Charles & Associates

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[1] Swale Highway Model – Local Plan Review – Highway Strategic Model – Regulation 10 Traffic Forecast Report (2021). Sweco UK Ltd, 2021.

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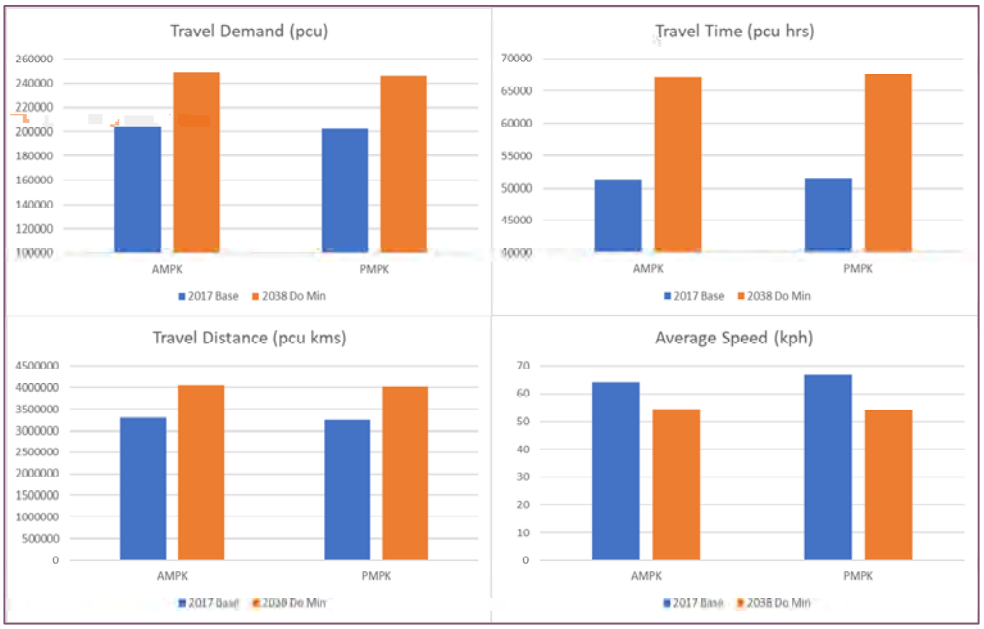
Travel Demand (pcu)
260000
240000
220000
200000
180000
160000
140000
120000
100000
AMPK
PMPK
2017 Base
2038 Do Min
Travel Time (pcu hrs)
70000
65000
60000
55000
50000
45000
40000
AMPK
PMPK
2017 Base
2038 Do Min
Travel Distance (pcu kms)
4500000
4000000
3500000
3000000
2500000
2000000
1500000
1000000
500000
0
AMPK
PMPK
2017 Base
2038 Do Min
Average Speed (kph)
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60
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40
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20
10
0
AMPK
PMPK
2017 Base
2038 Do Min

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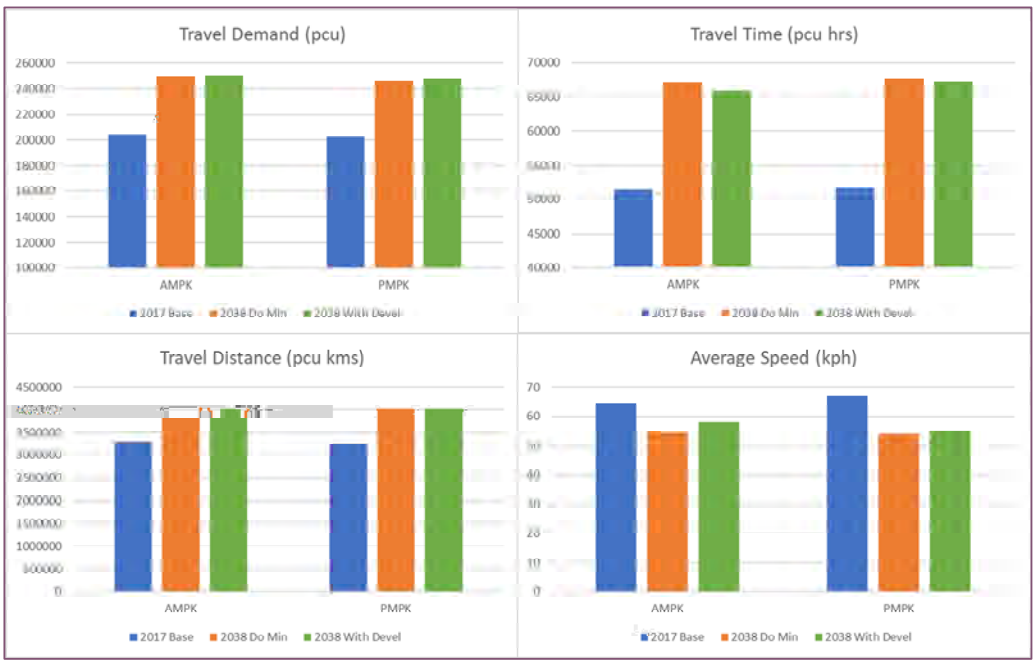
Travel Demand (pcu)
260000
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120000
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2017 Base
2038 Do Min
2038 With Devel
Travel Time (pcu hrs)
70000
65000
60000
50000
45000
40000
AMPK
PMPK
2017 Base
2038 Do Min
2038 With Devel
Travel Distance (pcu kms)
4500000
2500000
2000000
1500000
1000000
0
AMPK
PMPK
2017 Base
2038 Do Min
2038 With Devel
Average Speed (kph)
70
60
40
20
0
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2017 Base
2038 Do Min
2038 With Devel

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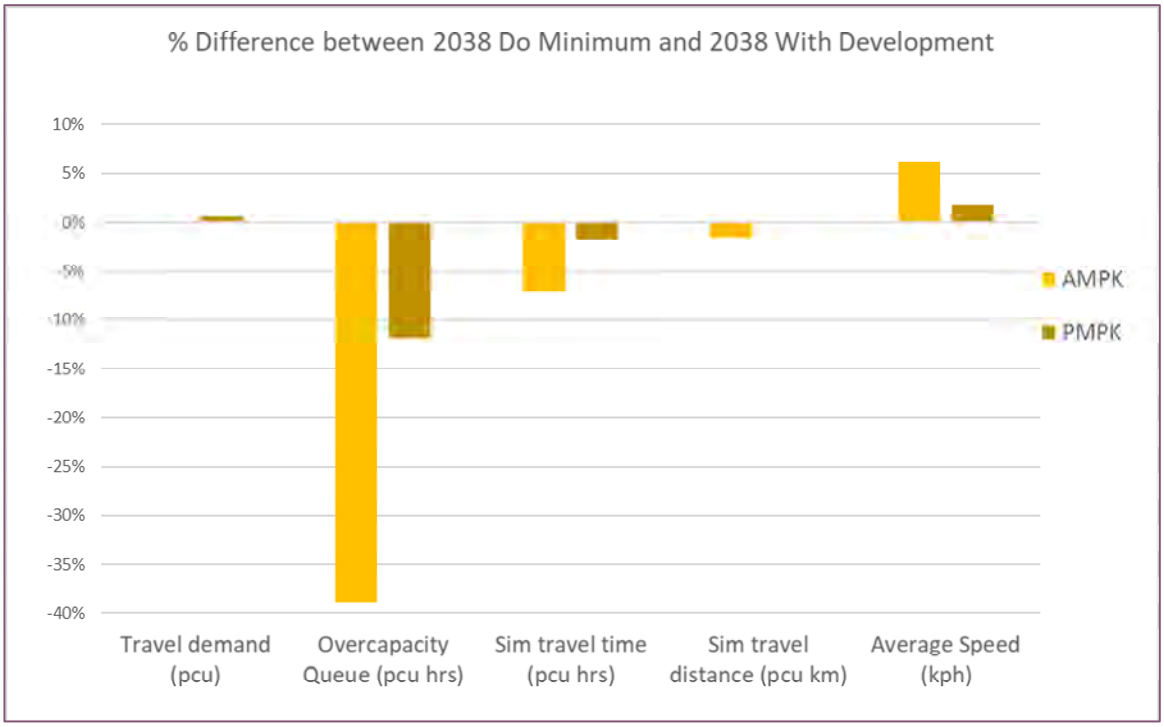
% Difference between 2038 Do Minimum and 2038 With Development
10%
5%
0%
-5%
-10%
-15%
-20%
-25%
-30%
-35%
-40%
Travel demand (pcu)
Overcapacity Queue (pcu hrs)
Sim travel time (pcu hrs)
Sim travel distance (pcu km)
Average Speed (kph)
AMPK
PMPK

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Morrisons Distribution Centre
Riverview Natural Burial Ground
Howt Green
MILTON REGIS
CHALKWELL
Eurolink Industrial Estate
Sittingbourne & Milton Regis Golf Club
Tunstall
Grove End Farm
Highsted
Rodmersham
Teynham
Deerton Street
Lynsted
Lewson Street
Norton
Luddenham Court
Dare Gunpowder Works Country Park
DAVINGTON
Faversham
Goodnestone
Ospringe
Newbury
Kingsdown
Dungate
Brogdale
Boughton Golf Club
Dare Marshes Nature Reserve
The Swale National Nature Reserve
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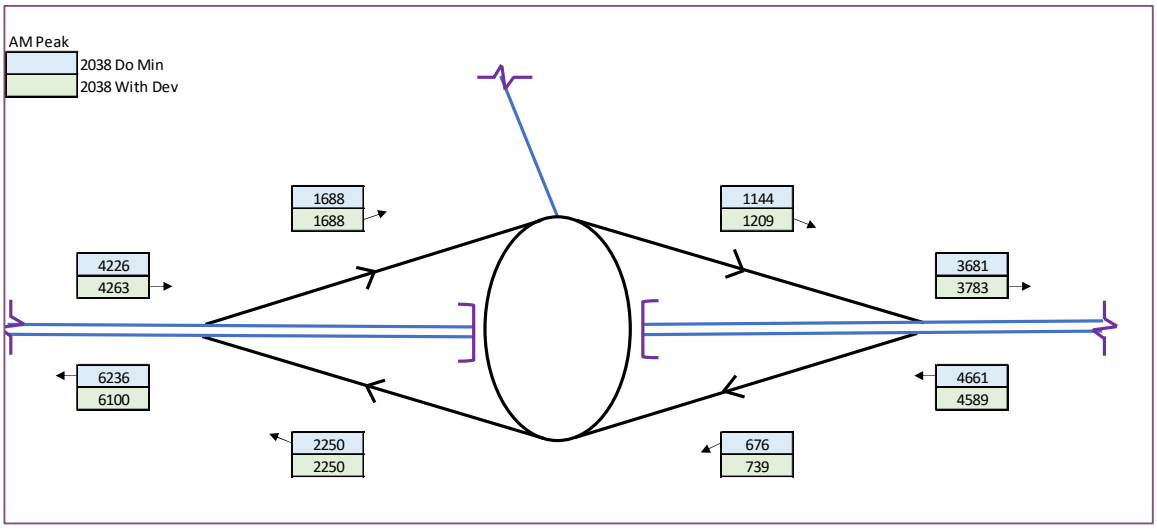
AM Peak
2038 Do Min
2038 With Dev
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4263
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2250
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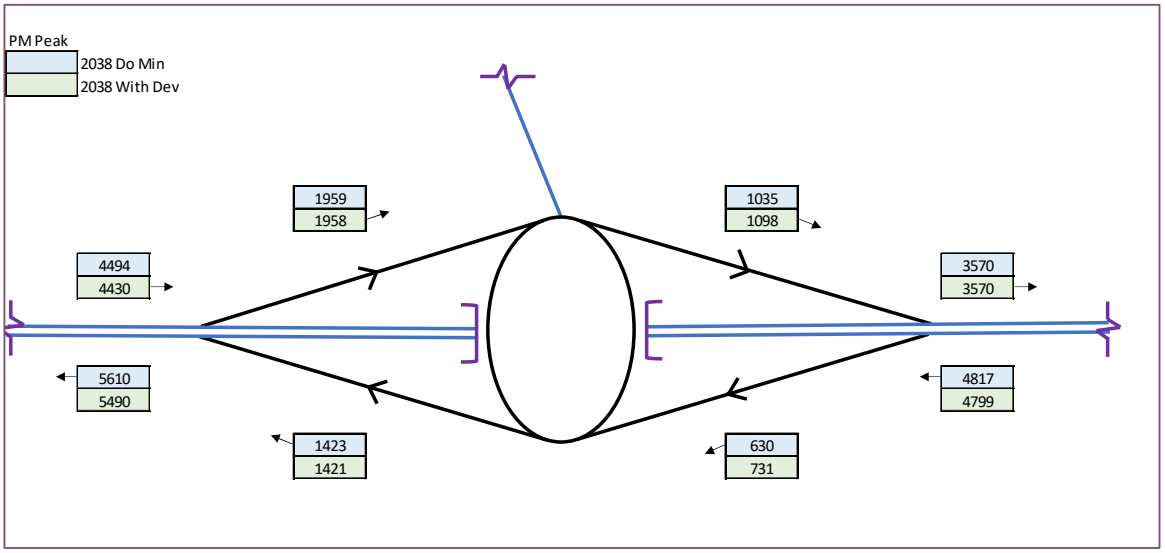
PM Peak
2038 Do Min
2038 With Dev
1959
1958
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1098
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4430
3570
3570
5610
5490
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4799
1423
1421
630
731

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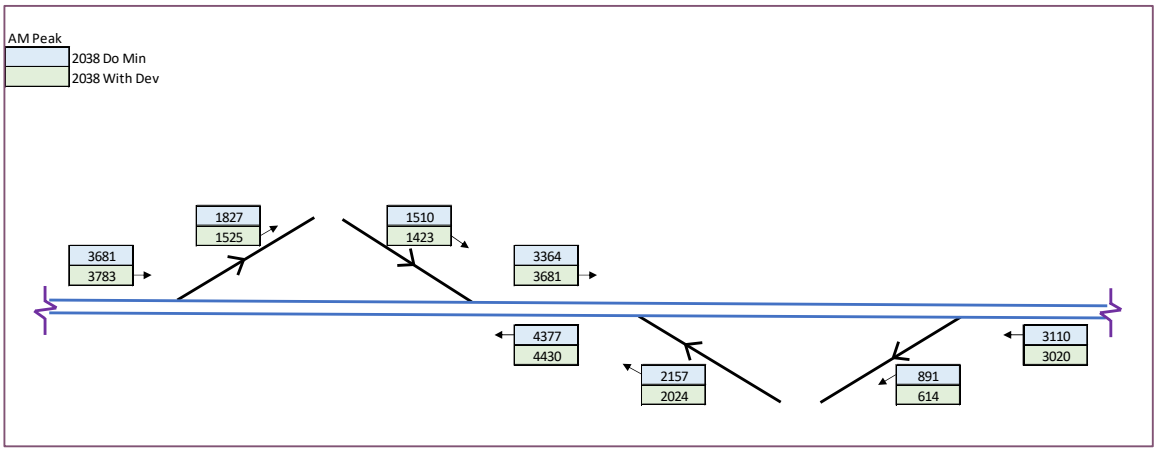
AM Peak
2038 Do Min
2038 With Dev
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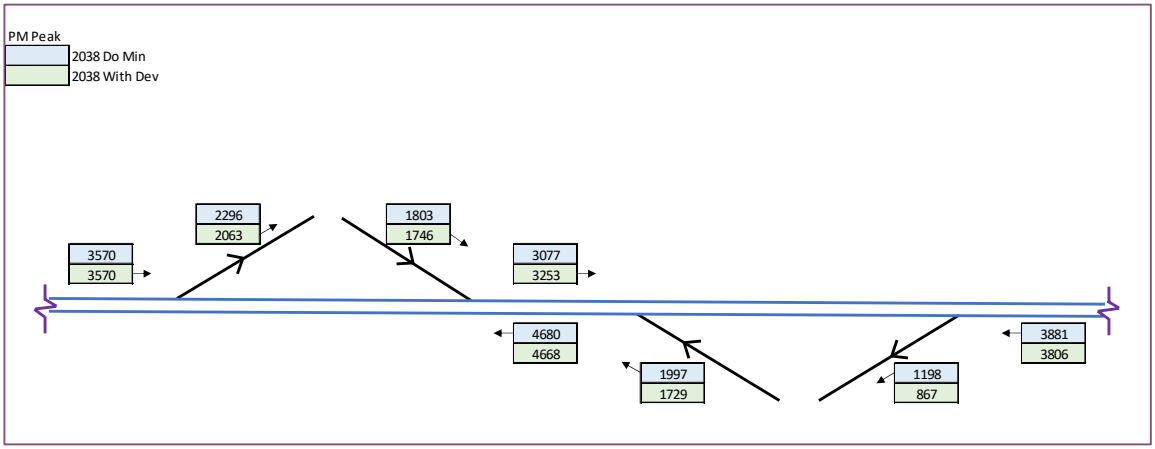
1525
1510
1423
3681
3783
3364
3681
4377
4430
2157
2024
891
614
3110
3020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2038 Do Min
2038 With Dev
2296
2063
1803
1746
3570
3570
3077
3253
4680
4668
1997
1729
1198
867
3881
3806

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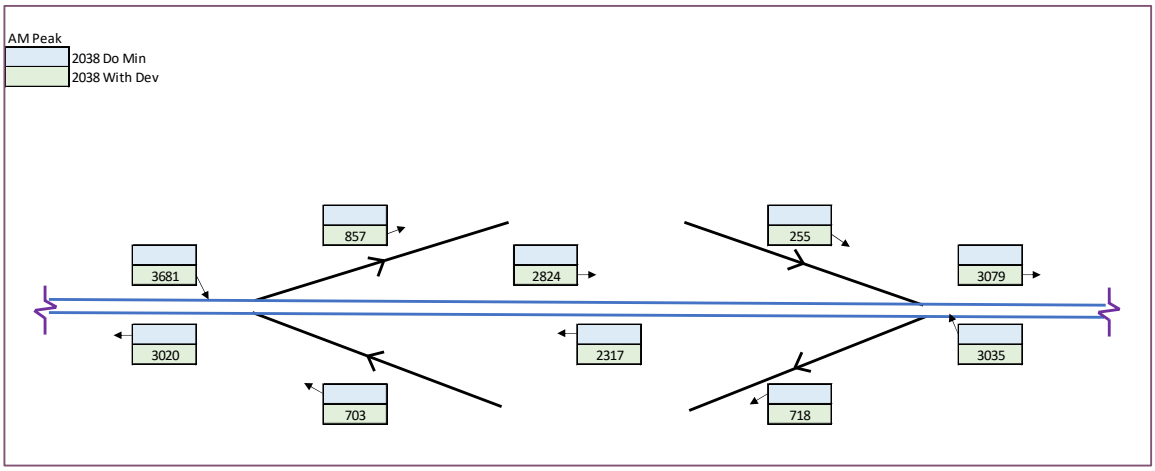
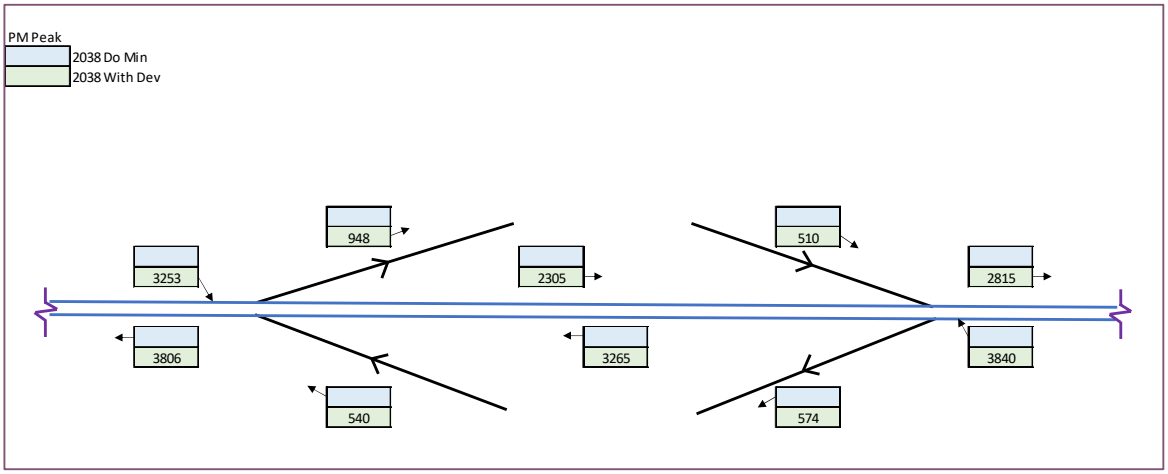

AM Peak
2038 Do Min
2038 With Dev
857
3681
2824
255
3079
3020
2317
3035
703
718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2038 Do Min
2038 With Dev
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3253
2305
510
2815
3806
3265
3840
540
574

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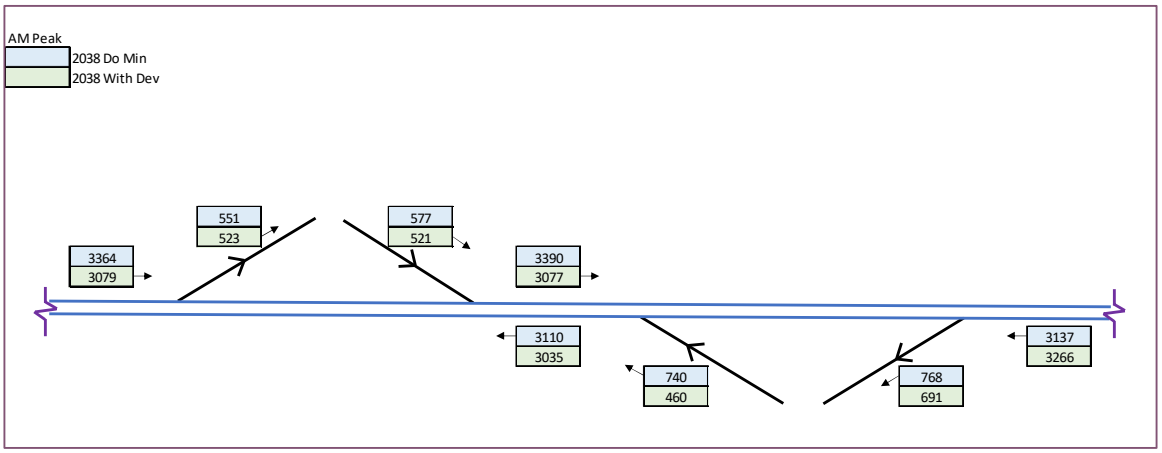
AM Peak
2038 Do Min
2038 With Dev
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521
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3390
3077
3110
3035
740
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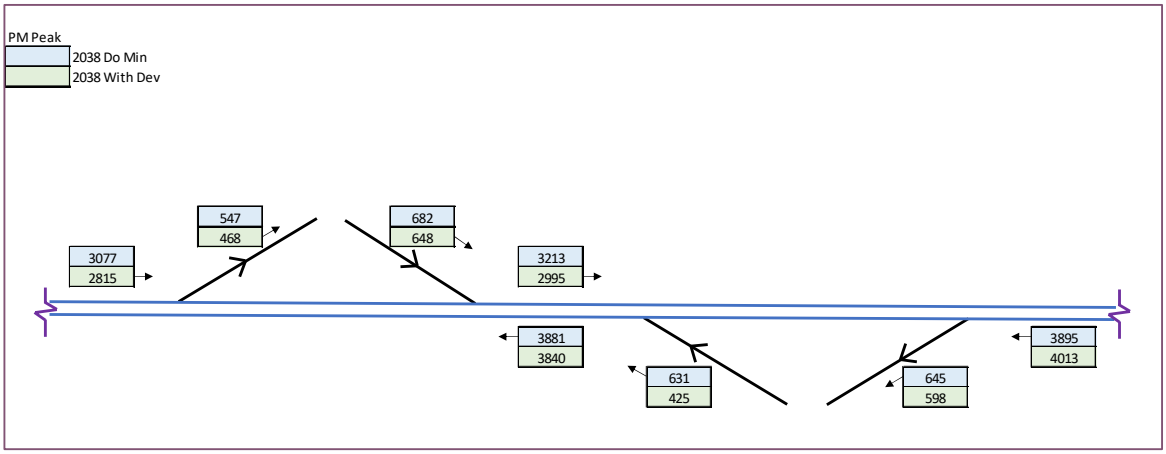
768
691
3137
3266


PM Peak
2038 Do Min
2038 With Dev
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468
682
648
3077
2815
3213
2995
3881
3840
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425
645
598
3895
4013

