DfT contribution of less than £5m)**

- a) Please provide a description of your assessment of the impact of the project to include:

- Significant positive and negative impacts (quantified where possible) including in relation to air quality and CO<sub>2</sub> emissions.
- A description of the key risks and uncertainties;
- If any modelling has been used to forecast the impact of the project please set out the methods used to determine that it is fit for purpose

The Town-centre Redevelopment Improvement Project (TRIP) is expected to give rise to a wide range of economic, environmental, and social benefits. The primary benefits are the journey time savings and journey time reliability improvements that are expected to result from reduced traffic congestion in the central area. The estimated monetised benefit associated with journey time savings is £46 million (all users combined, full appraisal period, 2017 prices discounted to 2010).

A number of other benefits arise as a direct result of the public realm improvements, made possible because of reduced traffic flows on Chichester Road. Key environmental benefits relate to improved air quality, as pedestrians in the central area will be less exposed to traffic emissions, and the ability to restore a sense of place (townscape benefits). Key social benefits that are expected to arise relate to improved journey quality, increased physical activity, reduced road accidents, increased access to services, and reduced severance. Social benefits arise as a result of reduced traffic flows and improved public realm.

By improving the efficiency of the transport network within the central area, the scheme will help to unlock economic development opportunities. The scheme will also directly support the Better Queensway scheme, delivering at least 441 affordable new homes.

An Appraisal Summary Table (AST) is attached to this submission, to outline the expected impacts against all of the WebTAG sub-criteria.

Negative impacts are expected to be minimal and are in all cases offset by positive impacts. For example, increased traffic flows on Whitegate Road and York Road (due to the amended junction arrangements) will increase noise to some residential properties. However, noise and vibration impacts will reduce on Chichester Road and Southchurch Road. Similarly, a slight increase in road accidents might be expected to occur at the new Queensway junctions, while a reduced frequency of accidents is expected on Chichester Road and at the Southchurch Road/Chichester Road junction.

The two key risks associated with TRIP are:

- Stakeholder buy-in: Works are proposed in highly sensitive locations within the town centre, which will require buy-in from residents, commuters, and business owners. Failure to manage stakeholder involvement effectively could lead to delays and cost overruns.
- Cost and programme overruns, which will be avoided wherever possible through effective project management. The QRA identified that key cost risks exist in relation to the variable message sign and landscaping components, as well as uncertain ground conditions.

#### Transport Modelling

Journey time forecasts have been made using an existing VISSIM micro-simulation model of the town centre. A separate technical note is attached to this submission, outlining the modelling methodology, key assumptions and a more detailed junction by junction impact assessment.

The VISSIM model used was validated for a 2014 base year during 2016, and has been run with 16 different random seeds in the Do-Something scenario. Further details on the VISSIM model can be found in the accompanying economic technical note.

Values of time from the March 2017 WebTAG Data Book have been applied to the model forecasts in order to calculate the monetised value of journey time savings. The estimated BCR for the scheme is just under 20, representing very high value for money. This high BCR arises because the scheme is expected to lead to substantial benefits for a comparatively low price.

*\* Small projects bids are not required to produce a Benefit Cost Ratio (BCR) but may want to include this here if available.*

b) *Small project bidders should provide the following in annexes as supporting material:*

Has a **Project Impacts Pro Forma** been appended?  Yes  No  N/A

Has a description of data sources / forecasts been appended?  Yes  No  N/A



Has an **Appraisal Summary Table** been appended?  Yes  No  N/A

Other material supporting your assessment of the project described in this section should be appended to the bid.

*\* This list is not necessarily exhaustive and it is the responsibility of bidders to provide sufficient information to demonstrate the analysis supporting the economic case is fit-for-purpose.*

**B) Additional requirements for large project bids (i.e. DfT contribution of more than £5m)**

c) *Please provide a short description (max 500 words) of your assessment of the value for money of the project including your estimate of the Benefit Cost Ratio (BCR) to include:*

- Significant monetised and non-monetised costs and benefits
- Description of the key risks and uncertainties and the impact these have on the BCR;
- Key assumptions including: appraisal period, forecast years, optimism bias applied; and
- Description of the modelling approach used to forecast the impact of the project and the checks that have been undertaken to determine that it is fit-for-purpose.

**N/A**

d) *Additionally detailed evidence supporting your assessment, including the completed [Appraisal Summary Table](#), should be attached as annexes to this bid. **A checklist of material to be submitted in support of large project bids has been provided.***

Has an Appraisal Summary Table been appended?  Yes  No  N/A

- Please append any additional supporting information (as set out in the Checklist).

*\*It is the responsibility of bidders to provide sufficient information for DfT to undertake a full review of the analysis.*

**B6 Economic Case:** For all bids the following questions relating to **desirable criteria** should be answered.

Please describe the air quality situation in the area where the project will be implemented by answering the three questions below.

i) *Has Defra's national air quality assessment, as reported to the EU Commission, identified and/or projected an exceedance in the area where the project will be implemented?*

Yes       No

ii) *Is there one or more Air Quality Management Areas (AQMAs) in the area where the project will be implemented? AQMAs must have been declared on or before the 31 March 2017*

Yes       No

iii) *What is the project's impact on local air quality?*

Positive       Neutral       Negative

- Please supply further details:

The proposed works will actively alter traffic flows from busy pedestrian areas to main traffic routes thus reducing pollution and improving air quality in the town centre. Furthermore, the creation of a transport hub intends to reduce vehicle movements

iv) *Does the project promoter incentivise skills development through its supply chain?*

Yes       No       N/A

- Please supply further details:

### **B7. Management Case - Delivery (Essential)**

Deliverability is one of the essential criteria for this Fund and as such any bid should set out, with a limit of 100 words for each of a) to b)., any necessary statutory procedures that are needed before it can be constructed.

a) A project plan (typically summarised in Gantt chart form) with milestones should be included, covering the period from submission of the bid to project completion.

Has a project plan been appended to your bid?       Yes       No

b) If delivery of the project is dependent on land acquisition, please include a letter from the respective land owner(s) to demonstrate that arrangements are in place to secure the land to enable the authority to meet its construction milestones.

Has a letter relating to land acquisition been appended?       Yes       No       N/A

c) Please provide in Table C summary details of your construction milestones (at least one but no more than 6) between start and completion of works:

### **Table C: Construction milestones**

#### **Estimated Date**

Start of works	
Detailed Design to commence	04/04/2018
Construction start date	31/10/2018
Queensway Car Park Access	31/10/2018
Bournemouth Park Road Junction	31/10/2018
Transport Interchange Public Realm Start	29/04/2019
VMS installations	16/09/2019
Opening date	30/03/2020
Completion of works (if different)	N/A

d) *Please list any major transport projects costing over £5m in the last 5 years which the authority has delivered, including details of whether these were completed to time and budget (and if not, whether there were any mitigating circumstances)*

Southend have carried out a number of schemes identified under the “Better Southend” Programme and were completed on time and to budget.

- A127/B1013 Tesco Junction Improvement £4.7 m (DfT & SBC funded)
- A127 Progress Road Junction Improvement £4.7m (HCA & SBC funded)
- A127 Cuckoo Corner Junction Improvement £5m (DfT & SBC funded)
- A127 Victoria Gateway £6.7m (HCA & SBC funded)
- City Beach £6.7m (HCA & SBC funded)

### **B8. Management Case – Statutory Powers and Consents (Essential)**

a) *Please list if applicable, each power / consent etc. already obtained, details of date acquired, challenge period (if applicable), date of expiry of powers and conditions attached to them. Any key dates should be referenced in your project plan.*

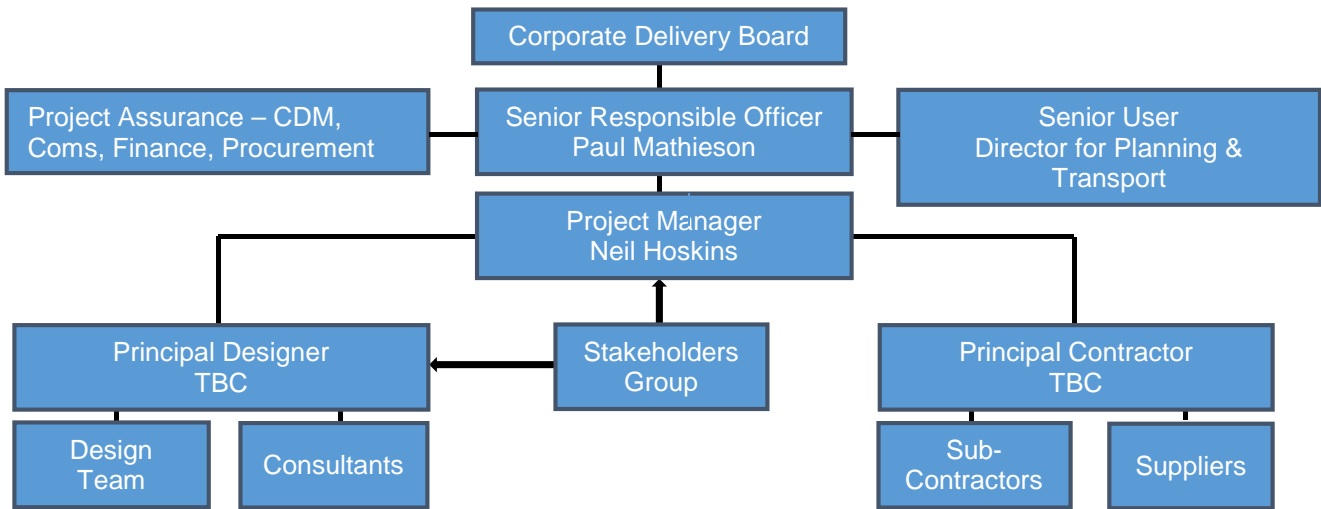
None Required

b) *Please list if applicable any outstanding statutory powers / consents etc. including the timetable for obtaining them.*

None Required

**B9. Management Case – Governance (Essential)**

Please name those who will be responsible for delivering the project, their roles (Project Manager, SRO etc.) and responsibilities, and how key decisions are/will be made. An organogram may be useful here.



Southend-on-Sea Borough Council has an excellent record of delivering projects on time and within budget. The ‘Better Southend’ projects, including the A127 Progress Road Junction Improvement, the A127 Cuckoo Corner Junction Improvement, A127/A13 Victoria Gateway and City Beach Improvements and the recently completed A127 Tesco Junction Improvements were all completed on time and within budget.

Andrew Lewis – Deputy Chief Executive (Place). There is Executive Director support for the NPIF, which experience has shown is essential for success. Andy will be ultimately responsible for the programme. He will ensure the all elements are correctly focused on achieving its aims, objectives and outcomes.

Peter Geraghty – Director of Planning and Transport. Peter is the Director of Service responsible for managing the strategic planning and transport functions. He will oversee the budgetary requirements and approve the resourcing and investment programme.

Pau Mathieson – Group Manager – Major Project and Strategic Transport Policy – SRO Paul is responsible for managing the Strategic Transport function and will oversee the budgetary requirements, resourcing and investment on this project.

Neil Hoskins – Programme Manager – Major Projects and Strategic Transport Policy – PM Neil will be responsible for the project management ensuring that the project is aligned with the bid objectives and that the appropriate monitoring is implemented to assess progress on key outputs.

**B10. Management Case - Risk Management (Essential)**

All projects will be expected to undertake a Quantified Risk Assessment (QRA) and a risk register should be included. Both should be proportionate to the nature and complexity of the project. A Risk Management Strategy should be developed that outlines how risks will be managed.

*Please ensure that in the risk / QRA cost that you have not included any risks associated with ongoing operational costs and have used the P50 value.*

Has a QRA been appended to your bid?  Yes  No

Has a Risk Management Strategy been appended to your bid?  Yes  No

Please provide evidence on the following points (where applicable) with a limit of 50 words for each:

a) *What risk allowance has been applied to the project cost?*

A risk allowance of approximately 10% has been allocated to the scheme which will be used in the event of cost overrun. There is also a 4 month float in the programme should there be any delays.

b) *How will cost overruns be dealt with?*

Effective project planning and stakeholder engagement will mitigate against the risk of cost overrun. Any cost overrun will be covered by the risk allowance

c) *What are the main risks to project timescales and what impact this will have on cost?*

Stakeholders - High profile/politically sensitive routes which will require 'buy in' from all stakeholders from businesses to councillors. Potential delay to programme if these relationships are not effectively managed, could result in increased costs

### **B11. Management Case - Stakeholder Management (Essential)**

The bid should demonstrate that the key stakeholders and their interests have been identified and considered as appropriate. These could include other local authorities, the Highways England, statutory consultees, landowners, transport operators, local residents, utilities companies etc. This is particularly important in respect of any bids related to structures that may require support of Network Rail and, possibly, train operating company(ies).

a) *Please provide a summary in no more than 100 words of your strategy for managing stakeholders, with details of the key stakeholders together with a brief analysis of their influences and interests.*

Identify all stakeholders and categorise them into groups based on their interest and influence on the project. Targeted, early & frequent consultation at the appropriate level for the different groups will create positive relationships and manage expectations. See table below for key stakeholders and interest/influence

Stakeholder	Interest	Influence
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SBC (Staff/Councillors)	Scheme promoter and funder	Very High
SBC Portfolio holder	Scheme promoter	Very High
SELEP	Economic development	Very High
Local businesses	Disruption during construction	Medium
Local residents	Noise/visual impact and congestion	Medium
Bus operators	Quality of infrastructure	Medium
Rail operators	Quality of infrastructure	Medium
Local Media	Public realm, economic benefits	Medium
Local MP's	Impact on local economy	High
Environment Agency	Flood management & ecology	Medium
DfT	Funder	Very High
Disability User Groups	Accessibility	Low

b) Can the project be considered as controversial in any way?  Yes  No

If yes, please provide a brief summary in no more than 100 words

**N/A**

c) Have there been any external campaigns either supporting or opposing the project?

Yes  No

If yes, please provide a brief summary (in no more than 100 words)

**N/A**

d) For large projects only please also provide a Stakeholder Analysis and append this to your application.

Has a Stakeholder Analysis been appended?  Yes  No  N/A

e) For large projects only please provide a Communications Plan with details of the level of engagement required (depending on their interests and influence), and a description of how and by what means they will be engaged with.

Has a Communications Plan been appended?  Yes  No  N/A

### **B12. Management Case – Local MP support (Desirable)**

e) *Does this proposal have the support of the local MP(s);*

MPs have been contacted and awaiting their support. Letters of support from the local MP will be forwarded.

Name of MP(s) and Constituency

1 **James Duddridge – Rochford & Southend East**  Yes  No

2 **Sir David Amess – Southend West**  Yes  No

3 **N/A**  Yes  No

### **B13. Management Case - Assurance (Essential)**

We will require Section 151 Officer confirmation (Section D) that adequate assurance systems are in place.

Additionally, for large projects please provide evidence of an integrated assurance and approval plan. This should include details of planned health checks or gateway reviews.

## **SECTION C – Monitoring, Evaluation and Benefits Realisation**

**C2.** Please set out, in no more than 100 words, how you plan to measure and report on the benefits of this project, alongside any other outcomes and impacts of the project.

Extensive 'before' survey have been undertaken, including vehicle and pedestrian movements along with cycle counts. Post implementation of each project the surveys will be repeated and compared with the original. This will include any reduction user delays and an evaluation report will be produced. This will be combined with the stage 3 safety audit and any amendments implemented. A further survey will be conducted a year post completion as part of a stage 4 safety audit and a final evaluation report produced.

*A fuller evaluation for large projects may also be required depending on their size and type.*

### **B13. Management Case - Assurance (Essential)**

We will require Section 151 Officer confirmation (Section D) that adequate assurance systems are in place.

Additionally, for large projects please provide evidence of an integrated assurance and approval plan. This should include details of planned health checks or gateway reviews.

## **SECTION C – Monitoring, Evaluation and Benefits Realisation**

**C2.** Please set out, in no more than 100 words, how you plan to measure and report on the benefits of this project, alongside any other outcomes and impacts of the project.

Extensive 'before' survey have been undertaken, including vehicle and pedestrian movements along with cycle counts. Post implementation of each project the surveys will be repeated and compared with the original. This will include any reduction user delays and an evaluation report will be produced. This will be combined with the stage 3 safety audit and any amendments implemented. A further survey will be conducted a year post completion as part of a stage 4 safety audit and a final evaluation report produced.

*A fuller evaluation for large projects may also be required depending on their size and type.*



## SECTION D: Declarations

### **D1. Senior Responsible Owner Declaration**

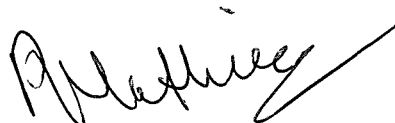
As Senior Responsible Owner for Town Centre Redevelopment Improvement Scheme I hereby submit this request for approval to DfT on behalf of Southend-on-Sea Borough Council and confirm that I have the necessary authority to do so

I confirm that Southend-on-Sea Borough Council will have all the necessary statutory powers in place to ensure the planned timescales in the application can be realised.

Name: Paul Mathieson

Signed.

Position: Group Manager – Major Projects & Strategic Transport Policy



### **D2. Section 151 Officer Declaration**

As Section 151 Officer for Southend-on-Sea Borough Council I declare that the project cost estimates quoted in this bid are accurate to the best of my knowledge and that Southend-on-Sea Borough Council

- has allocated sufficient budget to deliver this project on the basis of its proposed funding contribution
- accepts responsibility for meeting any costs over and above the DfT contribution requested, including potential cost overruns and the underwriting of any funding contributions expected from third parties
- accepts responsibility for meeting any ongoing revenue requirements in relation to the project
- accepts that no further increase in DfT funding will be considered beyond the maximum contribution requested and that no DfT funding will be provided for this bid in 2020/21.
- confirms that the authority has the necessary governance / assurance arrangements in place and, for smaller project bids, the authority can provide, if required, evidence of a stakeholder analysis and communications plan in place
- confirms that if required a procurement strategy for the project is in place, is legally compliant and is likely to achieve the best value for money outcome

Name: Joe Chesterton

Signed.



30/06/2017

### **HAVE YOU INCLUDED THE FOLLOWING WITH YOUR BID?**

Combined Authority multiple bid ranking note (if applicable)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Map showing location of the project and its wider context	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Combined Authority support letter (if applicable)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
LEP support letter (if applicable)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Housebuilder / developer evidence letter (if applicable)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Land acquisition letter (if applicable)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Projects impact pro forma (must be a separate MS Excel)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Appraisal summary table	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Project plan/Gantt chart	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A

# **National Productivity Fund**

## **Application Form - Town-centre Redevelopment Improvement Project (TRIP)**

### **Annexes**

**Annex 1a** – Southend Area Plan

**Annex 1b** – SCAAP Public Transport & Access

**Annex 2** – Modelling and Economics Methodology

**Annex 3** – LEP support Letter

**Annex 4** – Projects Impact Pro forma

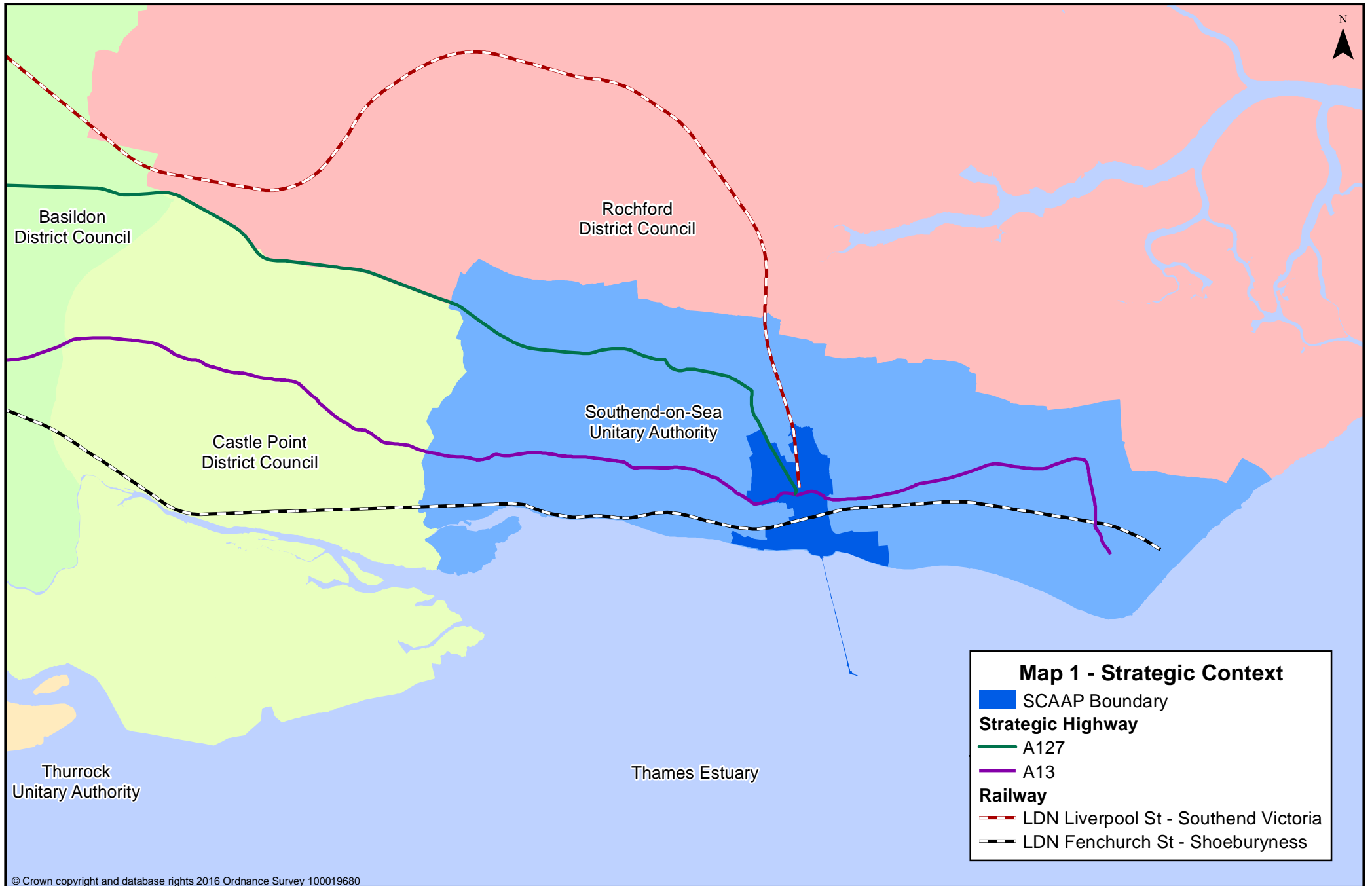
**Annex 5** – Project Plan/Gantt Chart

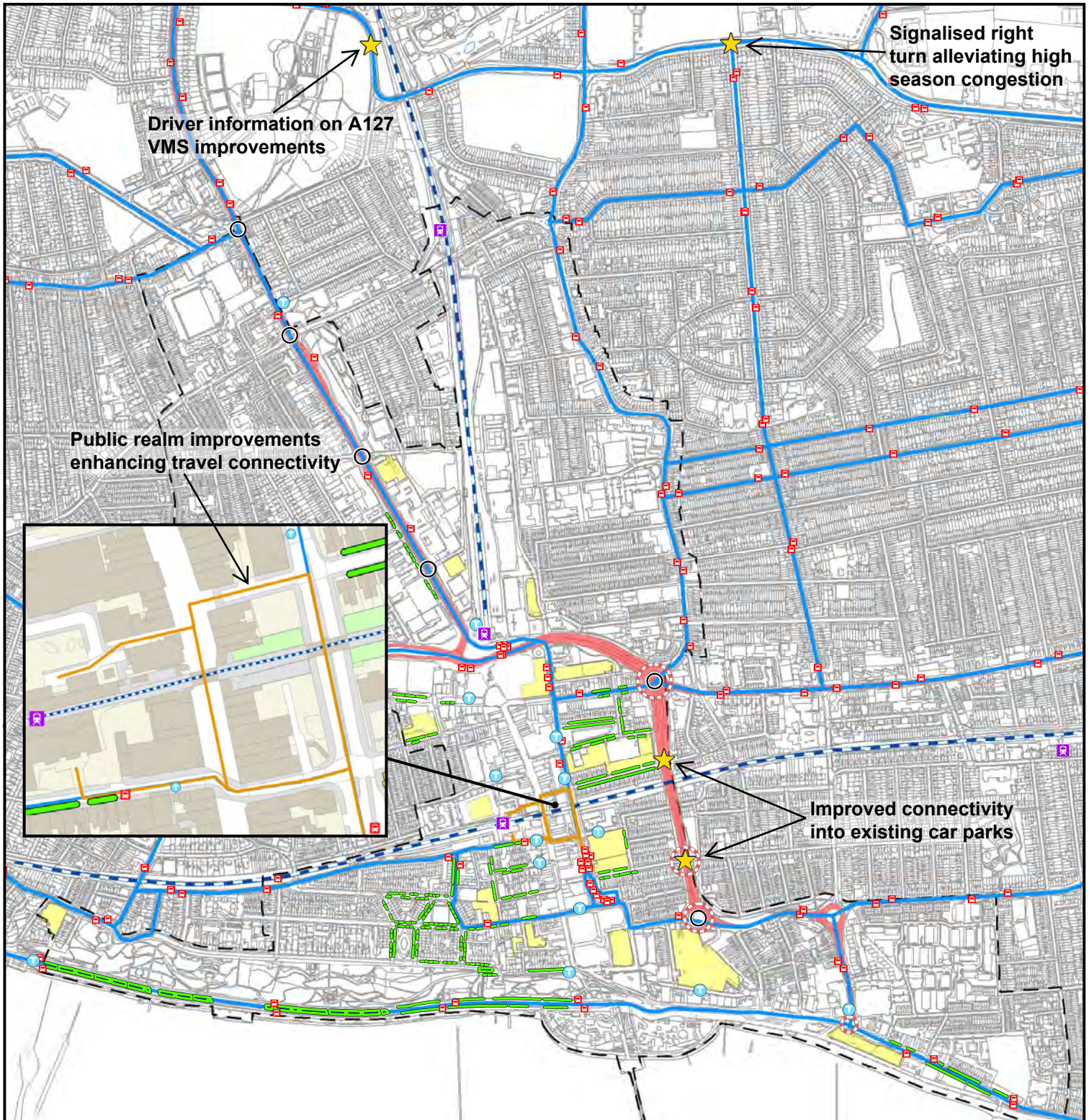
**Annex 6** – Appraisal summary table

**Annex 7** – Quantified Risk Assessment

Southend on Sea Borough Council – June 2017

# Southend Area Plan





**Southend Central Area Boundary**  
 [ - - - ] Southend Central Area Boundary

**Taxi Ranks**  
 ● Taxi Rank

**Parking**  
 ■ Off Street Key Visitor Parking  
 ■ On Street Payment Parking

**Public Transport and Access**

- Railway Station
- +— Railway Line
- Bus Stop
- Bus Route - Road served at least 5 days a week
- Improved Gateway Access for Pedestrians
- Main Route Network - Crossing and Environmental Improvements
- Proposed Strategic Junction Improvement
- Enhanced Travel Connectivity
- ★ New schemes

