# Fife LDP,
# Dunfermline Land Allocations,
# Candidate Sites

## Fife Council

## S-Paramics Assessment

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June 2015

# FIFE LDP, DUNFERMLINE LAND ALLOCATIONS CANDIDATE SITES

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|---|---|
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# FIFE LDP, DUNFERMLINE LAND ALLOCATIONS CANDIDATE SITES

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# 1 INTRODUCTION

## 1.1 Background

FIFEplan, the Fife Local Development Plan (LDP) is currently under preparation. It includes the development contained in the adopted Fife Development Plan (FDP) and the additional housing development identified through the SESplan Supplementary Guidance.

As part of the SESplan Supplementary Guidance, the amount of new housing required between 2009 –– 2024 increases beyond that already adopted in the FDP by 7,870 housing units. There are proposed sites for the additional housing development areas, which must be assessed in terms of transportation impacts to ensure that they are located in a suitably accessible location which enables the transport network to function efficiently. Before the final decision on the suitability of the additional housing land can be made, a supporting transport appraisal of the additional land allocations is required to be undertaken and suitable transport interventions identified.

Peter Brett Associates (PBA) has undertaken area wide modelling work to determine the impact on the trunk road network of the development proposed within the LDP, to assess whether the additional housing proposed within the SESplan Supplementary Guidance (SG) could be accommodated by existing infrastructure and the infrastructure already proposed in the FDP. That study considered the transport interventions already proposed within the FDP and sought to identify whether additional transport interventions were necessary to deliver the LDP.

The finding were presented in the PBA Report *Fife LDP Modelling Rev 2.3 (19 May 2015)*, which concluded that the identified trunk road infrastructure was sufficient to accommodate the additional traffic associated with proposed housing allocations.

## 1.2 Purpose of Report

The purpose of this study is to consider the impacts of the new additional housing proposed in the SESplan SG, focussed on Dunfermline and the local road network only. The study is to determine whether the proposals could be accommodated by existing infrastructure and the infrastructure already proposed in the FDP.

In 2011, SIAS prepared a Report entitled *Dunfermline Strategic Land Allocation Transport Assessment (SIAS Ref. 73799, July 2011)* which presented the findings of an S-Paramics modelling exercise which considered the traffic impacts of the following four sites in Dunfermline with associated infrastructure improvements:

- Wellwood
- Berrylaw
- Liggar Bridge
- Broomhall

The following elements from that previous study have been incorporated into this current exercise:

- S-Paramics model
- Person trip generation
- Vehicle trip distribution

## 1.3 Development Sites

Fife Council has supplied a full list of housing development sites to be included in the LDP modelling scenarios. Sites were classified into the following broad categories:

- **Carried forward from adopted LP**
  Committed sites from existing local plans, including Strategic Development Areas
- **Carried forward from adopted LP with changes**
  Committed local plan sites which have been subject to revision through the LDP process
- **New proposal** (New development sites, referred to in this Report as Candidate Sites)
  New sites proposed since the adopted LP

The Candidate Sites included in this assessment are listed in Table 1.1.

*Table 1.1 : Candidate Sites*

| REF_ID | Location | Estimated Capacity |
|---|---|---|
| KST 001 | Kingseat | 50 |
| DUN 029a/b | Lynebank Hospital | 100 |
| DUN 036 | Elliot Street | 19 |
| DUN 038 | Kent Street | 120 |
| DUN 039 | N Dunf (Colton) | 300 |
| DUN 041 | N Dunf (Swallowdrum) | 900 |
| DUN 042 | Carnock Road | 30 |
| DUN 043 | Halbeath | 1400 |
| DUN 044 | Land North of Wellwood | 100 |
| DUN 045 | Rosegreen, Carnock Rd | 100 |
| DUN 046 | Chamberfield | 50 |
| **Total** | | **3169** |

A total of 3,169 new residential units have been considered in this assessment.

# 2 MODEL DEVELOPMENT

## 2.1 2029 with Full SLA Development Model

The 2029 Infrastructure with Full SLA Development model was reported in SIAS's Report *Dunfermline SLA Transport Assessment (SIAS Ref. 73799).*

The 2029 Infrastructure Full SLA model included the following:

- 100% Broomhall Employment and Residential development (126.2Ha/1,972 Units)
- 100% Wellwood Employment and Residential development (22.4Ha/1,085 Units
- 100% Liggar Bridge Employment and Residential development (2.4Ha/1,063 Units)
- 100% Berrylaw Employment and Residential development (9.8 Ha/665 Units)

This gave a total of 4,785 residential units.

## 2.2 2029 with Candidate Sites Model

The 2029 with Candidate Sites Model has been developed from the 2029 Infrastructure Full SLA Model with inclusion of candidate sites and agreed infrastructure changes.

The whole extent of the Northern Link Road (NLR) has been included in the Candidate sites model.