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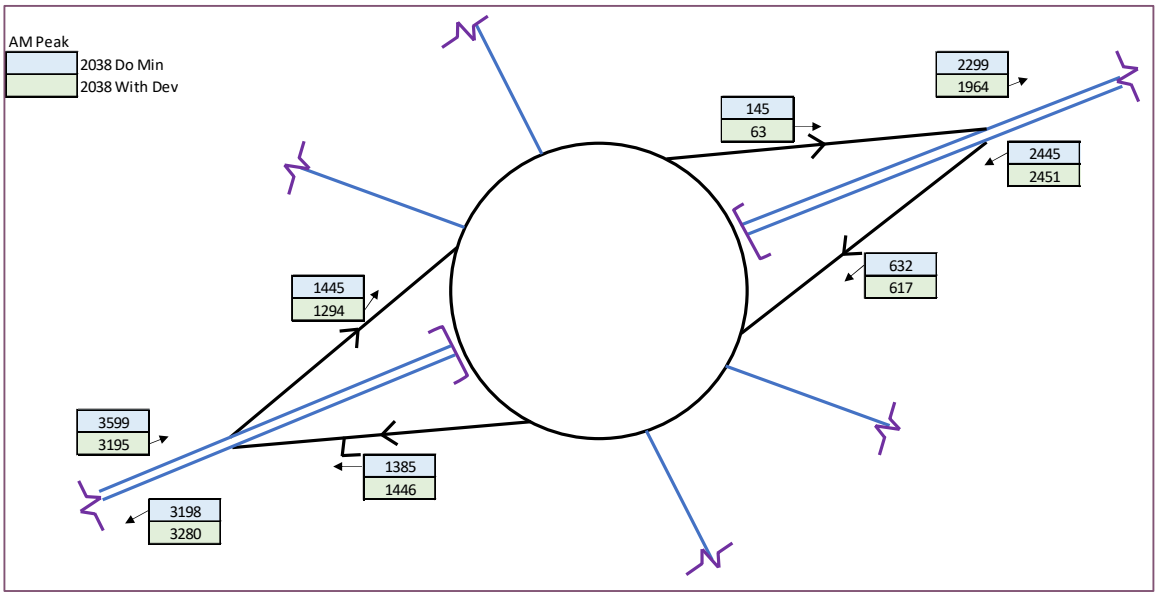
AM Peak
2038 Do Min
2038 With Dev
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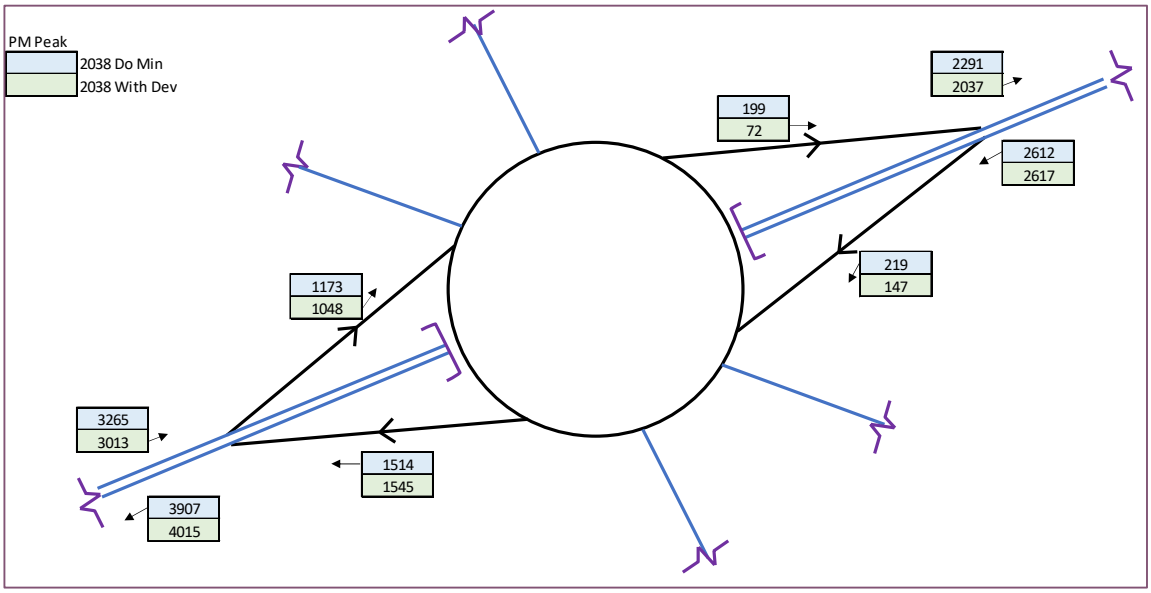
1964
2445
2451
632
617
1445
1294
3599
3195
1385
1446
3198
3280


PM Peak
2038 Do Min
2038 With Dev
199
72
2291
2037
2612
2617
219
147
1173
1048
3265
3013
1514
1545
3907
4015

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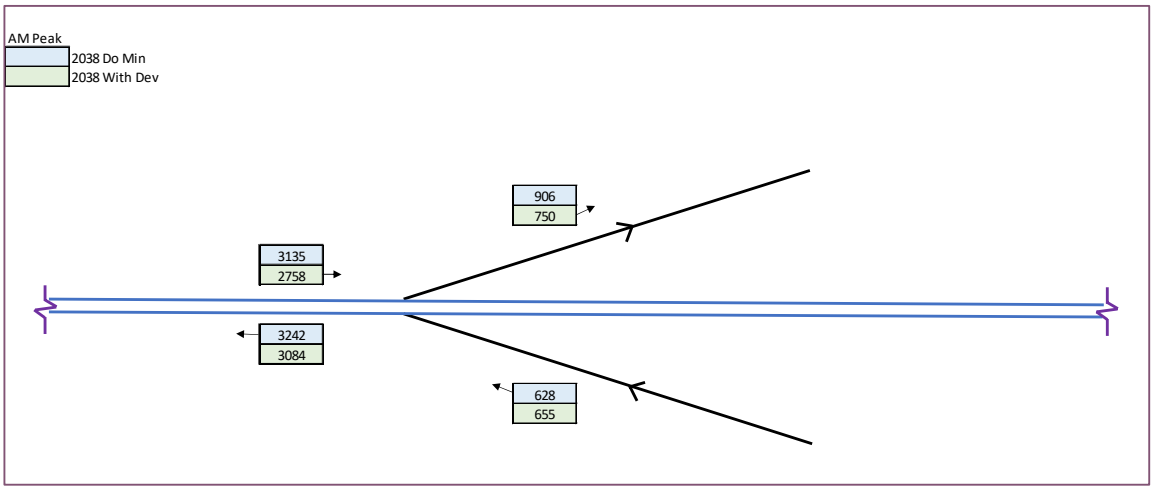
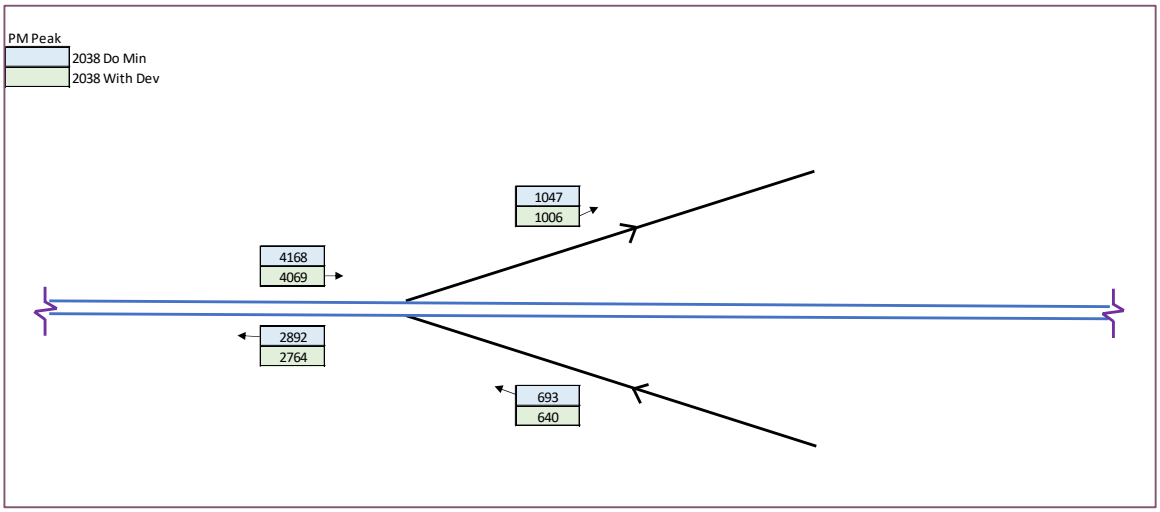

AM Peak
2038 Do Min
2038 With Dev
906
750
3135
2758
3242
3084
628
655


PM Peak
2038 Do Min
2038 With Dev
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1006
4168
4069
2892
2764
693
640

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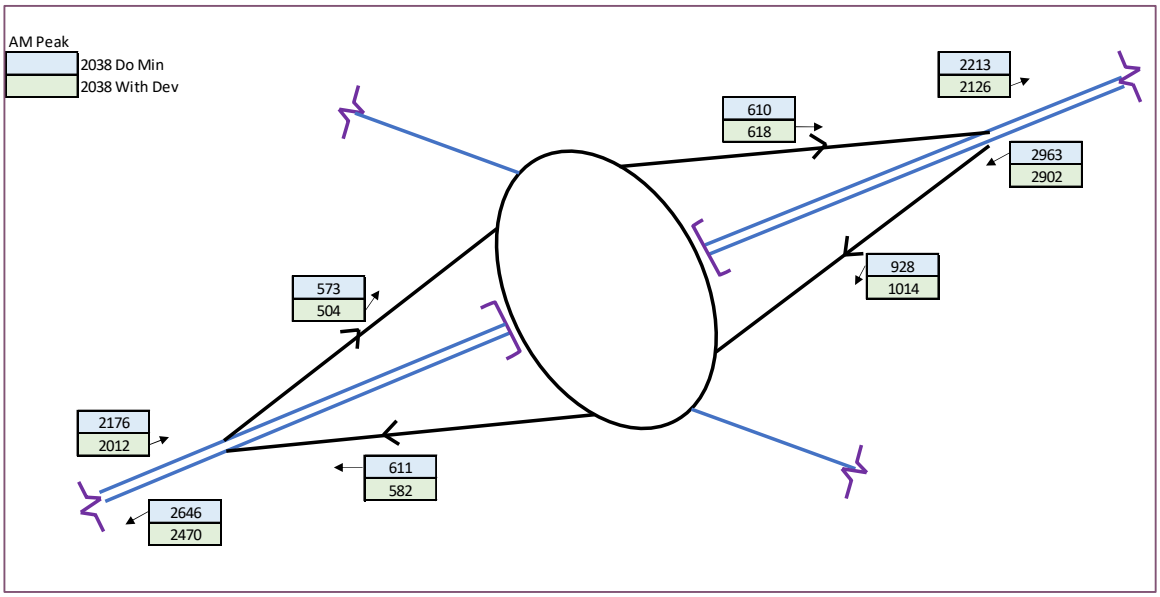
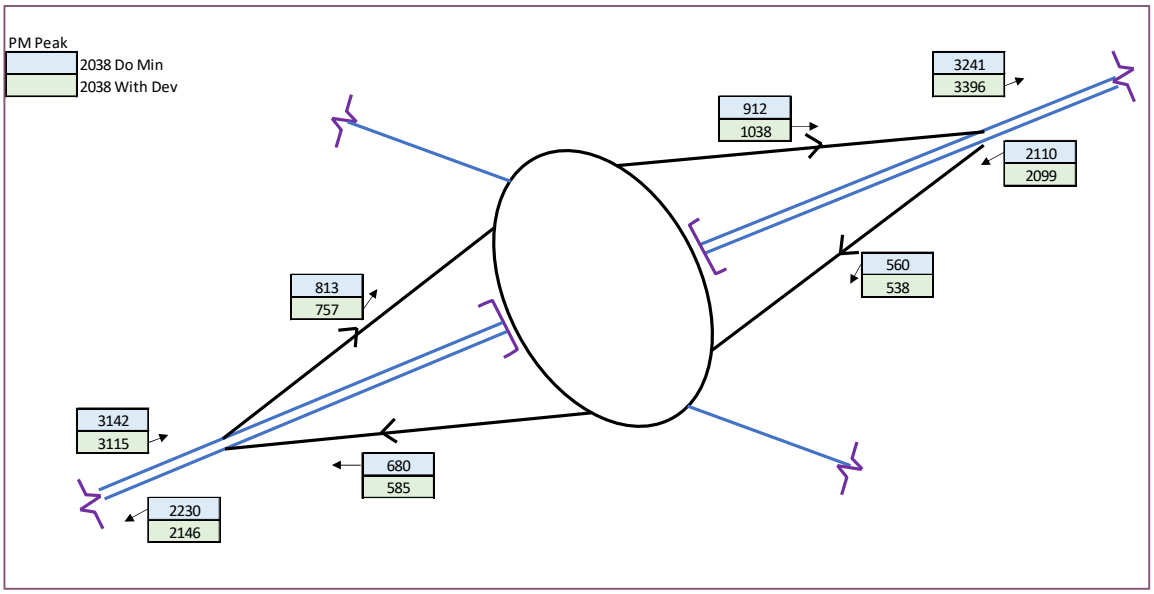
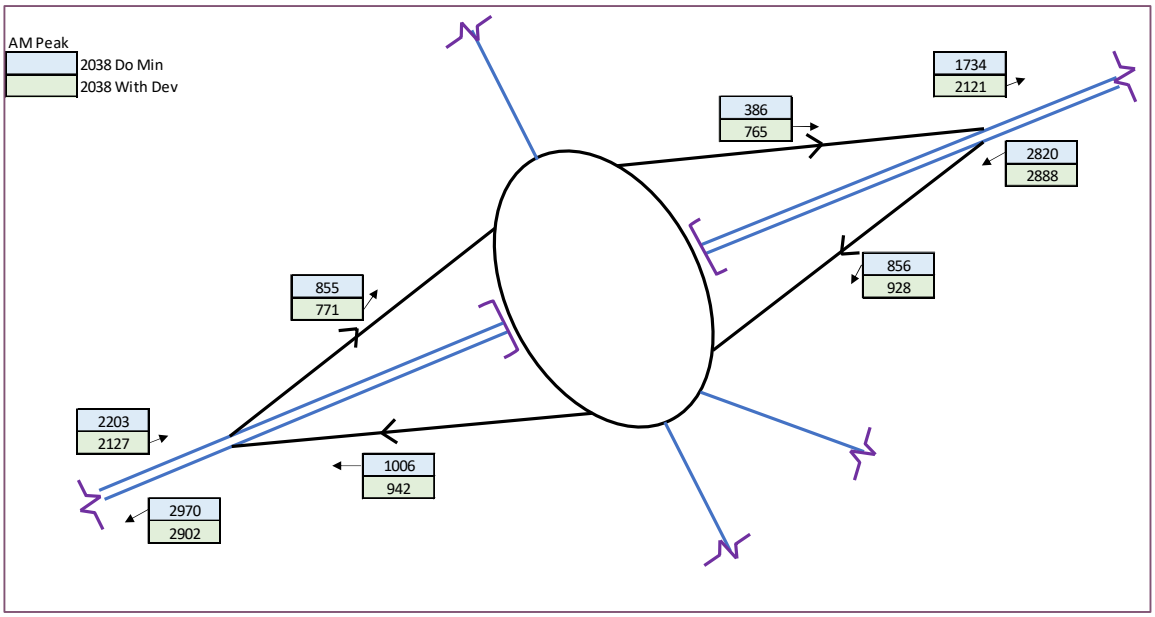
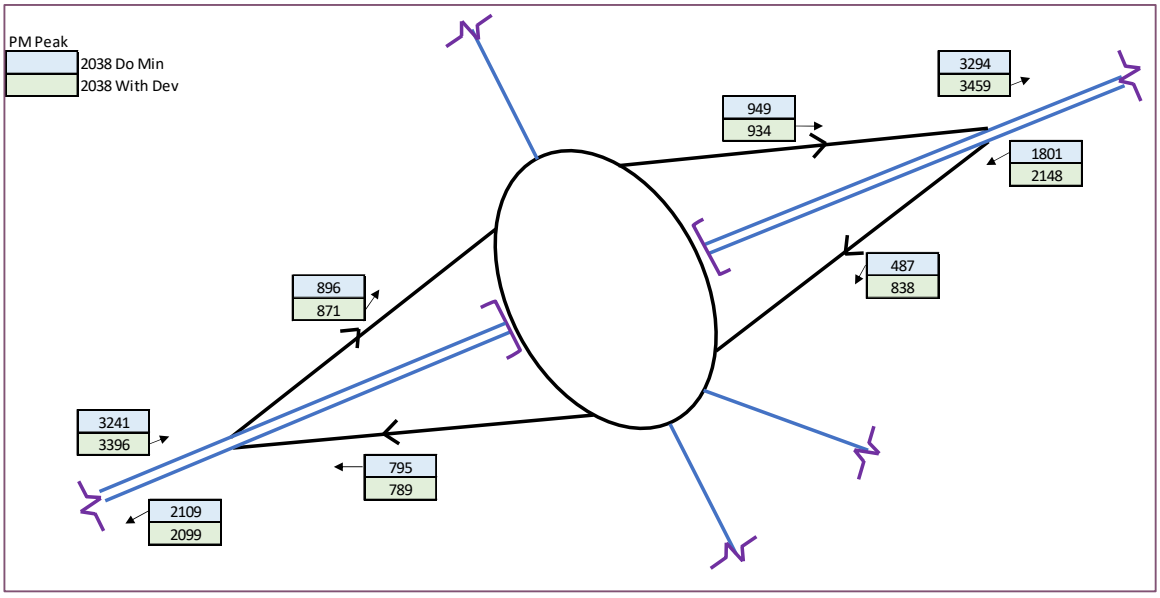

AM Peak
2038 Do Min
2038 With Dev
610
618
2213
2126
2963
2902
928
1014
573
504
2176
2012
611
582
2646
2470


PM Peak
2038 Do Min
2038 With Dev
912
1038
3241
3396
2110
2099
560
538
813
757
3142
3115
680
585
2230
2146


AM Peak
2038 Do Min
2038 With Dev
1734
2121
386
765
2820
2888
856
928
855
771
2203
2127
1006
942
2970
2902


PM Peak
2038 Do Min
2038 With Dev
3294
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949
934
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2148
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871
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Aylesford, Kent,
ME20 6SN
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Technical Note

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[1] Swale Highway Model – Local Plan Review – Highway Strategic Model – Regulation 10 Traffic Forecast Report (2021). Sweco UK Ltd, 2021.

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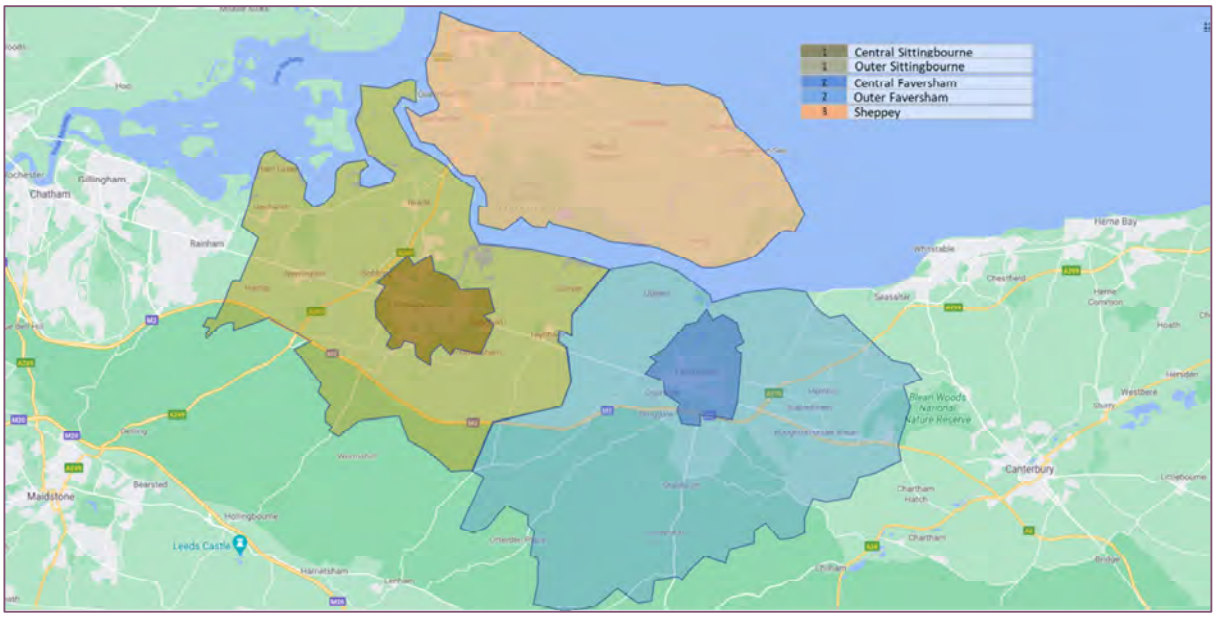
Central Sittingbourne
Outer Sittingbourne
Central Faversham
Outer Faversham
Sheppey
Chatham
Rainham
Herne Bay
Canterbury
Maidstone
Bearsted
Leeds Castle

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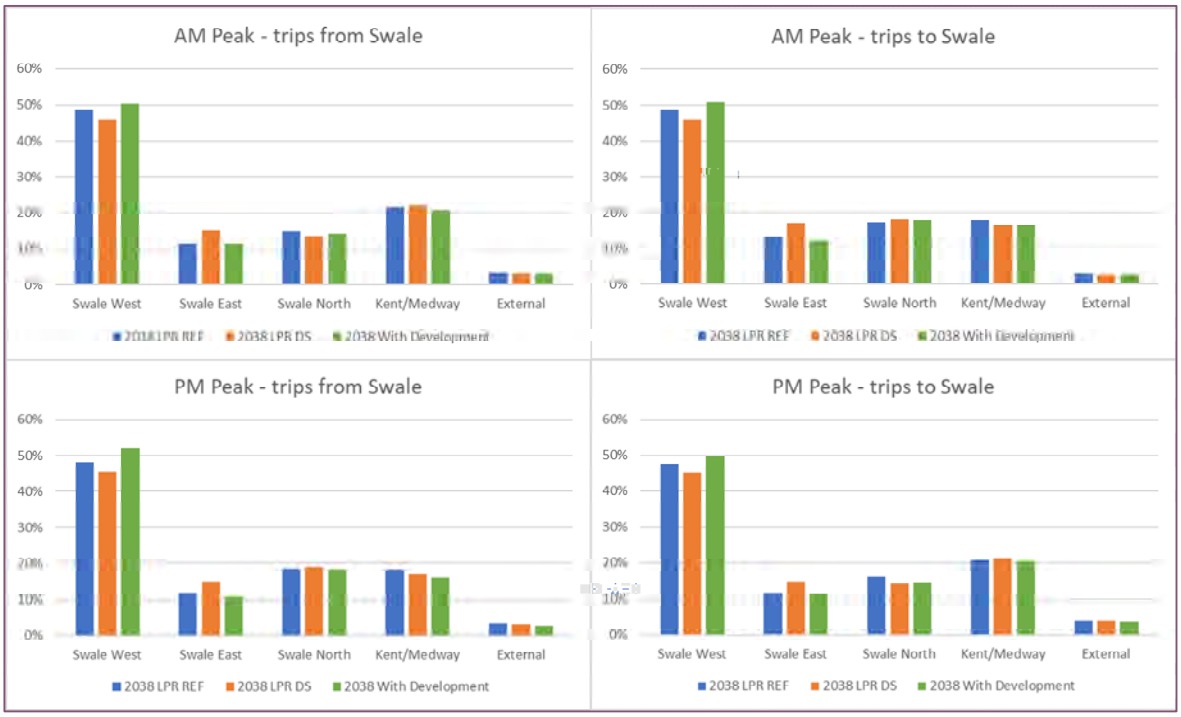
AM Peak - trips from Swale
60%
50%
40%
30%
20%
10%
0%
Swale West
Swale East
Swale North
Kent/Medway
External
2038 LPR REF
2038 LPR DS
2038 With Development
AM Peak - trips to Swale
60%
50%
40%
30%
20%
10%
0%
Swale West
Swale East
Swale North
Kent/Medway
External
2038 LPR REF
2038 LPR DS
2038 With Development
PM Peak - trips from Swale
60%
50%
40%
30%
20%
10%
0%
Swale West
Swale East
Swale North
Kent/Medway
External
2038 LPR REF
2038 LPR DS
2038 With Development
PM Peak - trips to Swale
60%
50%
40%
30%
20%
10%
0%
Swale West
Swale East
Swale North
Kent/Medway
External
2038 LPR REF
2038 LPR DS
2038 With Development