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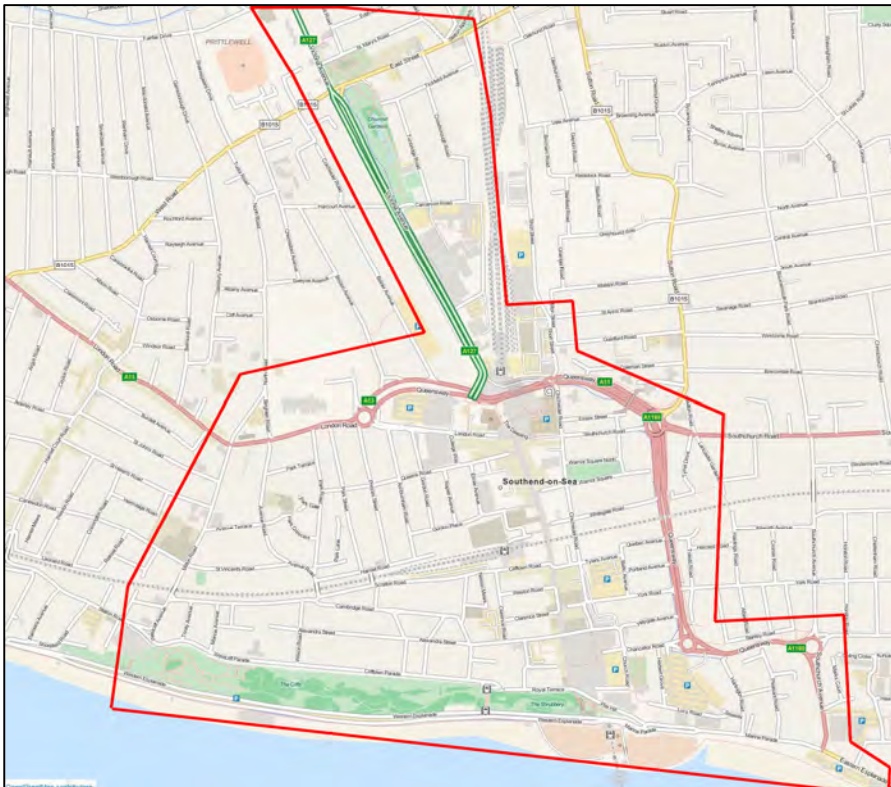
<b>Project:</b>	Southend NPIF Bid		
<b>Prepared by:</b>	Matt Hall	<b>Date:</b>	28 <sup>th</sup> June 2017
<b>Approved by:</b>	Matt Hall	<b>Checked by:</b>	Mike Brodrick
<b>Subject:</b>	NPIF Traffic Modelling and Economics		

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## 1 Introduction

Mott MacDonald was commissioned by Southend Borough Council (SBC) to assess improvement schemes on the Queensway to provide new right turn access into key car parks accessed from Whitegate Road and York Road and a scheme to signalise the junction of Eastern Avenue / Bournemouth Park Road and provide a right turn out from Bournemouth Park Road. The assessment made use of an existing VISSIM micro-simulation model of the Town Centre that was used in a business case last year in addition to the highway model of the Southend-on-Sea Multi Modal Model (SoSMMM).

The Town Centre VISSIM model extents are shown below in Figure 1.1.



**Figure 1.1 – Town Centre VISSIM Model Extents**

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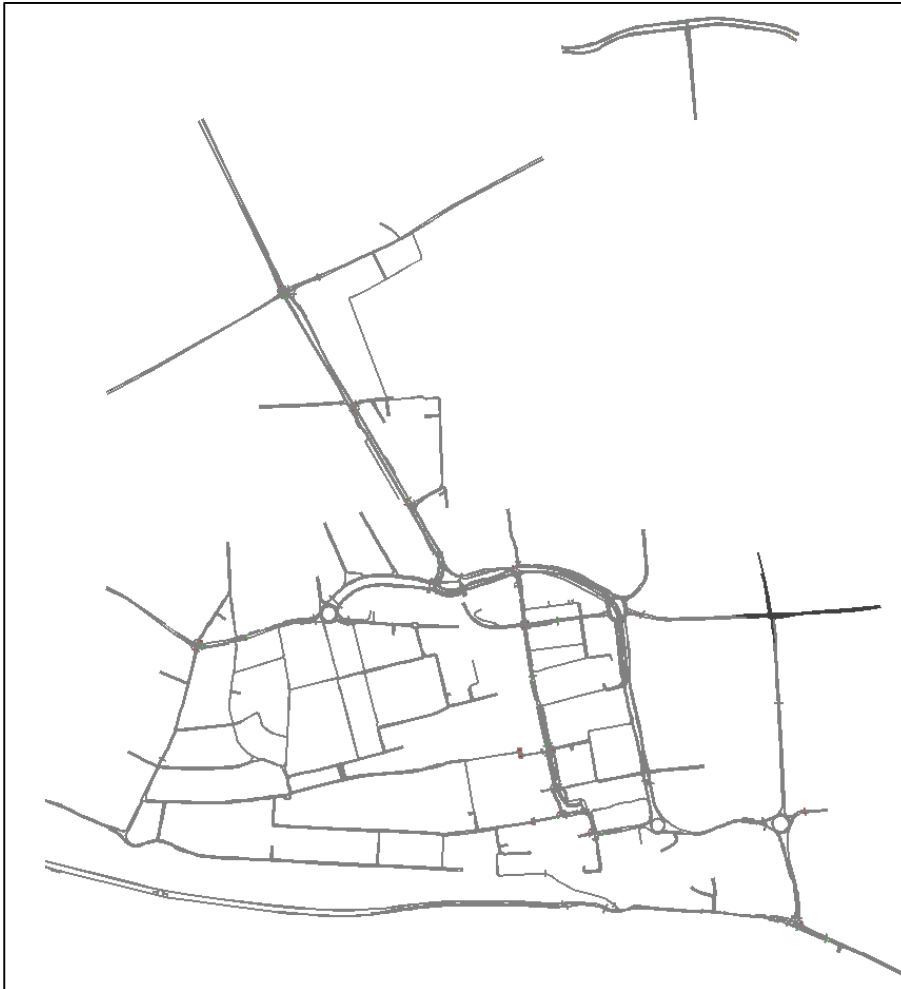
## 2 Modelling Methodology

### 2.1 Introduction

The Town Centre VISSIM model was validated for a 2014 base and reported in the Southend-on-Sea S-CATS VISSIM Modelling Assessment report of April 2016. Therefore, as the base model has already been validated forecast models have been prepared for 2021 based on a combination of TEMPRO growth and reassignment information from the Highway Assignment model of the SoSMMM.

The VISSIM model routes traffic based on dynamic assignment within the Town Centre. This allows for reassignment of traffic given changes in infrastructure. In order to incorporate the Bournemouth Park Road junction the model was extended to incorporate an isolated section of network to cover Eastern Avenue and Bournemouth Park Road. This section was then based on static assignment as it contains no route choice. The methodology was adopted as the section is too far from the main model to be incorporated into the dynamic model but retaining it within the same model as an isolated section allows for the network performance results to be collected from the same model.

The revised model extents are shown in Figure 2.1 below.



**Figure 2.1 – Revised Model Extents to include Bournemouth Park Road / Eastern Avenue**

The VISSIM modelling has been undertaken using VISSIM 5.40-13 as per the previous base model and the initial model developed by Atkins. The AM and PM peak periods have been modelled representing 7:00-10:00 in the morning peak and 16:00-19:00 in the evening peak respectively. A 15 minute warm-up period has been included to load the network before analysis.

The following modelling outputs as measures of effectiveness have been recorded:

- General network performance statistics; and,
- Junction analysis – Including volume, queue length, delay and level of service.

## **2.2 2021 Forecast Method**

The forecast demand has been derived with two methods for the different sections within the model. The main Town Centre model has retained the method used for the recent S-CATS business case as follows:

The forecast to 2021 has been based on a combination of known specific developments and TEMPRO background growth. The known developments are as follows:

- Residential Development on the former Hollybrook College Site on Carnarvon Road; and,
- Expansion of Great Eastern Street Car Park.

The former consists of 158 residential flats. The trip generation for the development has been based figures provided in the Mayer Brown Transport Statement (TS), dated May 2015. Trip rates are presented in the TS from TRICS for privately owned residential flats. These have been utilised within the VISSIM model to calculate the traffic generation for each hour within the peak periods (as the original TS only summarised the peak hours).

The latter is an expansion of the Great Eastern Street Car Park in order to accommodate 195 additional spaces. The trips have been calculated assuming 75% occupancy with an 80%/20% split of peak direction/non-peak direction. The profile of each half an hour period has been derived based on the proportion of existing trips within each half an hour period.

Both of the above developments have then been distributed to existing zones based upon the existing zone 41092 (Civic Centre car park). This zone was selected as it represented the most likely distribution of trips from within the local vicinity.

The development trips have been assigned as a separate user class within the model so that they can be easily identified within the model.

Background growth has been applied to the existing traffic based upon adjusted TEMPRO forecasts for Southend to 2021. The above development traffic has been deducted from the AF09 adjusted TEMPRO forecast to result in 8.3% and 8.5% growth in the AM and PM peak period respectively.

The forecast demand for the Bournemouth Park Road area has been based on the Southend Highway Assignment model (HAM) which is part of the SoSMMM. The HAM has been used to derive growth and reassignment of traffic to the forecast year of 2021. The following process has been used:

- Extract Base SoSMMM turning movements by user class for the Bournemouth Park Road / Eastern Avenue junction;
- Apply a TEMPRO 7.2 factor of 4.5% to the base model cordon matrices by user class to rebase to 2014 consistent with the VISSIM model;
- Code in new infrastructure into 2021 HAM and run;
- Cordon 2021 Forecast HAM;
- Deduct the 2021 Forecast HAM cordon matrices by user class from the Base matrices; and,
- Apply the differences to the base VISSIM matrices.

The resulting matrices have then been converged and assigned within the VISSIM models.

### 2.3 2021 Do Minimum Scenario

The 2021 Do Minimum scenario utilised the 2021 forecast demand as described above, assigned to the existing road network.

### 2.4 2021 Do Something Scheme

The 2021 Do Something scheme provides 3 infrastructure improvements as follows:

- Queensway Southbound right turn to Whitegate Road to provide easier access to the Warrior Square Car Park;
- Queensway Southbound right turn to York Road to provide easier access to the Tylers Avenue Car Park. Note this also involves reversing the staggered pedestrian crossing over Queensway; and,



- Provide a northbound right turn from Bournemouth Park Road onto Eastern Avenue and signalise the junction.

Drawings for all 3 schemes are provided in Appendix A.

Note that the latter of the 3 schemes has been included in order to accommodate a predicted increased demand for a development and highway scheme that SBC consider to be highly likely. However, as it is not yet committed this has not been included within the VISSIM model.

In addition, the traffic signals on Victoria Avenue have been optimised in LinSig to provide co-ordinated control compared to the existing Vehicle Actuated (VA) control.

The model results have been used to predict the benefits of the schemes and incorporated into a business case to be submitted for the National Productivity Investment Fund.

## 3 Model Results

### 3.1 Introduction

The VISSIM models have been run with 16 different random seeds with the Do Something model compared to the Do Something Opt. Outputs are compared for junction (node) and network performance.

### 3.2 AM Peak

The junction performance comparison for the AM peak is shown in Table 3.1 below for the peak modelled hour period, for volume, average queue length in meters, delay in seconds and the Level of Service (LOS). The light blue shaded cells represent the optimal performer for each junction and each measure. The full output for all junctions and all time periods is shown in Appendix B.

The LOS is an American concept derived from their Highway Capacity Manual (2000). It rates performance based upon delay thresholds on an A to F grading as follows:

- LOS A - 0 to 10 seconds;
- LOS B - 10 to 20 seconds (10 to 15 seconds for unsignalised);
- LOS C - 20 to 35 seconds (15 to 25 seconds for unsignalised);
- LOS D - 35 to 55 seconds (25 to 35 seconds for unsignalised);
- LOS E - 55 to 80 seconds (35 to 50 seconds for unsignalised); and,
- LOS F - Over 80 seconds (over 50 seconds for unsignalised).

Table 3.1 shows that the DS processes more traffic than the DM at nearly all junctions, particularly in the 0830-0900 period. It also shows that the average queue length, average delay and LOS reduce at the majority of junctions.

The overall delay reduces with the DS and results in an overall LOS of E for the network compared to a LOS of F in the DM.

**Table 3.1 – Junction Performance Comparison – 2021 AM Peak**

Time	Node	Description	Volume		Q Length (m) Max		Q Length (m) Average		Delay (s)		LOS	
			DM	DS	DM	DS	DM	DS	DM	DS	DM	DS
0800 - 0830	2011	Queensway/Chancellor	682	653	30.8	27.4	0.3	0.3	4.6	4.4	A	A
	2022	Heygate/Chichester	294	207	15	8.7	0.2	0.1	3.4	2.5	A	A
	2024	Pier Hill/Marine Parade	669	670	20.7	13.5	0.1	0	8.3	8.6	A	A
	2041	Alexandra/Clarence	338	318	56	43.8	7.9	6.3	0.0	0.0	A	A
	2042	Cliffdown/Clarence	264	264	60	83.4	10.1	15.3	3.5	5.8	A	A
	2051	Chichester/Tylers	313	265	2.8	1.5	0	0	33.3	35.0	C	C
	2056	Queensway/York Rd	582	644	129.1	142.8	35.2	42.3	33.9	35.6	C	D
	2065	Queensway/Whitegate Road	0	639	0	31.8	0	0.1	0.0	0.2	0	A
	2081	Queensway/Chichester Road	864	857	45.3	44.3	7.3	7.6	25.8	24.5	C	C
	2083	Chichester/Southchurch	160	255	65.8	33.8	13.7	1.2	31.9	5.8	C	A
	2094	Queensway/Sutton Rd	1018	1019	64	55.4	6.9	7.2	0.0	0.0	A	A
	2102	Queensway/Baxter Avenue	679	629	162.9	56.9	77	4.1	83.3	40.9	F	E
	2105	Queensway/Victoria Avenue	1052	999	76.3	64.9	5.5	4	6.3	5.6	A	A
	2121	Queensway/London Road	707	649	58.9	61.6	12	13.7	30.5	34.9	D	D
	2131	North Rd/London Rd	565	548	142	160	11	12	35.7	36.9	D	D
	2141	Southchurch/Marine	899	909	41	46	1	1	9.5	9.4	A	A
	3031	Southchurch Av/Queensway	793	792	0	0	0	0	0.5	0.3	A	A
	3043	Westcliff/Station Rd	431	438	3	2	0	0	1.0	1.0	A	A
	3065	Princes/Queens	65	50	370	303	8	7	20.4	18.8	C	C
	30514	Milton/St Johns	289	283	31	41	1	1	2.9	2.9	A	A
	4101	Victoria Av/Great Eastern Av	645	638	127	41	6	3	16.5	17.0	B	B
	4102	Victoria Av/Carnarvon Rd	74	44	111	73	5	4	16.5	10.7	B	B
	4108	Carnarvon Road / Tunbridge Rd	74	44	3	2	0	0	1.0	1.0	B	B
	4109	Carnarvon Road / SBC Offices	126	122	7	9	0	0	0.5	0.5	A	A
	4103	Victoria Av/B1015	1247	1237	215.4	209.5	30.4	35.1	76.3	87.1	E	F
	4104	East Street/Penhurst Av	543	549	50.4	68.5	1	2.5	2.8	5.0	A	A
4105	East Street/St Benet's Rd	537	537	19	29.3	0.3	1.2	0.6	1.5	A	A	
4106	East Street/Tickfield Av	541	541	28.2	45.5	0.1	0.9	0.7	2.4	A	A	
1000	Eastern Ave/Boumemouth Park Rd	1848	1691	47.1	204.8	2.1	27.6	2.9	25.4	A	C	
<b>OVERALL NETWORK TOTALS</b>			<b>13779</b>	<b>13528</b>	<b>53.3</b>	<b>70.2</b>	<b>3.7</b>	<b>5.2</b>	<b>30.2</b>	<b>29.7</b>	<b>D</b>	<b>D</b>
0830 - 0900	2011	Queensway/Chancellor	790	762	27.9	29.7	0.2	0.2	4.3	4.4	A	A
	2022	Heygate/Chichester	315	223	17.3	13.8	0.2	0.1	3.9	3.4	A	A
	2024	Pier Hill/Marine Parade	657	662	33.6	31.7	0.3	0.2	11.3	11.1	B	B
	2041	Alexandra/Clarence	402	384	58	56.4	10	9.8	0.0	0.0	A	A
	2042	Cliffdown/Clarence	335	342	81.7	194.8	15.8	55.8	7.9	6.5	A	A
	2051	Chichester/Tylers	372	324	3.3	1.3	0	0	35.1	39.9	D	D
	2056	Queensway/York Rd	683	779	206.9	168	58	55	37.8	34.6	D	C
	2065	Queensway/Whitegate Road	0	769	0	39	0	0.1	0.0	0.3	0	A
	2081	Queensway/Chichester Road	903	963	44.4	46.4	8.7	8.2	28.6	26.9	C	C
	2083	Chichester/Southchurch	189	287	101.2	54.8	35.3	3.6	52.3	12.3	D	B
	2094	Queensway/Sutton Rd	1074	1201	66.6	61.9	11	8.9	0.0	0.0	A	A
	2102	Queensway/Baxter Avenue	809	809	162.5	127.6	98.9	21.4	49.1	43.9	E	E
	2105	Queensway/Victoria Avenue	1103	1147	86	84	9	8	8.4	7.7	A	A
	2121	Queensway/London Road	871	852	51	56	11	12	31.4	38.1	D	E
	2131	North Rd/London Rd	609	623	114	152	6	11	36.5	38.1	D	D
	2141	Southchurch/Marine	913	931	41	48	1	1	11.7	11.6	B	B
	3031	Southchurch Av/Queensway	866	869	0	0	0	0	0.4	0.4	A	A
	3043	Westcliff/Station Rd	538	539	8	6	0	0	1.5	1.5	A	A
	3065	Princes/Queens	94	98	463	362	15	12	26.0	25.0	D	C
	30514	Milton/St Johns	289	294	175	59	23	2	10.9	3.9	B	A
	4101	Victoria Av/Great Eastern Av	701	748	125	46	6	3	13.8	13.9	B	B
	4102	Victoria Av/Carnarvon Rd	785	841	186	101	8	8	21.8	21.0	C	C
	4108	Carnarvon Road / Tunbridge Rd	106	98	7.5	5.9	0	0	1.5	1.5	C	C
	4109	Carnarvon Road / SBC Offices	154	158	7.4	9.2	0	0	0.5	0.7	A	A
	4103	Victoria Av/B1015	1335	1387	412.5	293.8	91.4	67.1	111.3	107.5	F	F
	4104	East Street/Penhurst Av	577	592	67.9	85.8	1.9	5.4	4.0	8.4	A	A
4105	East Street/St Benet's Rd	563	575	22.5	39.4	0.7	3	1.0	3.1	A	A	
4106	East Street/Tickfield Av	563	578	42.6	71.9	0.6	3.6	1.6	6.2	A	A	
1000	Eastern Ave/Boumemouth Park Rd	1810	1639	180.8	304.3	5.3	60.5	4.8	40.2	A	D	
<b>OVERALL NETWORK TOTALS</b>			<b>15158</b>	<b>15529</b>	<b>166.3</b>	<b>65.8</b>	<b>43.8</b>	<b>7.8</b>	<b>72.3</b>	<b>36.1</b>	<b>F</b>	<b>E</b>

The network performance comparison for the AM peak is shown in Table 3.2 below. The light blue shaded cells represent the optimal performer for each measure.

**Table 3.2 – Network Performance Comparison - AM Peak**

Measure	DM	DS	%Diff
Remaining Vehicles in Network	1067	<b>744</b>	-43%
Processed Vehicles	<b>50484</b>	50202	-1%
Total Distance Travelled (mi)	<b>27660.0</b>	27401.9	-1%
Total Travel Time (h)	2214.4	<b>2000.3</b>	-11%
Total Network Delay (h)	1221.0	<b>1016.7</b>	-20%
Average Travel Time (mins)	2.58	<b>2.36</b>	-9%
Average Delay Time (mins)	1.42	<b>1.20</b>	-19%
Total Stopped Delay (h)	845.8	<b>704.4</b>	-20%
Average Stopped Delay (s)	59.1	<b>49.8</b>	-19%
Number of Stops	96499.5	<b>80186.1</b>	-20%
Average Number of Stops	1.9	<b>1.6</b>	-19%
Average Network Speed (mph)	12.5	<b>13.7</b>	9%
Latent Demand	<b>169</b>	235	28%
Latent Delay (h)	166.7	<b>104.2</b>	-60%
Latent Delay per vehicle (s)	3560.3	<b>1599.5</b>	-123%

Table 3.2 shows that the DS results in the least distance travelled, the least number of stops and the highest average speed. The total network delay and travel time reduce by 20% and 11% respectively with the DS scheme.

### 3.3 PM Peak

The junction performance comparison for the PM peak is shown in Table 3.3 below for the modelled peak hour period, for volume, average queue length in meters, delay in seconds and the Level of Service (LOS). The full output for all junctions and time periods is shown in Appendix B.