The locations of the proposed housing candidate sites, together with the estimated number of houses related to each site, are shown in Figure 2.1.

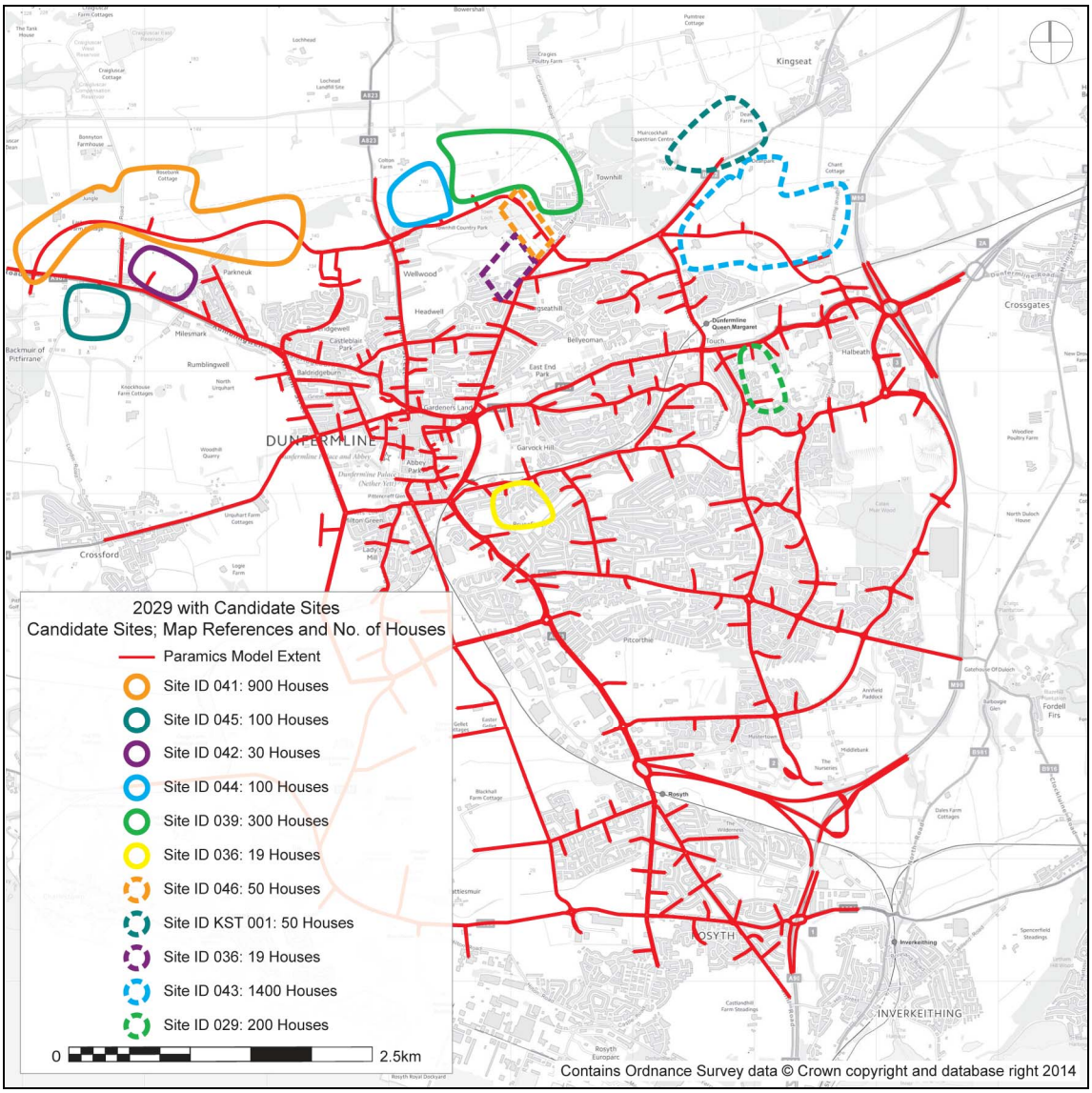


*Figure 2.1 : Candidate Sites, Indicative Location*

With the introduction of the housing development in the 2029 with Candidate Sites Model, the indicative NLR and related junction layouts have been coded in the model as indicated in Figure 2.2.