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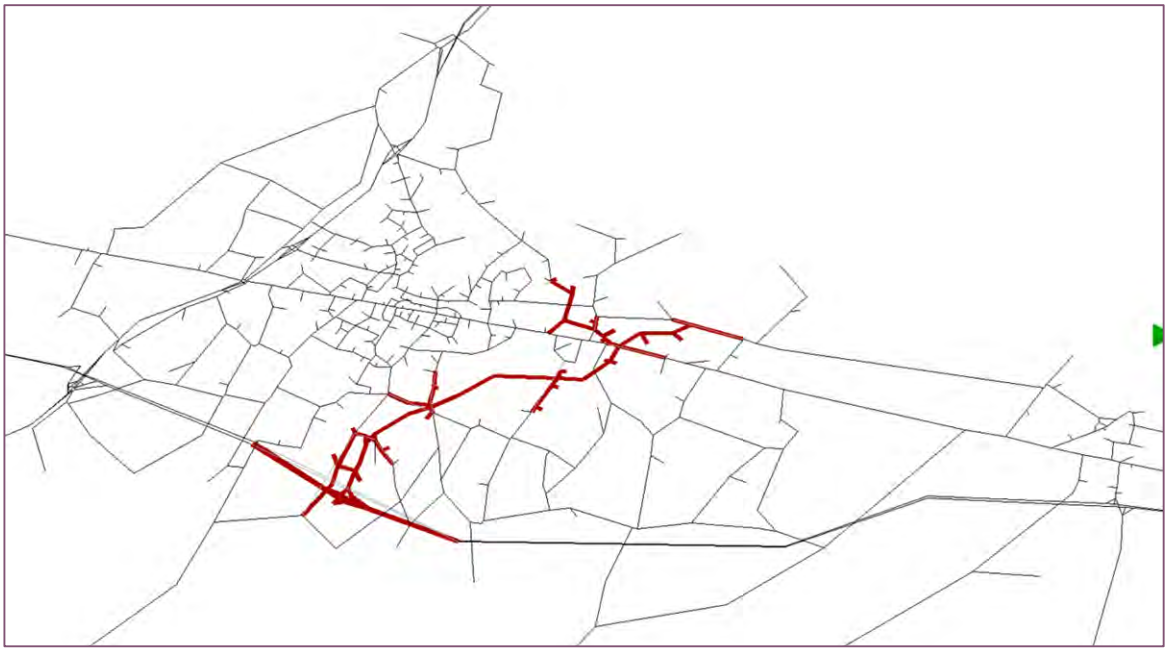


Travel Demand (pcu)
252000
250000
248000
246000
244000
240000
238000
236000
AMPK
PMPK
LPR REF Case
LPR Do Som
With Devel
Travel Time (pcu hrs)
68000
67000
66000
65000
63000
62000
61000
AMPK
PMPK
LPR REF Case
LPR Do Som
With Devel
Travel Distance (pcu kms)
4100000
4050000
4000000
3950000
3900000
3850000
3800000
AMPK
PMPK
LPR REF Case
LPR Do Som
With Devel
Average Speed (kph)
64
62
60
58
56
54
52
50
AMPK
PMPK
LPR REF Case
LPR Do Som
With Devel
Overcapacity Queues (pcu hrs)
1800
1600
1400
1200
1000
800
600
400
200
0
AMPK
PMPK
LPR REF Case
LPR Do Som
Series3
Transient Queues (pcu hrs)
2500
2000
1500
1000
0
AMPK
PMPK
LPR REF Case
LPR Do Som
With Devel

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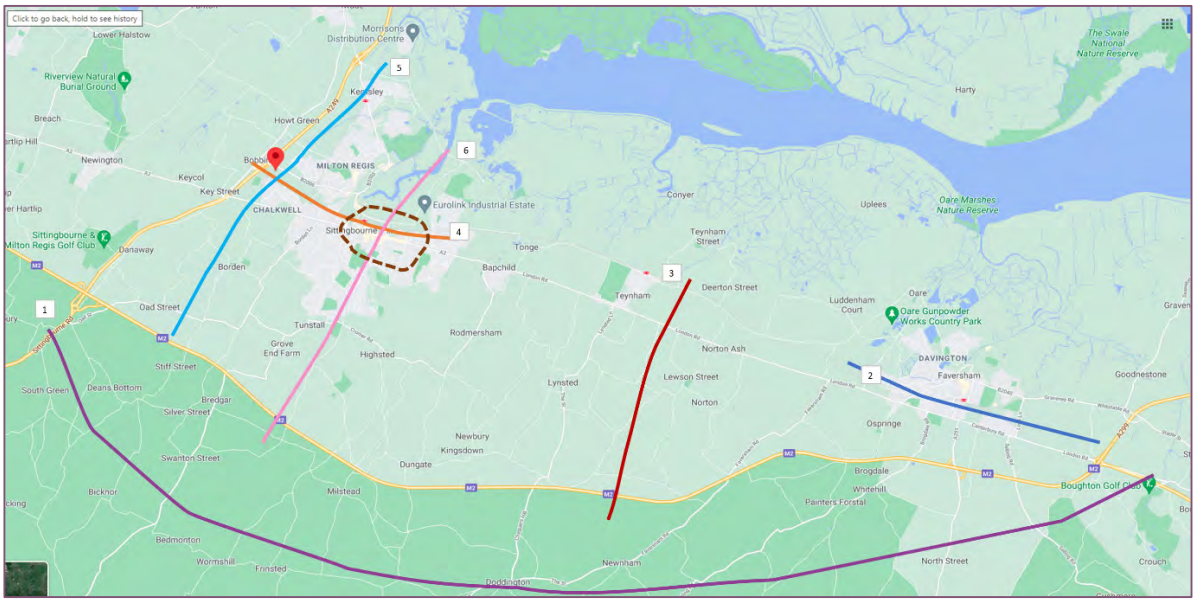
Click to go back, hold to see history
Morrisons Distribution Centre
Lower Halstow
Riverview Natural Burial Ground
Breach
Newington
Keycol
Key Street
Howt Green
Bobbing
MILTON REGIS
CHALKWELL
Eurolink Industrial Estate
Sittingbourne
Sittingbourne & Milton Regis Golf Club
Danaway
Borden
Oad Street
Tunstall
Grove End Farm
Stiff Street
South Green
Deans Bottom
Bredgar
Silver Street
Swanton Street
Bicknor
Bedmonton
Wormshill
Frinsted
Milstead
Highsted
Rodmersham
Bapchild
Tonge
Teynham
Teynham Street
Deerton Street
Conyer
Uplees
Oare Marshes Nature Reserve
The Swale National Nature Reserve
Harty
Luddenham Court
Oare
Oare Gunpowder Works Country Park
DAVINGTON
Faversham
Goodnestone
Norton Ash
Lewson Street
Norton
Lynsted
Ospringe
Newbury
Kingsdown
Dungate
Brogdale
Whitehill
Painters Forstal
Boughton Golf Club
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Technical Note

Highsted Park, Land South and East of Sittingbourne, Kent

16-023-014 Rev B

Trip Generation Assumptions

July 2022

Rev	Issue Purpose	Author	Checked	Reviewed	Approved	Date
-	For Information	AT	JW	JW	JW	21/05/21
A	For Information	AT	JW	JW	JW	27/05/21
B	For Information	AT	JW	JW	JW	20/07/22

1 Introduction

1.1 Overview

1.1.1 Charles and Associates Consulting Engineers Ltd (C&A) have been commissioned by Quinn Estates to provide highways and transport support with respect to a major mixed used development to the south east of Sittingbourne, known as Highsted Park: Land South and East of Sittingbourne, Kent; henceforth referred to as 'the Proposed Development'.

1.1.2 The Proposed Development represents a mixed-use garden village style settlement comprising approximately 7,150 new homes, commercial, retail, education, leisure and community land uses. In addition, the proposals include the provision of key new pieces of strategic infrastructure consisting of a new, privately funded connection to the Strategic Road Network (SRN) to the south east of Sittingbourne (M2 J5a) and a new link road between the M2 and A2 forming the Sittingbourne Southern Relief Road (SSRR).

1.1.3 The application for the Proposed Development comes forward together with an associated and adjacent application which forms part of the overarching Highsted Park development. The adjacent application, known as Highsted Park: Land to the West of Teynham, Kent and henceforth referred to as 'Highsted Park: North', incorporates proposals for 1,250 new homes, commercial, retail, education, leisure and community land uses. In addition, the proposals include the delivery of the further strategic infrastructure in the form of the 'Bapchild Link' which will complete the existing Sittingbourne Northern Relief Road (SNRR).

1.1.4 It should be noted that it is assumed that both applications are interdependent and will only come forward together. As such the traffic impact assessment contained within the Transport Assessment (TA) for both sites are based upon the cumulative assessment of both sites and their associated infrastructure proposals in combination.

1.1.5 As such this traffic generation exercise was conducted on the basis of an overall development potential for circa 8,400 dwellings, both affordable and privately owned, commercial, leisure and educational uses as well as local centres serving each proposed village area.

1.1.6 In order to assess the traffic impact of the development a strategic transport model for Swale, using industry standard SATURN software, has been developed by an independent modelling specialist in cooperation with Swale Borough Council, Kent County Council and Highways England. The model was used as the platform for undertaking specific forecast scenario tests incorporating the proposed development and associated infrastructure. In order to provide the development generated traffic flow information that was used as input to the strategic model, C&A has undertaken a trip generation exercise taking consideration of the different land uses, internalisation possibilities and mode share assumptions. These assumptions have formed an input parameter to the strategic model scenario runs.

1.1.7 Due to the scale of the development and the range of the land uses involved, it was considered imperative that the adopted methodology should acknowledge the double-counting of trips when generating traffic for each land use individually. As a result, the trip generation exercise has adopted a reverse first-principles approach by deriving a number of person trips for each land use and deducting the cross-purpose person trips generated from the other land uses from the residential trip generation. Combined trips were also considered and deducted as appropriate.

1.1.8 Mode split assumptions for walking, cycling, use of public transport, car sharing and working from home were made separately for each land use and for each origin and destination pair in order to account for the different groups of network users, journey purposes and accessibility to the different sustainability modes for each development parcel. In this way, the remaining trips were regarded as vehicular and were then used for the purposes of the traffic assessment of the network, as input to the strategic model.

1.1.9 Following this introduction, this note goes on to provide information regarding the trip rates, trip generation and mode split assumptions for each land use as well as the mechanism according to which they are considered to interact with each other.

1.1.10 It should be noted that this version of the technical note follows up on discussions with KCC Highways and addresses comments raised in their comprehensive consultation response, as received on the 30th November 2021, as well as comments raised during the subsequent meeting with C&A on the 28th February 2022. The consultation response, the minutes of the meeting and the response report with proposed changes can be found in **Annex A**.

1.1.11 Furthermore, the report addresses comments from National Highways (NH) as received through the consultation response (December 2021) and the subsequent meeting with C&A (11th January 2022) (**Annex B**). Again, a response report setting out the proposed changes is included.

1.1.12 This note has been updated to reflect the current assumptions and methodology following the above discussions. For a full understanding of the changes and rationale for these, reference should be made to **Annex A** and **B**.

2 General Assumptions on Sustainability

2.1 Introduction

2.1.1 The location, scale and mixed-use nature of the development, along with the duration of the build-out period gives rise to considerable opportunity to support sustainable development in a manner that exceeds current trends.

2.1.2 In assessing the impact of the development, there is a tendency to lean towards robust assumptions in order to increase confidence in the appropriateness of the results. At these scales, such robustness can easily result more towards being unrealistic and potentially be insufficiently aspirational to the extent that there could be an overprovision of highway infrastructure that fails to promote sustainable travel. However, it is equally important to ensure that assumptions on sustainable travel remain pragmatic.

2.1.3 Rather than simply being a tool to assess the impact of the development, the work that was undertaken in forecasting transport generation and impact formed a key means to informing the masterplan and development proposals. A number of masterplan proposals were introduced in order to further enhance sustainability so as to overcome highway constraints – which extended to changes in land uses across the development on increased sustainable travel interventions.

2.1.4 This note sets out the methodology followed for forecasting the trip generation arising from the development proposals. However, it was structured in a way that could respond to changes to the proposals that emerged during the application process, including those deemed necessary to respond to constraints. Likewise, the method of forecasting was based on a number of assumptions, such as the propensity for internalisation of trips within the development and the uptake of non-car modes of sustainable travel.

2.1.5 For ease of explanation, these assumptions are set out here and are, wherever possible, grounded in evidence and empirical data of current trends, such as Census data for mode choice. This was considered a reasonable approach for the assessment of development in what proved to be an iterative process of assessment and changes to the proposals.

2.1.6 As indicated previously, the nature of the development is such it is fully anticipated that current trends of sustainable use will be exceeded either naturally due to progression in trends over the time period and/or through interventions in the scheme proposals. In this regard, it is anticipated that the sustainable travel assumptions included within this note can shift from those which are evidence based and reflect current trends, towards those which reflect aspirations of the development and wider policy. It is accepted that where such changes in the assumptions are made, they will need to be justified and may give rise to a need for sensitivity testing and obligations within the planning process.

2.1.7 As noted previously, the aim of this note is to set out the methodology which allowed for consideration of those variables and to highlight the impact that those assumptions have on the forecasting of trip generation.

3 Trip Generation

3.1 Development zones

In order for the trip generation to be used as input to the strategic model, the necessary data was formed into origin-destination (OD) matrices. The OD matrices generated take account of the 22 development zones as structured within the strategic model, 17 for the development south and east of Sittingbourne (Figure 3.1) and 5 for the development at Highsted Park: North (

3.1.1 **Figure 3.2**), as well as an additional zone for trips external to the development.

Figure 3.1: Zones for Proposed Development

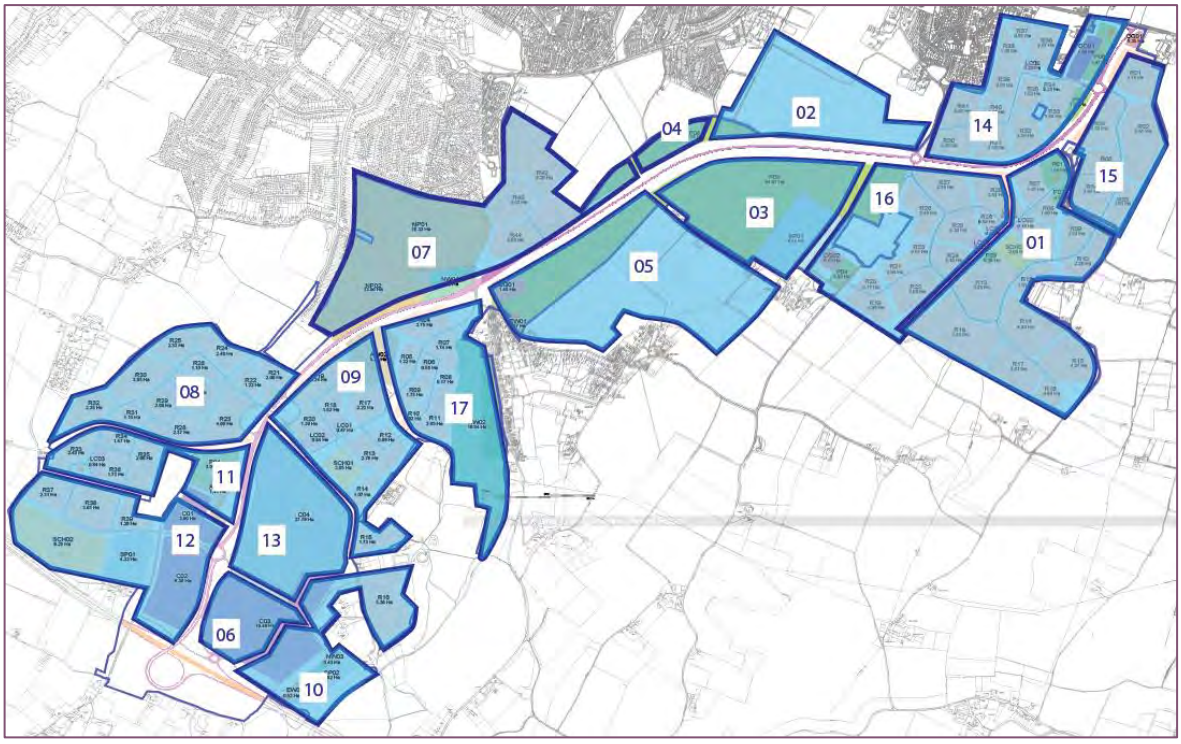
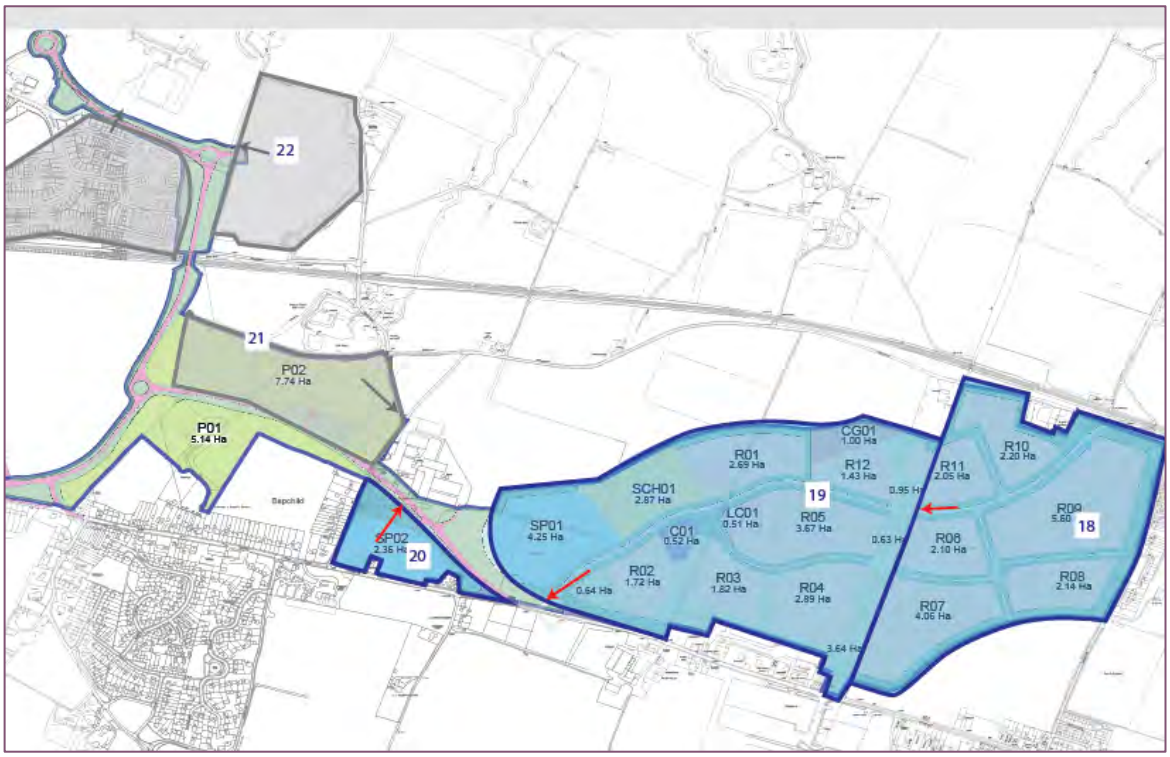


Figure 3.2: Zones for Highsted Park North



3.1.2 The development zones as defined within the model correspond to a specific land area of the development that is assumed to interact with the link road and wider network in a distinct way and can include a number of different land uses. The masterplan areas shown in above figures do not necessarily correspond to latest masterplan design, but they are presented as an indication of the development zones applied relative to the developments more generally.

3.2 Trip Rates

3.2.1 Person trip rates were obtained from the TRICS database for sites with the following characteristics:

- All sites in England, Scotland and Wales – as per the TRICS Good Practice Guidance;
- Surveys done during weekdays only;
- Sites at the edge of town and suburban area (or neighbourhood centre, when necessary – see paragraph 2.2);
- Sites for development and residential zones – or with no sub-category. Industrial zone, in relation to paragraph 2.2, was also considered for employment rates;
- With 5,000-50,000 population within 1 mile and
- 25,000-250,000 within 5 miles;
- With car ownership above 1.1.

3.2.2 In instances that the above criteria returned very few results, some allowances in the site location, surrounding population and the car ownership ratio selections were made in order to obtain a sufficient number of sites for the calculation of the trip rates.

3.2.3 This exercise was carried out individually for each of the land uses included in the development proposals, with the exception of B2c – Research units. For research units it was acknowledged that the TRICS database would not be able to provide representative results as it does not include a relevant sub-category. For this purpose existing patterns from the operating KSP site were considered appropriate for deriving the required trip rates.

3.2.4 Trip rates per employee were obtained for the existing KSP indicating 0.316 arrivals and 0.014 departures in the AM peak (08:00-09:00) with the respective numbers for the PM peak (17:00-18:00) being 0.288 and 0.32. This information, combined with the current ratio of employees per sqm (1empl. / 29.5sqm) results in the trip rates per sqm provided in **Table 3.1** below, along with the rest of the trip rates.

3.2.5 It should also be noted that the trip rates for retail correspond to gross floor area and not to retail area.

Table 3.1: Person Trip Rates for Total Development

Land Use Category	Land Use Sub-category	AM		PM		Units
		Arr.	Dep.	Arr.	Dep.	
Residential	Private Houses	0.183	0.844	0.717	0.357	5494
	Private Flats	0.115	0.397	0.532	0.205	225
	Affordable Houses	0.349	1.048	0.687	0.422	1730

Land Use Category	Land Use Sub-category	AM		PM		Units
		Arr.	Dep.	Arr.	Dep.	
	Affordable Flats	0.241	0.483	0.259	0.103	604
	Retirement Homes	0.101	0.083	0.156	0.119	318
Commercial	E(g)(i) - Office	2.525	0.378	0.430	2.448	2200 sqm
	B2 - General Industrial (Ind. Estate)	0.236	0.094	0.083	0.211	31200 sqm
	E(g)(ii) - Research units	1.071	0.047	0.108	0.976	34000 sqm
	B8 - Warehouse	0.178	0.062	0.024	0.112	102000 sqm
	Hotel	0.241	0.935	0.781	0.319	2800 sqm
	Household Waste and Recycling Centre	1.250	1.250	0.000	0.000	25 bays
Leisure	Leisure Centre + Sports	15.050	17.057	105.868	117.057	4850 sqm
Education	Primary	1.207	0.220	0.014	0.098	11 FE
	Secondary	0.806	0.090	0.047	0.036	8 FE
Local Centre	Nursery	7.200	1.900	2.200	5.300	830 sqm
	Medical Centre	7.245	3.556	3.211	4.910	2250 sqm
	Pharmacy	17.189	17.459	13.622	14.541	650 sqm
	Retail	17.189	17.459	13.622	14.541	5120 sqm
	Foodstore	3.237	2.358	7.032	7.411	4270 sqm
	Professional/ Financial	17.189	17.459	13.622	14.541	800 sqm
	Community Centre	44.000	12.000	140.000	93.333	3550 sqm
	Pub/ Restaurant	0.000	0.000	10.769	4.188	2400 sqm
	Gym/ Fitness	34.948	23.875	89.619	70.242	600 sqm

3.2.6 The above trip rates were subject to update during the preparation of this revision, following comments from KCC Highways and NH regarding the estimation approach. Initial changes to the methodology with TRICS resulted in some trip rates increasing and other reducing. To address this and maintain a robust assessment, the higher of rates derived from either method was adopted for this assessment.

3.2.7 The total number of units presented above reflect the land schedule 'KSP Development Summary v38 7150' for the south and east of Sittingbourne part of the development as well as the 'KSP North Development v16.1250' for the Highsted Park: North part of the proposals.

3.2.8 The application of the above trip rates resulted in the headline (person) trip generation that is shown in **Tables 3.2** and **3.3** for the two parts of the development (**Annex C**).

3.2.9 Below, a summary of the land uses is provided, in the order they have been studied in the present generation exercise and the breakdown of each land use trip generation into its different components, as they will be described in the subsequent paragraphs. For instance, the educational trips are considered to be trips generated by parents, pupils and staff. The parental trips further consist of 'home to school to home' (HSH) trips and 'home to school to work' (HSW) trips. A percentage inside brackets is provided (when applicable) to indicate the relative split between each component. These percentages will also be explained later.

A. Education

(Primary and Internal Secondary (70%))

- Parents
  - HSH: Home-School-Home (72%)
  - HSW: Home-School-Work (28%)
    - Internal (7%)
    - External (93%)
- Pupils
- Staff
  - Internal
  - External
- Secondary (external – 30%)

B. Leisure/Sports

- Internal (100%)

C. Local centre

- Internal (100%)

D. Other

(2% of total Residential person trip generation)

- Internal (10%)

- External (90%)

E. Household Waste Recycling Centre (HWRC)

- Internal (24%)
- External (76%)

F. Residential

- Parents to education (all)/ parents from education (HSH)
- Pupils
- Leisure/Sports
- Local Centre
- Other
- HWRC
- Trips to work
  - Internal (7%)
    - School Staff (internal)
    - Proposed Commercial (i.e. Business Offices, Light Industrial, Research, Warehouse) (internal)
  - External (93%)

G. Employment

- Internal
  - Proposed Commercial
  - School Staff
- External

H. Retirement Houses

- External (100%)

I. Hotel

- External (100%)

A. Education

3.2.10 The development proposals include nursery as well as primary and secondary education. The trips generated by the nursery were considered part of the trips resulting from the local centres – mainly due to its minimal size according to latest masterplan – and were likewise reduced directly from the residential along with all the local centre uses (mentioned later on). However, for the primary and secondary trips a more detailed approach was adopted.

3.2.11 The primary education, consisting of 11 FEs throughout the development was considered to be fully occupied by residents of the development and not to generate additional trips to/from the external network. It was also considered that the primary schools would fully cover the development needs. In other words that there would be no draw from students external to the site to cover additional places and equally there would be no need for residents of the development to travel externally for primary schools.