Table 3.3 shows that the DS processes more traffic than the DM at all junctions. It also shows that as a result of processing more traffic, the average queue length, average delay and LOS increase at the majority of junctions. However, in the shoulder hours the DS does perform better than the DM and overall during the peak period provides a benefit over the DM as shown in Appendix B.

**Table 3.3 - Junction Comparison - 2021 PM Peak**

Time	Node	Description	Volume		Q Length (m) Max		Q Length (m) Average		Delay (s)		LOS	
			DM	DS	DM	DS	DM	DS	DM	DS	DM	DS
1700 - 1730	2011	Queensway/Chancellor	632	814	10.8	20.9	0.1	0.2	3.0	4.3	A	A
	2022	Heygate/Chichester	210	327	38.6	31.1	2.6	0.8	7.1	5.5	A	A
	2024	Pier Hill/Marine Parade	409	617	22.7	35.7	0.8	0.3	11.0	10.2	B	B
	2041	Alexandra/Clarence	311	545	61	50.4	8.6	8.4	0.0	0.0	A	A
	2042	Clifftown/Clarence	224	365	38.1	126.8	4.2	32.2	6.5	44.6	A	E
	2051	Chichester/Tylers	205	322	4.9	3.7	0.4	0	74.7	25.3	E	C
	2056	Queensway/York Rd	584	719	243.9	235.7	74.3	59.5	32.0	20.5	C	C
	2065	Queensway/Whitegate Road	0	720	0	27.8	0	0.1	0.0	0.1	0	A
	2081	Queensway/Chichester Road	969	982	44	48.2	6.2	6.2	24.5	23.9	C	C
	2083	Chichester/Southchurch	82	111	110.5	39.7	44	1.2	92.1	6.7	F	A
	2094	Queensway/Sutton Rd	1179	1330	67.1	68.6	6	24.1	0.0	0.0	A	A
	2102	Queensway/Baxter Avenue	756	836	165.4	110.6	106.9	13.6	66.5	70.5	F	F
	2105	Queensway/Victoria Avenue	1091	1200	80.3	87.5	6.6	6.9	5.7	6.7	A	A
	2121	Queensway/London Road	816	987	52.6	90.2	12.5	17	33.0	34.7	D	D
	2131	North Rd/London Rd	550	747	59	130	2	9	31.4	36.1	C	D
	2141	Southchurch/Marine	681	864	68	82	11	29	24.3	51.5	C	D
	3031	Southchurch Av/Queensway	777	884	0	0	0	0	0.4	0.4	A	A
	3043	Westcliff/Station Rd	321	504	3	6	0	0	0.9	1.3	A	A
	3065	Princes/Queens	66	91	513	379	29	11	45.5	22.5	E	C
	30514	Milton/St Johns	247	348	21	18	3	0	8.7	1.8	A	A
	4101	Victoria Av/Great Eastern Av	540	698	98	41	4	4	13.1	12.2	B	B
	4102	Victoria Av/Carnarvon Rd	65	87	103	95	6	11	16.6	22.9	B	C
	4108	Carnarvon Road / Tunbridge Rd	65	87	3	6	0	0	0.9	1.3	B	C
	4109	Carnarvon Road / SBC Offices	128	194	8	30	0	0	0.9	4.8	A	A
	4103	Victoria Av/B1015	1193	1332	513	346	250.1	75.2	198.2	100.5	F	F
	4104	East Street/Penhurst Av	556	630	95.5	80.5	8.8	8.8	13.9	12.8	B	B
	4105	East Street/St Benet's Rd	543	599	53.1	40.1	7.3	5.8	7.0	5.2	A	A
	4106	East Street/Tickfield Av	544	602	389.6	162.2	39.6	28.2	40.5	25.9	E	D
1000	Eastern Ave/Boumemouth Park Rd	1437	1747	18	143.4	0.2	16.3	0.8	17.8	A	C	
<b>OVERALL NETWORK TOTALS</b>			<b>13175</b>	<b>16043</b>	<b>63.3</b>	<b>65</b>	<b>17.8</b>	<b>4.4</b>	<b>46.5</b>	<b>48.4</b>	<b>E</b>	<b>E</b>
1730 - 1800	2011	Queensway/Chancellor	632	815	10.8	11.2	0.1	0	3.0	3.6	A	A
	2022	Heygate/Chichester	210	326	38.6	64.1	2.6	9	7.1	13.5	A	B
	2024	Pier Hill/Marine Parade	409	557	22.7	59.2	0.8	6.9	11.0	15.5	B	C
	2041	Alexandra/Clarence	311	541	61	80.3	8.6	13.8	0.0	0.0	A	A
	2042	Clifftown/Clarence	224	377	38.1	125.1	4.2	34.7	6.5	30.2	A	D
	2051	Chichester/Tylers	205	328	4.9	3.3	0.4	0	74.7	29.0	E	C
	2056	Queensway/York Rd	584	718	243.9	259.7	74.3	70.3	32.0	21.3	C	C
	2065	Queensway/Whitegate Road	0	720	0	31.2	0	0.2	0.0	0.2	0	A
	2081	Queensway/Chichester Road	969	999	44	51.5	6.2	6.5	24.5	22.7	C	C
	2083	Chichester/Southchurch	82	111	110.5	37	44	1.6	92.1	8.1	F	A
	2094	Queensway/Sutton Rd	1179	1330	67.1	70	6	23.3	0.0	0.0	A	A
	2102	Queensway/Baxter Avenue	756	798	165.4	115.1	106.9	14.9	66.5	70.3	F	F
	2105	Queensway/Victoria Avenue	1091	1177	80	98	7	9	5.7	7.5	A	A
	2121	Queensway/London Road	816	908	53	65	13	15	33.0	32.0	D	D
	2131	North Rd/London Rd	550	701	59	105	2	5	31.4	33.9	C	C
	2141	Southchurch/Marine	681	842	68	88	11	46	24.3	77.8	C	E
	3031	Southchurch Av/Queensway	777	944	0	0	0	0	0.4	0.3	A	A
	3043	Westcliff/Station Rd	321	464	3	4	0	0	0.9	1.3	A	A
	3065	Princes/Queens	66	89	513	478	29	15	45.5	26.5	E	D
	30514	Milton/St Johns	247	345	21	5	3	0	8.7	1.7	A	A
	4101	Victoria Av/Great Eastern Av	540	644	98	37	4	3	13.1	10.6	B	B
	4102	Victoria Av/Carnarvon Rd	618	738	103	102	6	10	16.6	24.0	B	C
	4108	Carnarvon Road / Tunbridge Rd	65	93	2.9	4.3	0	0	0.9	1.3	B	C
	4109	Carnarvon Road / SBC Offices	128	154	8.3	17.9	0	0.1	0.9	2.6	A	A
	4103	Victoria Av/B1015	1193	1335	513	472.4	250.1	119.9	198.2	113.4	F	F
	4104	East Street/Penhurst Av	556	658	95.5	91	8.8	14.2	13.9	18.1	B	C
	4105	East Street/St Benet's Rd	543	640	53.1	48.1	7.3	11.5	7.0	9.1	A	A
	4106	East Street/Tickfield Av	544	642	389.6	346.1	39.6	62.6	40.5	49.1	E	E
1000	Eastern Ave/Boumemouth Park Rd	1437	1809	18	194.7	0.2	29.8	0.8	24.6	A	C	
<b>OVERALL NETWORK TOTALS</b>			<b>13175</b>	<b>15899</b>	<b>63.3</b>	<b>51.7</b>	<b>17.8</b>	<b>2.4</b>	<b>46.5</b>	<b>53.2</b>	<b>E</b>	<b>F</b>

The network performance comparison for the PM peak is shown in Table 3.4 below. The light blue shaded cells represent the optimal performer for each measure.

**Table 3.4 – Network Performance Comparison – PM Peak**

Measure	DM	DS	%Diff
Remaining Vehicles in Network	818	<b>757</b>	-8%
Processed Vehicles	53815	<b>55123</b>	2%
Total Distance Travelled (mi)	30447.5	<b>30996.0</b>	2%
Total Travel Time (h)	2680.7	<b>2436.2</b>	-10%
Total Network Delay (h)	1599.4	<b>1336.2</b>	-20%
Average Travel Time (mins)	2.94	<b>2.62</b>	-13%
Average Delay Time (mins)	1.76	<b>1.43</b>	-22%
Total Stopped Delay (h)	1097.7	<b>896.0</b>	-23%
Average Stopped Delay (s)	72.3	<b>57.7</b>	-25%
Number of Stops	117296.1	<b>99297.5</b>	-18%
Average Number of Stops	2.1	<b>1.8</b>	-21%
Average Network Speed (mph)	11.4	<b>12.7</b>	11%
Latent Demand	372	<b>263</b>	-41%
Latent Delay (h)	428.7	<b>278.9</b>	-54%
Latent Delay per vehicle (s)	4143.1	<b>3813.8</b>	-9%

Table 3.4 shows that the DS results in the highest number of processed vehicles, the least number of stops and the highest average speed. The total network delay and travel time reduce by 20% and 10% respectively with the DS scheme.

## 4 Economics

The economics assessment has been based on a spreadsheet assessment over a 60 year period consistent with previous assessment. Values of time from the March 2017 WebTAG Data Book have been applied to the model forecasts in order to calculate the monetised value of journey time savings.

The costs include all construction costs for improvements to provide right turns at Bournemouth Park Road, Whitegate Road and York Road in the DS scenario. The costs represent both construction costs and design fees.

### 4.1 Do Something Scheme

The economic summary for DS scheme is provided below:

Assessment year	60 years
Journey time benefits over assessment period	£185,248,132 £ in 2010 market prices
Journey time benefits over assessment period discounted to 2010	£45,814,094 £ in 2010 market prices
PVB	£45,814,094 £ in 2010 market prices discounted to 2010
PVC	£2,299,194 £ in 2010 market prices discounted to 2010
<b>BCR</b>	<b>19.9</b>

### 4.2 BCR Sensitivity Testing

In order to determine the robustness of the BCR, sensitivity testing has been undertaken on the DS scenario around the journey time savings and the scheme cost. Table 4.1 below shows the journey time savings reducing in 2.5 second intervals from 13.4 and 19.3 seconds in the AM and PM peaks respectively. The table shows that the BCR remains above 2 even if the journey time saving in the AM peak drops below 1s and the PM below 7s. This is due to the relatively low scheme cost and large number of vehicles affected.

**Table 4.1 – Impact of reducing Peak Journey Time Savings on BCR**

JT Saving/Veh (s)		BCR
AM	PM	
13.4	19.3	19.9
10.9	16.8	17.9
8.4	14.3	15.8
5.9	11.8	13.7
3.4	9.3	11.7
0.9	6.8	9.6

Table 4.2 shows the impact of increasing the costs by £0.5m increments on the BCR.

**Table 4.2 - Impact of increasing costs on BCR**

PVC	PVB	BCR
£2,299,194	£45,814,094	19.9
£2,799,194	£45,814,094	16.6
£3,299,194	£45,814,094	14.2
£3,799,194	£45,814,094	12.5
£4,299,194	£45,814,094	11.1
£4,799,194	£45,814,094	10.0
£5,299,194	£45,814,094	9.1

The table shows that even with a cost of over £5m the BCR would still be above 2 based on the predicted journey time savings.

### 4.3 Summary of Economic Assessment

The junction improvements in the DS scenarios result in a high BCR of 19.9. The high BCR is a result of journey time savings in the DS over the DM, mainly in the PM peak compared to a relatively low construction cost.

The sensitivity testing shows that minimal journey time savings still result in a BCR above 2 as the cost is low. Similarly, even if the cost increases by a further £3m the BCR is still above 2, indicating that the scheme is predicted to offer excellent value for money.

## 5 Summary

Mott MacDonald was commissioned by Southend Borough Council (SBC) to assess improvement schemes on the Queensway to provide new right turn access into key car parks accessed from Whitegate Road and York Road and a scheme to signalise the junction of Eastern Avenue / Bournemouth Park Road and provide a right turn out from Bournemouth Park Road. The assessment made use of an existing VISSIM micro-simulation model of the Town Centre that was used in a business case last year in addition to the highway model of the Southend-on-Sea Multi Modal Model (SoSMMM).

The Town Centre VISSIM model was validated for a 2014 base and reported in the Southend-on-Sea S-CATS VISSIM Modelling Assessment report of April 2016. Therefore, as the base model has already been validated forecast models have been prepared for 2021 based on a combination of TEMPRO growth and reassignment information from the Highway Assignment model of the SoSMMM.

The VISSIM model routes traffic based on dynamic assignment within the Town Centre. This allows for reassignment of traffic given changes in infrastructure. In order to incorporate the Bournemouth Park Road junction the model was extended to incorporate an isolated section of network to cover Eastern Avenue and Bournemouth Park Road. This section was then based on static assignment as it contains no route choice. The methodology was adopted as the section is too far from the main model to be incorporated into the dynamic model but retaining it within the same model as an isolated section allows for the network performance results to be collected from the same model.

The 2021 Do Something scheme provides 3 infrastructure improvements as follows:

- Queensway Southbound right turn to Whitegate Road to provide easier access to the Warrier Square Car Park;
- Queensway Southbound right turn to York Road to provide easier access to the York Road Car Park. Note this also involves reversing the staggered pedestrian crossing over Queensway; and,
- Provide a northbound right turn from Bournemouth Park Road onto Eastern Avenue and signalise the junction.

In addition the traffic signals on Victoria Avenue have been optimised in LinSig to provide co-ordinated control compared to the existing Vehicle Actuated (VA) control.

In the AM Peak the junction performance shows that the DS processes more traffic than the DM at nearly all junctions, particularly in the 0830-0900 period. It also shows that the average queue length, average delay and LOS reduce at the majority of junctions. The overall delay reduces with the DS and results in an overall LOS of E for the network compared to a LOS of F in the DM.

The network performance shows that the DS results in the least distance travelled, the least number of stops and the highest average speed. The total network delay and travel time reduce by 20% and 11% respectively with the DS scheme.

In the PM Peak the junction performance shows that the DS processes more traffic than the DM at all junctions. It also shows that as a result of processing more traffic, the average queue length, average delay and LOS increase at the majority of junctions. However, in the shoulder hours the DS does perform better than the DM and overall during the peak period provides a benefit over the DM.

The network performance shows that the DS results in the highest number of processed vehicles, the least number of stops and the highest average speed. The total network delay and travel time reduce by 20% and 10% respectively with the DS scheme.



The economics assessment has been based on a spreadsheet assessment over a 60 year period consistent with previous assessment. Values of time from the March 2017 WebTAG Data Book have been applied to the model forecasts in order to calculate the monetised value of journey time savings.

The junction improvements in the DS scenarios result in a high BCR of 19.9. The high BCR is a result of journey time savings in the DS over the DM, mainly in the PM peak compared to a relatively low construction cost.

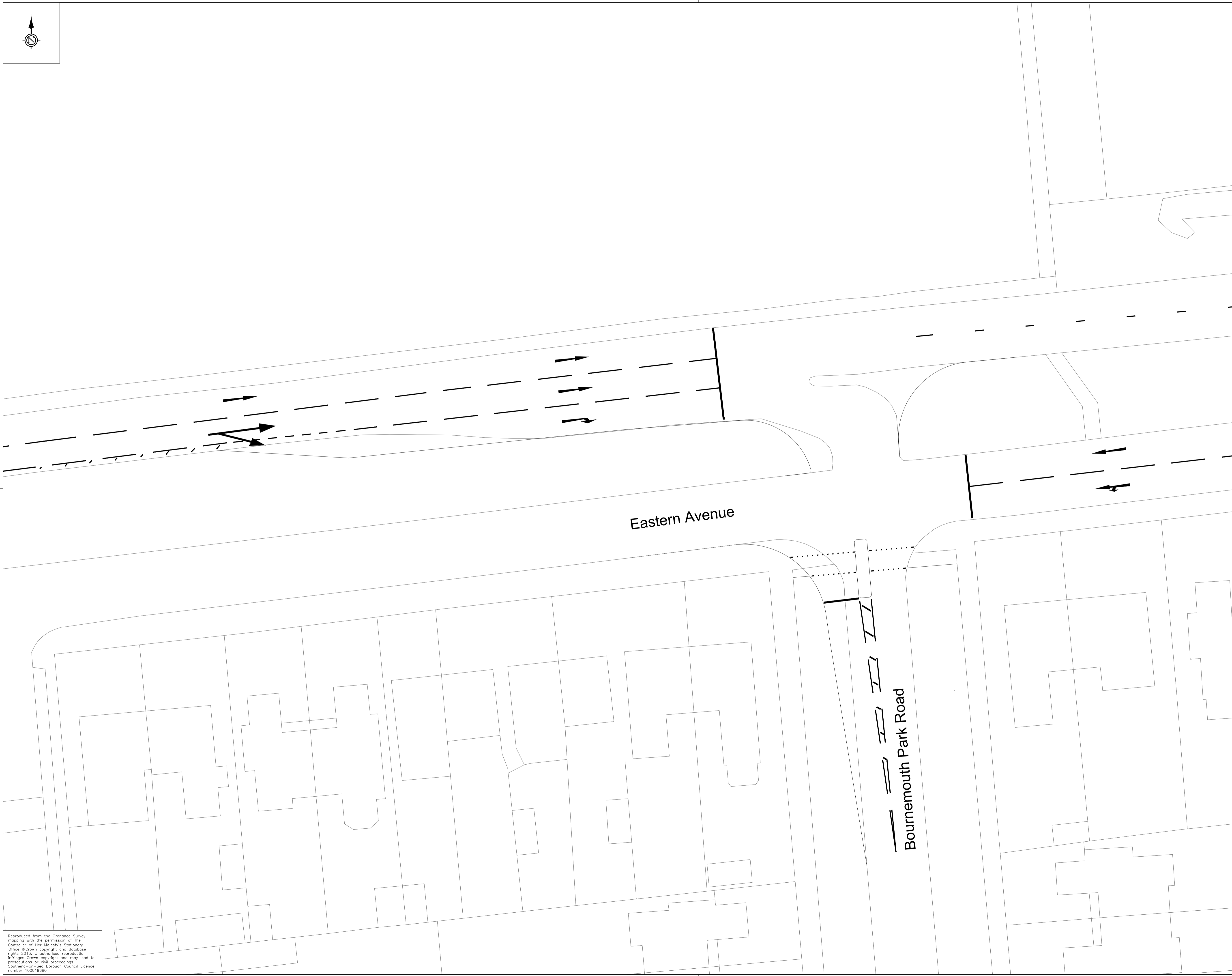
The sensitivity testing shows that minimal journey time savings still result in a BCR above 2 as the cost is low. Similarly, even if the cost increases by a further £3m the BCR is still above 2, indicating that the scheme is predicted to offer excellent value for money.

## **A. Appendix A – Scheme Drawings**



Revisions

Rev	Details	Auth	Date
A	Draft		



SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risk normally associated with the types of work detailed on this drawing, note the following significant residual risks

Construction	xxxx
Maintenance/Cleaning	xxxx
Use	xxxx
Decommissioning/Demolishing	xxxx

Southend-on-Sea Borough Council

Department for Place

PO Box 5560, Civic Centre  
Victoria Avenue, Southend on Sea,  
SS2 6ZQ

Project Title  
**Bournemouth Park Road  
Right Turn**

Drawing Title  
**Draft Layout**

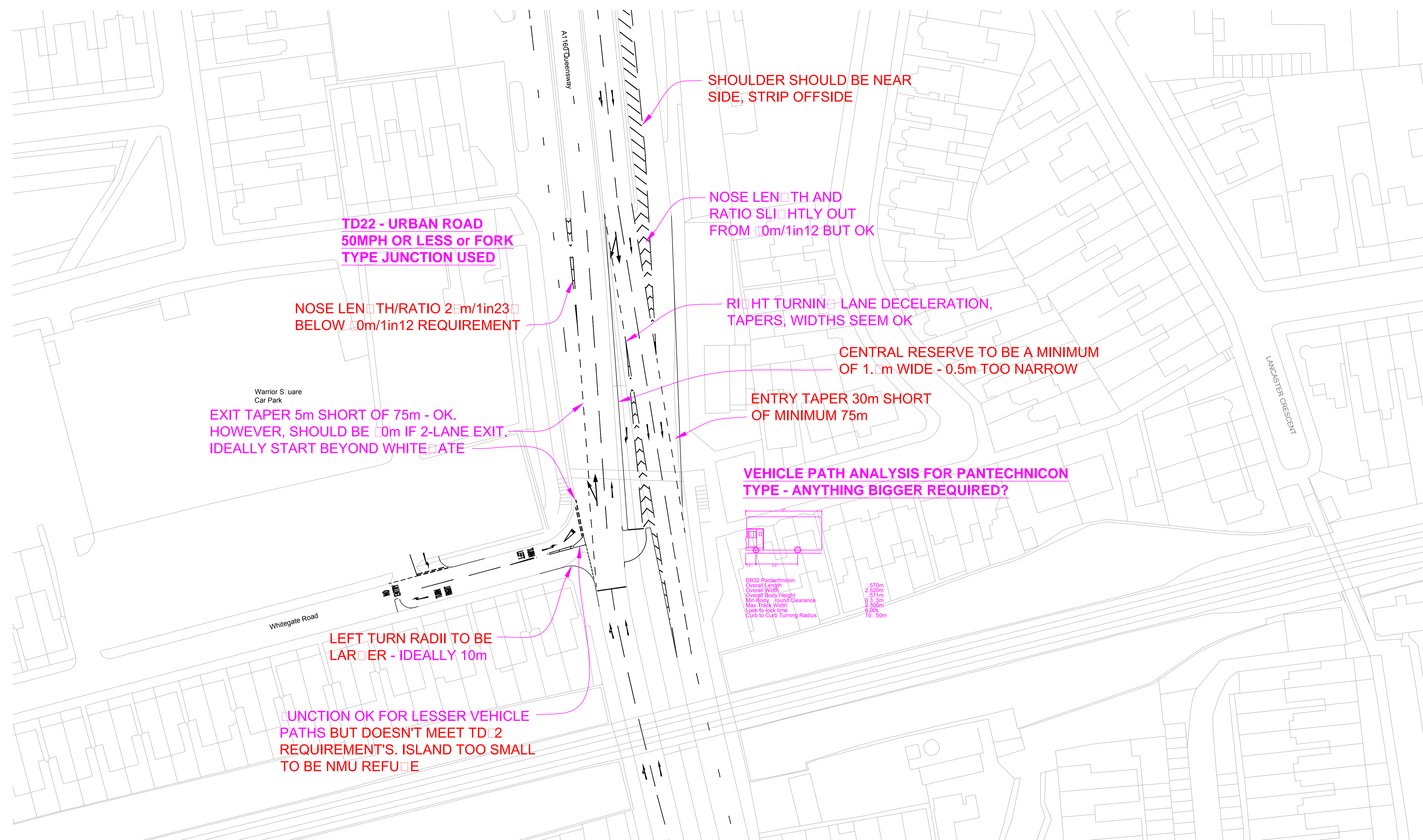
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Review XXX	Date XX/XX/XXXX	
Approved XXX	Date XX/XX/XXXX	Revision <b>A</b>