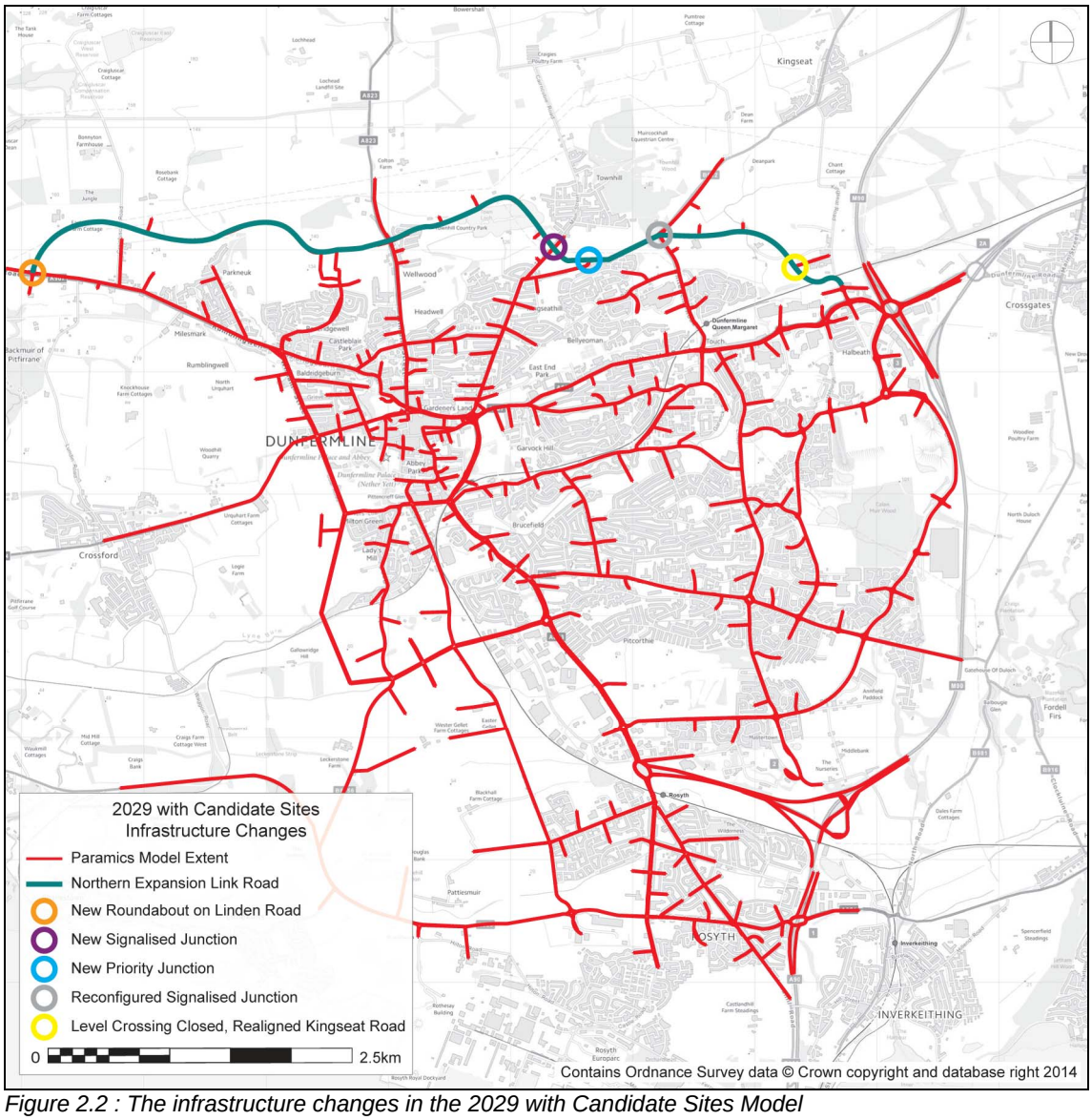


*Figure 2.2 : The infrastructure changes in the 2029 with Candidate Sites Model*

The extended NLR runs along the northern periphery of Dunfermline, and connects the A907 at Carnock Road to the west with Halbeath Road to the east. The connections to existing road and junctions coded into the 2029 Infrastructure Full SLA Model are set out as follows:

- At its western end, a new roundabout with the A907 and Lundin Road.
- Connects to the signalised junction on the A823 which is already in place in the 2029 Infrastructure Full SLA Model.
- New signalised junction with Townhill Road south of Townhill.
- Kingseat Road to the east of Townhill Road is realigned to connect to the NLR, forming a priority junction.
- The Kingseat Road/Whitefield Road/The B912 signalised junction is reconfigured compared to that included in the 2029 Infrastructure Full SLA Model.
- The level crossing on Kingseat Road, north of Halbeath Road, is assumed to be closed. Kingseat road to the north of the railway line is realigned to join the NLR at a priority junction.

## 3 CANDIDATE SITES, MATRIX DEVELOPMENT

The matrices were developed on the basis of calculating the total number of person trips generated by each development, then applying a mode split. The same methodology was applied as in the 2029 Infrastructure Full SLA Model.

Table 3.1 shows total number of car trips associated with the Candidate sites, assuming a mode split of 0.41.

In this 2029 with Candidate Sites assessment, it was agreed that the mode split should be increased to 0.51.