3.2.12 However, it is acknowledged that secondary school provision entails a level of choice that sits outside the proximity criteria that usually applies to primary schools. Therefore, even though the provision of secondary school places is proposed to be sufficient to cover the development demand it was acknowledged that it would be unrealistic to assume that all secondary needs from the development would be covered internally.

3.2.13 Taking into consideration the location of nearby schools in the area, as well as the proposed location of the school at a location equally accessible from the development to the north and the development to the south, it was assumed that a 70% of all of the development would be covered internally.

3.2.14 In this way, the percentage of the secondary school that is assumed to be occupied internally was is equally at 70%. This means that 70% of the total trip generation for the secondary schools were treated as internal trips, as will be explained in more detail below, while 30% of trips were assigned externally. Meetings were held with KCC Education regarding the secondary school provision, during which the extent of internal and external placements was discussed. It was accepted by KCC Education that the precise split was impossible to forecast at this stage, given the scope for demographic shift in the intervening period. However, KCC Education agreed with the principles of assuming a proportion of development residential demand would be external, including around 20% directed towards to Grammar places. Consequently, this space would thereafter been occupied by demand for on-site school places from external residential areas. KCC Education were unable to provide any greater steer on the precise assumptions that should be made and were therefore content with the reasonable forecasts made here.

3.2.15 For primary and internal secondary education, different assumptions for the AM and PM peak periods were made. For the AM period it was considered that, while the departures were trips associated with escorting activity and attributed in their entirety to parents (for ease of reference from now on they will be referred to as escorting trips), the residual trips (or difference) between arrivals and departures were trips attributed to school staff and pupils.

3.2.16 As far as the escorting trips are concerned, the AM arrivals were considered to come solely from the residential part of the development. The departures on the other hand were assumed to be partly trips returning to residential and partly combined trips that after arriving to education were then distributed to employment.

3.2.17 To define the ratio of home-school-home (HSH) to home-school-work (HSW) trips for the escorting departures, the National Travel Survey undertaken by the Department for Transport for the period 2015-2019 (NTS0408 2015-2019: Purpose of Next Trip) was referred to, according to which the weekday morning peak travel consists of:

- 72% trips from home to education (education escort) to home (HSH);
- 8.5% trips from home to education to work (HSW) and
- 19.5% trips from home to education to elsewhere (HSO).

3.2.18 Based on the above, 72% of the escorting departures were distributed to residential (HSH), while the remaining 28% was were considered trips that would either get lost internally or go outside the development into the wider network. As a robust approach, it was considered that this 28% would follow a distribution to employment using an internalisation percentage of 7% (that is further explained when describing the residential generation) – that means that, as far as employment is concerned, 7% of the residents are considered to travel inside the development to go to employment while the remaining 93% would distribute to the external network.

3.2.19 In order to avoid double-counting, the escorting arrivals to school were deducted from the residential AM peak departures and the 72% HSH departures from school were deducted from the residential arrivals.

3.2.20 It should be noted that frequently one escort may accompany several children to school which would account for the lower number of departures than might otherwise be expected. In addition, some escorts may not be recorded in the surveys if they do not actually enter the school boundaries. As noted in the TRICS Good Practice Guide 2021, parents or guardians who park outside the school boundary will not be included in the person trips although their vehicle will be in the vehicle count.

3.2.21 Furthermore, although the number of trips attributed to escorting activity seem lower than anticipated, an additional trip generation purpose is considered, namely 'other trip purposes', that includes all activities that have not been considered and can accommodate a level of uncertainty for any trips that have been included but seem somehow lower than expected.

3.2.22 For the part of the AM school arrivals that were attributed to staff and pupils, a ratio for differentiating between the two was required. For this purpose, a National Statistics survey regarding the school workforce in England was used, undertaken for the Department for Education and carried out in November 2016. According to that survey, the pupil/teacher (full-time equivalent) ratio for primary schools is 20.5; while for secondary is 15.6. Those numbers were then translated to 8.78 and 13.46 of school staff per form-entry, respectively for primary and secondary schools, for the purposes of the current exercise. A factor of 2 was applied to those ratios in order to account for the school personnel that have administrative or other than teaching responsibilities.

3.2.23 The pupil arrivals to school were deducted from residential departures during the morning peak.

3.2.24 The trips attributed to school staff were considered trips to employment and treated as such – as discussed under employment assumptions.

3.2.25 For the PM period a more simplistic approach was adopted, whereby the school arrivals were assumed to be coming from residential i.e. parents picking up pupils from after-school activities, while the PM school departures were considered as school staff returning home from their place of work.

3.2.26 As with AM, the school staff trips were added to the employment trip generation and used the same distribution/mode share assumptions, while the trips connected with parental activities were deducted from the residential.

3.2.27 In addition to the above, for the PM school departures only, an allowance was made when considering the interaction with the residential arrivals. It was assumed that due to journey time, as well as widely accepted behaviour of school pupils not taking the fastest return way, the secondary internal departures occurring between 16:00-17:00 would result in residential arrivals between 17:00-18:00. As such, the 16:00-17:00 internal departures from the secondary (70% of total 16:00-17:00 departure trips) were deducted from the PM peak residential arrivals.

3.2.28 Presented in **Annex D, Tables 3.4** and **3.5** show the proximity factors used for the assignment of trips from the residential to the nearest school, while **Tables 3.6** and **3.7** present the ODs that result from the above methodology. The total ODs for school trips can be found in **Table 3.8**, while the 16:00-17:00 secondary departure flows taken out of the residential in the PM peak are shown in **Table 3.9**.

B. Leisure Centre/Sports

3.2.29 Leisure generated trips have been considered to be 100% internal, to/from the residential part of the development, and for that purpose have been deducted from the residential trip generation.

3.2.30 Although consideration was given to the inclusion of sport facilities in the development, no additional information has been provided thus far as to what type of sport activities will be included and, as a result, sport facilities have been treated as leisure.

3.2.31 Final leisure ODs are shown in **Table 3.10** (**Annex D**)

C. Local Centre

3.2.32 As far as the local centre trip generation is concerned, a unique trip rate was used for each of the different activities included in that category. Due to the wide range of facilities and services provided within the development, it was assumed that on average, each trip would involve the use of two facilities. It was accepted some trips might be dedicated trips to a specific land use, for example the bank, but it was also considered likely for trips to be connected between more than two facilities, e.g. from the medical centre to the pharmacy to the retail, from the community centre to the bank to the pub etc. Therefore, an average of two connected trips was considered appropriate.

3.2.33 The generated trips were added together, as they are expected to have the same sustainability and distribution assumptions and multiplied with the factor of 0.5 as explained above. The resultant numbers were then deducted from the residential trips.

3.2.34 In terms of assignment, it was assumed that each residential parcel would be served by the nearest local centre. The relevant proximity tables that were used for this purpose can be found in **Table 3.11**, while **Table 3.12** (**Annex D**)shows the final ODs for the Local Centre.

D. Other Trip Purposes

3.2.35 While taking this generation exercise forward, it became apparent that the majority of trips left under residential, after a reduction was made for education, retail, leisure and local centre trips (as discussed above), would be trips to employment.

3.2.36 Nevertheless, it was understood that there would be a residual proportion of person trips generated from the residential that could be attributed to activities not considered here or even include trips that, although the trip purpose is taken into account, the actual number of trips generated from the development are in excess to the trips taken into account. One such example would be the escorting trips to education in the morning peak, as discussed under education, while a second one would clearly be the case of under-provision in education. That means that in the case that the form entries included in the development for primary schools are not enough to accommodate the demand from the residential, then there will be a number of trips that would originate from the development and would distribute to external education. In order to account for uncertainties of that nature, and to be able to treat the remaining residential purely as trips to employment, an additional trip purpose is assumed; referred to as 'other trip purposes'.

3.2.37 The trips that were treated under this category were a percentage of the overall person trip generation for residential. In order to determine that percentage, the National Travel Survey (NTS0502 2015-2019): 'Trip Purpose by time period' was used as a validation measure. According to that survey, during the AM peak period, trips to work account for46% of the overall trips, with 34% being education and educational escort trips and 21% being trips for other purposes. Based on that, a low percentage of 2% of the residential trips were treated as part of the 'other' category, giving the ability to include trips that have not been specifically accounted for, while at the same time allowing for a remaining 46% of AM peak departures to be considered as trips to work.

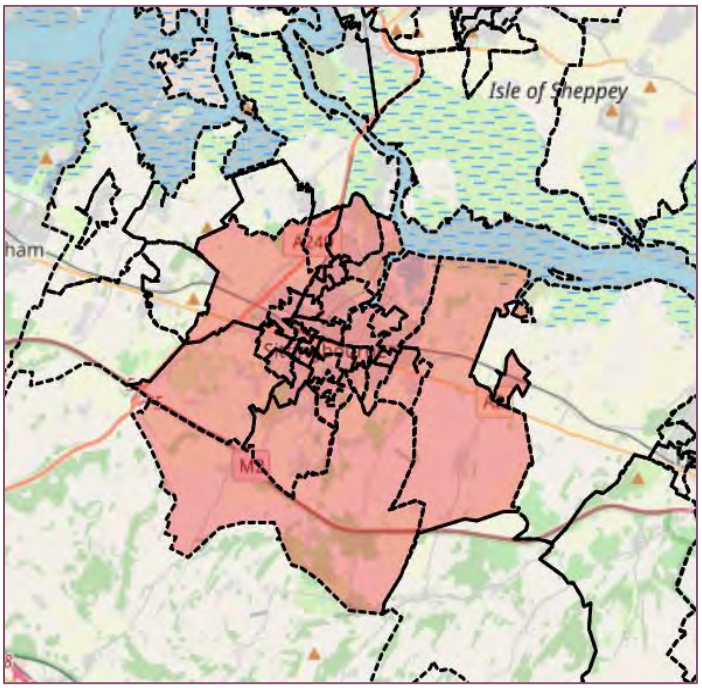
3.2.38 A breakdown into internal and external trips took place in order to define the number of trips that would leave the development and interact with the wider network. A proportional split of 10%/90% was considered reasonable at this stage, with the potential of increasing the internal (and decreasing the external) in the event of an increase in the development provisions.

3.2.39 Final ODs are presented in **Table 3.13** (**Annex D**).

E. Household Waste Recycling Centre (HWRC)

3.2.40 The Household Waste Recycling Centre (HWRC) proposed will be replacing the existing site located in Sittingbourne and subsequently is expected to generate traffic both internal and external. In accordance with KCC's Waste & Resources Action Programme (WRAP) guidance a 20 minute drive time catchment has been used as shown in **Figure 3.3** below.

Figure 3.3: HWRC catchment area



3.2.41 The number of households within the catchment area was taken from the 2011 census data and was used to split the trips generated by the HWRC proportionally to internal and external. This resulted in 24% of the trips being internal to the development, and distributed proportionally to/from residential, and 76% being external and distributed to the wider network.

3.2.42 The trips considered internal were deducted from the residential person trip generation as is discussed in the next paragraph.

3.2.43 Final HWRC ODs are shown in **Table 3.14** (**Annex D**).

F. Residential

3.2.44 For calculating the residential generation different trip rates were considered for the four different types of residential provision – namely houses privately owned, flats privately owned, affordable houses and affordable flats. At this point it should be noted that the retirement houses, although in nature part of the residential element of the development, due to the different patterns in trip purpose and interaction with the other land uses, were treated as a separate land use, discussed later on.

3.2.45 The person residential trips resulting from the aforementioned trip rates were reduced by the number of trips that were generated by the rest of the land uses of the development, as discussed previously, since they were considered to overlap – in order to account for double counting.

3.2.46 When taking education, leisure, local centre activities and HWRC out of the residential trips – while allowing for a percentage of residual trips to be accounted for under to the 'other' category – it was regarded reasonable to assume that the remaining were trips to employment. The breakdown for this is shown in **Table 3.15** (**Annex D**). At this stage, a percentage of 7% for internalisation was applied. This percentage was considered as that part of the residential development that found employment internally and therefore would not be distributed to the network outside the development – like the remaining 93% would do.

3.2.47 This percentage was derived from a close examination of the residential units to employment land ratio for King's Hill, a development that was considered of similar nature, albeit different scale than the one discussed in this technical note, and a comparison between King's Hill ratio and the suggested KSP ratio was made. A comparison between the type of jobs that the proposals and the existing KSP employment indicate and the land market of the surrounding area were also taken into consideration. Census 2011 journey to work data for Kings Hill indicated that 12% or working residents had a place of work within Kings Hill itself. Although it is anticipated that the development will achieve a higher proportion than this based on the type of employment proposed and likely value of housing in the context of the surrounding housing market, it is understood that this percentage would be for overall employment and it would not necessarily be reflected in the peak hour traffic.

3.2.48 The 7% seemed a reasonable assumption for peak traffic movements when taking into account that the B2 (general industrial), E(g)(ii) (Research) and B8 (Warehouses) commercial uses proposed tend to generate higher proportions of traffic outside the morning and afternoon peaks - which are more common for office uses.

3.2.49 Going forward from there, the 7% of the residential trips that was attributed to internal employment was deducted from the employment trip rates to avoid double counting. The rest were considered to be trips between residential and commercial and education (as place of employment).

3.2.50 Total residential trips shown in **Table 3.16** (**Annex D**).

G. Employment

3.2.51 The employment trips generated by the development were regarded to be the trips arising from the commercial land uses and staff trips to education.

3.2.52 The employment trips linked with the residential development were taken out of the employment trip generation as they were included in the residential – thus, the remaining trips were between development and the external network only, as shown in **Table 3.17** (**Annex D**).

H. Retirement Houses

3.2.53 The trips generated from the retirement houses proposed in the development were considered to be mainly family visiting trips, with a small element of employment. For robustness, those trips were considered 100% external.

3.2.54 Final Retirement Houses ODs are shown in **Table 3.18** (**Annex D**).

I. Hotel

3.2.55 Similarly, the hotel trip generation was considered 100% external, although it was acknowledged that a small element of interaction with other parts of the development, like commercial or local centre, might occur.

3.2.56 Total Retirement Houses ODs can be found in **Table 3.19** (**Annex D**).

4 Sustainability

4.1 Introduction

4.1.1 Separate assumptions for the 'non-car' modes i.e. walking, cycling, use of public transport, car sharing and working from home were made for each land use and for each origin and destination pair. This accounts for the different groups of network users, journey purposes and accessibility to the different sustainability modes for each development parcel. In this way, the remaining trips were regarded as vehicular and have been used to assign traffic into the strategic model.

4.1.2 A different methodology and overarching assumptions were adopted for trips internal to the development and trips going further afield (external trips) in order to take account of the development's Sustainable Travel Strategy as well as the emerging Transport Strategy for Swale.

4.2 Internal Mode Share

4.2.1 For trips internal to the development, mode share assumptions were made for each land use and mode of transport separately, including working from home and car-sharing assumptions where applicable. An example of that is shown in **Table 4.1** (**Annex E**), where Village 1 refers to Oakwood Village, Village 2 refers to Highsted Village North, Village 3 to Highsted Village East and West, Village 4 to Teynham West, while Village 5 was also applied for a part of Teynham West land that has not been included in the latest proposals.

4.2.2 The assumptions also took into account the relative location of the origin and destination of each trip within the development in order to reflect realistic walking and cycling distances as well as development aspirations for bus use.

4.2.3 In order to reflect the higher propensity for remote working that is anticipated to be the long-term result of the present pandemic situation, a slightly higher percentage for working from home was applied in employment assumptions than the initial percentages indicated by 2011 Census mode share statistics.

4.2.4 The result of this process is shown in **Table 4.2** (**Annex E**).

4.2.5 Taking this a step further, the minor road network connecting neighbouring zones within the development was also taken into account so that the final numbers would reflect only the vehicles using the link road and its respective junctions. This step was needed for producing the input to the strategic model and resulted the ODs shown in in **Table 4.3** (**Annex E**).

4.3 External Mode Share

4.3.1 For trips continuing further out onto the road network, distribution assumptions were needed as different mode shares were applicable to different destinations, based on distance and available transport modes. With that in mind, external trips were split between the following geographical groups:

- Sittingbourne,
- North Kent and Medway,
- South Kent and
- Other

4.3.2 This allowed for mode share assumptions that would take into consideration the existing and future opportunities for bus and train travel from the development to each of those destinations.

4.3.3 In addition, a second level of grouping took place to allow for different vehicle classes to be treated separately. These classes correspond to the ones assumed in the strategic transport model and are as follows:

- User Class 1: Car - Employers Business (HBEB),
- User Class 2: Car - Home Based Work (HBW),
- User Class 3: Car - All other trips (HBO),
- User Class 4: Light Goods Vehicles (LGV)
- User Class 5: Heavy Goods Vehicles (HGV)

4.3.4 The distribution percentages for each destination and each user class, along with the user class split, were taken from the strategic model. This exercise was undertaken separately for employment than the rest of the development, as it was acknowledged that both the user class split and the distribution to employment would follow different patterns than the rest of the land uses.

4.3.5 For the user class split and the sustainability assumptions of the employment, the patterns suggested from the strategic model for the KSP existing site as well as the site North of Swale were adopted (**Tables 4.4** and **4.5)**, while for the rest of the development the Stones Farm site was considered a good proxy (**Tables 4.6** and **4.7**).

Table 4.4: AM User Class Split and Distribution Percentages – Employment

User Class	AM User Class Split	AM Distribution Percentages			
		Sittingbourne	North Kent & Medway	South Kent	Other
UC1 - HBEB	6%	26.1%	44.6%	24.7%	4.7%
UC2 - HBW	29%	19.7%	55.5%	22.1%	2.7%
UC3 - HBO	48%	58.3%	32.9%	5.7%	3.2%
UC4 - LGV	6%	46.0%	29.4%	15.7%	8.9%
UC5 - HGV	11%	24.3%	37.2%	17.1%	21.3%

Table 4.5: PM User Class Split and Distribution Percentages – Employment

User Class	PM User Class Split	AM Distribution Percentages			
		Sittingbourne	North Kent & Medway	South Kent	Other
UC1 - HBEB	6%	29.9%	45.3%	18.7%	6.1%
UC2 - HBW	21%	12.7%	56.4%	24.4%	6.5%
UC3 - HBO	61%	51.2%	38.7%	6.4%	3.7%
UC4 - LGV	5%	52.5%	25.1%	14.0%	8.5%
UC5 - HGV	6%	19.8%	38.4%	17.9%	24.0%

Table 4.6: AM User Class Split and Distribution Percentages – Development Excl. Employment

User Class	AM User Class Split	AM Distribution Percentages			
		Sittingbourne	North Kent & Medway	South Kent	Other
UC1 - HBEB	7%	26.1%	44.6%	24.7%	4.7%
UC2 - HBW	53%	19.7%	55.5%	22.1%	2.7%
UC3 - HBO	33%	58.3%	32.9%	5.7%	3.2%
UC4 - LGV	7%	46.0%	29.4%	15.7%	8.9%
UC5 - HGV	0%	24.3%	37.2%	17.1%	21.3%

Table 4.7: PM User Class Split and Distribution Percentages – Development Excl. Employment

User Class	PM User Class Split	AM Distribution Percentages			
		Sittingbourne	North Kent & Medway	South Kent	Other
UC1 - HBEB	5%	29.9%	45.3%	18.7%	6.1%
UC2 - HBW	37%	12.7%	56.4%	24.4%	6.5%
UC3 - HBO	51%	51.2%	38.7%	6.4%	3.7%
UC4 - LGV	6%	52.5%	25.1%	14.0%	8.5%
UC5 - HGV	0%	19.8%	38.4%	17.9%	24.0%

4.3.6 Due to the nature of the trips for the user classes 4 and 5 (LGVs and HGVs), no sustainability assumptions were made as it was considered reasonable that no shift to sustainable mode could be made.

4.3.7 For user classes 1, 2 and 3, an initial sustainability percentage was established through Census data for travel to employment for Swale 007 as place of usual residence, as it was considered that Iwade closely resembled the proposed site's location and proximity to both the strategic network and Sittingbourne. This sustainability factor represents the percentage of trips that were made from Swale 007 to the four regions of interest with modes other than driving a car or taking a taxi.

4.3.8 These initial sustainability percentages were then increased to better reflect the aspirations of the Borough for better connectivity and uplift in the use of public transport and sustainable modes of travel, as well as the Sustainable Travel Strategy of the proposals. They were then applied to the respective person trips for each region and user class to create the final vehicle trips external to the development.

4.3.9 The only exception to the above methodology were the trips generated by HWRC. The HWRC trips were acknowledged to be vehicle only due to their nature, and therefore were excluded from the sustainability exercise. Instead, they were added directly to the vehicle trip ODs.

4.4 Total Vehicle Trips

4.4.1 The outcome of the methodology described above is a pair of OD matrices, for AM and PM flows, between the 22 development zones and the 'external' zone, where external comprises of all trips going to or originating from outside the proposed development, that involves all vehicle movements using the link road and the proposed junctions along it. The final results are shown in **Table 4.8** (**Annex E**).

4.4.2 These ODs were then used as an input to the strategic model, as already discussed, in order to form the With Development AM and PM scenarios based on which the traffic impact of the development on the wider network is subsequently assessed.

Annex A KCC Consultation Responses and Minutes to Meetings

Growth, Environment & Transport

Invicta House
MAIDSTONE
Kent ME14 1XQ

Phone: 03000 411683
Ask for: Simon Jones
Email: Simon.Jones@kent.gov.uk

30 November 2021

Andrew Lainton
Swale Borough Council
Development Control
Swale House
East Street,
Sittingbourne,
Kent
ME10 3HT

BY EMAIL ONLY

Dear Andrew,

Re: outline application with all matters reserved for a proposed development at land south and east of Sittingbourne, Kent [application reference: 21/503914/EIOUT]

Thank you for consulting Kent County Council (KCC) on the outline planning application, which, summarised, comprises up to 8,000 dwellings, up to 170,000sq.m commercial, business and service/employment floorspace, a mixed-use local centre and neighbourhood facilities, non-residential institutions and local community uses, learning institutions (including primary and secondary schools), open space, green infrastructure, woodland, community and sports provision and highways and infrastructure works, including a new motorway junction to the M2, a Sustainable Movement Corridor (including a Sittingbourne Southern Relief Road) and new vehicular access points and associated groundworks, engineering, utilities and demolition works.

The County Council notes that this application has been submitted alongside a related proposal for land to the west of Teynham Road (reference 21/503906). A separate response is made in respect of that application, and where appropriate, the cumulative impact of these two applications is considered.

In summary, and in considering the application as it currently stands, the County Council raises a **holding objection** on the following grounds:

- The proposal fails to provide appropriate modelling or sufficient information to provide KCC as the Local Highway Authority with an adequate understanding of the impact of the development. As such, KCC is not in a position to properly assess whether proposed mitigation measures are acceptable.
- The proposal provides insufficient information to fully assess the impact of the development on the Public Rights of Way Network (PRoW) network.
- The proposal fails to provide the necessary waste management infrastructure, required by KCC as Waste Disposal Authority, to mitigate the significant increase of demand arising from the development.

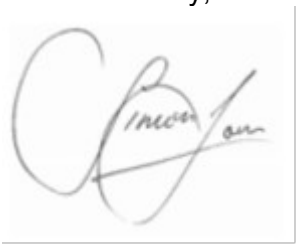
- The proposal fails to provide the necessary and appropriately located primary education, secondary education and Special Educational Needs provision, as required by the County Council as Local Education Authority.
- The proposal provides insufficient information to demonstrate that adequate provision has been made within open space allocations to manage surface water appropriately, with adequate separation distances as required to ensure sufficient attenuation volume based upon assumed applicability of infiltration rates. The layout and planning around areas of surface water flood risk (and the consequent impact that would have on the proposed developable area) has not been adequately demonstrated to the County Council as Lead Local Flood Authority.
- There is insufficient information to demonstrate there would not be needless sterilisation of safeguarded mineral deposits. The proposal therefore fails to provide sufficient information to KCC as Minerals and Waste Planning Authority to fully assess whether the proposed development can invoke any exemption criterion of Policy DM 7: Safeguarding of Land-won Minerals (Kent Minerals and Waste Local Plan 2013-30 (as Partially Reviewed).

The County Council has reviewed the application in its entirety and has an extensive commentary to raise in response to the proposal, set out clearly below, in a subject chapter format.

The County Council will continue to work closely with the Borough Council to help ensure the delivery of new housing and infrastructure in response to local needs – delivering sustainable growth for the Swale Borough. The County Council will welcome engagement with the applicant and the Borough Council as Local Planning Authority in addressing the matters raised in this response.

If you require any further information or clarification on any matter, please do not hesitate to contact me.

Yours sincerely,



Simon Jones
Corporate Director – Growth, Environment and Transport

Contents

KCC Highways and Transportation

Introduction

Due to the strategic nature of the application, KCC as the Highway Authority has employed an external consultant to provide assistance in its review. (Some of the content below relates to the cumulative impact of this application and that of application reference 21/503906. The Transportation Consultant Report should be considered in conjunction with this letter.