Drawing Status

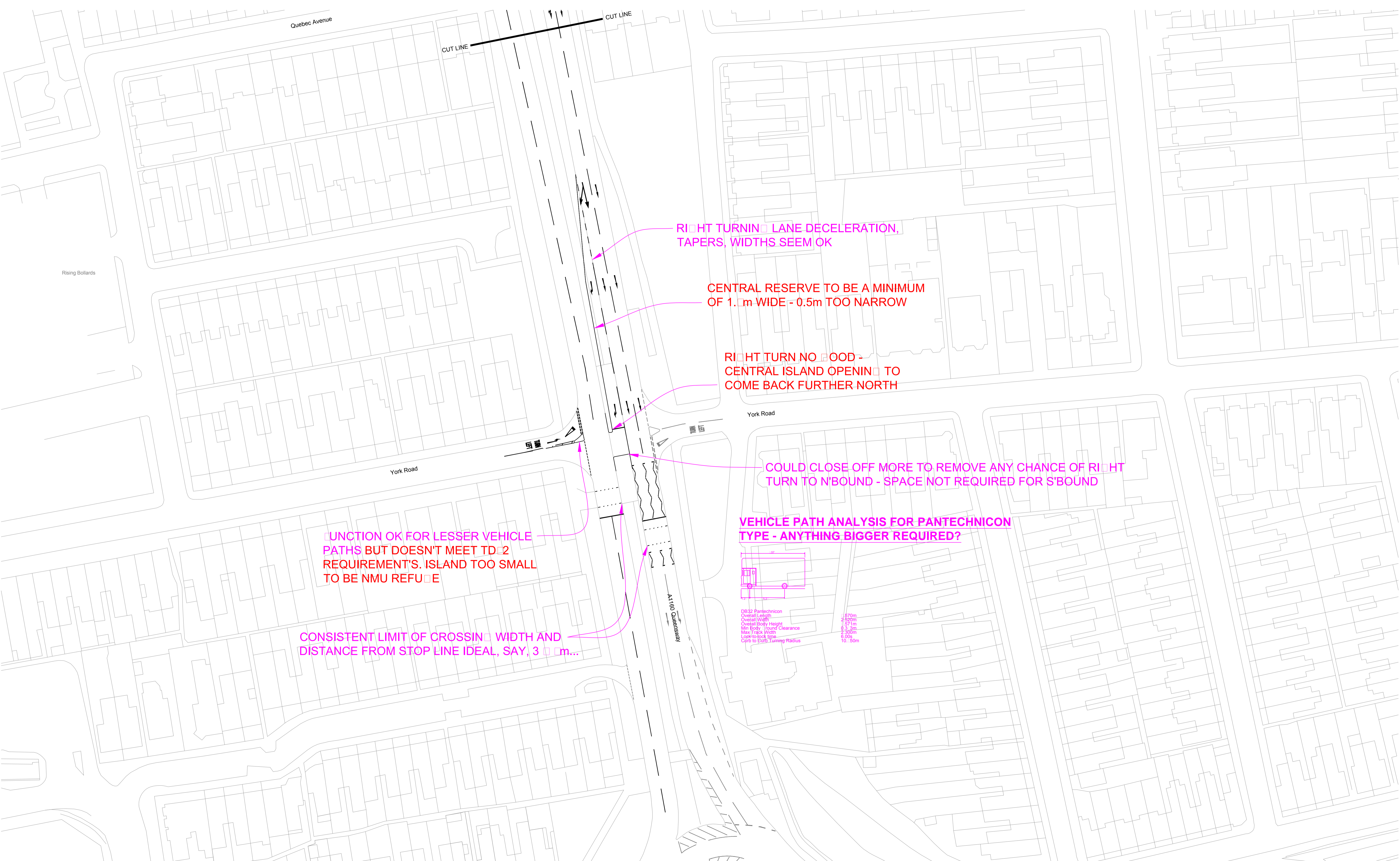
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Tender	<input type="checkbox"/>	As Constructed	<input type="checkbox"/>

Drawing Number  
SBCC10513-107/SBC/BPR/P/001

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Improved right turn Access into Warrior Square Car Park



Quebec Avenue

CUT LINE

Rising Bollards

RIGHT TURN LANE DECELERATION, TAPERS, WIDTHS SEEM OK

CENTRAL RESERVE TO BE A MINIMUM OF 1.0m WIDE - 0.5m TOO NARROW

RIGHT TURN NO GOOD - CENTRAL ISLAND OPENING TO COME BACK FURTHER NORTH

York Road

York Road

COULD CLOSE OFF MORE TO REMOVE ANY CHANCE OF RIGHT TURN TO N'BOUND - SPACE NOT REQUIRED FOR S'BOUND

JUNCTION OK FOR LESSER VEHICLE PATHS BUT DOESN'T MEET TD02 REQUIREMENT'S. ISLAND TOO SMALL TO BE NMU REFUGE

VEHICLE PATH ANALYSIS FOR PANTECHNICON TYPE - ANYTHING BIGGER REQUIRED?

DB32 Pantechnicon	1.570m
Overall Length	2.520m
Overall Width	0.571m
Overall Body Height	0.3.30m
Min Body Ground Clearance	2.300m
Max Track Width	1.600m
Lock-to-lock Angle	10.50m
Curb to Curb Turning Radius	

CONSISTENT LIMIT OF CROSSING WIDTH AND DISTANCE FROM STOP LINE IDEAL, SAY, 3.00m...

A160 Queensway

## **B. Appendix B – 2021 Junction Performance Comparisons**

Southend NPIF - 2021 AM Peak Comparison

Time	Route	Route Description	Road Description	Measurement	Volume		Q Length (ft) Max		Q Length (ft) Average		Delay (s)		LOS
					DM	DS	DM	DS	DM	DS	DM	DS	
2011	Queensway/Chancellor	Queensway to Chancellor	Queensway to Chancellor Rd	NW-SE	45	36	14	7.8	0	0	0	0	A
			Chancellor Rd to Queensway	NW-N	14	11	14	7.8	0	0	0	0	A
			Queensway to Queensway	E-N	14	11	14	7.8	0	0	0	0	A
			Queensway to Chancellor Rd	E-W	11	8	14	7.8	0	0	0	0	A
			Chancellor Rd to Queensway	W-N	36	28	21.4	23.5	0.2	0.1	0.2	0.1	C
			Chancellor Rd to Queensway	W-SE	36	28	21.4	23.5	0.2	0.1	0.2	0.1	C
2022	Haygate/Chichester	Chichester Rd to Haygate Avenue	Chichester Rd to Haygate Avenue	N-E	0	0	10.4	11.2	0	0	0	0	A
			Haygate Avenue to Chichester Rd	E-N	31	24	25.5	19.6	1.4	0.8	1.4	0.8	C
			Haygate Avenue to Chichester Rd	W-N	31	24	25.5	19.6	1.4	0.8	1.4	0.8	C
			Haygate Avenue to Chichester Rd	W-E	24	18	20.7	23.7	2.2	1.5	2.2	1.5	B
2024	Pier Hill/Marine Parade	Marine Parade to Western Esplanade	Marine Parade to Western Esplanade	E-W	360	278	218	24.9	0.1	0.1	0.1	0.1	A
			Western Esplanade to Marine Parade	E-NW	11	8	1.8	4.5	0	0	0	0	A
2041	Alexandra/Clarence	Clarence Rd to Alexandra St	Clarence Rd to Alexandra St	N-S	345	329	21.8	24.9	0.1	0.1	0.1	0.1	A
			Alexandra St to Clarence Rd	E-W	19	14	0	0	0	0	0	0	A
2042	Cliffhollow/Clarence	Cliffhollow Rd to Clarence Rd	Cliffhollow Rd to Clarence Rd	E-S	39	32	2.4	0	0	0	0	0	A
			Clarence Rd to Cliffhollow Rd	E-W	32	26	6.1	6.2	0	0	0	0	A
2051	Chichester/Tylers	Chichester Rd to Tylers Av	Chichester Rd to Tylers Av	N-E	345	329	21.8	24.9	0.1	0.1	0.1	0.1	A
			Chichester Rd to Bin Layby	N-S	0	0	33.4	33.7	1.2	2.1	1.2	2.1	A
			Chichester Rd to Chichester Rd	N-S	0	0	33.4	33.7	1.2	2.1	1.2	2.1	A
			Chichester Rd to Chichester Rd	N-S	0	0	33.4	33.7	1.2	2.1	1.2	2.1	A
			Tylers Av to Bin Layby	E-S	0	0	27.2	25.9	2.4	2.4	2.4	2.4	A
			Tylers Av to Chichester Rd	E-S	0	0	27.2	25.9	2.4	2.4	2.4	2.4	A
2056	Queensway/York Rd	Queensway to York Rd	Queensway to York Rd	N-E	345	329	21.8	24.9	0.1	0.1	0.1	0.1	A
			York Rd to Queensway	N-S	45	36	17.6	16.9	0.4	0.4	0.4	0.4	A
			Queensway to York Rd	S-W	14	11	14	7.8	0	0	0	0	A
			York Rd to Queensway	W-N	36	28	21.4	23.5	0.2	0.1	0.2	0.1	C
			Queensway to York Rd	W-S	36	28	21.4	23.5	0.2	0.1	0.2	0.1	C
			Queensway to York Rd	W-SE	36	28	21.4	23.5	0.2	0.1	0.2	0.1	C
2065	Queensway/Whitegate Road	Queensway to Whitegate Road	Queensway to Whitegate Road	N-S	90	72	0	0	0	0	0	0	A
			Whitegate Road to Queensway	N-S	90	72	0	0	0	0	0	0	A
			Queensway to Whitegate Road	S-W	90	72	0	0	0	0	0	0	A
			Whitegate Road to Queensway	S-W	90	72	0	0	0	0	0	0	A
			Queensway to Whitegate Road	W-N	72	57	21.8	24.9	0.1	0.1	0.1	0.1	A
			Whitegate Road to Queensway	W-N	72	57	21.8	24.9	0.1	0.1	0.1	0.1	A
2081	Queensway/Chichester Road	Chichester Road to Queensway	Chichester Road to Queensway	SE-W	345	329	21.8	24.9	0.1	0.1	0.1	0.1	A
			Queensway to Chichester Road	SE-W	345	329	21.8	24.9	0.1	0.1	0.1	0.1	A
			Chichester Road to Bin Layby	SE-W	0	0	40.3	72.2	5.1	11.2	5.1	11.2	A
			Queensway to Chichester Road	SE-W	0	0	40.3	72.2	5.1	11.2	5.1	11.2	A
			Chichester Road to Bin Layby	SE-W	0	0	40.3	72.2	5.1	11.2	5.1	11.2	A
			Queensway to Chichester Road	SE-W	0	0	40.3	72.2	5.1	11.2	5.1	11.2	A
2083	Chichester/Southchurch	Chichester Rd to Southchurch Rd	Chichester Rd to Southchurch Rd	N-E	10	8	30.7	49.2	1.7	2.4	1.7	2.4	A
			Southchurch Rd to Chichester Rd	N-S	0	0	33.4	33.7	1.2	2.1	1.2	2.1	A
			Chichester Rd to Southchurch Rd	E-S	10	8	23.2	40.1	2.3	5.1	2.3	5.1	B
			Southchurch Rd to Chichester Rd	E-N	10	8	23.2	40.1	2.3	5.1	2.3	5.1	B
			Chichester Rd to Southchurch Rd	S-E	8	6	35.8	39.0	3.3	3.4	3.3	3.4	B
			Southchurch Rd to Chichester Rd	S-E	8	6	35.8	39.0	3.3	3.4	3.3	3.4	B
2094	Queensway/Sutton Rd	Sutton Rd to Southchurch Rd	Sutton Rd to Southchurch Rd	N-E	345	329	21.8	24.9	0.1	0.1	0.1	0.1	A
			Southchurch Rd to Sutton Rd	N-E	345	329	21.8	24.9	0.1	0.1	0.1	0.1	A
			Sutton Rd to Southchurch Rd	N-E	345	329	21.8	24.9	0.1	0.1	0.1	0.1	A
			Southchurch Rd to Sutton Rd	N-E	345	329	21.8	24.9	0.1	0.1	0.1	0.1	A
			Sutton Rd to Southchurch Rd	N-E	345	329	21.8	24.9	0.1	0.1	0.1	0.1	A
			Southchurch Rd to Sutton Rd	N-E	345	329	21.8	24.9	0.1	0.1	0.1	0.1	A
2102	Queensway/Baxter Avenue	Baxter Avenue to Queensway	Baxter Avenue to Queensway	NW-E	14	11	1.1	4.3	0	0	0	0	A
			Queensway to Baxter Avenue	E-W	14	11	1.1	4.3	0	0	0	0	A
			Queensway to Baxter Avenue	E-W	14	11	1.1	4.3	0	0	0	0	A
			Baxter Avenue to Queensway	W-E	14	11	1.1	4.3	0	0	0	0	A
			Queensway to Baxter Avenue	W-E	14	11	1.1	4.3	0	0	0	0	A
			Baxter Avenue to Queensway	W-E	14	11	1.1	4.3	0	0	0	0	A
2105	Queensway/Victoria Avenue	Victoria Avenue to Bin Layby	Victoria Avenue to Bin Layby	NW-E	99	80	49.6	40.3	2	2.4	2	2.4	C
			Bin Layby to Victoria Avenue	NW-W	99	80	49.6	40.3	2	2.4	2	2.4	C
			Victoria Avenue to Bin Layby	NW-E	99	80	49.6	40.3	2	2.4	2	2.4	C
			Bin Layby to Victoria Avenue	NW-W	99	80	49.6	40.3	2	2.4	2	2.4	C
			Victoria Avenue to Bin Layby	NW-E	99	80	49.6	40.3	2	2.4	2	2.4	C
			Bin Layby to Victoria Avenue	NW-W	99	80	49.6	40.3	2	2.4	2	2.4	C
2121	Queensway/London Road	Retail Park to Queensway	Retail Park to Queensway	N-NE	345	329	21.8	24.9	0.1	0.1	0.1	0.1	A
			Queensway to Retail Park	N-NE	345	329	21.8	24.9	0.1	0.1	0.1	0.1	A
			Retail Park to Queensway	N-SE	1	1	0	0	0	0	0	0	A
			Queensway to Retail Park	N-SE	1	1	0	0	0	0	0	0	A
			Retail Park to Queensway	N-S	1	1	0	0	0	0	0	0	A
			Queensway to Retail Park	N-S	1	1	0	0	0	0	0	0	A
2131	North Rd/London Rd	North Rd to London Rd	North Rd to London Rd	N-E	11	8	10	18.5	1.8	1.8	1.8	1.8	C
			London Rd to North Rd	N-E	11	8	10	18.5	1.8	1.8	1.8	1.8	C
			North Rd to London Rd	N-E	11	8	10	18.5	1.8	1.8	1.8	1.8	C
			London Rd to North Rd	N-E	11	8	10	18.5	1.8	1.8	1.8	1.8	C
			North Rd to London Rd	N-E	11	8	10	18.5	1.8	1.8	1.8	1.8	C
			London Rd to North Rd	N-E	11	8	10	18.5	1.8	1.8	1.8	1.8	C
2141	Southchurch/Marine	Southchurch Av to Marine Parade	Southchurch Av to Marine Parade	N-S	45	36	0	0	0	0	0	0	A
			Marine Parade to Southchurch Av	N-S	45	36	0	0	0	0	0	0	A
			Southchurch Av to Marine Parade	N-S	45	36	0	0	0	0	0	0	A
			Marine Parade to Southchurch Av	N-S	45	36	0	0	0	0	0	0	A
			Southchurch Av to Marine Parade	N-S	45	36	0	0	0	0	0	0	A
			Marine Parade to Southchurch Av	N-S	45	36	0	0	0	0	0	0	A
3011	Southchurch Av/Queensway	Southchurch Av to Woodgrange Dr	Southchurch Av to Woodgrange Dr	N-E	11	8	6.2	7.1	0	0	0	0	A
			Woodgrange Dr to Southchurch Av	N-E	11	8	6.2	7.1	0	0	0	0	A
			Southchurch Av to Woodgrange Dr	N-E	11	8	6.2	7.1	0	0	0	0	A
			Woodgrange Dr to Southchurch Av	N-E	11	8	6.2	7.1	0	0	0	0	A
			Southchurch Av to Woodgrange Dr	N-E	11	8	6.2	7.1	0	0	0	0	A
			Woodgrange Dr to Southchurch Av	N-E	11	8	6.2	7.1	0	0	0	0	A
3043	Wescliff/Station Rd	Wescliff Av to Station Rd	Wescliff Av to Station Rd	SE-W	99	80	4	0	0	0	0	0	A
			Station Rd to Wescliff Av	SE-W	99	80	4	0	0	0	0	0	A
			Wescliff Av to Station Rd	SE-W	99	80	4	0	0	0	0	0	A
			Station Rd to Wescliff Av	SE-W	99	80	4	0	0	0	0	0	A
			Wescliff Av to Station Rd	SE-W	99	80	4	0	0	0	0	0	A
			Station Rd to Wescliff Av	SE-W	99	80	4	0	0	0	0	0	A
3065	Princes/Queens	Princes Street to Queens Rd	Princes Street to Queens Rd	N-E	7	5	0	0	0	0	0	0	A
			Queens Rd to Princes Street	N-E	7	5	0	0	0	0	0	0	A
			Princes Street to Queens Rd	N-E	7	5	0	0	0	0	0	0	A
			Queens Rd to Princes Street	N-E	7	5	0	0	0	0	0	0	A
			Princes Street to Queens Rd	N-E	7	5	0	0	0	0	0	0	A
			Queens Rd to Princes Street	N-E	7	5	0	0	0	0	0	0	A
3014	Milton/St Johns	Milton Rd to St Johns	Milton Rd to St Johns	N-S	99	80	0	0	0	0	0	0	A
			St Johns to Milton Rd	N-S	99	80	0	0	0	0	0	0	A
			Milton Rd to St Johns	N-S	99	80	0	0	0	0	0	0	A
			St Johns to Milton Rd	N-S	99	80	0	0	0	0	0	0	A
			Milton Rd to St Johns	N-S	99	80	0	0	0	0	0	0	A
			St Johns to Milton Rd	N-S	99	80	0	0	0	0	0	0	A
4101	Victoria Av/Great Eastern Av	Victoria Av to Great Eastern Av	Victoria Av to Great Eastern Av	NW-NE	36	28	6.4	23.2	1.6	1.7	1.6	1.7	B
			Great Eastern Av to Victoria Av	NW-NE	36	28	6.4	23.2	1.6	1.7	1.6	1.7	B
			Victoria Av to Great Eastern Av	NW-NE	36	28	6.4	23.2	1.6	1.7	1.6	1.7	B
			Great Eastern Av to Victoria Av	NW-NE	36	28	6.4	23.2	1.6	1.7	1.6	1.7	B
			Victoria Av to Great Eastern Av	NW-NE	36	28	6.4	23.2	1.6	1.7	1.6	1.7	B
			Great Eastern Av to Victoria Av	NW-NE	36	28	6.4	23.2	1.6	1.7	1.6	1.7	B
4102	Victoria Av/Carnarvon Rd	Victoria Av to Carnarvon Rd	Victoria Av to Carnarvon Rd	NW-SE	154	137	6.4	23.2	1.6	1.7	1.6	1.7	B
			Carnarvon Rd to Victoria Av	N									