Transport Assessment (TA) Document 2: Policy

The National Planning Policy Framework (NPPF) references made in chapter 3 are out of date, following an update to the NPPF in July 2021. The changes however predominantly relate to numbering and the correct numbering being paragraphs 104 to 113 within chapters 9 and 10. The element not referenced in the TA is in regard to paragraph 110 (c), which requires developments to meet "the design of streets, parking areas, other transport elements and the content of the National Design Guide and National Model Design Code.

In assessing the application, KCC's attention is drawn to paragraph 110 of the TA Document 2: Policy:

a.) The application and infrastructure proposed provide opportunities to promote sustainable transport modes. This is delivered through the application's ability to internalise movements and design in sustainable options from the outset. It is however considered that the application will be required to follow through its sustainable intentions into the junction designs. This is covered in the response.
b.) Safe and suitable access is yet to be demonstrated due to incomplete modelling and assessments on its impacts on highway safety. In its current form the application does not comply with this policy.
c.) The streets, parking areas and other transport elements have not been demonstrated to comply with the National Design Guide and National Model Design Code. In its current form, it is unclear as to how the application complies with this policy.
d.) Significant impacts from the development on the transport network have not been demonstrated to be cost effectively mitigated to an acceptable degree due to incomplete modelling evidence. In its current form, the application does not comply with this policy.

Action – Updated NPPF policy reference and evidence required

Reference to KCC's LTP4 remains current and includes reference to page 39 of LTP4 and the identified improvement labelled as an "extension to the Northern Relief Road to the A2 and then M2". As proposed, this application includes the infrastructure as referenced. Importantly though, this should be put into context of the content of page 25, which reflects that the schemes are identified from individual district's Local Plans and Transport Strategies. It is noted that this infrastructure did not appear to be a priority for Swale Borough Council during the recent Regulation 19 draft Local Plan consultation

In the longer term, KCC as Local Highway Authority considers that the modelling presented through the various stages of the Local Plan Review that infrastructure of this nature could be necessary to facilitate any growth occurring in the area between Sittingbourne and Faversham due to pre-existing congestion, junction capacity and air quality.

Swale Draft Transport Strategy

The Transport Strategy is designed to respond the emerging Local Plan Review, and it is envisaged that the six stated objectives of the Swale Borough Council Transport Strategy willremain the same; these being:

Objective 1	To promote active and sustainable travel enabling residents to take up these modes
Objective 2	To reduce and mitigate the impact of poor air quality related to transport whilst striving for net zero
Objective 3	To improve the journey time reliability and resilience across the transport network
Objective 4	To support the economic growth and development projected in the Local Plan Review
Objective 5	To consider the needs of all users across the transport network
Objective 6	To substantially reduce all road casualties and progress towards zero killed and seriously injured (KSI) casualties

Objective 1

The application includes measures to support this objective through the following proposals:

- Reduction in Sittingbourne Town Centre Traffic
- Additional Non Motorised Users (NMU) routes provided connecting with Teynham Station
- New highway infrastructure that creates opportunities for improvements to bus services
- Opportunities for internalisation of movement through accessible local amenities

Objective 2

The application includes measures to support this objective through the following proposals:

- Reported reductions in traffic through existing AQMAs
- Improved opportunities for modal shift

Objective 3

The application modelling needs to be updated to demonstrate that it is compliant with this objective.

Objective 4

The application duplicates the economic growth and development required by the draft Local Plan Review and has not been demonstrated to support the growth strategy proposed by the Borough Council.

Objective 5

The application includes measures to support this objective through the provision of new internal walking and cycling routes and a proposed NMU corridor. It however fails to meet this objective with a lack of crossing provision or appropriate facilities being provided across and along the proposed link road infrastructure.

Objective 6

Highway safety assessments are incomplete and as such, the application fails to demonstrate compliance with this objective.

TA Document 3: Site Context

The site context section has been reviewed and largely agreed as a representation of an accurate description; however, the following comments are made.

Bus Services

A 30min service is now operating along the A2 knowns as routes X3 and X4.

Local Highway Network

Park Road – Demand for on street parking is very high, often resulting in single carriageway operation.

Other local adopted roads affected by the development that have not been mentioned but should be included are as follows:

In an assessment for this application only:

Ufton Road, Tunstall Road, Rectory Road, Cromer Road, Highsted Valley, Highsted Road, Stockers Hill, Bottom Pond Road, Green Lane, Panteny Lane, School Lane, Church Street, Dully Road, Bexon Lane, Lynsted Lane, Swanton Street.

Additional highways in an assessment for the cumulative impact of both Highsted Park applications:

Lomas Road, Lower Road (Teynham) Station Road (Teynham), Hempstead Lane.

Action – Traffic flow details and highway safety assessments to be added for the above-mentioned affected highways.

Baseline Modal Split

It is noted that the applicant has made use of a doner Middle layer Super Output Areas (MSOA) (Swale area 07, Kemsley and Iwade) to determine the travel patterns of the proposal rather than area 16, in which the application sits. On the basis of the similarities of the doner site to that of the proposed development, the proposed use of MSOA Swale O7 is agreed. The doner area has an expected higher level of vehicular use than that of the National Average.

The 2017 Base data as shown in table 4.1 (taken from the Swale Transport Model (STM)) has been checked and all flows other than the AM flows on the A249 north of the A2 and the PM flows between M2 J6 and J7 are agreed as accurate.

Action - Clarity is required for the two figures that we are unable to replicate.

Traffic conditions

The statements in 4.2.6 and 4.2.7 are now out of date with consent being granted by the Planning Inspectorate to proceed with delivery of the M2 J5 RIS scheme.

Highways Safety

The highways safety section is presented in a summary form only, without any details of the incidents that have occurred. It is therefore not possible to review whether or not there are any patterns. Greater detail of the incidents reviewed should be presented, along with any specific clustering alongside a justification for each assessment. This assessment will enable us to confirm or otherwise the conclusions made by the applicant.

Action - In addition to the links presented, any highways not mentioned from the list above should be included in the assessment.

Action - Greater detail of the incidents reviewed should be presented, along with any specific clustering with a justification for each assessment.

TA Document 4: Development Proposals

This element of the application includes the following components.

- 8000 residential units including extra care sheltered accommodation
- 170,000 sqm of commercial Class B2, B8 and E, including 2,000 sqm hotel class C1
- Mixed use neighbourhood amenities Classes E F1 and F2.
- 3x primary school 3FE & 1 secondary school 8FE
- New highway access points including a Sittingbourne Southern Relief Road and new motorway junction to the M2.

The applicant has submitted a cumulative impact of both this application and that of 21/503904 only. Unusually, it is not therefore possible to assess this application on its own merits from a highway perspective. KCC has dealt with the cumulative assessment latterly in this response; this section therefore deals with the individual elements of this development.

The proposed development is formed of two new garden village communities known as Oakwood Village (South East of Bapchild and surrounding Rodmersham) and Highsted Village (Between Highsted and the M2 and surrounding the Kent Science Park).

Development proposals are understood to be separated between the villages in the following way:

Oakwood Village

Land Use	Sub Land Use	Units	Quantum
Residential	-	dwellings	4,073
Commercial	B2/E	m^2	4,140
Local Centre(s)	Medical Centre	m^2	1,250
	Pharmacy	m^2	200
	Retail	m^2	2,100
	Foodstore	m^2	1,670
	Professional/Financial	m^2	400
	Nursery	m^2	400
	Gym/Fitness	m^2	200
	Community Centre	m^2	1,000
	Pub/Restaurant	m^2	1,200
Education	Primary	FE	3
Leisure	Sports Pavilion	m^2	1,500

The development has an excellent ratio of employment space to residential, community facilities and appropriate primary school provision. As proposed it is agreed that there would be good potential for internalisation of movement within the proposed Oakwood Village. There would also be good accessibility to wider services, bus, train services and internal access provided to the strategic highway network.

Highsted Village

Land Use	Sub Land Use	Units	Quantum
Residential	-	dwellings	3,927
Commercial	B2/B8/E	m^2	165,860
Local Centre(s)	Medical Centre	m^2	1,000
	Pharmacy	m^2	250
	Retail	m^2	2,660
	Foodstore	m^2	1,950
	Professional/Financial	m^2	400
	Nursery	m^2	430
	Gym/Fitness	m^2	200
	Community Centre	m^2	2,000
	Pub/Restaurant	m^2	1,200
Education	Primary	FE	3
	Primary	FE	3
	Secondary	FE	8 + 6th Form
Leisure	Sports Pavilion	m^2	2,450

The development has a significantly higher level of employment space to residential, however it is well located with direct access to the strategic highway. There is a good range of community facilities and appropriate primary school provision. As proposed, it is agreed that there would be good potential for internalisation of movement within the proposed

Highsted Village. Access to bus services is likely to be good, access to train services may be require interchanging modes.

The secondary school and primary school proposed locations immediately adjacent to the M2 are poorly located and would be detrimental to independent or sustainable access. This would be a matter of objection on highway grounds for the above-mentioned reasons.

Action – Relocation of the collocated secondary and primary schools to a more sustainable site within Highsted Village to the satisfaction of the highway and education authorities.

Proposed new infrastructure

M2 Junction 5a

A proposed all movement motorway junction located between the existing Ruins Barn Road and Bottom Pond Road to the south of the application site.

The design of the junction will be a matter for the consideration of National Highways. From a local highway perspective, the junction has the potential to provide much needed resilience.

Sustainable Movement Corridor (SMC) incorporating the Southern Relief Road

The proposal includes a strategic highway connection between the A2 and the M2 with a sustainable movement corridor alongside. The new road would also act as access to the development.

The road is a combination of dual and single carriageway. Higher flows are demonstrated at the southern end of the proposed relief road and this has therefore been designed with a combination of grade separated and at grade junctions. The northern end has been designed with at grade junctions similar to those of the existing Swale Way.

Heading south to north, the relief roads starts as a dual carriageway serving vehicular use only to the first junction providing access to employment sites. This is agreed as appropriate.

Continuing north the route retains its dual carriageway status but transitions into a tree lined semi-rural corridor. The route continues through a grade separated junction with Broadoak Road. Broadoak Road itself crosses the relief road over a widened green bridge providing good pedestrian, cycle and public transport priority. North of this junction the road changes to a single carriageway. This is also the point at which the proposed Sustainable Movement Corridor (SMC) appears on the western flank of the relief road.

The next junctions is with the existing Highsted Road and Cromer Road and is proposed as a four arm signalised arrangement. It is mentioned that the signalisation would give priority to Public Transport and sustainable modes using the SMC.

Action - The applicant is requested to demonstrate how the reported SMC priority been modelled.

Beyond the signalised junction the road crosses three public rights of way.

The area to the south of Bapchild is mentioned to have been "designed to respond to masterplan and placemaking evolution". This appears to result in greater connectivity with Bapchild through the existing highway network. An at grade roundabout junction connects with Church Street acting as access to the proposed Oakwood villages North and South of the relief road. A similar junction is then proposed a little further north, again providing access to the proposed Oakwood villages. The SMC finishes at the Church Street junction where it is proposed to be integrated into the existing highway. Footway/Cycleway provision continues on the southern side of the road.

Paragraph 4.3.25 of TA document 4 appears to suggest that there is limited access to the relief road and no general vehicle connectivity to the wider villages to ensure that traffic is focussed on the Key gateway junctions.

Action – Clarification on this paragraph is sought. SATURN plans suggest that development connects only to the relief road and no vehicular connection is achievable from the development to School Lane and Panteny Lane.

Beyond the northern roundabout to the Oakwood villages the road returns to being a dual carriageway up to the point of a new roundabout on the A2 and the commencement of a proposed Bypass of Bapchild.

Action – Clarification is required as to the start and finish point of each of the Highsted applications. As demonstrated in this part 4 of the transport assessment there would only appear to be a half built Bapchild bypass in this application which clearly could not operate. Whilst the TA has not made any presentation of stand-alone modelling the application must be assessed as such. It is advised that either an alternative option of junction G must be presented in this application, or that it presents the inclusion of the completed link road around Bapchild from proposed Junctions R to G, inclusive of X and Y.

Junction B (Employment land access)

A four-arm roundabout on the proposed Southern Relief Road (SRR) dualled on the North and South Arms and single carriageway on the east and west. The roundabout has a three lane 12m circulatory with an 80m diameter, a three-lane entry on the northern arm and two lanes for all others. The applicant has advised on a departure from standards on the centre line radii. This relates to a need to avoid veteran trees in close proximity and the matter will need to be discussed through appropriate assessments to ensure there are no safety implications of this departure.

CD377 requires vehicle restraint systems (VRS) to be in place for all-purpose trunk roads with a speed limit of over 50MPH. Whilst technically not a trunk road, the dualled section of SRR between the M2 and a point just beyond the Broadoak Road junction is designed as such, hence the requirement for VRS. VRS is provided but stops short of the junction on the southbound approach by 1.5 times the stopping sight distance from the give way entry to the roundabout. The applicant has suggested an appropriate assessment on this be carried out through a Road Restraint Risk Assessment Process to be conducted prior to a Stage 1 Road Safety Assessment. The approach is generally agreed, and the matter will be raised with our structural engineers at an early stage for their consideration on the most appropriate design.

Action – Drawings to demonstrate approach lane width, inscribed circle diameter (ICD for roundabout and all visibility splays.

Side roads have an accepted 30MPH speed, the SRR has a 50MPH speed also accepted for this section of the road.

Cross sections of the SRR show two 7.3m carriageways in either direction with a 5.1m central reservation, area agreed as appropriate.

The Northern arm of the link has a 3m footway/cycleway facility which continues to the eastern employment arm of the roundabout. A crossing and ongoing shared facility provides access to the Western arm. It is unclear as to how this is controlled.

Action – Applicant to clarify NMU crossing facilities between employment parcels.

Junction C (Garden Bridge with Broadoak Road)

The junction provides grade separated access to the existing Kent Science Park through Broadoak Road and is made up of the following arrangements:

- Access off and on to the SRR is provided via on and off slip road facilities
- A green bridge carrying Broadoak Road over the SRR
- A priority bus only junction access to the start of a Northbound Sustainable Movement Corridor to the West of the SRR with Broadoak Road being the major arm.
- A priority junction between Broadoak Road and the southern off/on slip road with the slip being the major arm.
- A signalised junction to control Broadoak Road West and East, the northern on/off slip and central avenue.

A speed transition from 50 to 30MPH is noted on both exits of the SRR and is agreed.

The access off the 50MPH SRR is designed with merge, diverge tapers for all connections other than the southbound exit. The arrangements will need to conform with DMRB standards within CD123. Given the high employment use of the proposed development there is a likelihood for significant HGV movements and the lack of diverge on the southbound entry is of concern. Notwithstanding that CD123 does not allow for diverge facilities on the inside of a corner, the SRR at this location would appear to be near straight and the likelihood of obstruction of visibility of southbound merging vehicles potentially not of concern. No merge/diverge analysis has been presented for this arrangement and noting that flows appear to indicate around 140 left turn movements in the AM peak into this junction, with 50MPH mainline flows of over 1000, this analysis must be presented.

Junction modelling appears to be combined for Junction C and it is unclear which are the corresponding assessments.

Action – It is requested that the 4 “c” junctions be identified as “C (1-4)” to assist with junction location.

Action: Merge/Diverge analysis to be presented for the exits off/on to the proposed SRR at junction C. Discussion and review necessary to consider as to whether or not the CD123 inside of bend criteria is applicable. SSD visibility splays to be presented on the drawings.

Broadoak Road/SRR NB off slip

A short section of Broadoak Road is retained from its junction with Ruins Barn Road before giving way to the proposed the SRR north bound off-slip. No ghost right turn lane facilities are provided and visibility splays do not appear to have been demonstrated.

It is unclear which of the junction assessments relates to this location.

Action – Visibility splays to be demonstrated on the drawing. Clarity is sought on the location of this junction assessment.

Green Bridge – No design details have been presented and these would be required to be fully assessed by our structural engineers. The TA reports that part of the decision making for inclusion of a green bridge was to prioritise NMU East/West movements however the design drawing appears to indicate only vehicle priority. No detail is demonstrated as to how pedestrians/cyclists are expected to negotiate the proposed arrangements or how the two existing public footpaths are to be dealt with. The masterplan submitted with the application appears to indicate that PROW ZR155 would serve as a ped/cycle green link into the development. Public Bridleway ZR151 is not shown on the drawing, but would provide a vital link to Tunstall Village.

Action – Priority Walking/cycling and PROW arrangements to be presented in the design drawing. Cycling connection to Tunstall Village via PROW ZR151 to be demonstrated. Indicative design details to be discussed with KCC structural engineers.

Bus only junction to Broadoak Road

The intention of this facility is welcomed. Further details will be required on its proposed operation and enforcement.

Action – Applicant to provide information on the proposed operation and enforcement of the bus gate.

Signalised control of Broadoak Road

A proposed four arm signalised cross roads with Broadoak Road, the SRR southbound off slip and access to Kent Science Park via Central Road. SSD's have not been demonstrated on the plans and will be required.

Action – Add visibility splays to drawings.

Junction D – Access to Highsted Road

The junction has been designed in accordance with CD123 and is in the form of a signalised junction between the SRR and Highsted Road. All lanes are stated to have a 3.5m width. Both approaches of the SRR have two straight ahead lanes and separate right turn lanes. The Northbound approach also has a separated left turn lane. The left turn lane is included to provide for priority crossing of the SMC situated on the north side of the SRR. Controlled pedestrian/cycle crossing facilities are provided on the eastern arm of the SRR and Highsted road Northern arm.

The Northern arm of Highsted Road provides access to new development and has two entry lanes into the signalised junction but does not continue Northbound to Sittingbourne Town Centre. A proposed sustainable gateway through the northern end of Highsted Road is proposed and welcomed.

Cromer Road is proposed to be diverted to a priority junction arrangement with Highsted Road. Highsted Road being the major arm with a ghost right turn lane facility being provided into Cromer Road. The above mentioned Highsted Road removal of vehicular access to Sittingbourne results in Cromer Road being used for vehicular access to the Town Centre.

The Southern arm serves as access to the proposed development and has a two lane entry to the signalised junction.

Stockers Hill joins the proposed development access road via a priority junction being the minor arm of that arrangement. The road continues to serve access to Rodmersham Green and rural areas to the east.

Highsted Road south joins Stockers Hill as a minor arm at a priority junction being a reversal of the existing layout. The road continues to serve as access to the Highsted Valley to the south.

Public Bridleway ZU38 appear largely untouched by the proposals other than its termination being onto Stockers Hill rather than Highsted Road. There would appear to be an opportunity within the masterplan layout for this route to be continued North to connect with existing bridleway ZU35. This could provide a valuable addition for recreation and should be discussed further with the PROW and Access Service.

Action – Strategic approach to PROW to be discussed with KCC PROW & Access Service and opportunities for network development included in the application proposals.

Heading north on drawing 16-023/2014D, a development access is demonstrated. This is not shown on the SATURN plan, does not appear to be modelled and its layout is unclear.

Action – Clarity on the layout, modelling and design required for the demonstrated development access to the North of proposed Junction D.

Drawing 16-023/2015D demonstrates three crossings of public rights of way. These routes would play a vital component for provision of sustainable access routes and recreation, careful consideration needs to be applied to crossing treatments to ensure priority for NMU uses and suitability for equestrians.

Action - The treatment of PROW crossings should be discussed with KCC's PROW & Access Service & KCC Highways.

The section has a two lane single carriageway with the SMC on the northern side and a 3m shared footway/cycleway on the southern side. The stretch is designed as a 50MPH section with 7.3m wide carriageway.

Junction E (Access to Oakwood Village South)

A four arm roundabout with single carriageway approaches on each arm. Transition from 50MPH to 30MPH occurs on the western approach arm. Church Lane Northern arm is

diverted into the proposed development with no vehicular through access to Bapchild. Church Lane Southern arm is shown as being retained but has a different configuration to that depicted in the Masterplan in which Church Lane becomes a minor arm of a new access road to development.

The SMC diverts into the Northern Oakwood village where is connects back into running with other traffic.

The Footway/Cycleway is also removed between junctions E & F and the ongoing provision to access Teynham Station does not appear to have not been demonstrated. Indirect on street routes with multiple junctions is demonstrated on the Framework Walking and Cycling plans which would again be in direct contradiction to the proposed objectives of the Sustainability section of the TA.

Action – Clarification is sought on how NMU routes are provided to connect with Teynham station.

Two lane approach flares are demonstrated on all but the southern arm. At grade uncontrolled crossings are shown for pedestrians and cyclists across the Southern and Eastern Arm of the roundabout which would be detrimental to the proposed strategy to prioritise those modes. This is unsuitable for access towards Bapchild and local amenities proposed to the south of the SRR.

Action – Applicant to demonstrate a consistent approach in the Masterplan and proposed junction layouts with appropriate modelling.

Action – Suitable NMU crossing of the SRR to be proposed.

No details are provided as to the ICD, lane width, radii or visibility splays.

Action – Geometric layout details to be provided on the drawings.

The layout between the two Oakwood village access roundabouts includes a large central reservation verge with 6.75m carriageway. Cross section P does not appear to be representative of the layout and a cross section of the different layout further South near to Dully Road has not been demonstrated.

Action – Additional cross sections on the section between Junction E and F to be provided and should correspond with the link sectional drawing provided.

Junction F (Access to Oakwood village North)

A four arm roundabout with single carriageway approaches on all arms except the Northern arm, which reverts to a dual carriageway with two 6.75m lanes in each direction. At grade uncontrolled crossings are shown for pedestrians and cyclists across the Eastern Arm of the roundabout which would be detrimental to the proposed strategy to prioritise those modes.

Action – Suitable NMU crossing of the development access to be proposed.

No details are provided as to the ICD, lane width, radii or visibility splays.

Action – Geometric layout details to be provided on the drawings.

A 3m shared footway/cycleway is demonstrated to be located on the eastern side of the road.

Heading north the proposed SRR connects to junction G on which KCC has made comments in its response to the other Highsted application 21/503906.

Framework Pedestrian and Cycle Routes

The Framework Plan for walking and cycling routes demonstrates existing PROW facilities and use of internal development roads. The only specifically new feature demonstrated appears to be that of a proposed route following a similar alignment to that of the proposed SRR but not at its northern end and critically it does not connect to Teynham or the train station.

Public Rights of Way are largely retained along their existing alignments and within wider green corridors to retain their ability to serve recreational need. KCC could find no mention as to how these would be enhanced within the development to promote mode shift nor does there appear to be any additional PROWs proposed. A notable omission is the missed opportunity to connect existing bridleways.

Whilst stating that there would be priority crossing facilities, most have been demonstrated on the highway layout drawings as at grade uncontrolled with no priority. Furthermore, there is no indication as to how the existing PROWs are to cross the road infrastructure and appear to be severed and incomplete which would be significantly detrimental to promoting mode shift.

It is however acknowledged that much of the development is within a cyclable distance and that internal streets to Kent Design standards could provide opportunities within a garden village settlement for high levels of internal walking and cycling. As presented the Framework Walking and Cycling routes appear indirect, have limited separation from internal highways and no priority over vehicular modes. This would fail to be compliant with national or local policy.

No details of where local services, schools and amenities is shown on the Framework Walking and Cycling Framework and as such it is impossible to tell whether routes are serving them.

Action – Greater detail of pedestrian and cycling crossings are required to demonstrate that the proposed mode share can be achieved.

Action – Walking and cycling connectivity to Teynham to be improved and demonstrated.

Action – Framework walking and cycling route to demonstrate a more convenient and direct network of routes through development parcels and how they connect to schools, local amenities and transport hubs.

Action – Improvements to PROW network to be discussed with KCC PROW and Access Service including the filling of gaps within the current Public Bridleway network.

Ruins Barn Road - South

A proposed shared footway/cycleway is demonstrated along Ruins Barn Road. The route is shown on the western side of the road but terminates without completing. No visibility splays have been demonstrated at the crossing point and it would appear that provision for the existing on street parking is reduced. Existing highway boundaries have not been shown. In light of the above it is at this stage unclear as to the value or deliverability of the proposal.

Action – Proposal to be discussed further with the Highway Authority.

Highsted Road Sustainable Gateway

The junction between Highsted Road and Swanstree Avenue is proposed to operate as a bus, pedestrian/cycling only gateway. Highway boundaries are depicted in the drawing and it would appear to be deliverable within the application and highway land. The proposal is in general welcomed however further detail will be required on the proposed enforcement mechanism and ongoing management.

Action – Proposal to be discussed further with the Highway Authority.

Cycling

Segregated cycling routes are proposed along the primary roads and these would be required to comply with the DfT LTN 1/20.

Improvements to cycle parking convenience are welcomed with easier accessibility integrated into proposed dwellings. These would need to be both secured and sheltered.

An electric bike hire scheme within the development is proposed and welcomed. This would be served from the transport hub with supporting infrastructure provided throughout the development. It is proposed that the developments electric bike scheme could be expanded to cover wider areas of the Borough.

Parking

The applicant proposes to adopt the Swale Borough Council standards and as such is agreed.