2011	Queensway/Cancellor	Queensway to Queensway	NW-SE	31	42	16.4	16.1	0.1	0.1	0.1	A	A		
		Queensway to Chancellor Rd	NW-W	14	38	16.4	16.1	0.1	0.1	0.1	A	A		
		Queensway to Queensway	NW-N	28	38	16.4	16.1	0.1	0.1	0.1	A	A		
		Queensway to Queensway	E-N	28	38	16.4	16.1	0.1	0.1	0.1	A	A		
2032	Hygate/Chichester	Hygate Avenue to Chichester Rd	E-N	46	2	38.2	29	3	0.1	0.1	C	C		
		Hygate Avenue to Chichester Rd	W-N	46	2	38.2	29	3	0.1	0.1	C	C		
		Hygate Avenue to Chichester Rd	W-E	114	28	114.2	109.3	2.3	0.1	0.1	A	A		
		Hygate Avenue to Chichester Rd	W-S	46	2	38.2	29	3	0.1	0.1	C	C		
2024	Pier Hill/Marine Parade	Marine Parade to Western Esplanade	E-W	285	287	7.4	0.8	0.1	0.1	0.1	A	A		
		Marine Parade to Pier Hill	E-W	14	17	12.5	7.8	0.1	0.1	0.1	A	A		
		Western Esplanade to Marine Parade	NW-E	304	227	4	0	0	0	0	A	A		
		Western Esplanade to Pier Hill	NW-NW	12	26	1.2	0.4	0.1	0.1	0.1	A	A		
2041	Alexandra/Lance	Clarence Rd to Alexander St	N-E	28	2	9.4	9.1	0	0	0	A	A		
		Clarence Rd to Alexander St	N-W	48	46	10	10.7	0.1	0.1	0.1	A	A		
		Alexander St to Alexander St	E-W	24	2	0	0	0	0	0	A	A		
		Alexander St to Alexander St	W-E	24	2	0	0	0	0	0	A	A		
2042	Cliffdown/Lance	Cliffdown Rd to Clarence Rd	E-S	24	2	0	0	0	0	0	A	A		
		Cliffdown Rd to Clarence Rd	E-W	83	74	11.8	8.5	0	0	0	A	A		
		Scranton Rd to Clarence Rd	W-S	24	2	0	0	0	0	0	A	A		
		Cliffdown Rd to Clarence Rd	AE	492	444	46.7	46.4	8.5	8.5	8.5	8.5	A	A	
2041	Chichester/Tilers	Chichester Rd to Tilers Av	N-E	10	1	41.4	36.5	1.7	4.1	5.7	B	B		
		Chichester Rd to Bus Laby	N-S	0	0	41.4	36.5	1.7	4.1	5.7	B	B		
		Chichester Rd to Chichester Rd	N-S	0	0	41.4	36.5	1.7	4.1	5.7	B	B		
		Chichester Rd to Cliffdown Rd	N-W	60	1	41.4	36.5	1.7	4.1	5.7	B	B		
		Tilers Av to Bus Laby	E-S	0	0	41.4	36.5	1.7	4.1	5.7	B	B		
		Tilers Av to Chichester Rd	E-S	0	0	41.4	36.5	1.7	4.1	5.7	B	B		
		Tilers Av to Cliffdown Rd	E-W	65	87	41.7	43.1	3.3	6.4	5.3	C	C		
		Tilers Av to Chichester Rd	E-N	0	0	41.4	36.5	1.7	4.1	5.7	B	B		
		Chichester Rd to Cliffdown Rd	S-W	60	1	41.4	36.5	1.7	4.1	5.7	B	B		
		Chichester Rd to Chichester Rd	S-S	0	0	41.4	36.5	1.7	4.1	5.7	B	B		
		Chichester Rd to Tilers Av	AE	492	444	46.7	46.4	8.5	8.5	8.5	8.5	A	A	
		2056	Queensway/York Rd	Queensway to York Rd	N-E	38	26	22.5	0	0.6	0.6	0	A	A
Queensway to Queensway	N-S			78	2	22.5	0	0.6	0.6	0	A	A		
Queensway to York Rd	S-W			68	42	22.5	24.7	0	0	0	A	A		
Queensway to Queensway	S-N			78	2	22.5	0	0.6	0.6	0	A	A		
2065	Queensway/Whitgate Road	Queensway to Queensway	N-S	154	154	0	0	0	0	0	A	A		
		Queensway to Whitgate Road	N-W	EN/A	0	EN/A	0	EN/A	0	EN/A	0	EN/A	EN/A	
		Queensway to Queensway	S-N	78	2	16.4	16.1	0.1	0.1	0.1	A	A		
		Whitgate Road to Queensway	W-N	EN/A	0	EN/A	0	EN/A	0	EN/A	0	EN/A	EN/A	
2081	Queensway/Chichester Road	Short Street to Queensway	N-E	28	2	16.4	16.1	0.1	0.1	0.1	A	A		
		Queensway to Queensway	E-W	28	2	16.4	16.1	0.1	0.1	0.1	A	A		
		Chichester Road to Queensway	SE-W	41	115	50.6	80.5	8.1	12.8	8.1	12.8	E	C	
		Chichester Road to Bus Laby	SE-W	78	39	39.4	80.5	8.1	12.8	8.1	12.8	E	C	
2083	Chichester/Southchurch	Chichester Rd to Southchurch Rd	N-E	492	444	46.7	46.4	8.5	8.5	8.5	8.5	A	A	
		Chichester Rd to Chichester Rd	N-S	0	0	41.4	36.5	1.7	4.1	5.7	B	B		
		Southchurch Rd to Chichester Rd	E-N	161	161	33.4	44.1	4.5	9.8	4.5	9.8	C	C	
		Chichester Rd to Chichester Rd	S-N	0	0	41.4	36.5	1.7	4.1	5.7	B	B		
2094	Queensway/Sutton Rd	Sutton Rd to Southchurch Rd	N-E	3	3	36.5	15.4	0.4	0.4	0.4	A	A		
		Sutton Rd to Queensway	N-E	11	11	36.5	15.4	0.4	0.4	0.4	A	A		
		Sutton Rd to Southchurch Rd	N-W	50	50	36.5	15.4	0.4	0.4	0.4	A	A		
		Sutton Rd to Queensway	N-E	11	11	36.5	15.4	0.4	0.4	0.4	A	A		
		Southchurch Rd to Queensway	E-S	9	9	36.5	15.4	0.4	0.4	0.4	A	A		
		Southchurch Rd to Southchurch Rd	E-W	38	3	36.5	15.4	0.4	0.4	0.4	A	A		
		Southchurch Rd to Queensway	E-W	0	0	36.5	15.4	0.4	0.4	0.4	A	A		
		Queensway to Southchurch Rd	S-W	22	81	36.5	18.4	2.4	1.1	2.4	1.1	A	A	
		Queensway to Queensway	S-W	28	2	36.5	18.4	2.4	1.1	2.4	1.1	A	A	
		Queensway to Sutton Rd	S-NE	49	49	36.5	18.4	2.4	1.1	2.4	1.1	A	A	
		Queensway to Southchurch Rd	S-E	22	81	36.5	18.4	2.4	1.1	2.4	1.1	A	A	
		Queensway to Queensway	S-S	28	2	36.5	18.4	2.4	1.1	2.4	1.1	A	A	
Southchurch Rd to Queensway	W-W	39	5	36.4	33.9	1.4	0.6	1.4	0.6	A	A			
Southchurch Rd to Southchurch Rd	W-NE	31	32	36.4	33.9	1.4	0.6	1.4	0.6	A	A			
Southchurch Rd to Sutton Rd	W-E	39	1	36.4	33.9	1.4	0.6	1.4	0.6	A	A			
Southchurch Rd to Queensway	W-S	9	1	36.4	33.9	1.4	0.6	1.4	0.6	A	A			
Southchurch Rd to Southchurch Rd	W-W	39	1	36.4	33.9	1.4	0.6	1.4	0.6	A	A			
Queensway to Sutton Rd	W-NE	45	41	36.3	38.4	2.4	1.1	2.4	1.1	A	A			
Queensway to Southchurch Rd	W-E	11	11	36.3	38.4	2.4	1.1	2.4	1.1	A	A			
Queensway to Queensway	W-S	28	24	36.4	36.3	0.1	0.1	0.1	0.1	A	A			
Queensway to Southchurch Rd	W-W	28	2	36.3	38.4	2.4	1.1	2.4	1.1	A	A			
Queensway to Queensway	W-W	28	2	36.3	38.4	2.4	1.1	2.4	1.1	A	A			
2102	Queensway/Baxter Avenue	Baxter Avenue to Queensway	N-E	492	444	46.7	46.4	8.5	8.5	8.5	8.5	A	A	
		Queensway to Queensway	E-W	28	2	16.4	16.1	0.1	0.1	0.1	A	A		
		Queensway to Baxter Avenue	W-N	19	28	1.8	4.5	0	0	0	A	A		
		Queensway to Queensway	W-E	28	2	16.4	16.1	0.1	0.1	0.1	A	A		
2105	Queensway/Victoria Avenue	Victoria Avenue to Bus Laby	NW-E	4	4	66.4	60.3	8.8	6.1	8.8	6.1	A	A	
		Victoria Avenue to Queensway	NW-E	61	108	66.4	60.3	8.8	6.1	8.8	6.1	A	A	
		Victoria Avenue to Queensway	NW-W	101	108	66.4	60.3	8.8	6.1	8.8	6.1	A	A	
		Bus Laby to Victoria Avenue	E-NW	0	0	28.1	29	4.1	3.7	4.1	3.7	A	A	
		Queensway to Queensway	E-W	28	2	16.4	16.1	0.1	0.1	0.1	A	A		
		Queensway to Victoria Avenue	E-NW	171	107	163.4	78.1	9.4	8.8	9.4	8.8	F	C	
		Queensway to Victoria Avenue	W-NW	171	107	163.4	78.1	9.4	8.8	9.4	8.8	F	C	
		Queensway to Queensway	W-E	28	2	16.4	16.1	0.1	0.1	0.1	A	A		
		Queensway to Queensway	AE	492	444	46.7	46.4	8.5	8.5	8.5	8.5	A	A	
		2121	Queensway/London Road	Retail Park to Queensway	N-NE	4	1	0	0	0	0	0	A	A
				Retail Park to London Road	N-SE	2	1	0	0	0	0	0	A	A
				Retail Park to Princes Street	N-S	4	1	0	0	0	0	0	A	A
Retail Park to London Road	N-W			4	1	0	0	0	0	0	A	A		
Queensway to London Road	N-SE			48	42	58.5	54.6	2.3	2.3	2.3	2.3	A	A	
Queensway to Princes Street	N-S			13	4	58.5	54.6	2.3	2.3	2.3	2.3	A	A	
Queensway to London Road	N-W			48	42	58.5	54.6	2.3	2.3	2.3	2.3	A	A	
Queensway to Retail Park	N-S			5	3	58.5	54.6	2.3	2.3	2.3	2.3	A	A	
Queensway to Queensway	N-NE			28	2	16.4	16.1	0.1	0.1	0.1	A	A		
London Road to Princes Street	E-S			17	14	23.4	18.2	0.4	0.4	0.4	0.4	A	A	
London Road to London Road	E-W			17	14	23.4	18.2	0.4	0.4	0.4	0.4	A	A	
London Road to Retail Park	E-N			4	1	23.4	18.2	0.4	0.4	0.4	0.4	A	A	
London Road to Queensway	E-NE	36	7	23.4	18.2	0.4	0.4	0.4	0.4	A	A			
London Road to Retail Park	SE-N	4	1	23.4	18.2	0.4	0.4	0.4	0.4	A	A			
London Road to Queensway	SE-E	36	7	23.4	18.2	0.4	0.4	0.4	0.4	A	A			
London Road to London Road	SW-SE	17	14	23.4	18.2	0.4	0.4	0.4	0.4	A	A			
London Road to Princes Street	SW-S	1	1	23.4	18.2	0.4	0.4	0.4	0.4	A	A			
2131	North Rd/London Rd	North Rd to London Road	NE-E	492	444	46.7	46.4	8.5	8.5	8.5	8.5	A	A	
		North Rd to Milton Road	NE-S	27	26	28.4	28	4.1	3.8	4.1	3.8	D	D	
		North Rd to London Road	NE-W	49	48	28.4	28	4.1	3.8	4.1	3.8	D	D	
		London Road to Milton Road	E-S	33	22	46.9	53.7	8.9	12.1	8.9	12.1	C	C	
		London Road to London Road	E-NW	17	14	23.4	18.2	0.4	0.4	0.4	0.4	A	A	
		London Road to North Rd	E-NE	19	18	46.9	53.7	8.9	12.1	8.9	12.1	C	C	
		Milton Road to North Rd	S-NW	52	28	89.8	99.8	26.5	37.5	26.5	37.5	E	E	
		Milton Road to North Rd	S-NE	124	38	89.8	99.8	26.5	37.5	26.5	37.5	E	E	
		Milton Road to London Road	S-E	12	9	89.8	99.8	26.5	37.5	26.5	37.5	E	E	
		London Road to North Rd	NW-NE	19	18	46.9	53.7	8.9	12.1	8.9	12.1	C	C	
		London Road to London Road	NW-E	17	14	23.4	18.2	0.4	0.4	0.4	0.4	A	A	
		London Road to Milton Road	NW-S	22	22	46.9	53.7	8.9	12.1	8.9	12.1	C	C	
2141	Southchurch/Marine	Southchurch Av to Eastern Esplanade	N-SE	72	71	9	10.1	0.1	0.1	0.1	D	D		
		Southchurch Av to Marine Parade	N-W	44	38	4.1	0.1	0.1	0.1	0.1	D	D		
		Eastern Esplanade to Marine Parade	E-W	274	192	153.4	196	27.2	26.7	26.7	26.7	C	C	





2011	Queenway/Chancellor	Queenway to Queenway	NW-SE	190	197	53.1	70.2	3.7	5.5	3.7	5.5	F	E
	Queenway to Chancellor Rd	Queenway to Chancellor Rd	NW-W	30	31	30.3	30.8	1.6	1.6	1.6	1.6	B	B
	Queenway to Queenway	Queenway to Queenway	NW-N	33	33	33.1	33.1	0.0	0.0	0.0	0.0	A	A
	Queenway to Queenway	Queenway to Queenway	E-N	33	33	6.5	11.7	0.0	0.0	0.0	0.0	A	A
	Queenway to Chancellor Rd	Queenway to Chancellor Rd	E-W	39	39	39.3	39.3	1.6	1.6	1.6	1.6	B	B
	Chancellor Rd to Queenway	Chancellor Rd to Queenway	W-W	46	46	46.3	46.3	0.0	0.0	0.0	0.0	A	A
	Chancellor Rd to Queenway	Chancellor Rd to Queenway	W-SW	46	46	27.4	26.7	0.7	0.7	0.7	0.7	C	C
	Chancellor Rd to Hygate Avenue	Chancellor Rd to Hygate Avenue	AB	790	762	27.9	29.7	8.2	8.2	8.2	8.2	A	A
	Hygate Avenue to Chancellor Rd	Hygate Avenue to Chancellor Rd	E-N	53	53	50.4	51.5	0.7	0.7	0.7	0.7	A	A
	Hygate Avenue to Hygate Avenue	Hygate Avenue to Hygate Avenue	W-N	53	53	50.4	51.5	0.7	0.7	0.7	0.7	A	A
2024	Pier Hill/Marine Parade	Marine Parade to Western Esplanade	E-W	291	295	24.2	24.2	0.4	0.4	0.4	0.4	A	A
	Marine Parade to Pier Hill	Marine Parade to Pier Hill	E-SW	45	45	29.4	29.4	0.0	0.0	0.0	0.0	A	A
	Western Esplanade to Marine Parade	Western Esplanade to Marine Parade	NW-E	511	502	0.0	0.0	0.0	0.0	0.0	0.0	A	A
	Western Esplanade to Pier Hill	Western Esplanade to Pier Hill	NW-NW	63	63	26.1	25.7	0.7	0.7	0.7	0.7	A	A
2041	Alexandra/Clarence	Clarence Rd to Alexandra St	N-E	64	64	36.7	33.8	0.4	0.4	0.4	0.4	B	B
	Clarence Rd to Alexandra St	N-W	94	94	0.0	0.0	0.0	0.0	0.0	0.0	A	A	
	Alexandra St to Alexandra St	E-W	68	68	38.7	38.3	0.2	0.2	0.2	0.2	A	A	
	Alexandra St to Alexandra St	W-E	68	68	38.7	38.3	0.2	0.2	0.2	0.2	A	A	
2042	Cliffhollow/Clarence	Cliffhollow Rd to Clarence Rd	E-S	114	112	29.6	28.8	0.0	0.0	0.0	0.0	A	A
	Cliffhollow Rd to Scranton Rd	E-W	173	173	36	36.0	0.0	0.0	0.0	0.0	F	F	
	Scranton Rd to Clarence Rd	W-S	34	34	81.7	84.4	15.8	15.8	15.8	15.8	A	A	
	Clarence Rd to Clarence Rd	AB	790	762	27.9	29.7	8.2	8.2	8.2	8.2	A	A	
2041	Chichester/Tyers	Chichester Rd to Tyers Av	N-E	14	14	81.7	84.4	15.8	15.8	15.8	15.8	D	D
	Chichester Rd to Bus Laby	N-S	0	0	81.7	84.4	15.8	15.8	15.8	15.8	D	D	
	Chichester Rd to Chichester Rd	N-S	0	0	101.7	101.7	0.0	0.0	0.0	0.0	A	A	
	Chichester Rd to Cliffhollow Rd	N-W	82	82	101.7	101.7	0.0	0.0	0.0	0.0	A	A	
	Tyers Av to Bus Laby	E-S	0	0	35.1	35.1	0.0	0.0	0.0	0.0	F	F	
	Tyers Av to Chichester Rd	E-S	0	0	101.4	101.4	0.0	0.0	0.0	0.0	A	A	
	Tyers Av to Cliffhollow Rd	E-W	120	120	29	29	1.3	1.3	1.3	1.3	A	A	
	Tyers Av to Chichester Rd	E-N	0	0	101.4	101.4	0.0	0.0	0.0	0.0	A	A	
	Chichester Rd to Cliffhollow Rd	S-W	82	82	101.7	101.7	0.0	0.0	0.0	0.0	A	A	
	Chichester Rd to Chichester Rd	S-N	0	0	101.7	101.7	0.0	0.0	0.0	0.0	A	A	
2056	Queenway/York Rd	Queenway to York Rd	N-E	31	31	41.1	39	1.3	1.3	1.3	1.3	A	A
	Queenway to Queenway	S-S	31	31	41.1	39	1.3	1.3	1.3	1.3	A	A	
	Queenway to York Rd	S-W	103	103	94.2	93.5	21.1	13.1	21.1	13.1	F	F	
	York Rd to Queenway	S-N	31	31	41.1	39	1.3	1.3	1.3	1.3	A	A	
2065	Queenway/Whitgate Road	Queenway to Queenway	N-S	34	34	28.4	28.4	0.0	0.0	0.0	0.0	A	A
	Queenway to Whitgate Road	N-W	EN/A	4	4	EN/A	7.3	EN/A	0.0	EN/A	0.0	EN/A	A
	Queenway to Queenway	S-N	33	33	6.5	11.7	0.0	0.0	0.0	0.0	A	A	
	Whitgate Road to Queenway	S-W	EN/A	4	4	EN/A	7.3	EN/A	0.0	EN/A	0.0	EN/A	A
2081	Queenway/Chichester Road	Short Street to Queenway	AB	790	762	27.9	29.7	8.2	8.2	8.2	8.2	A	A
	Queenway to Queenway	E-W	33	33	6.5	11.7	0.0	0.0	0.0	0.0	A	A	
	Chichester Road to Queenway	SE-W	71	71	44.7	46.0	4.4	23.1	4.4	23.1	D	C	
	Chichester Road to Bus Laby	SE-W	214	214	29.4	29.4	0.0	0.0	0.0	0.0	A	A	
2083	Chichester/Southchurch	Chichester Rd to Southchurch Rd	N-E	0	0	101.7	101.7	0.0	0.0	0.0	0.0	A	A
	Chichester Rd to Chichester Rd	N-S	0	0	101.7	101.7	0.0	0.0	0.0	0.0	A	A	
	Southchurch Rd to Chichester Rd	E-N	24	24	0.0	0.0	0.0	0.0	0.0	0.0	A	A	
	Chichester Rd to Southchurch Rd	S-N	0	0	101.7	101.7	0.0	0.0	0.0	0.0	A	A	
2094	Queenway/Sutton Rd	Sutton Rd to Southchurch Rd	NE-E	1	1	101.7	101.7	0.0	0.0	0.0	0.0	A	A
	Sutton Rd to Queenway	NE-W	60	60	296.1	44.7	47.7	30.1	47.7	30.1	F	B	
	Southchurch Rd to Queenway	E-S	47	47	296.1	44.7	47.7	30.1	47.7	30.1	F	A	
	Southchurch Rd to Southchurch Rd	E-W	47	47	296.1	44.7	47.7	30.1	47.7	30.1	F	A	
	Southchurch Rd to Queenway	E-W	47	47	296.1	44.7	47.7	30.1	47.7	30.1	F	A	
	Southchurch Rd to Sutton Rd	E-W	47	47	296.1	44.7	47.7	30.1	47.7	30.1	F	A	
	Queenway to Southchurch Rd	S-W	38	38	48.4	25.7	0.0	0.0	0.0	0.0	A	A	
	Queenway to Queenway	S-W	38	38	48.4	25.7	0.0	0.0	0.0	0.0	A	A	
	Queenway to Sutton Rd	S-NE	52	52	49.4	23.2	0.0	0.0	0.0	0.0	A	A	
	Queenway to Southchurch Rd	S-E	38	38	48.4	25.7	0.0	0.0	0.0	0.0	A	A	
2102	Queenway/Baxter Avenue	Baxter Avenue to Queenway	NW-E	26	26	96.4	96.4	0.0	0.0	0.0	0.0	F	F
	Queenway to Queenway	E-W	33	33	6.5	11.7	0.0	0.0	0.0	0.0	A	A	
	Queenway to Baxter Avenue	W-N	33	33	36.3	35.6	3.3	5.1	3.3	5.1	A	A	
	Queenway to Queenway	W-E	33	33	6.5	11.7	0.0	0.0	0.0	0.0	A	A	
	Queenway to Queenway	AB	790	762	27.9	29.7	8.2	8.2	8.2	8.2	A	A	
	Victoria Avenue to Bus Laby	NW-E	0	0	61.1	60.3	11.6	12	11.6	12	D	D	
	Victoria Avenue to Queenway	NW-E	120	120	29.4	29.4	0.0	0.0	0.0	0.0	A	A	
	Victoria Avenue to Queenway	NW-W	120	120	29.4	29.4	0.0	0.0	0.0	0.0	A	A	
	Bus Laby to Victoria Avenue	E-NW	0	0	2.1	0.7	0.0	0.0	0.0	0.0	A	A	
	Queenway to Queenway	E-W	33	33	6.5	11.7	0.0	0.0	0.0	0.0	A	A	
2121	Queenway/London Road	Queenway to Queenway	NW-NW	171	168	2.1	0.7	0.0	0.0	0.0	0.0	A	A
	Queenway to Queenway	W-E	33	33	6.5	11.7	0.0	0.0	0.0	0.0	A	A	
	Retail Park to Queenway	N-NE	7	7	85.7	86	9.1	8.1	9.1	8.1	A	A	
	Retail Park to London Road	N-SE	6	6	85.7	86	9.1	8.1	9.1	8.1	A	A	
	Retail Park to Princes Street	N-S	4	4	85.7	86	9.1	8.1	9.1	8.1	A	A	
	Queenway to London Road	N-W	24	24	35.7	36	9.1	8.1	9.1	8.1	A	A	
	Queenway to Princes Street	N-SE	101	101	49.5	49.1	1.9	1.9	1.9	1.9	B	B	
	Queenway to London Road	N-S	23	23	40.8	40.1	1.9	1.9	1.9	1.9	B	B	
	Queenway to Retail Park	N-W	100	100	40.8	40.1	1.9	1.9	1.9	1.9	B	B	
	Queenway to Queenway	N-N	14	14	40.8	40.1	1.9	1.9	1.9	1.9	B	B	
2131	North Rd/London Rd	North Rd to London Rd	NE-E	121	121	109.9	107.5	89.9	85.3	89.9	85.3	F	F
	North Rd to Milton Road	NE-S	40	40	109.9	107.5	89.9	85.3	89.9	85.3	F	F	
	North Rd to London Rd	NE-W	14	14	109.9	107.5	89.9	85.3	89.9	85.3	F	F	
	London Road to Milton Road	E-S	40	40	63.4	71	3.5	3.5	3.5	3.5	C	C	
	London Road to London Road	E-NW	20	20	31	30	3.5	3.4	3.5	3.4	B	B	
	London Road to North Rd	E-N	33	33	63.4	70.9	3.4	3.4	3.4	3.4	C	C	
	Milton Road to London Rd	S-NW	58	58	114.1	109.6	27.4	27.5	27.4	27.5	D	D	
	Milton Road to North Rd	S-NE	45	45	74.5	64.9	4.7	4.7	4.7	4.7	E	E	
	Milton Road to London Road	S-E	38	38	114.1	109.6	27.4	27.5	27.4	27.5	D	D	
	London Road to North Rd	NW-NE	33	33	63.4	70.9	3.4	3.4	3.4	3.4	C	C	
2141	Southchurch/Marine	Southchurch Av to Eastern Esplanade	N-SE	106	106	315.1	315.2	51.7	51.9	51.7	51.9	F	F
	Southchurch Av to Marine Parade	N-W	110	110	23.7	20.6	0.0	0.0	0.0	0.0	A	A	
	Eastern Esplanade to Marine Parade	E-W	273	282	21.5	20.6	0.4	0.4	0.4	0.4	A	A	
	Eastern Esplanade to Southchurch Av	E-N	143	143	21.5	20.6	0.4	0.4	0.4	0.4	A	A	
	Marine Parade to Southchurch Av	W-N	129	129	13.7	13.8	0.0	0.0	0.0	0.0	A	A	
	Marine Parade to Eastern Esplanade	W-SW	134	134	41.3	47.8	0.4	0.4	0.4	0.4	A	A	
	Southchurch Av to Woodranga Dr	N-E	29	29	41.1	47.8	0.0	0.0	0.0	0.0	A	A	
	Southchurch Av to Southchurch Av	N-S	65	65	16.1	21.4	0.1	0.1	0.1	0.1	A	A	
	Southchurch Av to Queenway	N-W	35	35	50.8	53.8	3.5	3.1	3.5	3.1	B	B	
	Southchurch Av to Southchurch Av	N-NE	63	63	16.1	21.4	0.1	0.1	0.1	0.1	A	A	
3014	Milton/St Johns	Woodranga Dr to Woodranga Dr	E-S	29	29	62.8	63.3	1.5	1.5	1.5	1.5	A	A
	Woodranga Dr to Queenway	E-W	170	170	25.8	25.8	0.5	0.5	0.5	0.5	A	A	
	Woodranga Dr to Southchurch Av	E-NE	29	29	62.8	63.3	1.5	1.5	1.5	1.5	A	A	
	Southchurch Av to Queenway	E-E	0	0	11.4	10.9	0.0	0.0	0.0	0.0	A	A	
	Southchurch Av to Queenway	E-W	29	29	62.8	63.3	1.5	1.5	1.5	1.5	A	A	
	Southchurch Av to Southchurch Av	S-NE	63	63	16.1	21.4	0.1	0.1	0.1	0.1	A	A	
	Southchurch Av to Woodranga Dr	S-E	16	16	62.8	63.3	1.5	1.5	1.5	1.5	A	A	
	Southchurch Av to Southchurch Av	S-S	63	63	16.1	21.4	0.1	0.1	0.1	0.1	A	A	
	Queenway to Southchurch Av	W-											

Project ID	Project Name	Location	Area (ha)	Population	Employment	Greenhouse Gas (tCO2e/yr)	Water (ML/yr)	Waste (t/yr)	Other	
2011	Queensway/Chancellor	Queensway to Queensway	NW-SE	154	194	166.1	65.4	41.4	71	41.4
		Queensway to Chancellor Rd	NW-W	73	92	188.4	77.3	23.3	31	23.3
		Queensway to Queensway	NW-N	40	48	4.1	2.4	0	0	0
		Queensway to Queensway	E-N	40	48	4.1	2.4	0	0	0
		Queensway to Chancellor Rd	E-W	73	92	188.4	77.3	23.3	31	23.3
		Chancellor Rd to Queensway	W-N	113	141	113.0	44.0	13.0	20	13.0
		Chancellor Rd to Queensway	W-SW	74	92	112.4	21.1	30.0	14.5	14.5
		Chancellor Rd to Queensway	W-SW	74	92	112.4	21.1	30.0	14.5	14.5
		Chancellor Rd to Queensway	W-SW	74	92	112.4	21.1	30.0	14.5	14.5
		Chancellor Rd to Queensway	W-SW	74	92	112.4	21.1	30.0	14.5	14.5
2022	Hygate/Chichester	Chichester Rd to Hygate Avenue	N-E	81.3	819	9.3	19.3	0	0.1	0.1
		Hygate Avenue to Chichester Rd	E-N	55	55	45.5	45.7	0.7	0.2	0.2
		Hygate Avenue to Chichester Rd	W-N	55	55	45.5	45.7	0.7	0.2	0.2
		Hygate Avenue to Chichester Rd	W-E	109	109	45.5	45.7	0.7	0.2	0.2
		Hygate Avenue to Chichester Rd	W-E	109	109	45.5	45.7	0.7	0.2	0.2
		Hygate Avenue to Chichester Rd	W-E	109	109	45.5	45.7	0.7	0.2	0.2
		Hygate Avenue to Chichester Rd	W-E	109	109	45.5	45.7	0.7	0.2	0.2
		Hygate Avenue to Chichester Rd	W-E	109	109	45.5	45.7	0.7	0.2	0.2
		Hygate Avenue to Chichester Rd	W-E	109	109	45.5	45.7	0.7	0.2	0.2
		Hygate Avenue to Chichester Rd	W-E	109	109	45.5	45.7	0.7	0.2	0.2
2024	Pier Hill/Marine Parade	Marine Parade to Western Esplanade	E-W	308	311	17.1	17.4	0.2	0.2	0.2
		Marine Parade to Pier Hill	E-W	41	41	7.4	7.4	0	0	0
		Western Esplanade to Marine Parade	NW-E	309	312	17.1	17.4	0.2	0.2	0.2
		Western Esplanade to Pier Hill	NW-NW	41	41	7.4	7.4	0	0	0
		Western Esplanade to Pier Hill	NW-NW	41	41	7.4	7.4	0	0	0
		Western Esplanade to Pier Hill	NW-NW	41	41	7.4	7.4	0	0	0
		Western Esplanade to Pier Hill	NW-NW	41	41	7.4	7.4	0	0	0
		Western Esplanade to Pier Hill	NW-NW	41	41	7.4	7.4	0	0	0
		Western Esplanade to Pier Hill	NW-NW	41	41	7.4	7.4	0	0	0
		Western Esplanade to Pier Hill	NW-NW	41	41	7.4	7.4	0	0	0
2041	Alexandra/Clarence	Clarence Rd to Alexander St	N-E	78	78	29.3	28.1	0.4	0.4	0.4
		Clarence Rd to Alexander St	N-W	71	71	26.4	25.2	0.4	0.4	0.4
		Clarence Rd to Alexander St	E-W	43	43	28.1	28.1	0.2	0.2	0.2
		Alexander St to Clarence Rd	W-E	43	43	28.1	28.1	0.2	0.2	0.2
		Alexander St to Clarence Rd	W-E	43	43	28.1	28.1	0.2	0.2	0.2
		Alexander St to Clarence Rd	W-E	43	43	28.1	28.1	0.2	0.2	0.2
		Alexander St to Clarence Rd	W-E	43	43	28.1	28.1	0.2	0.2	0.2
		Alexander St to Clarence Rd	W-E	43	43	28.1	28.1	0.2	0.2	0.2
		Alexander St to Clarence Rd	W-E	43	43	28.1	28.1	0.2	0.2	0.2
		Alexander St to Clarence Rd	W-E	43	43	28.1	28.1	0.2	0.2	0.2
2042	Cliffhollow/Clarence	Cliffhollow Rd to Clarence Rd	E-S	80	80	65.4	72.2	6.5	9.2	9.2
		Cliffhollow Rd to Clarence Rd	E-W	100	100	65.4	72.2	6.5	9.2	9.2
		Cliffhollow Rd to Clarence Rd	W-S	80	80	65.4	72.2	6.5	9.2	9.2
		Cliffhollow Rd to Clarence Rd	W-S	80	80	65.4	72.2	6.5	9.2	9.2
		Cliffhollow Rd to Clarence Rd	W-S	80	80	65.4	72.2	6.5	9.2	9.2
		Cliffhollow Rd to Clarence Rd	W-S	80	80	65.4	72.2	6.5	9.2	9.2
		Cliffhollow Rd to Clarence Rd	W-S	80	80	65.4	72.2	6.5	9.2	9.2
		Cliffhollow Rd to Clarence Rd	W-S	80	80	65.4	72.2	6.5	9.2	9.2
		Cliffhollow Rd to Clarence Rd	W-S	80	80	65.4	72.2	6.5	9.2	9.2
		Cliffhollow Rd to Clarence Rd	W-S	80	80	65.4	72.2	6.5	9.2	9.2
2043	Chichester/Tyers	Chichester Rd to Tyers Av	N-E	151	151	65.4	102.4	1.4	79.4	79.4
		Chichester Rd to Bus Laby	N-S	0	0	62.4	102.4	7.6	79.4	79.4
		Chichester Rd to Chichester Rd	N-S	0	0	62.4	102.4	7.6	79.4	79.4
		Chichester Rd to Chichester Rd	N-S	0	0	62.4	102.4	7.6	79.4	79.4
		Chichester Rd to Chichester Rd	N-S	0	0	62.4	102.4	7.6	79.4	79.4
		Tyers Av to Chichester Rd	E-S	0	0	58.1	102.4	32.4	48.1	48.1
		Tyers Av to Chichester Rd	E-S	0	0	58.1	102.4	32.4	48.1	48.1
		Tyers Av to Chichester Rd	E-S	0	0	58.1	102.4	32.4	48.1	48.1
		Tyers Av to Chichester Rd	E-S	0	0	58.1	102.4	32.4	48.1	48.1
		Tyers Av to Chichester Rd	E-S	0	0	58.1	102.4	32.4	48.1	48.1
2056	Queensway/York Rd	Queensway to York Rd	N-E	27	27	114	105.5	10.9	31	10.9
		Queensway to York Rd	N-S	40	40	4.2	2.4	0	0	0
		Queensway to York Rd	S-W	123	123	100	95	30	14.5	30
		Queensway to York Rd	S-N	40	40	4.2	2.4	0	0	0
		York Rd to Queensway	W-N	123	123	100	95	30	14.5	30
		Queensway to York Rd	W-N/A	123	123	100	95	30	14.5	30
		Queensway to York Rd	W-N/A	123	123	100	95	30	14.5	30
		Queensway to York Rd	W-N/A	123	123	100	95	30	14.5	30
		Queensway to York Rd	W-N/A	123	123	100	95	30	14.5	30
		Queensway to York Rd	W-N/A	123	123	100	95	30	14.5	30
2065	Queensway/Whitgate Road	Queensway to Queensway	N-S	81.3	819	9.3	19.3	0	0.1	0.1
		Queensway to Queensway	N-W	81.3	819	9.3	19.3	0	0.1	0.1
		Queensway to Queensway	S-N	81.3	819	9.3	19.3	0	0.1	0.1
		Queensway to Queensway	S-W	81.3	819	9.3	19.3	0	0.1	0.1
		Queensway to Queensway	W-N	81.3	819	9.3	19.3	0	0.1	0.1
		Queensway to Queensway	W-N	81.3	819	9.3	19.3	0	0.1	0.1
		Queensway to Queensway	W-N	81.3	819	9.3	19.3	0	0.1	0.1
		Queensway to Queensway	W-N	81.3	819	9.3	19.3	0	0.1	0.1
		Queensway to Queensway	W-N	81.3	819	9.3	19.3	0	0.1	0.1
		Queensway to Queensway	W-N	81.3	819	9.3	19.3	0	0.1	0.1
2081	Queensway/Chichester Road	Short Street to Queensway	N-E	49	49	4.2	2.4	0	0	0
		Queensway to Queensway	E-W	49	49	4.2	2.4	0	0	0
		Chichester Road to Queensway	SE-W	70	117	400	210	52.1	35.1	72.1
		Chichester Road to Bus Laby	SE-W	70	117	400	210	52.1	35.1	72.1
		Queensway to Chichester Road	W-N	133	133	58.2	94.4	3.1	19.2	3.3
		Queensway to Chichester Road	W-E	49	49	4.2	2.4	0	0	0
		Chichester Road to Queensway	W-SW	133	133	58.2	94.4	3.1	19.2	3.3
		Chichester Road to Queensway	W-SW	133	133	58.2	94.4	3.1	19.2	3.3
		Chichester Road to Queensway	W-SW	133	133	58.2	94.4	3.1	19.2	3.3
		Chichester Road to Queensway	W-SW	133	133	58.2	94.4	3.1	19.2	3.3
2083	Chichester/Southchurch	Chichester Rd to Southchurch Rd	N-E	81.3	819	9.3	19.3	0	0.1	0.1
		Chichester Rd to Chichester Rd	N-S	0	0	105.4	106.4	40.1	57.2	40.1
		Southchurch Rd to Chichester Rd	E-N	28	28	0	0	0	0	0
		Southchurch Rd to Chichester Rd	E-N	28	28	0	0	0	0	0
		Chichester Rd to Southchurch Rd	S-N	0	0	105.4	106.4	40.1	57.2	40.1
		Chichester Rd to Southchurch Rd	S-E	17	17	134.2	27	28.1	1.1	28.1
		Chichester Rd to Southchurch Rd	W-N	17	17	134.2	27	28.1	1.1	28.1
		Chichester Rd to Southchurch Rd	W-E	0	0	134.2	27	28.1	1.1	28.1
		Chichester Rd to Southchurch Rd	W-E	0	0	134.2	27	28.1	1.1	28.1
		Chichester Rd to Southchurch Rd	W-E	0	0	134.2	27	28.1	1.1	28.1
2094	Queensway/Sutton Rd	Sutton Rd to Southchurch Rd	N-E	81.3	819	9.3	19.3	0	0.1	0.1
		Sutton Rd to Queensway	N-E	81.3	819	9.3	19.3	0	0.1	0.1
		Sutton Rd to Southchurch Rd	N-E	81.3	819	9.3	19.3	0	0.1	0.1
		Sutton Rd to Queensway	N-E	81.3	819	9.3	19.3	0	0.1	0.1
		Sutton Rd to Southchurch Rd	N-E	81.3	819	9.3	19.3	0	0.1	0.1
		Sutton Rd to Queensway	N-E	81.3	819	9.3	19.3	0	0.1	0.1
		Sutton Rd to Southchurch Rd	N-E	81.3	819	9.3	19.3	0	0.1	0.1
		Sutton Rd to Queensway	N-E	81.3	819	9.3	19.3	0	0.1	0.1
		Sutton Rd to Southchurch Rd	N-E	81.3	819	9.3	19.3	0	0.1	0.1
		Sutton Rd to Queensway	N-E	81.3	819	9.3	19.3	0	0.1	0.1
2102	Queensway/Baxter Avenue	Baxter Avenue to Queensway	NW-E	25	25	40.1	40.1	28.2	7.2	28.2
		Queensway to Baxter Avenue	E-W	25	25	40.1	40.1	28.2	7.2	28.2
		Queensway to Baxter Avenue	W-N	25	25	40.1	40.1	28.2	7.2	28.2
		Queensway to Baxter Avenue	W-E	49	49	4.2	2.4	0	0	0
		Queensway to Baxter Avenue	W-E	49	49	4.2	2.4	0	0	0
		Queensway to Baxter Avenue	W-E	49	49	4.2	2.4	0	0	0
		Queensway to Baxter Avenue	W-E	49	49	4.2	2.4	0	0	0
		Queensway to Baxter Avenue	W-E	49	49	4.2	2.4	0	0	0
		Queensway to Baxter Avenue	W-E	49	49	4.2	2.4	0	0	0
		Queensway to Baxter Avenue	W-E	49	49	4.2	2.4	0	0	0
2105	Queensway/Victoria Avenue	Victoria Avenue to Bus Laby	NW-E	0	0	77.5	76.3	15	15.2	15.2
		Victoria Avenue to Queensway	NW-E	221	221	100.2	117.6	30.1	56.1	30.1
		Victoria Avenue to Queensway	NW-W	221	221	100.2	117.6	30.1	56.1	30.1
		Victoria Avenue to Queensway	NW-W	221	221	100.2	117.6	30.1	56.1	30.1
		Victoria Avenue to Queensway	NW-W	221	221	100.2	117.6	30.1	56.1	30.1
		Victoria Avenue to Queensway	NW-W	221	221	100.2	117.6	30.1	56.1	30.1
		Victoria Avenue to Queensway	NW-W	221	221	100.2	117.6	30.1	56.1	30.1
		Victoria Avenue to Queensway	NW-W	221	221	100.2	117.6	30.1	56.1	30.1
		Victoria Avenue to Queensway	NW-W	221	221	100.2	117.6	30.1	56.1	30.1
		Victoria Avenue to Queensway	NW-W	221	221	100.2	117.6	30.1	56.1	30.1
2121	Queensway/London Road	Retail Park to Queensway	N-NE	14	14	91.4	86	9	8.9	8.9
		Retail Park to London Road	N-NE	14						



Southend NPIF - 2021 PM Peak Comparison

Time	Route	Route Description	Road Description	Measurement	Volume		Q Length (m) Max		Q Length (m) Average		Delay (s)		LOS	
					DM	DS	DM	DS	DM	DS	DM	DS		
2011	Queensway/Chancellor	Queensway to Queensway	NW-SE	210	240	46.2	48.4	1.3	1.3	1.3	1.3	A	A	
			NW-N	16	27	46.2	48.4	1.3	1.3	1.3	1.3	A	A	
			E-N	16	27	46.2	48.4	1.3	1.3	1.3	1.3	A	A	
			E-W	89	174	63.5	48.1	1.7	2.1	1.7	2.1	F	D	
			W-N	89	174	63.5	48.1	1.7	2.1	1.7	2.1	F	D	
2022	Hygate/Chichester	Chichester Rd to Hygate Avenue	N-E	0	2	14.1	13.2	0.2	0.2	0.2	0.2	A	C	
			Hygate Avenue to Chichester Rd	E-N	0	2	14.1	13.2	0.2	0.2	0.2	0.2	A	C
			Hygate Avenue to Chichester Rd	E-W	5	9	24.6	29	1.4	1.1	1.4	1.1	C	C
			Hygate Avenue to Chichester Rd	W-N	5	9	24.6	29	1.4	1.1	1.4	1.1	C	C
			Hygate Avenue to Chichester Rd	W-E	163	203	113.4	75.9	21.2	14	21.2	14	D	B
2024	Pier Hill/Marine Parade	Marine Parade to Western Esplanade	E-W	452	885	74.4	68.2	7.3	1.4	7.3	1.4	C	B	
			E-NW	23	44	16.2	16.2	0.1	0.1	0.1	0.1	A	A	
			Western Esplanade to Marine Parade	NW-E	213	212	37.3	27.4	0.1	0.1	0.1	0.1	A	A
			Western Esplanade to Pier Hill	SW-NW	4	12	1.1	7.1	0	0	0	0	A	A
			Marine Parade to Western Esplanade	AB	432	885	74.4	68.2	7.3	1.4	7.3	1.4	C	B
2041	Alexandra/Clarence	Clarence Rd to Alexandra St	N-S	27	118	22.1	24.4	1.3	1.3	1.3	1.3	A	A	
			Alexandra St to Clarence Rd	E-W	29	87	0	0	0	0	0	0	A	A
			Alexandra St to Clarence Rd	W-E	29	87	0	0	0	0	0	0	A	A
			Alexandra St to Clarence Rd	AB	432	885	74.4	68.2	7.3	1.4	7.3	1.4	C	B
			Clarence Rd to Alexandra St	AB	432	885	74.4	68.2	7.3	1.4	7.3	1.4	C	B
2042	Cliffhollow/Clarence	Cliffhollow Rd to Clarence Rd	E-S	186	116	22.7	21.4	0.6	0.6	0.6	0.6	B	A	
			Cliffhollow Rd to Clarence Rd	E-W	45	119	26.7	26.9	0.6	0.6	0.6	0.6	B	A
			Cliffhollow Rd to Clarence Rd	W-S	45	119	26.7	26.9	0.6	0.6	0.6	0.6	B	A
			Cliffhollow Rd to Clarence Rd	AB	432	885	74.4	68.2	7.3	1.4	7.3	1.4	C	B
			Clarence Rd to Cliffhollow Rd	AB	432	885	74.4	68.2	7.3	1.4	7.3	1.4	C	B
2051	Chichester/Tylers	Chichester Rd to Tylers Av	N-E	0	0	0	0	0	0	0	0	A	A	
			Chichester Rd to Bin Laby	N-S	0	0	0	0	0	0	0	0	A	A
			Chichester Rd to Bin Laby	N-S	0	0	0	0	0	0	0	0	A	A
			Chichester Rd to Bin Laby	E-W	0	0	0	0	0	0	0	0	A	A
			Chichester Rd to Bin Laby	E-W	0	0	0	0	0	0	0	0	A	A
2056	Queensway/York Rd	Queensway to York Rd	N-S	16	27	46.2	48.4	1.3	1.3	1.3	1.3	A	A	
			Queensway to York Rd	S-W	16	27	46.2	48.4	1.3	1.3	1.3	1.3	A	A
			Queensway to York Rd	S-W	16	27	46.2	48.4	1.3	1.3	1.3	1.3	A	A
			Queensway to York Rd	W-N	0	0	0	0	0	0	0	0	A	A
			Queensway to York Rd	AB	432	885	74.4	68.2	7.3	1.4	7.3	1.4	C	B
2065	Queensway/Whitgate Road	Queensway to Queensway	N-S	270	185	0	22.5	0	0.4	0	0.4	0	A	A
			Queensway to Queensway	S-N	16	27	46.2	48.4	1.3	1.3	1.3	1.3	A	A
			Queensway to Queensway	S-W	16	27	46.2	48.4	1.3	1.3	1.3	1.3	A	A
			Queensway to Queensway	W-N	0	0	0	0	0	0	0	0	A	A
			Queensway to Queensway	AB	432	885	74.4	68.2	7.3	1.4	7.3	1.4	C	B
2081	Queensway/Chichester Road	Short Street to Queensway	N-E	85	46	44.5	44.6	7.8	6.1	7.8	6.1	D	C	
			Queensway to Short Street	E-W	16	27	46.2	48.4	1.3	1.3	1.3	1.3	A	A
			Chichester Road to Queensway	SE-W	11	10	61.1	45.7	1.5	6.1	1.5	6.1	B	B
			Chichester Road to Bin Laby	SE-W	0	0	0	0	0	0	0	0	A	A
			Queensway to Short Street	W-E	11	10	61.1	45.7	1.5	6.1	1.5	6.1	B	B
2083	Chichester/Southchurch	Chichester Rd to Southchurch Rd	N-E	0	0	0	0	0	0	0	0	A	A	
			Chichester Rd to Southchurch Rd	N-S	0	0	0	0	0	0	0	0	A	A
			Southchurch Rd to Chichester Rd	E-S	23	27	30.4	23.6	2.9	2.9	2.9	2.9	D	B
			Southchurch Rd to Chichester Rd	E-N	23	27	30.4	23.6	2.9	2.9	2.9	2.9	D	B
			Chichester Rd to Southchurch Rd	S-E	4	1	44	36.3	6.2	4.2	6.2	4.2	C	B
2094	Queensway/Sutton Rd	Sutton Rd to Southchurch Rd	N-E	632	885	74.4	68.2	7.3	1.4	7.3	1.4	C	B	
			Sutton Rd to Queensway	N-E	73	86	107.7	35.3	15.4	11	15.4	11	E	A
			Sutton Rd to Queensway	N-E	24	31	107.7	35.3	15.4	11	15.4	11	E	A
			Sutton Rd to Queensway	N-E	73	86	107.7	35.3	15.4	11	15.4	11	E	A
			Sutton Rd to Queensway	E-S	11	14	110.5	29.5	44	0.4	44	0.4	F	A
2103	Queensway/Baxter Avenue	Baxter Avenue to Queensway	NW-E	16	27	46.2	48.4	1.3	1.3	1.3	1.3	A	A	
			Queensway to Baxter Avenue	E-W	16	27	46.2	48.4	1.3	1.3	1.3	1.3	A	A
			Queensway to Baxter Avenue	W-E	117	22	190.7	75.8	30.4	30.4	30.4	30.4	F	A
			Queensway to Baxter Avenue	W-E	16	27	46.2	48.4	1.3	1.3	1.3	1.3	A	A
			Queensway to Baxter Avenue	AB	432	885	74.4	68.2	7.3	1.4	7.3	1.4	C	B
2105	Victoria Avenue/Victoria Avenue	Victoria Avenue to Bin Laby	NW-E	651	673	6	21.4	4	21.4	4	21.4	A	A	
			Victoria Avenue to Queensway	NW-E	166	108	67.1	67.1	4	21.4	4	21.4	E	D
			Victoria Avenue to Queensway	NW-E	166	108	67.1	67.1	4	21.4	4	21.4	E	D
			Bin Laby to Victoria Avenue	E-W	9	19	19	1.7	1.7	1.7	1.7	A	A	
			Queensway to Victoria Avenue	E-W	17	22	61.2	48.4	1.3	1.3	1.3	1.3	A	A
2121	Queensway/London Road	Retail Park to Queensway	N-NE	632	885	74.4	68.2	7.3	1.4	7.3	1.4	C	B	
			Retail Park to London Road	N-SE	7	11	18.1	13.2	1.3	0.1	1.3	0.1	E	A
			Retail Park to Princes Street	N-S	18	12	12.2	7.5	0.8	3.3	0.8	3.3	E	A
			Retail Park to London Road	N-W	3	11	18.1	13.2	1.3	0.1	1.3	0.1	E	A
			Queensway to London Road	N-SE	36	46	80.3	43	6.6	4.1	6.6	4.1	A	A
2131	North Rd/London Rd	North Rd to London Rd	N-E	2	5	40.7	51	3.7	9.9	3.7	9.9	C	D	
			North Rd to Milton Road	N-E	3	10	40.7	51	3.7	9.9	3.7	9.9	C	D
			North Rd to London Rd	NE-NW	12	17	40.7	51	3.7	9.9	3.7	9.9	C	D
			London Road to North Rd	E-S	52	37	52.9	94.1	12.5	16.2	12.5	16.2	C	C
			London Road to North Rd	E-W	19	39	39.4	55.9	1	1.7	1	1.7	B	B
2141	Southchurch/Marine	Southchurch Av to Eastern Esplanade	N-SE	632	885	74.4	68.2	7.3	1.4	7.3	1.4	C	B	
			Southchurch Av to Marine Parade	N-S	93	118	80.3	80.2	18.8	38.4	18.8	38.4	B	F
			Southchurch Av to Marine Parade	N-W	93	118	80.3	80.2	18.8	38.4	18.8	38.4	B	F
			Eastern Esplanade to Marine Parade	E-S	227	227	80.3	80.2	18.8	38.4	18.8	38.4	B	F
			Eastern Esplanade to Southchurch Av	E-N	53	53	53.4	71.4	4.2	15.4	4.2	15.4	C	D
3011	Southchurch Av/Queensway	Southchurch Av to Woodgrange Dr	N-E	36	36	51.4	51.2	5.4	7.4	5.4	7.4	C	C	
			Southchurch Av to Southchurch Av	N-S	6	6	51.4	51.2	5.4	7.4	5.4	7.4	C	C
			Southchurch Av to Queensway	N-W	23	48	51.4	51.2	5.4	7.4	5.4	7.4	C	C
			Southchurch Av to Southchurch Av	N-NE	18	36	51.4	51.2	5.4	7.4	5.4	7.4	C	C
			Woodgrange Dr to Southchurch Av	E-S	28	14	68.4	68.7	11.3	14.2	11.3	14.2	C	D
4101	Victoria Av/Great Eastern Av	Victoria Av to Great Eastern Av	NW-NE	11	16	97.4	40.2	0.4	4.1	0.4	4.1	B	A	
			Victoria Av to Victoria Av	NW-SE	28	28	97.4	40.2	0.4	4.1	0.4	4.1	B	A
			Great Eastern Av to Victoria Av	NE-SE	15	15	13.1	51.2	0.6	12.1	0.6	12.1	B	E
			Great Eastern Av to Victoria Av	NE-SW	15	15	13.1	51.2	0.6	12.1	0.6	12.1	B	E
			Victoria Av to Great Eastern Av	SE-NE	35	14	21	28.1	0.1	0.1	0.1	0.1	A	A
4102	Victoria Av/Carnarvon Rd	Victoria Av to Carnarvon Rd	NW-NE	78	78	97.4	40.2	0.4	4.1	0.4	4.1	B	A	
			Victoria Av to Victoria Av	NW-SE	28	28	97.4	40.2	0.4	4.1	0.4	4.1	B	A
			Carnarvon Rd to Victoria Av	NE-SE	31	46	39.8	41.2	3	11.4	3	11.4	C	C
			Carnarvon Rd to Victoria Av	NE-SW	31	46	39.8	41.2	3	11.4	3	11.4	C	C
			Carnarvon Rd to Victoria Av	NE-W	4	4	39.8	41.2	3	11.4	3	11.4	C	C
4108	Carnarvon Rd / Tunbridge Rd	Carnarvon Rd to Tunbridge Rd (South)	E-S	0	0	0	0	0	0	0	0	A	A	
			Carnarvon Rd to Carnarvon Rd	E-W	40	11	0	0	0	0	0	0	A	A
			Carnarvon Rd to Tunbridge Rd	E-N	1	2	0	0	0	0	0	0	A	A
			Tunbridge Rd (South) to Carnarvon Rd	S-W	3	13	0	5.4	0	1.1	0	1.1	A	A
			Tunbridge Rd (South) to Carnarvon Rd	S-N	3	13	0	5.4	0	1.1	0	1.1	A	A
4109	Carnarvon Rd / BHC Office	Carnarvon Rd to Carnarvon Rd Car Park	E-S	44	0	0	0	0	0	0	0	A	A	
			Carnarvon Rd to Carnarvon Rd	E-W	44	0	0	0	0	0	0	0	A	A
			Carnarvon Rd Car Park to Carnarvon Rd	S-W	24	48	7.7	13.2	0	0.1	0	0.1	A	A
			Carnarvon Rd Car Park to Carnarvon Rd	S-E	24	48	7.7	13.2	0	0.1	0	0.1	A	A
			Carnarvon Rd to Carnarvon Rd Car Park	W-E	44	0	0	0	0	0	0	0	A	A
4103	Victoria Av/B1015	Victoria Av to B1015 East Street	NW-E	35	108	49.4	46.7	4.9	11.1					