TA Document 5: Sustainable Transport Strategy

The proposed strategy, and development as a whole, seeks to adopt similar objectives to those contained within the Swale Draft Transport Strategy , as mentioned above. There are, however, objectives set within the application's own strategy that do not accord with the Borough's,

3. Ensure that the need for, and opportunities to, effect a wider change through large scale strategic development are maximised and that the influence of wider positive benefits remain key to the strategy;

This is clearly designed to support a larger "Garden Community" development. Whilst not a Borough objective there is nothing in the above that would conflict with the proposed draft transport policy or be objected to by the Highway Authority.

4. Encourage and facilitate, through a flexible framework, innovation in transport technology that place the Proposed Development and Swale at the cutting edge of sustainable transport solutions and a 'net exporter' of ideas;

There is a distinctive emphasis on transport innovation yet untested. Whilst an admirable objective, there will need to be far greater detail on the proposals and whether or not they can be sufficiently legislated and approved on a public highway.

5. Present clear, demonstrably deliverable and tangible measures to achieve the objectives that learn from past experiences and respond to the shortcomings of historic strategies (and those emerging in draft) which set aspirational objectives but fail to secure effective and deliverable solutions.

The Borough's draft strategy is clearly marked as such, has a list of deliverable measures interventions and includes a stated flexibility for evolution to respond to emerging technologies and changes to travel patterns. The first part of the objective would therefore be in accordance with the draft policy, the second part is not supported, being as it is a derogatory and unnecessary comment which neither adds anything to the objective nor is conducive to positive engagement between the Highway and Planning Authorities.

Infrastructure to support innovation in public transport.

The development includes potential use of autonomous vehicles, an example of which has been given as the Aurrigo pod which is being trialled in Milton Keynes. To facilitate this the development includes a 6m guided bus corridor between the A2 and Lower Road, this is to be separated by a 3m verge and is welcomed.

Public Transport Strategy

The proposals seek to make sure that all development lies within the required 400m walking distance threshold but also to ensure that the maximum headway would be 30 mins between services. Services would provide connectivity between the emerging villages and interconnect with employment areas and rail stations.

It is proposed that the SMC would be built in the earlier stages of development so that a route can be provided.

Two routes have been initially assumed that would operate between the Oakwood and Highsted Villages and the centre of Sittingbourne and train station. The routes use a combination of internal development roads, the SMC and make use of a proposed bus gate at the Northern end of Highsted Road. A further inter development route is shown in figure 5.1 operating along the SMC between Kent Science Park and Teynham station.

There is no evidence seen that demonstrates that discussions have taken place with bus operators to justify the statements.

Action - To ensure public transport is available from the outset a costed public transport phasing strategy will be required to demonstrate the feasibility and an approach that is compliant with national and local policy.

Action – Applicant to engage with KCC's Public Transport team and bus operators to discuss the feasibility of the proposals.

Development Rail Access

It is assumed that there is a typographical error in paragraph 5.3.1 where is mentions connectivity to the Chartham main line, which KCC has taken to meaning the Chatham main line.

Train services along this line are relatively frequent offering an hourly service in both directions during the inter-peak. A very good early morning and PM peak service is offered with increased frequency of between two to three services in the hour.

High speed services are mentioned as operating along the line, but it should be clarified that high speed services are not available from Teynham station.

The TA mentions that the development seeks to maximise opportunities to access rail through various modes. Little detail provided other than mention of walking, cycling and bus connecting routes and an intended community travel plan.

Action – Further indication on how rail travel is proposed to be maximised is requested.

Framework Travel Plan

KCC as the Highway Authority welcomes the inclusion of a framework travel plan. The applicant is expecting a condition to the required to ensure delivery of a Community Travel Plan to cover both the Highsted applications. KCC would agree and recommend that a combined Travel Plan is a conditional requirement.

The Travel Plan would need to be monitored by the Highway Authority and a financial contribution would be required to ensure our costs for this are covered.

The Framework Travel Plan includes a number of potential measures that are agreeable, these being;

- Defined targets to increase use of Public Transport, Walking and Cycling. Increase up-take of EV cars and car sharing.
  Integration of parking to facilitate EV and/or car sharing and appropriately located cycle parking hubs
- An electric bike hire scheme with associated infrastructure
- Public Transport services
- Provision of a 5m+ NMU corridor to facilitate any emergent autonomous technology
- Free or discounted public transport passes
- Vouchers for cycling equipment
- Promotional material to support the travel plan
- A central web-based framework for tailoring bespoke individual travel plan services
- Cycle Training

Action - Additional measures that the Highway Authority also considers to be appropriate for this development would be bus shelters and waiting facilities and central community collection points such as Amazon lockers. Also the provision of public seating at regular intervals along the SMC and on other key walking corridors to accommodate elderly and

mobility impaired persons they may need to rest along the route. These should be demonstrated.

No measures for employment staff travel plans have been included in the application which as above undermines the portrayed sustainability of the proposals.

Action – Inclusion of a framework employment staff travel plans should also be provided

Whilst mentioning many agreeable options the Framework Travel Plan has given no consideration to the cost of each incentive.

Action - KCC will require a full cost plan demonstrating the expected outlay being provided towards each of the individual incentives to a level that can be fully considered by the Planning Authority in the review of viability assessment and for consideration of any Section 106 financial contributions.

No targets or objectives could also be found which are fundamental to any TP.

Action- Guidance should be sought from KCC on the required inclusions of the TP.

TA Document 7: Traffic Impact Assessment

This section of the response is repeated for both applications 21/503906 and 21/503914. The applicant has, rather unusually, submitted two separate applications however only assessed the impacts as a cumulative of the two. It is therefore technically impossible for the applications to be assessed independently on highway grounds. This response is therefore on the cumulative impact only.

Should the determining authority choose to approve these applications our position would have to be that one application could not be approved without the other due to insufficient analysis of the individual applications being provided.

In preparation of the Swale Local Plan review it was determined at an earlier stage in Pre-application discussions that Borough Council, County Council and applicant would commission the build of a Strategic Highway model to be jointly paid for. This provides economic efficiencies for all parties whilst also ensuring that any forthcoming development applications can use the same modal structure and distribution. The base highway model is therefore the same for both this application and the Local Plan and has been validated appropriately and approved by the County Council, Borough Council and National Highways. Reference Case modelling was also completed as a joint approach but has subsequently been independently updated to meet the requirements of the Local Plan test and build brief of National Highways.

Highway Infrastructure assumptions.

There have been some revisions to the Local Plan reference case model in terms of Highway Assumptions that would also be required for the modelling tests for this application.

The additional junction improvements that have occurred since the Borough Council's earlier 2019 reference case model run are as follows:

A2/Love Lane signalisation
A249/Bobbing junction signalisation
Lower Road/Cowstead Corner capacity improvements
B2006/Sonora Way roundabout capacity improvements
Borden Lane/Homewood Avenue mini roundabout
Quinton Road mini roundabouts
Halfway Road Traffic lights
M2/J5
SW Sittingbourne link road between Chestnut St and Boden Lane
NW Sittingbourne Access roundabout and internal link road between Quinton Road and Grovehurst Road
Crown Quay Lane Access to Eurolink Way
Iwade Expansion roundabout to Grovehurst Road
Preston Field link road
Perry Court link between Brogdale Road and the A251.

Action – Reference case modelling needs to be updated in order to properly assess the developments impact. The Highway Authority will be able to provide the applicant with the updated reference case model.

Model Updates

The changes at Park Road and Swale Way are noted.

Action - We request the detail of this is shared with KCC in order for the Swale model to be appropriately amended.

Trip Rates

KCC's response to trip rates is contained within our appended consultant's report.

Highway Infrastructure Assumptions

Paragraph 3.4.8 and 3.4.9 mentions the highway connections added including the following:

- M2 J5A
- Completion of the SNRR Bapchild link
- A SSRR connecting between the A2 and M2

Links from the development and new road to the following have also been added;

- Ruins Barn Road
- Broadoak Road
- Highsted Road
- Church Road
- A2

It is noted that Lower Road is not mentioned despite application 21/503906 creating a link to it. Neither are the flows shown in Appendix C for Frognal lane, Station Road or whatever connection is to be made back to the A2 through the eastern side of that application.

Action – The impact on the traffic flows for the abovementioned streets should be demonstrated as it would be likely that the new links created to connect them to a strategic network would have an impact.

A review of the SATURN layout has identified that the proposed link to Lower Road is not included.

Ruins Barn Road and access to the South of the A2. Paragraph 3.4.11 identifies that Ruins Barn Road modelling capacity was limited to avoid unrealistic routing of traffic on rural roads. The assumption from this therefore is that the application is generating a demand for use of rural roads through the AONB and along an existing popular rural route using Ruins Barn Road through Swanton Street and Hollingbourne to get to the M20 or Maidstone.

Further to the above the diagrammatic traffic flow charts at Appendix C do not demonstrate what traffic is flowing South of the M2 on Ruins Barn Road but show a significant increase above the reference case provided.

Action - Further evidence is required as to the traffic impact upon the AONB and in particular towards the route mentioned above.

Trip Distribution

The trip distribution beyond the development zones uses the same zonal pattern as the Swale Base and Reference cases and as such is agreeable.

Land use assumptions

The demand modelling for application 21/503906 is advised to be using the following KSP development Summary V27 8000. The numbers presented neither matched the application for 1250 dwellings or a cumulative test of 9250 dwellings stated at the outset of Section 7 of the TA. **The modelling evidence is therefore not matching that of the application.**

Table 4.1: Land Uses

Land Use Category	Land Use Sub-category	Units
Residential	Private	6400 dwel.
	Affordable	1600 dwel.
Commercial	Light Industrial (Ind. Estate)	66400 sqm
	Research units	66400 sqm
	Warehouse	199200 sqm
Leisure	Leisure Centre + Sports	3950 sqm
Education	Primary	9 FE
	Secondary	8 FE
Local Centre	Nursery	790 sqm
	Medical Centre	2250 sqm
	Pharmacy	450 sqm
	Retail	5200 sqm
	Foodstore	3620 sqm
	Professional/ Financial	800 sqm
	Community Centre	3000 sqm
	Pub/ Restaurant	2400 sqm

When checking the application 21/503914 this shows the same referenced KSP development Summary V27 8000 however the land uses table is different and does show cumulative Land Use assessment figures. This raises significant concerns as to what is included in the modelling completed.

Action: The TA's need to be appropriately amended and to provide the correct Land Use assumptions demonstrating the impacts of both applications independently and as a cumulative test. Modelling will need to be re-run to demonstrate the applications on their own merits and as a cumulative of the two. It is recommended that section 7 for each application is updated to show the impacts of the above mentioned scenarios.

Net Traffic Impacts

As has been mentioned earlier, the Highway Authority is not accepting that the reference case and with development tests provided are appropriate. Notwithstanding this and our comments on the necessary modelling amendments, the information provided demonstrates the cumulative application as an indicative option against Local Plan required growth required in the Borough. Indicatively this shows a reduction of traffic through Sittingbourne Town Centre, the A249 and the A2. Increases are however then shown on Bell Road/Gore Court Road/Woodstock Road, routes to the South to Hollingbourne, Swale Way and the M2.

Junction Assessments

The applicant includes assessments for 36 junctions however as the modelling is in need of updating these will be inaccurate. As a consequence no detailed review has been completed by the Highway Authority or its consultants until such a time as the applicant has re-assessed them.

Action - The applicant should append scale drawings of the existing junctions modelled. Base model calibration and validation should be carried out for all modelled junctions plus those identified earlier in this response. Subsequently, forecast models should be revised and junctions identified for mitigation should be updated based on capacity assessment results.

21/503906

The TA provides no information on the performance of the proposed development accesses for application 21/503906 other than Junction G.

Without an ongoing connection to Lower Road, this junction assessment will be incorrect.

Action – The applicant to update SATURN with the correct links and provide details of how development traffic has been apportioned to each of the access points for the proposed new development area.

The Bapchild A2 access at Junction G also appears to operate over capacity in the AM peak, this therefore bares doubt into the output of Junction R as traffic is likely to re-assign to that. Junction R already suffers on its A2 Western arm with a 17 PCU queue in the AM and a 25 PCU Queue in the PM although this may be able to be balanced out through signal timings.

TA Document 8: Mitigation Proposals

As for the section above, KCC's comments for this section in respect of a cumulative test only and only for the mitigation presented by the applicant at this point in time.

Junction 21 – Swale Way/Barge Way

The junction is currently a three arm roundabout serving industrial employment to the North including the large waste to energy facility.

The mitigation proposed increases the two lane entry length on the Southern and Western arms of the roundabout. The circulatory width will need to be demonstrated on the drawing along with updated modelling evidence. Modelling for the mitigation proposed halves the difference between the AM queue to 7.4 PCU. The RFCs remain over 0.85 in the AM and PM and the gain appears disproportionate to the mitigation, as such further work may be required to ensure it operates within effective capacity.

Action – Disproportionate modelling results to be explained.

Junction 22 – Swale Way/Ridham Avenue

The junction is currently a three arm roundabout serving industrial employment to the east. Increases in development traffic results in the junction becoming over capacity on the Swale Way arms.

The mitigation proposed increases the two lane entry length on the Southern and Northern arms of the roundabout. The circulatory width will need to be demonstrated on the drawing along with updated modelling evidence. Subject to the above the principle of the mitigation proposed is generally agreed as acceptable.

Junction 24 – Swale Way/Bingham Road

The junction is currently a three arm roundabout serving industrial employment to the South. As above the increases in development traffic results in the junction becoming over capacity on the Swale Way arms.

The mitigation proposed increases the two lane entry length on the Southern and Northern arms of the roundabout. The circulatory width will need to be demonstrated on the drawing along with updated modelling evidence. Modelling for the mitigation proposed reduces the AM queue by 11 PCU's. The RFCs remain over 0.85 in the AM and PM and the gain appears disproportionate to the mitigation, as such further work may be required to ensure it operates within effective capacity.

Action – Disproportionate modelling results to be explained

Junction 32 – Woodstock Rd/Cromer Rd/Ruins Barn Rd/Tunstall Rd

The existing arrangement is a staggered cross roads giving priority to the Woodstock/Ruins Barn Road arms.

The proposal is for the junction to be signalised however there remains queues of 80 PCU's on Woodstock Road in the AM and 48 on Ruins Barn Road in the PM. Three of the four

arms are operating above 100% DOS. It is noted that the reference case also operates with severe congestion and any development strategy is therefore likely to require some kind of congestion control at this junction. The proposal remains with severe highway impacts and is not accepted by the Highway Authority.

Action - Further work is clearly required that would control movements from the application site and this would need to be discussed with the Highway Authority with through traffic from either Cromer Road or Ruins Barn Road likely to need some restriction to vehicular movement.

Junction 58 – Woodstock Rd/Bell Rd/Gore Ct Rd/Park Ave

The existing arrangement is a four arm mini roundabout. The proposal retains the roundabout geometry but proposes two lane entry on approaches. Both the exit lanes and circulatory would remain single lanes. The design is sub-standard and not accepted by the Highway Authority.

Although not demonstrated it is anticipated that further mitigation would be required for this application on its own merits. Subject to appropriate modelling evidence the Highway Authority anticipates that there may be a necessity for mitigation for ongoing access to the East of the application's residential development on Lower Road, Station Road and for accessing to the A2 East of the proposed roundabout. Further to that is the earlier mentioned consideration for measures to include bus priority, direct and appropriate facilities for cycling and walking along and across the proposed new link roads and physical measures to improve conditions to support sustainable transport choice along Lomas Road.

Summary

It is technically impossible for the applications to be assessed independently on highway grounds due to the approach taken by the applicant. The TAs need to be appropriately amended providing the correct Land Use assumptions in order to demonstrate the impacts of both applications independently and as a cumulative test. Modelling must be re-run to demonstrate the applications on their own merits and as a cumulative of the two and against the updated Local Plan Reference Case. Once that is completed, a reflection of the impact of the development can be both tested on its own merits and against alternative growth strategies sufficient to deliver the Borough's housing needs.

As portrayed, it would appear that there is a general benefit of traffic re-routing away from existing AQMA's, Sittingbourne Town Centre and many congestion hot spots within the Borough. However there remains unacceptable impacts on the Highway as currently demonstrated. Traffic flows amounting to similar levels of the new Local Distributor 7.3m wide Southern Relief Road are found on the Woodstock Road approach to Sittingbourne Town Centre. The flow diagrams at Appendix C show a two way PM flow of 2166 on the existing constrained highway compared to a flow of 1978 at the Southern end of the appropriately designed wide development distributor road. This is clearly unacceptable an undermines the value of the new link.

A summary of issues relating to this application –

1. Inappropriate modelling and a requirement for additional information.
2. Insufficient facilities at proposed junctions and existing infrastructure to promote the reported objectives for modal shift.

3. Junction performance analysis for the development accesses to be provided.
4. Inappropriate volumes of traffic along the Woodstock Road approach to Sittingbourne Town Centre.
5. Insufficient information on impacts or mitigation for routes through the AONB towards the M20.
6. Merge/Diverge analysis required for proposed on/off slips to SRR
7. Lack of information on treatment of Public Rights of Way
8. Lack of cycling connectivity to Teynham station
9. Unacceptable location of the proposed co-located secondary/primary school.

A summary of issues relating to the cumulative impact of applications –

1. Inappropriate modelling and a requirement for additional information.
2. Insufficient facilities at proposed junctions and exiting infrastructure to promote the reported benefits to modal shift.
3. SATURN modelling links need to include the proposed connection to Lower Road and A2.
4. Inappropriate volumes of traffic along the Woodstock Road approach to Sittingbourne Town Centre.
5. Insufficient information on impacts or mitigation for routes through the AONB towards the M20.

On the basis of the above assessment, KCC would raise a holding objection until such a time as further evidence is provided.

Highways and Transportation Consultant Report

Kent County Council

HIGHSTED PARK

Transport Assessment Review

002
OCTOBER 2021

CONFIDENTIAL

Kent County Council

HIGHSTED PARK

Transport Assessment Review

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CONTENTS

INTRODUCTORY SUMMARY

A comprehensive review has been undertaken of the Transport Assessment (TA) and supporting appendices submitted as part of planning application 21/503906 (development on land to the west of Tynham), on behalf of Kent County Council.

The TA and supporting assessment has taken a cumulative approach and provides an Impact Appraisal to cover the scheme as part of a wider development known as 'Highsted Park'. As such, this Response Report also includes a review of the impact assessment, which includes both application references 21/503906 and 21/503914.

The details of the audit and planning applications have been set out below:

Planning Application: 21/503906

Local Planning Authority: Swale Borough Council

Local Highway Authority: Kent County Council

Description: Outline application with all matters reserved for the phased development of up to 95.51 hectares of land comprising: demolition and relocation of existing farmyard and workers cottages, up to 1,250 residential dwellings including sheltered/extra care accommodation (Use Class C2 and Use Class C3) - up to 2,200 sq.m/1 hectare of commercial floorspace (Use Class E(g)) - mixed use local centre and neighbourhood facilities including commercial, business and employment floorspace (Use Class E), non-residential institutions (Use Class F1) and local community uses (Use Class F2) floorspace, and Public Houses (Sui Generis) - learning institutions including a primary school (Use Class F1(a)) - open space, green infrastructure, woodland, and community and sports provision (Use Class F2(c)) - highways and infrastructure works including the completion of a Northern Relief Road, Bapchild Section, and new vehicular access points to the existing network - associated groundworks, engineering, utilities, and demolition works – on Land to The West of Teynham in Kent.

Planning Application: 21/503914

Local Planning Authority: Swale Borough Council

Local Highway Authority: Kent County Council

Description: Outline application with all matters reserved for the phased development of up to 578.65 hectares of land comprising: up to 8,000 residential dwellings including sheltered/extra care accommodation (Use Class C2 and Use Class C3), - up to 170,000 sq. m/34 hectares of commercial, business and service/employment floorspace (Use Class B2, Use Class B8 and Use Class E), and including up to 2,800 sq m of hotel (Use Class C1) floorspace - mixed use local centre and neighbourhood facilities including commercial, business and employment floorspace (Use Class E), non-residential institutions (Use Class F1) and local community uses (Use Class F2) floorspace, and Public Houses (Sui Generis) - learning institutions including primary and secondary schools (Use Class F1(a)) - open space, green infrastructure, woodland, and community and sports provision (Use Class F2(c)) - highways and infrastructure works including the provision of a new motorway junction to the M2, a Sustainable Movement Corridor (inc. a Sittingbourne Southern Relief Road)', and new vehicular access points to the existing network - associated groundworks, engineering, utilities, and demolition works.

Each volume of the TA has been reviewed and categorised using a RAG (Red-Amber-Green) scale, to easily identify whether a particular section within the TA is not acceptable and needs further revision (Red), is acceptable with some minor issues which would not change the overall conclusions (Amber) or is fully acceptable (Green).

In addition to the RAG scale, a full and detailed commentary of each aspect of the TA is provided in the following sub-sections.

A summary of the main findings is provided below.

Summary for Development Planning Officer	TA Not Acceptable – revisions required
	TA Acceptable – minor issues highlighted
	TA Acceptable

A Transport Assessment (TA) has been produced by Charles and Associates Consulting Engineers Ltd (C&A) on behalf of Quinn Estates, in support of planning application 21/503906 for the development of a residential-led, mixed-use development on land to the west of Teynham in Kent. The development comprises 1,250 new homes as well as commercial, retail, education, leisure and community land uses, in addition to strategic highway infrastructure.

The proposed development on land to the west of Teynham is sought to be delivered alongside a larger scheme on land to the south and east of Sittingbourne. This adjacent scheme will provide up to 8,000 new homes along with complementary land uses and further strategic highway infrastructure (planning application 21/503914). Whilst delivered by separate Applicants, both schemes form part on an overarching development known as 'Highsted Park'.

As both schemes are interdependent, the supporting TA for the development proposal on land to the west of Teynham has provided a cumulative traffic impact assessment for both sites and their associated infrastructure. As such, the Impact Appraisal and commentary relating to Volumes 7 and 8 of the TA, as provided within this Review Report, is relevant to both applications (i.e. planning application references 21/503906 and 21/503914). However, it is noted that the supporting TA for the development on land to the west of Tehynam does not include an assessment of the individual development proposal – as discussed later in this report. All other sections, unless specified, relate to the TA for land to the west of Tehynam only

The submitted TA comprises eight volumes which have been reviewed in full, along with supporting appendices. In terms of a general review, it is noted that the TA, as submitted, is incomplete and additional information is required to confirm the impact appraisal undertaken.

As such, at this stage the TA is considered 'not acceptable' due to the following key issues, as listed below. Detailed commentary on the TA is also provided below.

- The Applicant has not confirmed within the TA how the scope of the assessment or area of study was defined, nor whether any parameters of the scope were agreed with the Local Highway Authority and / or Highways England. The TA does not include any information on formal pre-application advice. Based on a review of the study area and existing highway conditions, additional junctions and scenarios may need to be reviewed and assessed.
- The majority of the Impact Appraisal (Volume 7) has been based on outputs from the 2037 Master Plan and reference case model. However, several inconsistences have been identified. The Impact Appraisal and soundness of the assessment and subsequent mitigation cannot therefore be confirmed.
- Further details on trip generation and development flows and how these have been applied to the highway network is requested. Based on a review of the data provided within the TA, it appears as though residential trips relating to the proposed development (i.e. 1,250 units on land west of Teynham) have not been included in the assessment. It is unclear whether this is a miscalculation or error.
- Clarification is required on exactly what has been included in the SATURN modelling with regards to new highway infrastructure around Teynham.
- Clarification is required as to why some of the new development zones have zero trips.

- The Applicant is requested to address the vehicular flows inconsistencies identified between the Traffic Flow Diagram and the SATURN model.
- Clarification is requested on the difference in TA Reference Case and the 'existing' Reference Case. The Applicant is also requested to detail the assumptions made to the 'existing' 2037 Reference Case.
- The development proposals appear to have been tested against a Reference Case that has more trips than the Local Plan 'Do Something' scenario. This overestimation of a 'without development' scenario minimises the overall impact of the scheme and is not considered to be a reasonable approach.
- It is recommended that a sensitivity test be carried out comparing the Highsted Park development scenario against the Local Plan Reference case.
- A review of demand modelling has shown that the underlying assumptions have not been adequately detailed. Further clarification is required.
- Individual junction modelling has been undertaken as part of the Impact Appraisal. However, the inputs into the junction models (particularly flows, geometric inputs etc.) cannot be verified as Traffic Flow Diagrams to demonstrate turning counts have not been submitted for review as part of the TA. The Applicant is requested to submit traffic flow diagrams and confirmation of calculation of geometric parameters.
- It appears as though flows from the strategic model have been used to undertake individual junction modelling. This approach is unacceptable as it does not account for specific turning movements at junctions. The Applicant is asked to justify this approach or correct using an acceptable method.
- There is no evidence of queue survey data being used to correctly calibrate and validate individual junction models. Based on an initial review of traffic conditions via Google Maps, it appears that several of the junctions modelled experience significant queuing during peak periods. However, the models provided within the TA do not account for this. The resultant junction modelling results are therefore not considered robust. The Applicant is asked to justify this approach or provide observed queue length data to validate the junction models.
- CAD drawings or similar to verify geometric inputs for the individual junction models have not been made available for review as part of the TA. The inputs for each junction cannot therefore be reviewed in detail. The Applicant is requested to provide evidence of geometric calculations.
- In addition to priority junctions, the TA also reviews signal junctions as part of its Impact Appraisal. Review of the signal timing inputs cannot be verified as the TA has not confirmed how these have been set up. For example, it is not clear whether signal configuration information has been provided by the Local Highway Authority. Based on an initial review, there are issues with inter-green and pedestrian phase timings, and this will need further review.
- Based on the inconsistencies found in the Impact Appraisal, the mitigation proposals will require further consideration by the Applicant and some further assessment will be required.
- In light of the proposals for a 'garden-village' style development with a strong focus towards provision of sustainable measures and encouragement of reducing car use, the Framework Travel Plan submitted does not include any detail on targets, aims, objectives, etc. It is clear that the TA has reviewed Swale's Transport Strategy as part of the TA and confirmed local modal shift targets – however, these have not been applied to the development.