Project ID	Project Name	Location	Area (sq ft)	Value (\$)	Start	End	Phase	Notes						
2011	Queensway/Chancellor	Queensway to Queensway	NW-SE	214	22	46.2	37.4	1.3	1.3	1.3	A	A		
		Queensway to Chancellor Rd	NW-W	4	0.2	37.4	1.3	1.3	1.3	1.3	A	A		
		Queensway to Queensway	NW-N	16	0.6	37.4	1.3	1.3	1.3	1.3	A	A		
		Queensway to Queensway	E-N	16	0.6	37.4	1.3	1.3	1.3	1.3	A	A		
		Queensway to Chancellor Rd	E-W	4	0.2	37.4	1.3	1.3	1.3	1.3	A	A		
		Chancellor Rd to Queensway	W-S	30	0.3	17.0	1.3	1.3	1.3	1.3	A	A		
		Chancellor Rd to Queensway	W-SE	30	0.3	17.0	1.3	1.3	1.3	1.3	A	A		
		Chancellor Rd to Queensway	AB	632	800	744	747	7.3	1.7	7.3	1.7	C	C	
		Chancellor Rd to Hygate Avenue	N-E	0	0	0	0	0	0	0	0	B	B	
		Hygate Avenue to Chancellor Rd	E-N	0	0	0	0	0	0	0	0	C	D	
Hygate Avenue to Chancellor Rd	W-N	0	0	0	0	0	0	0	0	C	D			
Hygate Avenue to Hygate Avenue	W-E	0	0	0	0	0	0	0	0	B	A			
Marine Parade to Hygate Avenue	AB	632	800	744	747	7.3	1.7	7.3	1.7	C	C			
2024	Pier Hill/Marine Parade	Marine Parade to Western Esplanade	E-W	165	205	10.8	12.4	0.1	0.1	0.1	A	A		
		Marine Parade to Pier Hill	E-W	23	0.2	19.4	0.1	0.1	0.1	0.1	A	A		
		Western Esplanade to Marine Parade	NW-E	211	260	37.8	0.1	0.1	0.1	0.1	A	A		
		Western Esplanade to Pier Hill	NW-NW	421	35	0	2.2	0	0	0	0	A	A	
		Western Esplanade to Pier Hill	AB	632	800	744	747	7.3	1.7	7.3	1.7	C	C	
2041	Alexandra/Tamce	Clarence Rd to Alexander St	N-E	66	134	38.4	20.7	2.4	0.1	2.4	10.4	A	A	
		Clarence Rd to Alexander St	N-W	87	121	44.4	20.1	3.5	0.7	3.5	0.7	A	A	
		Alexander St to Alexander St	E-W	28	0	0	0	0	0	0	0	A	A	
		Alexander St to Alexander St	W-E	28	0	0	0	0	0	0	0	A	A	
		Alexander St to Alexander St	AB	632	800	744	747	7.3	1.7	7.3	1.7	C	C	
2042	Cliffhollow/Clarence	Cliffhollow Rd to Clarence Rd	E-S	198	127	22.7	28.2	0.8	0.2	0.8	0.2	B	A	
		Cliffhollow Rd to Clarence Rd	E-W	63	107	20.3	11.7	0.9	0.1	0.9	0.1	B	A	
		Scrutton Rd to Clarence Rd	W-S	62	106	19.4	11.7	0.9	0.1	0.9	0.1	B	A	
		Scrutton Rd to Clarence Rd	AB	632	800	744	747	7.3	1.7	7.3	1.7	C	C	
		Cliffhollow Rd to Clarence Rd	AB	632	800	744	747	7.3	1.7	7.3	1.7	C	C	
2041	Chichester/Talors	Chichester Rd to Talors Av	N-E	0	0	0	0	0	0	0	0	0	0	
		Chichester Rd to Bus Laby	N-S	0	0	0	0	0	0	0	0	0	0	
		Chichester Rd to Chichester Rd	N-SE	0	0	0	0	0	0	0	0	0	0	
		Chichester Rd to Chichester Rd	N-W	93	0	0	0	0	0	0	0	0	0	
		Talors Av to Bus Laby	E-S	0	0	0	0	0	0	0	0	0	0	
		Talors Av to Chichester Rd	E-S	0	0	0	0	0	0	0	0	0	0	
		Talors Av to Chichester Rd	E-W	37	130	31.1	83.7	4.2	19.4	4.2	19.4	C	D	
		Talors Av to Chichester Rd	E-N	0	0	0	0	0	0	0	0	0	0	
		Chichester Rd to Chichester Rd	S-W	93	0	0	0	0	0	0	0	0	0	
		Chichester Rd to Chichester Rd	S-N	0	0	0	0	0	0	0	0	0	0	
Chichester Rd to Talors Av	S-E	0	0	0	0	0	0	0	0	0	0			
Chichester Rd to Talors Av	AB	632	800	744	747	7.3	1.7	7.3	1.7	C	C			
2056	Queensway/York Rd	Queensway to York Rd	N-E	48	12	3.1	0	1.6	1.6	1.6	A	A		
		Queensway to Queensway	N-S	16	0.6	17.0	1.3	1.3	1.3	1.3	A	A		
		Queensway to Queensway	S-W	63	0	0	0	0	0	0	0	A	A	
		Queensway to Queensway	S-N	16	0.6	17.0	1.3	1.3	1.3	1.3	A	A		
		York Rd to Queensway	W-N	4	0	0	0	0	0	0	0	A	A	
Queensway to York Rd	AB	632	800	744	747	7.3	1.7	7.3	1.7	C	C			
2065	Queensway/Whitgate Road	Queensway to Queensway	N-S	75	0	0	0	0	0	0	0	0	0	
		Queensway to Queensway	N-W	16	0.6	17.0	1.3	1.3	1.3	1.3	A	A		
		Queensway to Queensway	S-W	16	0.6	17.0	1.3	1.3	1.3	1.3	A	A		
		Whitgate Road to Queensway	W-N	16	0.6	17.0	1.3	1.3	1.3	1.3	A	A		
		Whitgate Road to Queensway	AB	632	800	744	747	7.3	1.7	7.3	1.7	C	C	
2081	Queensway/Chichester Road	Short Street to Queensway	N-E	16	0.6	17.0	1.3	1.3	1.3	1.3	A	A		
		Queensway to Queensway	E-W	16	0.6	17.0	1.3	1.3	1.3	1.3	A	A		
		Chichester Road to Queensway	SE-W	31	0.4	61.1	59.1	8.5	7.9	8.5	7.9	E	B	
		Chichester Road to Bus Laby	SE-W	31	0.4	61.1	59.1	8.5	7.9	8.5	7.9	E	B	
		Queensway to Short Street	W-N	71	102	243.4	209	34.1	99.1	34.1	99.1	C	C	
Queensway to Queensway	W-E	16	0.6	17.0	1.3	1.3	1.3	1.3	A	A				
Chichester Road to Chichester Road	W-SE	49	0	0	0	0	0	0	0	A	A			
Bus Laby to Chichester Road	W-SE	0	0	0	0	0	0	0	0	A	A			
Chichester Rd to Southchurch Rd	AB	632	800	744	747	7.3	1.7	7.3	1.7	C	C			
2083	Chichester/Southchurch	Chichester Rd to Chichester Rd	N-E	0	0	0	0	0	0	0	0	0		
		Chichester Rd to Chichester Rd	N-S	0	0	0	0	0	0	0	0	0		
		Southchurch Rd to Chichester Rd	E-N	23	26	30.4	27.6	2.6	2.4	2.6	2.4	D	C	
		Southchurch Rd to Chichester Rd	E-N	23	26	30.4	27.6	2.6	2.4	2.6	2.4	D	C	
		Chichester Rd to Chichester Rd	S-N	0	0	0	0	0	0	0	0	A	A	
		Chichester Rd to Southchurch Rd	S-E	0	0	0	0	0	0	0	0	A	A	
		Chichester Rd to Southchurch Rd	W-N	0	0	0	0	0	0	0	0	A	A	
		Deeping to Chichester Rd	W-E	0	0	0	0	0	0	0	0	A	A	
		Deeping to Chichester Rd	W-S	0	0	0	0	0	0	0	0	A	A	
		Deeping to Chichester Rd	AB	632	800	744	747	7.3	1.7	7.3	1.7	C	C	
2094	Queensway/Sutton Rd	Sutton Rd to Southchurch Rd	N-E	7	1	10.7	28.2	15.6	15.6	15.6	1	D	A	
		Sutton Rd to Queensway	N-E	7	1	10.7	28.2	15.6	15.6	15.6	15.6	1	D	A
		Sutton Rd to Southchurch Rd	N-E	24	0	10.7	28.2	15.6	15.6	15.6	15.6	1	D	A
		Sutton Rd to Queensway	N-E	7	1	10.7	28.2	15.6	15.6	15.6	15.6	1	D	A
		Southchurch Rd to Queensway	E-S	11	1	110.5	34.2	44	44	44	44	F	A	
		Southchurch Rd to Southchurch Rd	E-W	50	0	110.5	34.2	44	44	44	44	F	A	
		Southchurch Rd to Queensway	E-W	11	1	110.5	34.2	44	44	44	44	F	A	
		Southchurch Rd to Sutton Rd	E-N	11	1	110.5	34.2	44	44	44	44	F	A	
		Queensway to Southchurch Rd	S-W	34	44	176	55.5	196.2	24	196.2	24	F	A	
		Queensway to Queensway	S-W	16	0.6	17.0	1.3	1.3	1.3	1.3	1.3	A	A	
Queensway to Sutton Rd	S-NE	79	117	229	196.2	24	196.2	24	196.2	F	A			
Queensway to Southchurch Rd	S-E	34	44	176	55.5	196.2	24	196.2	24	F	A			
Queensway to Queensway	S-S	16	0.6	17.0	1.3	1.3	1.3	1.3	1.3	A	A			
Southchurch Rd to Queensway	W-W	111	142	110.5	34.2	44	44	44	44	F	A			
Southchurch Rd to Sutton Rd	W-NE	31	0	110.5	34.2	44	44	44	44	F	A			
Southchurch Rd to Southchurch Rd	W-E	30	0	110.5	34.2	44	44	44	44	F	A			
Southchurch Rd to Queensway	W-S	111	142	110.5	34.2	44	44	44	44	F	A			
Southchurch Rd to Southchurch Rd	W-W	30	0	110.5	34.2	44	44	44	44	F	A			
Queensway to Sutton Rd	W-NE	30	0	110.5	34.2	44	44	44	44	F	A			
Queensway to Southchurch Rd	W-E	11	1	110.5	34.2	44	44	44	44	F	A			
Queensway to Queensway	W-S	16	0.6	17.0	1.3	1.3	1.3	1.3	1.3	A	A			
Queensway to Southchurch Rd	W-W	16	0.6	17.0	1.3	1.3	1.3	1.3	1.3	A	A			
Queensway to Queensway	AB	632	800	744	747	7.3	1.7	7.3	1.7	C	C			
2102	Queensway/Baxter Avenue	Baxter Avenue to Queensway	NW-E	16	0.6	17.0	1.3	1.3	1.3	1.3	A	A		
		Queensway to Queensway	E-W	16	0.6	17.0	1.3	1.3	1.3	1.3	A	A		
		Queensway to Baxter Avenue	W-N	13	17	145	412	81.6	81.6	81.6	81.6	C	A	
		Queensway to Queensway	W-E	16	0.6	17.0	1.3	1.3	1.3	1.3	1.3	A	A	
		Queensway to Queensway	AB	632	800	744	747	7.3	1.7	7.3	1.7	C	C	
2105	Queensway/Victoria Avenue	Victoria Avenue to Bus Laby	NW-E	0	0	0	0	0	0	0	0	0		
		Victoria Avenue to Queensway	NW-E	0	0	0	0	0	0	0	0	0		
		Victoria Avenue to Queensway	NW-W	0	0	0	0	0	0	0	0	0		
		Bus Laby to Victoria Avenue	E-NW	0	0	0	0	0	0	0	0	0		
		Queensway to Queensway	E-W	16	0.6	17.0	1.3	1.3	1.3	1.3	1.3	A	A	
		Queensway to Victoria Avenue	E-NW	171	246	105.4	303.5	109.4	111	109.4	111	E	E	
		Queensway to Victoria Avenue	W-NW	171	246	105.4	303.5	109.4	111	109.4	111	E	E	
		Queensway to Queensway	W-E	16	0.6	17.0	1.3	1.3	1.3	1.3	1.3	A	A	
		Queensway to Queensway	AB	632	800	744	747	7.3	1.7	7.3	1.7	C	C	
		Queensway to Queensway	AB	632	800	744	747	7.3	1.7	7.3	1.7	C	C	
2121	Queensway/London Road	Retail Park to Queensway	N-NE	37	1	18.4	3.8	3.5	0.1	3.5	0.1	C	A	
		Retail Park to London Road	N-SE	7	1	18.4	3.8	3.5	0.1	3.5	0.1	C	A	
		Retail Park to Princes Street	N-S	3	1	18.4	3.8	3.5	0.1	3.5	0.1	C	A	
		Retail Park to London Road	N-W	0	0	18.4	3.8	3.5	0.1	3.5	0.1	C	A	
		Queensway to London Road	N-SE	96.3	0	80.3	17.8	6.6	6.6	6.6	6.6	C	A	
		Queensway to Princes Street	N-S											

2011	Queensway/Chancellor	Queensway to Queensway	NW-SE	274	63	63	17.4	21	17.4	21	F	F
	Queensway to Chancellor Rd	NW-W	4	42	34.4	39.7	3.3	23	3.3	23	C	D
	Queensway to Queensway	NW-N	16	16	14.1	13.9	0.2	0.2	0.2	0.2	A	F
	Queensway to Queensway	E-N	16	16	14.1	13.9	0.2	0.2	0.2	0.2	F	F
	Queensway to Chancellor Rd	E-W	4	42	34.4	39.7	3.3	23	3.3	23	C	D
	Chancellor Rd to Queensway	W-S	30	113	113.4	113.5	0.1	0.1	0.1	0.1	F	F
	Chancellor Rd to Queensway	W-S	30	113	113.4	113.5	0.1	0.1	0.1	0.1	F	F
	Chickster Rd to Hygate Avenue	AB	632	814	1018	209	8.1	6.2	8.1	6.2	A	A
	Hygate Avenue to Chickster Rd	E-N	3	3	27.1	26.8	0.3	0.3	0.3	0.3	A	A
	Hygate Avenue to Chickster Rd	E-N	3	3	27.1	26.8	0.3	0.3	0.3	0.3	A	A
	Hygate Avenue to Chickster Rd	W-N	3	3	27.1	26.8	0.3	0.3	0.3	0.3	A	A
	Hygate Avenue to Hygate Avenue	W-E	30	113	113.4	113.5	0.1	0.1	0.1	0.1	F	F
	Marine Parade to Western Esplanade	AB	632	814	1018	209	8.1	6.2	8.1	6.2	A	A
	Western Esplanade to Marine Parade	E-W	165	235	44.4	43.1	1.3	1.2	1.3	1.2	A	A
	Marine Parade to Pier Hill	E-W	23	23	24.4	24.2	0.2	0.2	0.2	0.2	A	A
	Western Esplanade to Pier Hill	NW-E	211	227	63	59	0.4	0.3	0.4	0.3	A	B
	Western Esplanade to Pier Hill	NW-NW	211	227	63	59	0.4	0.3	0.4	0.3	A	A
	Alexandra/Clarence	AB	632	814	1018	209	8.1	6.2	8.1	6.2	A	A
	Clarence Rd to Alexandra St	N-E	66	148	36.3	36.4	0.1	0.1	0.1	0.1	B	B
	Clarence Rd to Alexandra St	N-W	87	146	0	0	0	0	0	0	A	A
	Alexandra St to Alexandra St	E-W	28	28	28.2	28.4	0.2	0.2	0.2	0.2	A	A
	Alexandra St to Alexandra St	W-E	28	28	28.2	28.4	0.2	0.2	0.2	0.2	A	A
	Cliffdown/Clarence	AB	632	814	1018	209	8.1	6.2	8.1	6.2	A	A
	Cliffdown Rd to Clarence Rd	E-S	392	128	241.8	208.8	32.0	31.0	32.0	31.0	C	B
	Cliffdown Rd to Clarence Rd	E-W	63	108	61	58.8	0.2	0.2	0.2	0.2	D	D
	Scranton Rd to Clarence Rd	W-S	63	108	38.1	25.6	12.5	12.5	12.5	12.5	A	A
	Cliffdown Rd to Clarence Rd	AB	632	814	1018	209	8.1	6.2	8.1	6.2	A	A
	Chickster/Tilers	AB	632	814	1018	209	8.1	6.2	8.1	6.2	A	A
	Chickster Rd to Tilers Av	N-E	4	4	38.1	38.0	0.1	0.1	0.1	0.1	C	C
	Chickster Rd to Bus Laby	N-S	0	0	38.1	38.0	0.1	0.1	0.1	0.1	B	D
	Chickster Rd to Chickster Rd	N-S	0	0	38.1	38.0	0.1	0.1	0.1	0.1	B	D
	Chickster Rd to Cliffdown Rd	N-W	93	48	98.2	102	0.2	0.2	0.2	0.2	D	D
	Tilers Av to Bus Laby	E-S	0	0	38.1	38.0	0.1	0.1	0.1	0.1	B	D
	Tilers Av to Chickster Rd	E-S	0	0	105.2	115.3	0.1	0.1	0.1	0.1	C	D
	Tilers Av to Cliffdown Rd	E-W	37	136	13	14.0	0.1	0.1	0.1	0.1	A	A
	Tilers Av to Chickster Rd	E-N	0	0	105.2	115.3	0.1	0.1	0.1	0.1	C	D
	Chickster Rd to Cliffdown Rd	S-W	93	48	98.2	102	0.2	0.2	0.2	0.2	D	D
	Chickster Rd to Chickster Rd	S-N	0	0	98.2	102	0.2	0.2	0.2	0.2	E	D
	Chickster Rd to Tilers Av	S-E	0	0	98.2	102	0.2	0.2	0.2	0.2	E	D
	Chickster Rd to Tilers Av	AB	632	814	1018	209	8.1	6.2	8.1	6.2	A	A
	Queensway/York Rd	AB	632	814	1018	209	8.1	6.2	8.1	6.2	A	A
	Queensway to York Rd	N-E	48	16	43.7	37.8	5.9	6.1	5.9	6.1	B	A
	Queensway to Queensway	N-S	16	16	14.1	13.9	0.2	0.2	0.2	0.2	F	F
	Queensway to York Rd	S-W	63	27	63.1	68.3	5.2	5.5	5.2	5.5	F	B
	Queensway to Queensway	S-N	16	16	14.1	13.9	0.2	0.2	0.2	0.2	A	F
	York Rd to Queensway	W-N	4	4	24.4	24.2	0.2	0.2	0.2	0.2	A	A
	Queensway to York Rd	W-N/A	63	27	63.1	68.3	5.2	5.5	5.2	5.5	F	B
	Queensway/Whitgate Road	AB	632	814	1018	209	8.1	6.2	8.1	6.2	A	A
	Queensway to Queensway	N-S	75	16	75.2	79.3	4.1	4.4	4.1	4.4	A	A
	Queensway to Whitgate Road	N-W	16	16	14.1	13.9	0.2	0.2	0.2	0.2	A	F
	Queensway to Queensway	S-W	16	16	14.1	13.9	0.2	0.2	0.2	0.2	A	F
	Whitgate Road to Queensway	W-N	16	16	14.1	13.9	0.2	0.2	0.2	0.2	A	F
	Whitgate Road to Queensway	W-N	16	16	14.1	13.9	0.2	0.2	0.2	0.2	A	F
	Queensway/Chickster Road	AB	632	814	1018	209	8.1	6.2	8.1	6.2	A	A
	Short Street to Queensway	N-E	16	16	14.1	13.9	0.2	0.2	0.2	0.2	A	F
	Queensway to Queensway	E-W	16	16	14.1	13.9	0.2	0.2	0.2	0.2	A	F
	Chickster Road to Queensway	SE-W	31	56	43.4	20.9	6.2	23.1	6.2	23.1	D	C
	Chickster Road to Bus Laby	SE-W	31	56	43.4	20.9	6.2	23.1	6.2	23.1	D	C
	Queensway to Short Street	W-N	71	36	38.4	45.7	7.3	7.4	7.3	7.4	B	B
	Queensway to Queensway	W-E	16	16	14.1	13.9	0.2	0.2	0.2	0.2	A	F
	Chickster Road to Queensway	W-S	49	28	39.4	28.4	10.9	2.9	10.9	2.9	C	C
	Bus Laby to Chickster Road	W-S	0	0	33.4	38.1	4.7	4.7	4.7	4.7	C	C
	Chickster Rd to Southchurch	AB	632	814	1018	209	8.1	6.2	8.1	6.2	A	A
	Chickster Rd to Chickster Rd	N-E	0	0	38.1	38.0	0.1	0.1	0.1	0.1	A	A
	Chickster Rd to Chickster Rd	N-S	0	0	38.1	38.0	0.1	0.1	0.1	0.1	A	A
	Southchurch Rd to Chickster Rd	E-N	23	23	24.4	24.2	0.2	0.2	0.2	0.2	A	A
	Chickster Rd to Chickster Rd	S-N	0	0	98.2	102	0.2	0.2	0.2	0.2	E	D
	Chickster Rd to Southchurch Rd	S-E	0	0	105.2	115.3	0.1	0.1	0.1	0.1	C	D
	Chickster Rd to Southchurch Rd	W-E	0	0	105.2	115.3	0.1	0.1	0.1	0.1	C	D
	Droping to Southchurch Rd	W-E	0	0	105.2	115.3	0.1	0.1	0.1	0.1	C	D
	Droping to Chickster Rd	W-S	0	0	105.2	115.3	0.1	0.1	0.1	0.1	C	D
	Droping to Chickster Rd	AB	632	814	1018	209	8.1	6.2	8.1	6.2	A	A
	Queensway/Sutton Rd	AB	632	814	1018	209	8.1	6.2	8.1	6.2	A	A
	Sutton Rd to Southchurch Rd	NE-E	71	71	110.5	109.7	0.8	0.8	0.8	0.8	F	B
	Sutton Rd to Queensway	NE-W	71	71	110.5	109.7	0.8	0.8	0.8	0.8	F	B
	Sutton Rd to Southchurch Rd	NE-W	24	24	27.9	39.5	11.6	11.6	11.6	11.6	F	A
	Sutton Rd to Queensway	NE-W	71	71	110.5	109.7	0.8	0.8	0.8	0.8	F	B
	Southchurch Rd to Queensway	E-S	11	28	37.9	39.5	1.6	1.6	1.6	1.6	F	A
	Southchurch Rd to Southchurch Rd	E-W	58	27	37.9	39.5	1.6	1.6	1.6	1.6	F	A
	Southchurch Rd to Queensway	E-W	11	28	37.9	39.5	1.6	1.6	1.6	1.6	F	A
	Southchurch Rd to Sutton Rd	E-N	71	71	110.5	109.7	0.8	0.8	0.8	0.8	F	B
	Queensway to Southchurch Rd	S-W	54	34	166.1	147.3	18.8	17.8	18.8	17.8	F	A
	Queensway to Queensway	S-W	16	16	14.1	13.9	0.2	0.2	0.2	0.2	A	F
	Queensway to Sutton Rd	S-NE	28	116	166.1	147.3	18.8	17.8	18.8	17.8	F	A
	Queensway to Southchurch Rd	S-E	54	34	166.1	147.3	18.8	17.8	18.8	17.8	F	A
	Queensway to Queensway	S-S	16	16	14.1	13.9	0.2	0.2	0.2	0.2	A	F
	Southchurch Rd to Queensway	W-W	11	28	37.9	39.5	1.6	1.6	1.6	1.6	F	A
	Southchurch Rd to Sutton Rd	W-E	31	31	166.1	147.3	18.8	17.8	18.8	17.8	F	B
	Southchurch Rd to Southchurch Rd	W-N	30	21	37.9	39.5	1.6	1.6	1.6	1.6	F	A
	Southchurch Rd to Queensway	W-S	11	28	37.9	39.5	1.6	1.6	1.6	1.6	F	A
	Southchurch Rd to Southchurch Rd	W-W	30	21	37.9	39.5	1.6	1.6	1.6	1.6	F	A
	Queensway to Sutton Rd	W-NE	70	116	166.1	147.3	18.8	17.8	18.8	17.8	F	B
	Queensway to Southchurch Rd	W-E	30	30	166.1	147.3	18.8	17.8	18.8	17.8	F	B
	Queensway to Queensway	W-S	16	16	14.1	13.9	0.2	0.2	0.2	0.2	A	F
	Queensway to Southchurch Rd	W-W	30	30	166.1	147.3	18.8	17.8	18.8	17.8	F	B
	Queensway to Queensway	W-W	16	16	14.1	13.9	0.2	0.2	0.2	0.2	A	F
	Queensway to Queensway	AB	632	814	1018	209	8.1	6.2	8.1	6.2	A	A
	Baxter Avenue to Queensway	NW-E	16	16	14.1	13.9	0.2	0.2	0.2	0.2	A	F
	Queensway to Baxter Avenue	E-W	16	16	14.1	13.9	0.2	0.2	0.2	0.2	A	F
	Queensway to Baxter Avenue	W-N	13	28	37.9	39.5	1.6	1.6	1.6	1.6	F	A
	Queensway to Queensway	W-E	16	16	14.1	13.9	0.2	0.2	0.2	0.2	A	F
	Queensway to Queensway	AB	632	814	1018	209	8.1	6.2	8.1	6.2	A	A
	Queensway to Victoria Avenue	NW-E	0	0	104.4	109.0	4.6	4.6	4.6	4.6	E	E
	Victoria Avenue to Queensway	NW-E	0	0	104.4	109.0	4.6	4.6	4.6	4.6	E	E
	Victoria Avenue to Queensway	NW-W	0	0	171.4	114.0	57.4	57.4	57.4	57.4	F	F
	Bus Laby to Victoria Avenue	E-NW	0	0	18.4	0	18.4	0	18.4	0	C	A









Southend on Sea Borough Council

22<sup>nd</sup> June 2017

## **National Productivity Investment Fund**

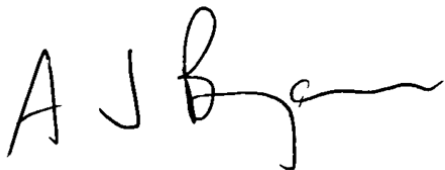
Dear Karen,

On behalf of my Chairman, Christian Brodie, I am writing to offer my support to Southend on Sea Borough Council for your bid for support from the National Productivity Investment Fund (NPIF). With the bid for NPIF complementing previous and current projects which have received Local Growth Funding and further enhancing the conditions for growth in the area, we are very pleased to endorse it.

A fully funded proposal will enable Southend on Sea Borough Council to make improvements in a coherent and functional manner and will squarely align with the South East LEP's aspirations for the area. The positive endorsement from the South East LEP Strategic Board on 9<sup>th</sup> June 2017 confirms that we are fully supportive of your ambition.

At the South East LEP we understand the importance for the area to continue to improve road and public transport infrastructure to continue developing and enhancing key travel destinations in and around the town centre and sea front. We wish you every success with your application for funding and will be pleased to help build on its success in the future.

Yours sincerely



Adam Bryan  
Managing Director  
South East LEP

At SELEP we understand the importance We wish you every success with your application for funding.

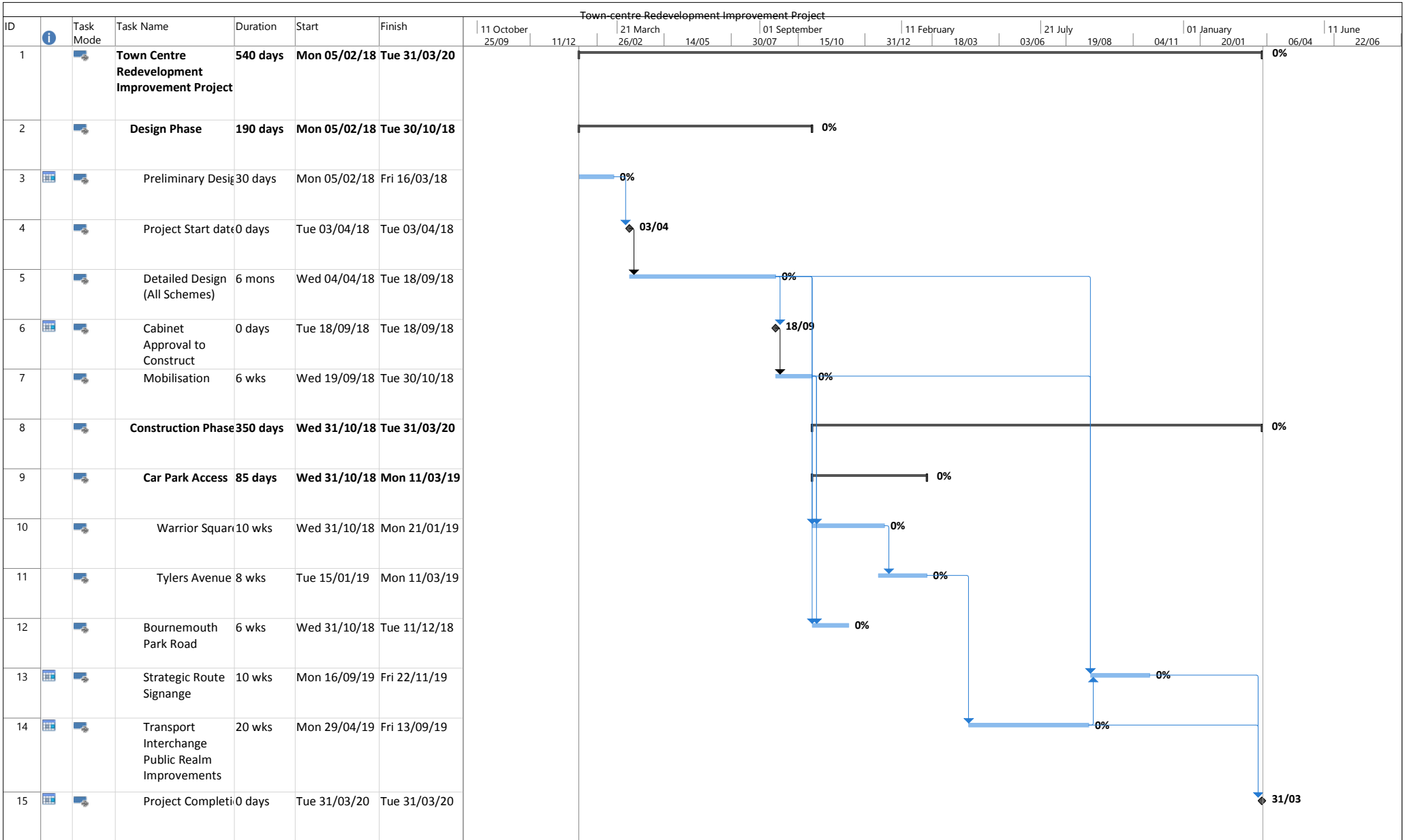
Yours sincerely

Adam Bryan

**Annex 4 - Scheme Impact Pro Forma for Small Project Bids  
NPIF**

Year of assessment	2021
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Scenario	Input Data / Key Performance Indicators	Unit	AM Peak Hr	PM Peak Hr	Inter-Peak Hr
			Weekday	Weekday	Weekday
<b>Do-Minimum</b>	Number of highway trips affected	vehicles	51,720	55,005	N/A
	Total vehicle travelled time	vehicle-hours	2,214	2,681	N/A
	Total vehicle travelled distance	vehicle-km	27,660	30,448	N/A
	Highway peak period conversion factor	-	2.55	2.77	N/A
	Number of PT passenger trips on affected routes	passenger trips	N/A	N/A	N/A
	Total PT travelled time	passenger-hrs	N/A	N/A	N/A
	PT peak period conversion factor	-			
<b>Do-Something</b>	Number of highway trips affected	vehicles	51,181	56,143	N/A
	Total vehicle travelled time	vehicle-hours	2,000	2,436	N/A
	Total vehicle travelled distance	vehicle-km	27,402	30,996	N/A
	Highway peak period conversion factor	-	2.55	2.77	N/A
	Number of PT passenger trips on affected routes	passenger trips	N/A	N/A	N/A
	Total PT travelled time	passenger-hrs	N/A	N/A	N/A
	PT peak period conversion factor	-			



Critical		Split		Finish-only		Baseline Milestone		Manual Summary		Inactive Task	
Critical Split		Task Progress		Duration-only		Milestone		Project Summary		Inactive Milestone	
Critical Progress		Manual Task		Baseline		Summary Progress		External Tasks		Inactive Summary	
Task		Start-only		Baseline Split		Summary		External Milestone		Deadline	

Annex 6		Appraisal Summary Table			Date produced:	28	6	17	Contact:	
Name of scheme:		Town-centre Redevelopment Improvement Project (TRIP)						Name	Paul Mathieson	
Description of scheme:		Improving local access to the town centre, bus interchange and rail stations by redirecting car parking traffic (new VMS and parking guidance systems), improving public realm and modifying the highway (to improve access to Warrior Square and Tylers Avenue car parks from Queensway). The proposals facilitate a wider network redistribution by ensuring the most appropriate travel routes and smart guidance, making the area more viable for new development opportunities.						Organisation	Southend-on-Sea BC	
								Role	Group Manager	
Impacts	Summary of key impacts	Assessment					Monetary £(NPV)	Distributional 7-pt scale/ vulnerable grp		
		Quantitative			Qualitative					
Economy	Business users & transport providers	* Business user journey time savings from reduced congestion (partly caused by vehicles circulating to find car parks) and reduced access time from major routes to car park entrance. * £46million of travel time benefits across all users, associated with reduced congestion in the central area. * Joint working with local bus operators to ensure project delivers increased passenger numbers in town centre / revenues.			Value of journey time changes(£)		£45.8m	N/A	£45.8 million (all user groups)	Not assessed
	Net journey time changes (£)			0 to 2min	2 to 5min	> 5min				
	-	-	-							
	Reliability impact on Business users	Reduced congestion in the central area is expected to lead to more reliable car journey times to access car parks, and more reliable bus journeys along Chichester Road.	-			N/A	Not assessed			
Regeneration	Southend Central Area is currently undergoing redevelopment / regeneration as part of the separate S-CATS project. Improvements from TRIP are expected to reduce traffic congestion in the central area, which is currently a constraint for new developments and a constraint for public realm enhancements.	-			N/A	-				
Wider Impacts	Directly supports Better Queensway scheme, delivering a minimum of 441 affordable new homes, and SCAAP to deliver 2166 new dwellings and 7,750 new jobs up to 2021. Scheme will therefore help to unlock economic development opportunities.	-			N/A	Not assessed				
Environmental	Noise	Reduced delays and traffic queues forecast at the Chichester Rd / Southchurch Rd signals will in turn reduce noise and vibration affecting properties on these roads. Increased traffic flows on Whitegate Road and York Road as a result of allowing right turns into these roads from Queensway.	Not assessed			Neutral	-	Not assessed		
	Air Quality	Reduced delays and traffic queues on Southchurch Rd and Chichester Rd will lead to a slight improvement in air quality. The scheme will actively alter traffic routeing, with pedestrians less exposed to traffic emissions within the central area.	Not assessed			Slight Beneficial	-	Expected to be Slight Beneficial for all groups		
	Greenhouse gases	Improved public realm (and reduced traffic flow) in the Chichester Rd area may encourage increased walking, cycling and bus use. Mode shift will help to reduce greenhouse gas emissions.	Change in non-traded carbon over 60y (CO2e)		-	Slight Beneficial	-			
			Change in traded carbon over 60y (CO2e)		-					
	Landscape	No impact expected.	-			Neutral	-			
	Townscape	Public realm improvements on Chichester Rd will enhance the townscape, enabling a sense of place to be restored. The area is not designated for townscape quality, therefore the impact is assessed as Slight Beneficial.	-			Slight Beneficial	-			
	Historic Environment	No impact expected on any known or potential historic environmental assets.	-			Neutral	-			
	Biodiversity	No impact expected.	-			Neutral	-			
Water Environment	No impact expected.	-			Neutral	-				
Social	Commuting and Other users	* Commuter and other user journey time savings from reduced congestion (currently caused by vehicles circulating to find car parks) and reduced access time from major routes to car park entrance. * £46million of travel time benefits across all users, associated with reduced congestion in the central area.			Value of journey time changes(£)		-	N/A	£45.8 million (all user groups)	Not assessed
	Net journey time changes (£)			0 to 2min	2 to 5min	> 5min				
	-	-	-							
	Reliability impact on Commuting and Other users	Reduced congestion in the central area is expected to lead to more reliable car journey times to access car parks, and more reliable bus journeys along Chichester Road.	-			N/A	Not assessed			
	Physical activity	Potential for increase in walking and cycling due to improved public realm on Chichester Rd, and reduced traffic flows and reduced congestion in the central area - traffic will be redistributed onto alternative routes for accessing car parks.	Not assessed			Slight Beneficial	Not assessed			
	Journey quality	New VMS and car park guidance systems will provide additional information to drivers - help them find car parks and available spaces. This will also reduce driver stress. Expected to benefit at least 500 drivers per day (329 parking spaces at Warrior Square, 241 spaces at Tylers Avenue)	Benefits to at least 500 drivers per day.			Moderate Beneficial	Not assessed			
	Accidents	Reduced frequency of accidents expected on Chichester Road and at the Chichester Rd / Southchurch Rd junction as a result of lower traffic flows (12 slight injury accidents & 3 serious injury accidents have occurred on this stretch of road 2012-2016). Potential for slight increase in accidents at the new Queensway junctions with Whitegate Rd and York Rd. Overall potential opportunity for conflict between vehicles and non-motorised users will be reduced.	-			Slight Beneficial	Not assessed	Not assessed		
	Security	No impact expected on personal security.	-			Neutral	-	No impacts		
	Access to services	Access to bus stops on Chichester Road will be improved as a result of public realm enhancements, making Southend town centre a more accessible place for bus users.	-			Slight Beneficial	-	Expected to be Slight Beneficial for all groups		
	Affordability	No impact on personal affordability expected.	-			Neutral	-	No impacts		
Severance	Public realm improvements on Chichester Rd expected to improve the level of severance from 'Moderate' to 'Slight', leading to an overall Slight Beneficial impact.	-			Slight Beneficial	-	Not assessed			
Option and non-use values	No change in availability of transport services	-			Neutral	-				
Public Account	Cost to Broad Transport Budget	Includes preparatory/design, preliminaries, construction and supervision costs. Also includes quantified risk layer assessed with a QRA. Optimism Bias at 15%.			PVC: £2.3 million NPV: £43.5 million (PVB: £45.8 million) BCR: 19.9		N/A	- £2.3 million		
	Indirect Tax Revenues	Expected to reduce slightly - reduced fuel consumption due to lower levels of congestion and shorter journey times.			Not assessed		N/A	Not assessed		

## Appendix 7

### Quantified Risk Assessment

In order to assess the potential impact of unexpected eventualities on the cost of scheme implementation, a quantified risk assessment (QRA) has been undertaken.

### Works Cost

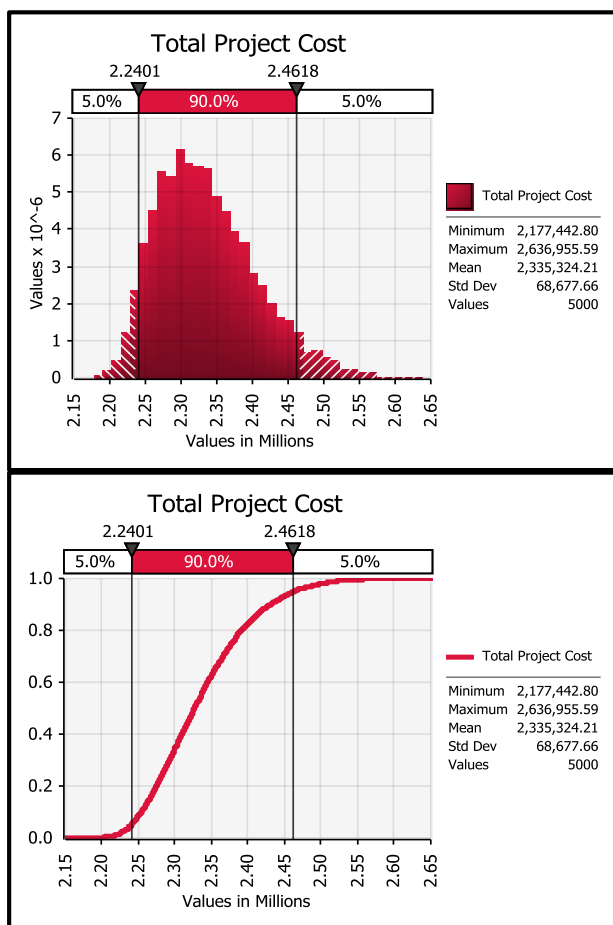
Cost elements have been prepared identifying the events which have a reasonable likelihood of impacting on scheme cost. For each of these items of risk a probability of that event occurring has been assessed and a range of costs defined. These costs include the most likely value of extra costs should the event occur and an upper and lower limit of those costs. The cost elements are displayed in Table 1.

**Table 1 – Cost Elements**

Cost elements	Base Case	Minimum	Most Likely	Maximum	Minimum	Most Likely	Maximum	Sampled
Preliminaries and Traffic Management	192,000	100%	100%	130%	192,000	192,000	249,600	201,600
Site Clearance	27,264	95%	100%	105%	25,901	27,264	28,627	27,264
Road Restraint Systems	40,466	95%	100%	120%	38,443	40,466	48,559	41,478
Drainage and Service Ducts	111,024	95%	100%	135%	105,473	111,024	149,882	116,575
Earthworks	60,282	95%	100%	130%	57,268	60,282	78,367	62,794
Pavements	528,239	95%	100%	125%	501,827	528,239	660,299	545,847
Kerbs and Footways	216,985	95%	100%	130%	206,136	216,985	282,081	226,026
Traffic Signs and Road Markings	161,021	95%	100%	120%	152,970	161,021	193,225	165,047
Road Lighting Columns, Brackets and CCTV Masts	67,111	100%	100%	130%	67,111	67,111	87,244	70,467
Traffic Signals	107,871	100%	100%	125%	107,871	107,871	134,839	112,366
VMS	675,000	95%	100%	150%	641,250	675,000	1,012,500	725,625
Working Enhancements	0	95%	100%	110%	0	0	0	0
Contract Uplift	0	100%	100%	110%	0	0	0	0
Landscaping	37,141	100%	100%	150%	37,141	37,141	55,712	40,236

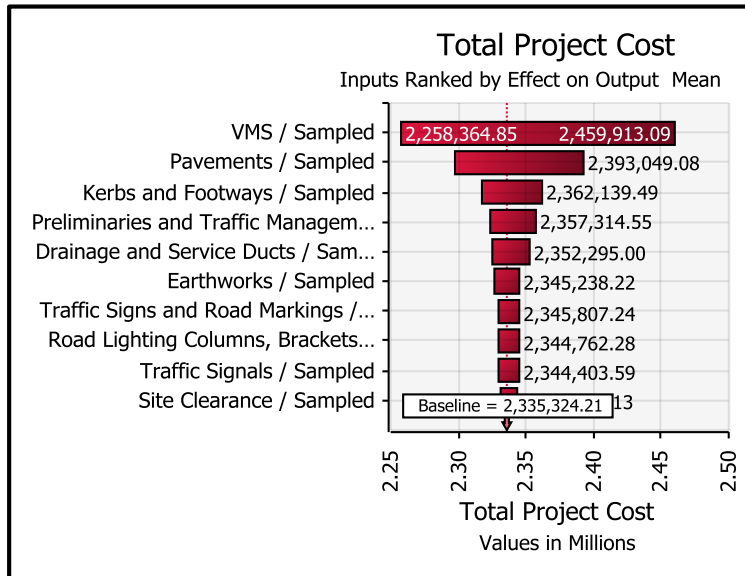
Based on this a Monte Carlo assessment has been carried out using @RISK software. For each of the above cost elements a triangular probability distribution has been defined. These, combined with the discrete probability distribution for the chance of that risk's occurrence generated a probability distribution for that risk.

Through the use of 5,000 sampling iterations from each of the distributions defined above, a combined risk probability distribution has been developed, setting out the expected overall cost of risk to the scheme. This distribution is illustrated below.



Summary Statistics for Total Project Cost			
Statistics		Percentile	
<b>Minimum</b>	2,177,443	<b>5%</b>	2,240,149
<b>Maximum</b>	2,636,956	<b>10%</b>	2,253,830
<b>Mean</b>	2,335,324	<b>15%</b>	2,265,012
<b>Std Dev</b>	68,678	<b>20%</b>	2,274,337
<b>Variance</b>	4716620385	<b>25%</b>	2,283,498
<b>Skewness</b>	0.646950764	<b>30%</b>	2,292,654
<b>Kurtosis</b>	3.202802699	<b>35%</b>	2,300,908
<b>Median</b>	2,326,615	<b>40%</b>	2,309,257
<b>Mode</b>	2,336,195	<b>45%</b>	2,317,715
<b>Left X</b>	2,240,149	<b>50%</b>	2,326,615
<b>Left P</b>	5%	<b>55%</b>	2,335,513
<b>Right X</b>	2,461,787	<b>60%</b>	2,344,226
<b>Right P</b>	95%	<b>65%</b>	2,354,461
<b>Diff X</b>	221,638	<b>70%</b>	2,365,782
<b>Diff P</b>	90%	<b>75%</b>	2,377,737
<b>#Errors</b>	0	<b>80%</b>	2,390,902
<b>Filter Min</b>	Off	<b>85%</b>	2,407,908
<b>Filter Max</b>	Off	<b>90%</b>	2,430,889
<b>#Filtered</b>	0	<b>95%</b>	2,461,787





Change in Output Statistic for Total Project Cost			
Rank	Name	Lower	Upper
1	VMS / Sampled	2,258,365	2,459,913
2	Pavements / Sampled	2,297,340	2,393,049
3	Kerbs and Footways / Sampled	2,317,634	2,362,139
4	Preliminaries and Traffic Management / Sampled	2,323,012	2,357,315
5	Drainage and Service Ducts / Sampled	2,325,577	2,352,295
6	Earthworks / Sampled	2,326,741	2,345,238
7	Traffic Signs and Road Markings / Sampled	2,329,229	2,345,807
8	Road Lighting Columns, Brackets and CCTV Masts / Sampled	2,329,165	2,344,762
9	Traffic Signals / Sampled	2,329,310	2,344,404
10	Site Clearance / Sampled	2,331,650	2,344,057

According to this distribution, percentile values have been extracted. The value is calculated as £237,383.