Based on the summary provided above, the TA has been categorised as Red i.e. 'Not Acceptable - Revisions Required'. It is recommended that the Applicant addresses the issues outlined above and in detail below, in order to robustly demonstrate that the proposed development will not have a severe impact on the operation of the local highway network.

Recommendation:

The information provided in the TA, particularly relating to the actual Impact Appraisal, requires further review and justification by the Applicant. Due to a number of inconsistencies and errors identified within the data, the TA cannot be considered acceptable and the assessment is considered incomplete. Further information would be required to support the proposed scheme. It is also noted that based on the errors identified, the mitigation measures as proposed by the Applicant will require further review.

It is recommended that the application should be refused on the grounds of non-compliance with the key objectives of the NPPF in demonstrating non-severe cumulative impact, unless further details are forthcoming and submitted to the Local Highway Authority for review.

1. BACKGROUND

Overview of Scheme

1.1 A Transport Assessment, dated May 2021, has been produced by Charles and Associates Consulting Engineers Ltd (C&A) on behalf of Quinn Estates, in support of outline planning application 21/503906 for the development of a residential-led, mixed-use development on land to the west of Teynham in Kent.

1.2 The development will comprise of:

- up to 1,250 residential dwellings including sheltered/extra care accommodation;
- up to 2,200 sq.m/1 hectare of commercial floorspace;
- mixed use local centre;
- commercial, business and employment floorspace;
- non-residential institutions and local community uses;
- Public Houses;
- learning institutions including a primary school; and
- open space, green infrastructure, woodland, and community and sports provision.

1.3 The proposed development will also be delivered alongside major strategic highway infrastructure in order to access the site including completion of a Northern Relief Road and new vehicular access points to the existing network via the A2 and Link Road.

1.4 As the application is for outline planning permission only, all matters are reserved. This includes access. Therefore, this TA Review focusses primarily on the 'Impact Appraisal' (Volume 7) submitted as part of the TA.

Existing Site

1.5 The existing site measures approximately 95.51 hectares and the majority of the site is currently vacant. As set out in the 'Planning Context' (Volume 2) of the submitted TA, the application site does not currently form part of the Local Plan for allocated development. The site was previously identified as a potential strategic site (referred to as 'SE Sittingbourne').

1.6 The site forms part of a wider and overarching 'Highsted Park' development on land to the south and east of Sittingbourne which is located adjacent to the proposed development site. This adjacent scheme will provide up to 8,000 new homes along with complementary land uses and further strategic highway infrastructure.

1.7 As both schemes are interdependent, the supporting TA for the development proposal on land to the west of Teynham has provided a cumulative traffic impact assessment for both sites and their associated infrastructure.

Pre-Application Advice

1.8 There is no reference in the TA to formal pre-application advice provided to the Applicant from the Local Highway Authority. The TA does note that earlier versions of the demand modelling assumptions including trip generation, internalisation and mode share were previously agreed by KCC as documented in a separate Technical Note (ref: 16-023-011 TN1 Rev A, August 2018), including use of the Swale Transport Model (STM). However,

parameters relating to the scope of the assessment or how the area of study was defined or agreed have not been provided.

1.9 A separate meeting note dated 9th February 2020 has been provided to the Review Team. The minutes suggest general agreement of the sustainable travel strategy for the development.

2. POLICY CONTEXT, DEVELOPMENT PROPOSALS & SUSTAINABLE TRANSPORT STRATEGY	TA Not Acceptable – revisions required
	TA Acceptable – minor issues highlighted
	TA Acceptable

Policy

2.1 Volume 2 of the TA covers the Policy Context, relevant to the proposed development site. The TA specifically refers to the following national and local planning policy guidance:

- National Planning Policy Framework (NPPF, 2019)
- Planning Practice Guidance (March 2014)
- Bearing Fruits 2031: The Swale Borough Local Plan 2017 (Adopted)
- Swale Borough Local Plan 2021 Review (Emerging)
- Kent Local Transport Plan 4: Delivering Growth without Gridlock 2016-2031
- Swale Borough Council Transport Strategy 2022-2037

2.2 It is noted that the TA does not make reference to KCC's "Guidance on Transport Assessments and Travel Plans". This policy needs to be referred to and any subsequent TA or Addendum should be compliant which this guidance.

2.3 The Applicant should also refer to Policy DM 11 'Vehicle Parking' of the emerging Local Plan and the Swale Borough Council Parking Standards (May 2020) Supplementary Planning Document and comply with these standards in subsequent stages of planning and the design for vehicular and cycling parking spaces.

2.4 Notably, the TA refers to para 109 of the NPPF, which states that ***"development should only be prevented or refused on highway grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe".*** Para 3.1.9 of Volume 2 of the TA suggests that the Highsted Park development is compliant with this para of the NPPF – however, based on an initial review of the TA's Impact Appraisal, further assessment is required to satisfy the Local Highway Authority before the impacts of the scheme can be deemed as not severe.

2.5 With regards to local policy, the TA refers to Swale Borough Council's emerging Local Plan which covers the period 2022 to 2038. It is also noted that the adopted July 2017 Local Plan runs up until 2031. The future year modelling for the development scenario runs until 2037. Further comments on the future year scenarios and Impact Appraisal are detailed in Section 4 of this Report.

Development Proposals

2.6 As set out in Volume 4 of the TA, the proposed development is for a mixed-use garden village that will comprise 1,250 homes with associated land uses and strategic infrastructure in the form of 'Bapchild Link' which will complete the existing Sittingbourne Northern Relief Road (SNRR).

2.7 The proposed scheme forms part of the Highsted Park Development. The wider Highsted Park Development includes an additional 8,000 new homes on Land to the South and East of Sittingbourne and a connection to the strategic road network which would link the M2 and A2 forming a Sittingbourne Southern Relief Road (SSRR).

2.8 The proposed Bapchild Link including the SNRR would provide a new eastern bypass of Sittingbourne and a new point of connection to the SRN. It will also form part of a Sustainable Movement Corridor (SMC), which will provide dedicated space for public transport, pedestrians and cyclists.

2.9 It is noted that the application is for outline planning permission only, with all matters reserved. This includes access. Therefore, this TA Review focusses primarily on the 'Impact Appraisal' (Volume 6) submitted as part of the TA. However, the elements comprising the development have been reviewed to confirm land uses and relevant parameters for the trip generation exercise (including internalisation of trips) which forms a key aspect of the Impact Appraisal. With the exception of this element, the Review Team have no comments on Volume 4 of the TA.

Sustainable Transport Strategy

2.10 As set out in Volume 5 of the TA, the proposed development seeks to deliver a scheme which promotes sustainable modes of travel. As a 'garden-village' style development which provides a mixture of uses on site, the development will be designed to encourage internal trips which could be made by walking, cycling and public transport.

2.11 As previously noted, the development proposal includes a new Sustainable Movement Corridor that links the M2 and A2. Para 4.1.4 of the Sustainable Transport Strategy states that *"…the central spine road through the Proposed Development is intended to form a key connecting sustainable corridor connecting the wider Highsted Park development to Teynham and in particular the station."* The proposal includes a multi-model functionality which will allow for a carriageway in addition to segregated pedestrian and cycling facilities throughout. This approach is welcome and will be subject to further design agreements.

2.12 It is noted that the application is for outline planning permission only, with all matters reserved. This includes access and internal highway design aspects. However, the Applicant is referred to the latest walking and cycling design guidance as set out in LTN 1/20 and the guiding principles of Manual for Streets to design key connecting routes within the development which cater to and prioritise walking, cycling and active travel over vehicles.

Public Transport

2.13 The development proposal includes the provision of a dedicated public transport link and new bus routes. The TA asserts that the design will also consider infrastructure that can accommodate future technologies such as autonomous vehicles. Para 5.2.4 sets out the main objectives for bus provisions. However, no proposals for the number of services, which services and potential frequency of services have been confirmed.

2.14 Along with the introduction of "Aurrigo Pods" which are referenced in the Applicant's Sustainable Travel Strategy to travel to nearby railway stations, it is hoped that the development will also take advantage of diverting existing bus services into the site to provide connections to Sittingbourne and Teyhnam railway stations. There are a number of Stagecoach and other local bus services currently routing along the A2 which could be diverted into the site. This includes the X3 and X4 Stagecoach services to and from Sittingbourne. The Local Highway Authority would be keen to understand how the Applicant has sought to ensure deliverability of bus services through the site and what initial discussions have been had with local bus service providers to provide frequent bus services to future residents.

Summary

2.15 Overall, the TA identifies sustainable transport initiatives and highlights their importance. It is noted that information contained within the Sustainable Transport Strategy is high level with much of the sustainable travel information still emerging. Therefore, details will be subject to reserved matters. Once defined, key infrastructure delivery including walking, cycling and public transport measures will be secured as part of a Section 106 Agreement.

Framework Travel Plan

2.16 A Framework Travel Plan has been submitted as part of the TA at Chapter 8 of the Sustainable Transport Strategy (Volume 5). The Framework Travel Plan considers a two-tier approach consisting of the following:

- An overall Community Travel Plan; and
- Individual Travel Plans implemented within the framework for individual components of the development.

2.17 The Framework Travel Plan is described as "high-level" and identifies expectations and aspirations for the Travel Plan. However, the Framework Travel Plan does not include the following:

- Specific aims and objectives
- The potential impacts of the Travel Plan on modal share
- Modal shift targets in line with local policy guidance
- Any information on how the Travel Plan will be monitored (e.g. annual travel surveys)
- Any information on how the Travel Plan will be funded

2.18 In light of the proposals for a 'garden-village' style development with a strong focus towards provision of sustainable measures and encouragement of reducing car use, the Framework Travel Plan submitted does not include any further detail on targets, aims, objectives etc. It is clear that the TA has reviewed Swale's Transport Strategy as part of the TA and confirmed local modal shift targets – however, these have not been applied to the development. Targets for the development could be in line with Swale Borough Council's Transport Strategy (2022 to 2037), as below:

- Walking – 15%
- Cycling – 5%
- Travel by Bus – 5%
- Travel by Train – 9%
- Working from Home – 15%

2.19 Any subsequent Travel Plan should also make reference and be compliant with KCC's "Guidance on Transport Assessments and Travel Plans".

Actions:

2.20 The 'Policy Context' section of the TA should be reviewed to include KCC's "Guidance on Transport Assessments and Travel Plans". Additional sections of this volume may also need to be reviewed, based on further recommendations set out in this Review Report (relating to the Impact Appraisal).

2.21 The Local Highway Authority would welcome further detail on any initial discussions the Applicant has had with local public transport operators to secure bus services into the site and provide sustainable transport connections for future residents to key destinations.

2.22 The Framework Travel Plan needs to provide further detail on aims and objectives, modal shift targets, infrastructure measures and likely impact on mode share and funding. Any subsequent Framework Travel Plan should also be prepared with reference to KCC's "Guidance on Transport Assessments and Travel Plans'.

3. INFRASTRUCTURE PROPOSALS	TA Not Acceptable – revisions required
	TA Acceptable – minor issues highlighted
	TA Acceptable

Overview

3.1 The development proposals include the delivery of strategic highway infrastructure, to facilitate access to the site as well as mitigate its impacts. As set out in Volume 6 of the TA, key infrastructure elements proposed to be delivered as part of the Land to the West of Teynham scheme includes provision of the 'Bapchild Link' which will complete the existing Sittingbourne Northern Relief Road (SNRR).

3.2 Further strategic infrastructure including links to the M2 motorway at Junction 5a and a new sustainable movement corridor (SMC) and link road between the M2 and A2 (to form the Sittingbourne Southern Relief Road) will also be delivered by the adjacent development on land the South and East of Sittingbourne.

3.3 Volume 6 of the TA sets out the design principles that new highway infrastructure will comply with and makes reference to DfT Circular 01/2013, DMRB and KCC's own Kent Design Guide. The TA at Volume 6 para 1.7.1. states that the proposed designs

"*will be subject to a full Stage 1 Road Safety Audit in order to both inform and audit the design process. However, as has been summarised above and detailed elsewhere in this TA, the objectives of the design are informed by an extensive assessment and analysis process, including comprehensive transport modelling which it is anticipated will be agreed with the relevant authorities. However, prior to submission and therefore at the time of writing, this naturally remains outstanding*."

3.4 Whilst this review does not provide comment on the actual design of the proposed infrastructure, it is noted that acceptability of the design (and geometric parameters) will have an impact on the TA's Impact Appraisal and the modelling of any proposed junctions. It is therefore recommended that further modelling be undertaken should the design of the proposed highway infrastructure be fundamentally changed following any recommendations at RSA Stage 1.

Actions:

3.5 Further details of the proposed highway arrangements should be agreed with the Highway Authority.

3.6 An RSA Stage 1 should be undertaken on proposed highway infrastructure design and, subject to any fundamental changes to geometry and design, additional modelling may be required.

4. IMPACT APPRAISAL	TA Not Acceptable – revisions required
	TA Acceptable – minor issues highlighted
	TA Acceptable

Impact Appraisal Approach

4.1 This section of the Review Report summarises key issues and observations following a detailed review of Impact Appraisal (Volume 7 of the TA). Key elements of the Impact Appraisal include Strategic Modelling, Demand Modelling and individual Junction Capacity Assessments.

4.2 Given the proposed development's interdependencies with the adjacent scheme on land South and East of Sittingbourne, a cumulative assessment of the overarching Highsted Park proposals has been undertaken.

4.3 The Impact Appraisal is informed by three key assessments including a Strategic Transport Model, Demand modelling and Local Junction Capacity Assessments. Each has been summarised and reviewed in turn below.

Strategic Modelling

4.4 The proposed development of Highsted Park includes new infrastructure connecting to the strategic highway network at a new motorway junction. Thus, a strategic modelling approach has been adopted.

4.5 For the purposes of supporting the proposed development and representing the end of the current Swale Local Plan, the forecast year of 2037 is stated to be agreed. Two 2037 forecasts have been developed to inform a comparative assessment of the traffic impacts of the proposed development, which are:

- 2037 Reference Case; and
- 2037 With Development

4.6 The 2037 Reference Case model represents the unplanned growth scenario incorporating the adopted Local Plan allocation sites, additional growth in Swale up to the revised Objectively Assessed Need and committed transport schemes. This model provides a benchmark against which the development model scenarios are assessed. The assumptions made in the building of 2037 Reference Case model have been detailed in the TA.

4.7 The future development trips in the 2037 Reference Case model have been distributed using the base model trip distribution at zone level.

4.8 The 2037 Reference Case model is markedly different to that used for the Local Plan modelling. The Local Plan modelling has been updated to 2038, and the Reference Case includes only committed or extant developments. The Do Something (DS) then adds the remainder of the Local Plan developments.

4.9 It is noticeable that the TA 2037 Reference Case includes more development, and therefore more trips than the Local Plan DS. It is questionable whether this is an accurate level of development to compare against the Highsted Park development, particularly with the assumption that much of the proposed development would have been built elsewhere in the Reference Case and is therefore removed in the DS.

4.10 The 2037 With Development model presents an alternative forecast growth scenario to that proposed within the draft Local Plan. The scenario represents the cumulative appraisal of the overarching Highsted Park and new highway infrastructure in the form of a new motorway connection (M2 J5a), a new link between the M2 and A2 (SSRR) and completion of SNRR (Bapchild Link). The development assumptions are detailed in the TA.

4.11 An extract of the relevant table is provided below:

Table 2.6 2037 Housing Assumptions

	2037 Reference Case (dwellings)	2037 With Development (dwellings)
Completed	1,830	1,830
Permitted	2,389	2,389
Pending	46	46
Windfall	990	990
Allocated	8,822	8,822
OAN additional	8,826	2,726 (-6,100)
Highsted Park		9,250
Total	**22,903**	**26,053**

4.12 TA volume 7a para 3.4.6 states that:

"The fundamental growth assumption for the 2037 With Development scenario is that the Proposed Development will effectively replace part of the Objectively Assessed Need (OAN) housing requirement for Swale which is already included within the 2037 Reference Case model."

4.13 This is the justification for the removal of 6,100 homes from the Reference Case before the proposed 9,250 for the entire Highsted Park development are added in. There is no mention in the TA of how employment sites contributed to the Reference Case, or whether a similar process of removing any of this in the DS was used. This overestimation of a 'without development' scenario minimises the overall impact of the scheme and is not considered to be a reasonable approach.

4.14 The trip distribution of the forecast development trips is also stated to be distributed based on the 2017 base model zone level distribution.

4.15 The Swale Transport Model (SHM) base year (2017) traffic model has been used to provide an independent evidence base for the assessment of the emerging Local Plan by Swale Borough Council. The model was developed by SWECO using the SATURN suite of software. The area in the model includes the proposed residential, employment and commercial centre development sites, Sittingbourne and Faversham town centre and the

Isle of Sheppey. In addition to the detailed network, a skeletal strategic network has been included for the wider region covering the extent of the network to the Kent County boundary. The SHM LMVR reports that the simulation network development includes site visits by the transport modelling team, Google Maps imagery and traffic data, Intelligent Transport Network data as well as signal timing sheet information.

4.16 A total of 46 routes were used to assess the level of accuracy of the modelled journey times. The proportion of journey times which meet the DMRB criteria in the AM peak, inter-peak and PM peak are 96%, 96% and 98% respectively.

4.17 A thorough audit of the forecast network has been carried out by the Review Team. The detailed review of the network coding was limited to the major junctions surrounding the Highsted Park development. The review consists of the 18 existing junctions that fall within the study area. A list of the junctions has been identified at Appendix A and quoted in para 6.2.5 of the TA Volume 7.

4.18 The parameters listed below were checked along the scheme corridor nodes:

- Junction type
- Number of approach arms
- Number of lanes
- Link length
- Free-flow speeds and speed-flow curves
- Lane allocation
- Turn saturation flows
- Stacking capacity
- Priority markers
- Flare

4.19 Tt is noted that this network review was limited to only 18 junctions in the forecast models as some of the junctions surrounding the development had no junction layout plans.

4.20 A review of the Forecast Traffic Flow Diagram presented in Volume 7 of the TA and the forecast models (2037 Reference Case and Masterplan) concluded that there are discrepancies with the traffic flows (Actual flows) on some of the links. Also, it is noted that the traffic flow diagrams are missing for the AM peak of reference case in the document.

4.21 The traffic flow diagrams appended to the TA have also been checked against the model from which they were adopted. However, a number of inconsistencies were identified.

4.22 The table below shows how the number of trips in the SATURN matrices vary across the various scenarios for both the Local Plan and the TA.

		Local Plan modelling		TA modelling			
User Class	Base	Existing RC (2037)	(% diff from Base)	RC matrix (2037)	(% diff from Base)	DS matrix (2037)	(% diff from Base)
Car Business	16771	19225	14.60%	18930	13.60%	19057	14.30%
Car Commute	66857	79818	19.40%	76552	14.50%	77668	16.20%
Car Other	89410	113436	26.90%	112672	26.00%	113199	26.60%
LGV	17627	26805	52.10%	26805	52.10%	26972	53.00%
HGV	13636	15643	14.70%	15643	14.70%	15671	14.90%
AM total	**204302**	**254927**	**24.80%**	**250602**	**22.70%**	**252556**	**23.60%**

		Local Plan modelling		TA modelling			
User Class	Base	Existing RC (2037)	(% diff from Base)	RC matrix (2037)	(% diff from Base)	DS matrix (2037)	(% diff from Base)
Car Business	15571	17660	13.40%	17499	12.40%	17578	12.90%
Car Commute	51721	60302	16.60%	58330	12.80%	58977	14.00%
Car Other	108892	135412	24.40%	134412	23.40%	135236	24.20%
LGV	16966	25797	52.10%	25797	52.10%	26044	53.50%
HGV	9042	10367	14.70%	10367	14.70%	10392	14.90%
PM total	**202193**	**249538**	**23.40%**	**246404**	**21.90%**	**248227**	**22.80%**

4.23 The figures in red show that the TA Reference Case is not identical to the existing Reference Case (except for LGVs / HGVs). As details of assumptions / inputs to 'existing' 2037 Reference Case are unavailable, the reason for the difference cannot be ascertained. The Applicant is requested to provide further details.

4.24 Para 3.1.6 of the TA states:

"It is acknowledged that Swale Borough Council have since the collaborative development of the 2037 forecast base, moved the assessment year of their modelling to 2038, however, they have neither shared this through the collaboration process nor made it publicly available such that it has not been practical to bring achieve complete alignment (sic). Nonetheless, the underlying planning assumptions remain essentially the same and the difference between a 2037 and 2038 forecast year will be imperceptible in impact terms. Accordingly, the 2037 forecast year has been retained and can notionally be considered a proxy for 2038."

4.25 Given the differences between the Local Plan and TA Reference cases already mentioned, para 3.1.6 is irrelevant. The use of the 2037 TA Reference Case should be reviewed, and if necessary, a sensitivity test should be carried out against the Local Plan Reference Case.

4.26 Figure 4.2 of Volume 4 of the TA shows new highway infrastructure around Teynham, with the Spine road continuing north of the A2. This does not appear to have been included in the With Development SATURN network. The zones are included, but they are connected into existing network only. This needs clarification.

4.27 Analysis of the new zones and the access points onto the network also shows that there are some parts of the development that have zero trips accessing the network, as shown in the table below. This needs to be clarified.

Zone number	Connects to	AM IN	AM OUT	PM IN	PM OUT
91001 (A)	Spine Rd Junc F	137	353	401	174
91001 (B)	Church St Junc N	57	247	113	38
91002	Panteney Lane Junc O	0	0	0	0
91003	Church St Junc E	1	1	5	6
91004	Highsted Rd Junc K	0	0	0	0
91005	Church St Junc E	0	0	0	0
91006	Employment Access Junc B	401	38	42	337
91007	Highsted Rd Junc K	86	237	243	108
91008	Ruins Barn Rd Junc J	103	263	419	159
91009	Broadoak Rd Junc M	128	223	304	143
91010	Employment Access Junc B	19	50	89	27
91011	Ruins Barn Rd Junc I	31	67	148	54
91012	Ruins Barn Rd Junc I	679	111	151	283
91013	Employment Access Junc B	0	0	0	0
91014 (A)	Panteney Lane Junc O	52	150	84	44
91014 (B)	Spine Rd Junc F	87	203	244	115
91015	Spine Rd Junc F	105	323	301	124
91016	Church St Junc E	132	389	381	159
91017	Highsted Rd/Cromer Rd Junc D	49	120	190	73
91018	A2 Junc G	90	295	238	91
91019	A2 Junc G	159	306	545	478
91020	Local Access Junc Y	0	0	0	0
91021	Local Access Junc Y	0	0	0	0
91022	Swale Way Junc W	0	0	0	0

Demand Modelling

4.28 Demand modelling has been undertaken to estimate the development-generated traffic flows, input to the strategic model. A detailed report on the demand modelling appraisal and assumptions made is contained in Appendix B of Volume 7 of the TA, as a separate technical note. The TA states that a previous technical note of the methodology and assumptions was agreed with KCC. The new technical note is stated to have used the same overarching principles and methodology but with some assumptions evolved and therefore declared fit for purpose. This will need to be confirmed by KCC as the original technical note has not been provided to the Review Team.

Trip Generation

4.29 A reverse first-principles approach has been adopted by deriving the number of person trips generated from each land use and deducting the cross-purpose person trips generated from the other land uses from the residential trip generation. Combined or linked trips have also been deducted.

4.30 However, it is noted that the development quantum provided in Table 4.1 of Volume 7 of the TA does not represent the proposed development. The Applicant is requested to provide a detailed breakdown of development quantum by land use for both the land parcels of the overarching Highsted Park development.

4.31 Person trip rates for each of these uses have been obtained from TRICS database. The TA specifies that the overarching principle of the trip generation is that all land uses are connected, to a certain extent, to the residential trip generation. The selection criteria adopted in extracting the trip rates will need to be discussed with KCC. However, the TRICS data reports have not been provided. The Applicant is requested to provide the TRICS data reports produced for review. An extract of the person trips table is provided overleaf.

Table 3.1: Person Trip Rates for Total Development

Land Use Category	Land Use Sub-category	AM		PM		Units
		Arr.	Dep.	Arr.	Dep.	
Residential	Private Houses	0.247	0.866	0.632	0.297	6532
	Private Flats	0.115	0.397	0.532	0.205	869
	Affordable Houses	0.349	1.048	0.687	0.422	1176
	Affordable Flats	0.241	0.483	0.259	0.103	674
Commercial	B1 - Office	1.319	0.242	0.113	0.951	2200 sqm
	B2a - Light Industrial (Ind. Estate)	0.193	0.060	0.063	0.199	66400 sqm
	B2c - Research units	1.071	0.047	0.108	0.976	66400 sqm
	B8 - Warehouse	0.097	0.023	0.012	0.048	199200 sqm
Leisure	Leisure Centre + Sports	15.050	17.057	105.868	117.057	70750 sqm
Education	Primary	0.965	0.149	0.009	0.026	12 FE
	Secondary	0.762	0.083	0.015	0.021	8 FE
Local Centre	Nursery	4.750	2.500	0.500	1.750	790 sqm
	Medical Centre	7.245	3.556	3.211	4.910	2250 sqm
	Pharmacy	0.000	0.000	0.000	0.000	650 sqm
	Retail	17.189	17.459	13.622	14.541	5500 sqm
	Foodstore	3.237	2.358	7.032	7.411	4070 sqm
	Professional/ Financial	0.000	0.000	0.000	0.000	800 sqm
	Community Centre	44.000	12.000	140.000	93.333	3000 sqm
	Pub/ Restaurant	0.000	0.000	10.769	4.188	2950 sqm

4.32 The headline trip generation for each of the proposed land use based on the trip rates above is provided in the Demand Modelling Technical Note (Appendix B of Volume 7). These headline trips do not match the headline trips provided in the Development Modelling chapter of Volume 7 of the TA. Based on a review of the data provided within the TA, it appears as though trips relating to the proposed development (i.e. 1,250 units on land west of Teynham)

have not been included in the assessment. Also, the trip generation does not consider or explain the removal of 6,100 units (as discussed in the strategic modelling section above). It is unclear whether this is a miscalculation or error. The headline trips reviewed appear to correspond with trips related to Land to the South and East of Sittingbourne which is adjacent to the proposed development.

4.33 The units (development quantum) assumed in estimating the primary and secondary school trip generation is not provided in the TA.

4.34 A sense check on the trip rates used has also been undertaken, based on the selection criteria provided in the TA. It is noted that the trip rates for B1 Office use appear to have been underestimated.

4.35 The Applicant is requested to review the trip generation exercise again and provide further clarification on the working-out and assumptions.

Internalisation Trip Assumptions

4.36 Trips considered internal to the development have been distributed to the residential areas proportionally based on the number of dwellings in each parcel. Trips from residential to other land uses within the development have been distributed based on proximity.

4.37 The Applicant is requested to provide a table summary of internal trips from each land use that have been deducted, so that assumptions on internalisation of trips can be properly verified.

4.38 A review of internalisation factors applied for each land use is summarized below.

Education Trip Assumptions

4.39 The trips generated by the proposed nursery are considered as part of the trips resulting from the local centres due to its minimal size. These trips, which will be internal to the development, have been deducted from residential trips.

4.40 All primary school trips have been assumed to be internal. No students external to the site are expected. Whereas, for the secondary school within the development, based on its proximity to the residential units and the availability of other schools nearby the following assumptions have been made for internal trips:

- It has been concluded that 63% of all secondary school trips will be internal and 37% external. However, the correlation of 63% internalisation with residential use could not be verified due to the lack of clarity on how a factor of 63% was arrived at.
- The total internal person trips for both primary and secondary schools have been split between staff, pupil and parents. AM Peak arrivals and PM Peak departures have been considered to be escort trips made by parents. The remaining trips are distributed between students and staff based on NTS survey student to staff ratio. This is considered acceptable.
- The staff trip generation is included in employment category, which is considered acceptable.

4.41 The Applicant is requested to correct the trip generation table with the trips for cumulative development and provide the total number of educational trips that are getting deducted from the residential trips.

Employment Trip Assumptions

4.42 The employment trip generation comprises of trips that arise from the commercial land uses on site and staff trips relating to education.

4.43 An internalisation factor of 7% has been assumed for employment. This percentage was derived from a close examination of the residential units to employment land ratio for the approved King's Hill development in Kent. Census 2011 journey to work data for Kings Hill suggested that 12% of working residents had a place of work within Kings Hill itself. The 7% seemed a reasonable assumption for peak traffic movements when taking into account that the light industrial, Research and Storage / Warehouse commercial uses proposed tend to generate higher proportions of traffic outside the morning and afternoon peaks - which are more common for office uses.

4.44 A slightly higher percentage for working from home has been applied in employment assumptions than the initial percentages indicated by 2011 Census mode share statistics. The Applicant should provide clarification on the percentage adopted.

4.45 The Applicant is requested to highlight the total employment trips deducted from residential and correct the trip generation table with the cumulative development trips.

Leisure and Local Centre Trip Assumptions

4.46 Each local centre trip internal to the development is assumed to involve the usage of at least two facilities. Therefore, the combined trips generated from the units have been halved. The Leisure trips are assumed full. This is considered acceptable.

4.47 A corrected trip generation table and the proposed trips deducted from residential is requested from the Applicant.

Residential Trips Assumptions

4.48 The residential trips have been classified into:

a) Trips internal to the development and connected to the rest of the land uses except employment;
b) Trips classified as 'others' that are not included in the development land uses (2%); and
c) Trips to employment.

4.49 Based on NTS, of the 2% 'other' trips, 10% has been assumed to be internal and the rest external. This is considered acceptable.

<u>Mode Share</u>

4.50 Assumptions have been made for the non-car modes, for each land use. These assumptions are stated to be based on the different user groups, journey purposes and accessibility to sustainable modes of transportation. The remaining trips have been regarded as vehicular and assigned to the highway network.

Internal Mode Share

4.51 The mode share assumptions for internal trips has been made for each land use separately. It is stated that the assumptions have considered the relative location of the origin and destination of each trip within the proposed development.

4.52 The mode share adopted for sustainable modes for each land use varies. The overall internal percentage of trips assumed to be made by sustainable travel modes is 70.7% as highlighted in the demand calculation spreadsheet. The Applicant is requested to provide clarification on the basis of these percentages adopted for each mode and land use.

External Mode Share

4.53 The destinations of the external trips have been broadly classified into four regions - Sittingbourne, North Kent and Medway, South Kent and Other. These regions have been used to support the sustainable mode share assumptions based on the existing and future bus and rail connections to the corresponding regions.

4.54 The distribution of trips to each of these regions for the different vehicle classes has been extracted from strategic model. Five vehicle user classes have been presented of which two user classes represent LGV and HGV. A sustainability percentage for the remaining three vehicle classes have been adopted based on the Census 2011 Travel to Work data for Iwade. Iwade has been considered due to its close comparison to Sittingbourne in terms of the site's location and proximity to strategic road network.

4.55 The sustainability percentages from Census data have been increased further to reflect the aspirations of the borough in improving sustainable travel. The Applicant is requested to highlight the percentage increase adopted for each region and user class. The Applicant is also requested to provide clarification on the assumptions made.

Local Junction Capacity Models

4.56 The TA asserts that the junctions selected for standalone modelling have been selected based on those junctions identified from the strategic model to have an increase in net traffic due to the proposed development, as well as key junctions that will provide vehicular access to the site.

4.57 The TA identifies 36 junctions within the Local Highway Authority network (18 proposed junctions and 18 existing junctions). Checks have been completed on the local junction modelling inputs and results. The main comments and concerns raised can be summarised as follows:

- Scale drawings were not provided for the existing junctions. As a result, Google Maps was used to check geometric parameters inputted into the model. Overall, the measurements appear to be reasonable.

- Traffic flow diagrams were not provided for the review. Due to this limited information, the traffic flow inputs cannot be confirmed.

- Base model calibration and validation has not been carried out on any of the existing junctions. This indicates that the modelled results are not robust as the existing typical traffic function in Google Maps suggests longer queues, which is likely to be worse by the Forecast year of 2037. Therefore, the forecast results should be revisited after base model calibration. This is particularly an issue for the junctions where mitigation has not been proposed.

- Three signalised junctions have been modelled using LinSig (junction 17a – Eurolink / Milton Rd, Junction 41 - M2 Junction 7 and the proposed site access junction A roundabout). No Signal control files were provided as part of the review and assumptions have not been justified in the TA. The cycle times appear to be reasonable however there are concerns regarding the inter-green times as they appear to be underestimated and do not consider the pedestrian phase inter-greens. This is particularly an issue for the two existing signalised junctions.

- The summary of the results contained in Volume 6 of the TA and the Junction Assessment Technical Note (Appendix D) are not consistent with the Capacity Assessment Output Reports contained in Appendix E.

4.58 Appendix A contains a summary of the junctions reviewed and details concerns per junction.

Actions

Strategic Modelling

4.59 Clarification is required on exactly what has been included in the SATURN modelling with regards to new highway infrastructure around Teynham.

4.60 Clarification is required as to why some of the new development zones have zero trips.

4.61 The Applicant is requested to address the vehicular flows inconsistencies identified between the Traffic Flow Diagram and the SATURN model.

4.62 Clarification is requested on the difference in TA Reference Case and the 'existing' Reference Case. The Applicant is also requested to detail the assumptions made to the 'existing' 2037 Reference Case.

4.63 It is recommended that a sensitivity test be carried out comparing the Highsted Park development scenario against the Local Plan Reference case.

Demand Modelling

4.64 The Applicant is requested to provide a detailed breakdown of the development quantum by land use for both the land parcels of the overarching Highsted Park development.

4.65 The TRICS report for all trip rates should be appended to the TA. The Applicant is requested to correct the trip generation tables provided for all land uses to represent the cumulative development trips.

4.66 The units assumed to estimate the education trips should be provided.

4.67 A summary table of the internal trips, from each land use should be provided.

4.68 Further clarification should be provided for the 63% internalisation for secondary school trips.

4.69 It is recommended that the Applicant provide clarification on the internal 'sustainability' percentages adopted for each mode and land use. The Applicant is requested to highlight the external sustainability percentage increase adopted for each region and user class. Further clarification should be provided on these assumptions made.

Local Junction Capacity Models

4.70 The Applicant should append scale drawings of the existing junctions modelled.

4.71 Base model calibration and validation should be carried out for all modelled junctions. Subsequently, forecast models should be revised and junctions identified for mitigation should be updated based on capacity assessment results.

5. MITIGATION PROPOSALS	TA Not Acceptable – revisions required
	TA Acceptable – minor issues highlighted
	TA Acceptable

Overview

5.1 The Applicant has identified five off-site junctions that require mitigation. These are:

- Junction 21 - Swale Way/Barge Way
- Junction 22 - Swale Way/Ridham Avenue
- Junction 24 - Swale Way/Bingham Road
- Junction 32 - Woodstock Road /Cromer Road /Tunstall Road
- Junction 58 - Woodstock Road /Bell Road /Gore Ct Road

5.2 **It** is noted that the A249 junctions with Swale Way and Grovehurst Road (which have been included in a committed improvement scheme proposed by KCC and allocated for funding through the Housing Infrastructure Fund) have not been considered by the Applicant for further mitigation. This is considered acceptable.

5.3 A review of the junction capacity assessments has confirmed modelling undertaken for existing junctions needs to be revisited. In light of this, any proposed mitigation and subsequent modelling cannot be accepted at this stage. A detailed review of discrepancies identified in the junction modelling can be found at Appendix A of this Review Report, including for any proposed mitigation at junctions.

5.4 Following a re-assessment of junction capacities, additional mitigation measures (at additional junctions) may be required to sufficiently mitigate the impacts of the scheme and ensure junctions continue to operate within their theoretical capacity**.**

Actions:

5.5 Mitigation to be revisited following junction capacity assessment updates.

WSP House
70 Chancery Lane
London
WC2A 1AF

wsp.com

Public Rights of Way (PRoW)

KCC is committed to working in partnership with the applicant to achieve the aims contained within the Rights of Way Improvement Plan (ROWIP). Specifically, these relate to quality of life, supporting the rural economy, tackling disadvantage and safety issues and providing sustainable transport choices.

Restricted Byways ZU34A, ZU35 and ZR151 and the following Public Footpaths are located within the site and would be directly affected by the proposed development:

- ZR194
- ZR682
- ZR196
- ZR19
- ZR199
- ZR208
- ZR209
- ZU31
- ZU30
- ZR147
- ZR155
- ZR158
- ZR156
- ZR157
- ZR15
- ZR185
- ZR49

The locations of these paths are indicated on the extracts from the Definitive Map provided within this response.

In respect of PRoW, this response sets out an assessment of the cumulative impact on the borough that would arise from both applications. The County Council is raising a holding objection, due to insufficient detail being provided to fully assess the impact of the development on the PRoW network throughout the construction and occupation of the development. The proposed development would sever and fragment the existing network over a considerable area and across a considerable period. The plans and drawings provided in this application are of too large a scale to ensure that all PRoW are shown on the correct alignment and it would appear that there are routes omitted from the Movement Strategy Plan in the Design and Access Statement (Vol.7) – these matters need to be corrected.

The County Council requests that a PRoW Management Scheme is provided, to include each Public Right of Way affected and to address pre-construction, construction and completion over the prolonged phasing schedule. All details will need to be approved by KCC prior to commencement of any works.

KCC also requires details of the proposed strategy for off-site connectivity - particularly addressing how the PRoW network will ensure permeability across the site and beyond, to transport connections and existing community facilities. This will ensure the opportunities that the network can provide are not missed. The County Council would also advise that financial contributions, in the form of a section 106 agreement, should be provided to mitigate the loss of amenity, increased use of the network and subsequent improvements that will be required in the wider network as the area is developed. The total cost will need to be calculated once further information is provided. It is expected that significant measures will need to be taken to help mitigate the impact and to future-proof sustainable Active Travel across the wider area of the borough.

The County Council requires that a holistic approach is taken to consider how the PRoW network alongside other sustainable modes of transport will ensure connectivity. There are significant concerns regarding the impact of increased vehicular traffic along surrounding

rural lanes, which currently provide valuable connections for equestrians and cyclists travelling between off-road PRoW routes. The proposed development could deter public use of the PRoW network as vehicular traffic increases along these roads. It is particularly disappointing this has not been addressed within the Transport and Access documents provided. The PRoW network needs to be shown on all future masterplans to ensure linkage is optimised.

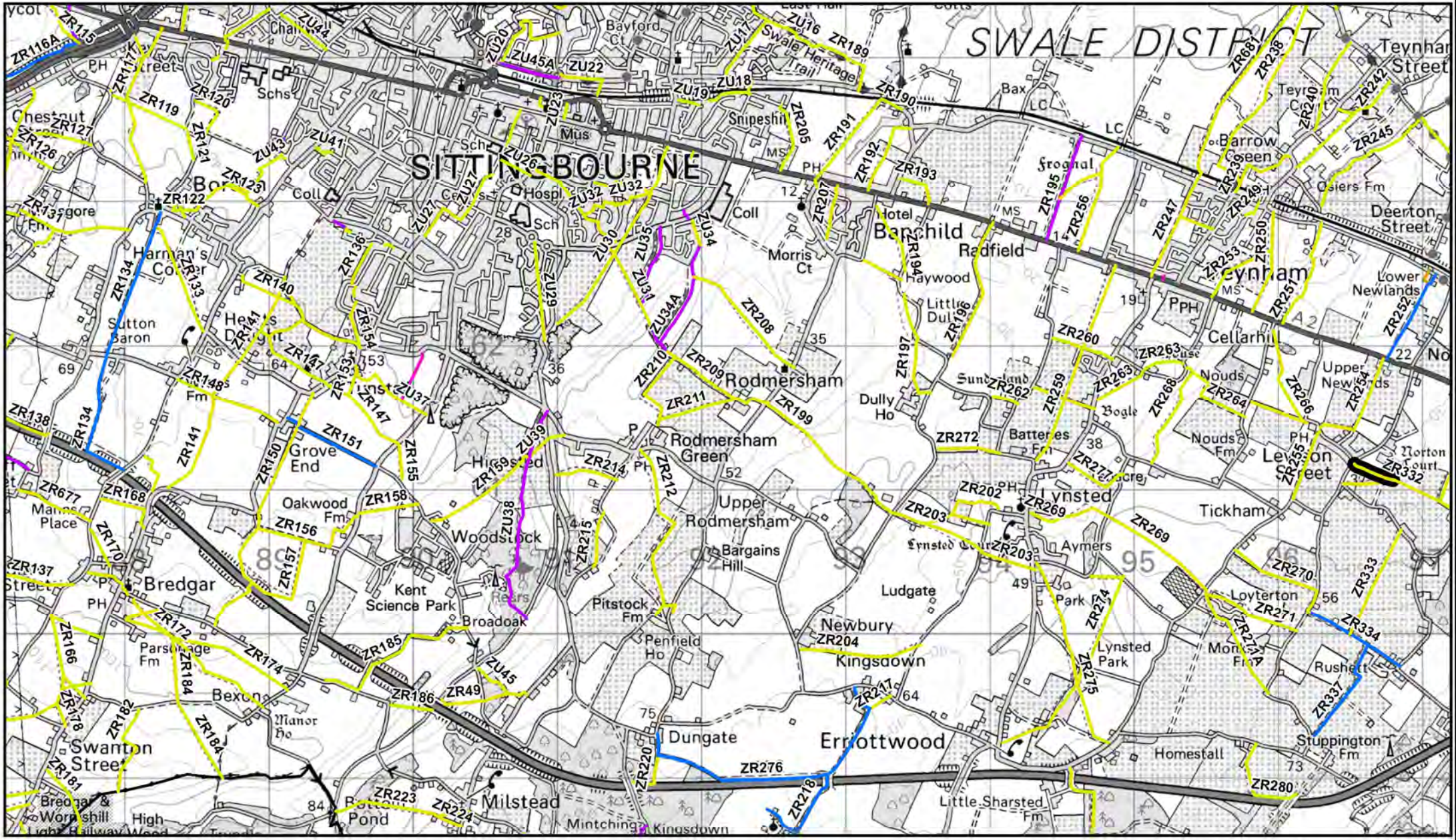
In respect of implementation and delivery, Active Travel access is essential from the outset of any work commencing, to enable both new and existing users to access amenities such as schools and community facilities within and off-site. There can be no disruption or potential danger to public use of the network. Any delay to the upgrading and/or construction of Rights of Way, cycle routes and other related works to the PRoW networks would only increase the already significant impact on new and existing residents. The development must demonstrate commitment to Active Travel, connectivity of developments, sustainable transport and the protection of and enhancement of the local area rural character.

In respect of the Environmental Statement (Volume 3, non-technical summary – sections 8, 9 and 10) KCC would also highlight that PRoW use will be severely affected in all categories during construction and once the development is occupied. This needs to be addressed appropriately within the Environmental Assessment and the necessary mitigation secured.

The County Council would also draw attention to comments raised within its Scoping Opinion response (application reference 21/500836/EIASCO) and continues to request consideration of the following matters:

- The likely usage and visual impact on users participating in recreational activity on the above-mentioned footpaths and restricted byways.
- The likely loss of recreational walks within open countryside.
- The viability of upgrading existing PRoW, as a means of providing Active Travel walking and cycling between residential dwellings, education facilities, employment hubs and local amenities, to encourage active travel.
- The creation of new walking, cycling and equestrian routes that connect the site with the surrounding countryside, providing opportunities for outdoor recreation.
- The provision of safe crossings points over the A2 for non-motorised PRoW users, to address safety concerns and improve network connectivity.
- In consideration of Kent Design standards and Police guidance, any forthcoming masterplan should keep PRoW within overlooked areas of open space, to facilitate a safer environment for path users.
- Path extinguishments and long-term severance of routes should also be avoided, to prevent fragmentation of the PRoW network.

Extract of the Definitive Map 1



Key

- Public Footpath
- Public Bridleway
- Restricted Byway
- Byway Open to All Traffic

17/506551/EIASCO - Public Rights of Way Map

Please note: this map extract is not a legal record of the alignment or existence of a public right of way.
No measurements should be taken from it.

0 1.5 3 Kilometres

0 0.75 1.5 Miles

Created by:	TK
Checked by:	TK
Issue Date:	10.01.2018
Reference:	17/506551/EIASCO

N

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Kent County Council

Extract of the Definitive Map 2

Key

- Footpath
- Bridleway
- Restricted Byway
- Byway Open to All Traffic

EXTRACT OF THE WORKING COPY OF THE DEFINITIVE MAP OF PUBLIC RIGHTS OF WAY FOR THE COUNTY OF KENT

FOR REFERENCE ONLY – NO FURTHER COPIES MAY BE MADE

0 Kilometres 0.5 1

Miles 0 0.275 0.55

Created by:	WJB
Checked by:	KB
Issue Date:	29/10/21
Reference:	21/503906 & 21/503914

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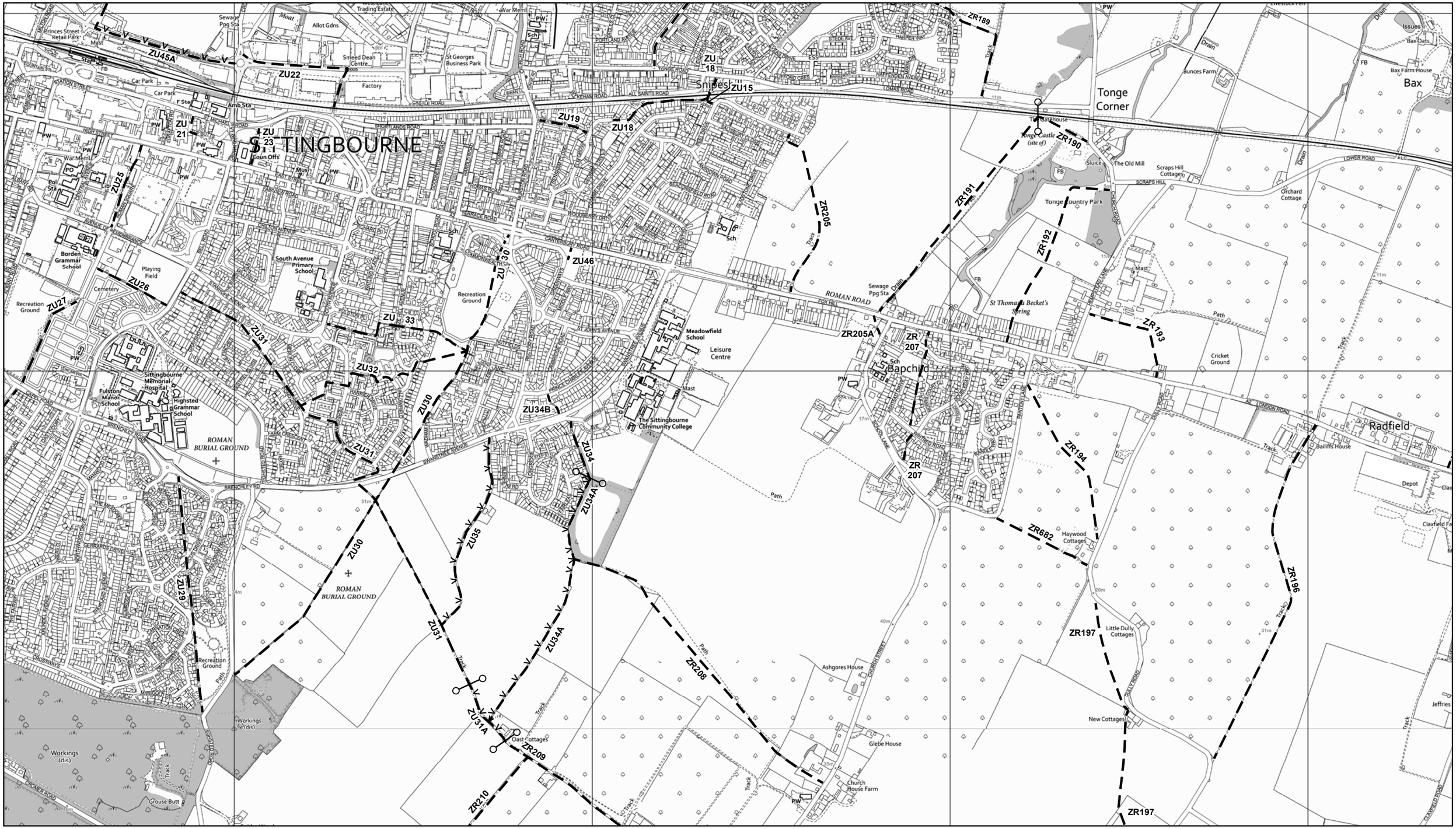
Extract of the Definitive Map 3



Key

- Footpath
- Bridleway
- Restricted Byway
- Byway Open to All Traffic

EXTRACT OF THE WORKING COPY OF THE DEFINITIVE MAP OF PUBLIC RIGHTS OF WAY FOR THE COUNTY OF KENT

FOR REFERENCE ONLY – NO FURTHER COPIES MAY BE MADE

0 Kilometres 0.5 1

Miles 0 0.275 0.55

Created by:	WJB
Checked by:	KB
Issue Date:	29/10/21
Reference:	21/503906 & 21/503914

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Kent County Council kent.gov.uk

Extract of the Definitive Map 4