In line with the methodology used for the 2029 Infrastructure Full SLA Model, it is also assumed that 30% of the trips are to other developments when all developments are in place. These trips are then taken from the Candidate Sites out during the AM period and from the Candidate Sites in for the PM period.

The resulting AM and PM trip totals are shown in Table 3.1.

*Table 3.1 : the 2029 with Candidate Sites, Total number of trips*

| | In | Out |
|---|---|---|
| **AM totals** | 1,150 | 2,073 |
| **PM totals** | 2,118 | 2,109 |

The total number of trips for each of the candidate sites in AM and PM periods are shown in Table 3.2 to Table 3.7.

*Table 3.2 : Total number of trips in AM period: DUN 029 a/b, DUN 036, DUN 038, and DUN 039*

| | DUN 029 a/b | | DUN 036 | | DUN 038 | | DUN 039 | |
|---|---|---|---|---|---|---|---|---|
| Residential | IN | OUT | IN | OUT | IN | OUT | IN | OUT |
| 07:00-08:00 | 6 | 20 | 1 | 4 | 7 | 24 | 18 | 61 |
| 08:00-09:00 | 14 | 56 | 3 | 11 | 16 | 67 | 41 | 167 |
| 09:00-10:00 | 17 | 17 | 3 | 3 | 20 | 21 | 50 | 52 |
| AM TOTAL | 36 | 65 | 7 | 12 | 44 | 78 | 109 | 196 |

*Table 3.3 : Total number of trips in AM period: DUN 041, DUN 042 and DUN 043, and DUN 044*

| | DUN 041 | | DUN 042 | | DUN 043 | | DUN 044 | |
|---|---|---|---|---|---|---|---|---|
| Residential | IN | OUT | IN | OUT | IN | OUT | IN | OUT |
| 07:00-08:00 | 55 | 184 | 2 | 6 | 86 | 286 | 6 | 20 |
| 08:00-09:00 | 122 | 502 | 4 | 17 | 190 | 780 | 14 | 56 |
| 09:00-10:00 | 150 | 156 | 5 | 5 | 233 | 242 | 17 | 17 |
| AM TOTAL | 327 | 589 | 11 | 20 | 508 | 916 | 36 | 65 |

*Table 3.4 : Total number of trips in AM period: DUN 045, DUN 046, and KST 001*

| | DUN 045 | | DUN 046 | | KST 001 | |
|---|---|---|---|---|---|---|
| Residential | IN | OUT | IN | OUT | IN | OUT |
| 07:00-08:00 | 6 | 20 | 3 | 10 | 3 | 10 |
| 08:00-09:00 | 14 | 56 | 7 | 28 | 7 | 28 |
| 09:00-10:00 | 17 | 17 | 8 | 9 | 8 | 9 |
| AM TOTAL | 36 | 65 | 18 | 33 | 18 | 33 |

*Table 3.5 : Total number of trips in PM period: DUN 029 a/b, DUN 036, DUN 038, and DUN 039*

| | DUN 029 a/b | | DUN 036 | | DUN 038 | | DUN 039 | |
|---|---|---|---|---|---|---|---|---|
| Residential | IN | OUT | IN | OUT | IN | OUT | IN | OUT |
| 16:00-17:00 | 33 | 22 | 6 | 4 | 40 | 27 | 99 | 67 |
| 17:00-18:00 | 37 | 21 | 7 | 4 | 45 | 26 | 112 | 64 |
| 18:00-19:00 | 25 | 23 | 5 | 4 | 30 | 27 | 75 | 69 |
| PM TOTAL | 67 | 67 | 13 | 13 | 80 | 80 | 200 | 200 |

*Table 3.6 : Total number of trips in PM period: DUN 041, DUN 042, DUN 043, and DUN 044*

| | DUN 041 | | DUN 042 | | DUN 043 | | DUN 044 | |
|---|---|---|---|---|---|---|---|---|
| Residential | IN | OUT | IN | OUT | IN | OUT | IN | OUT |
| 16:00-17:00 | 297 | 200 | 10 | 7 | 462 | 311 | 33 | 22 |
| 17:00-18:00 | 336 | 193 | 11 | 6 | 522 | 300 | 37 | 21 |
| 18:00-19:00 | 226 | 206 | 8 | 7 | 352 | 321 | 25 | 23 |
| PM TOTAL | 601 | 599 | 20 | 20 | 936 | 932 | 67 | 67 |

*Table 3.7 : Total number of trips in PM period: DUN 045, DUN 046, and KST 001*

| | DUN 045 | | DUN 046 | | KST 001 | |
|---|---|---|---|---|---|---|
| Residential | IN | OUT | IN | OUT | IN | OUT |
| 16:00-17:00 | 33 | 22 | 17 | 11 | 17 | 11 |
| 17:00-18:00 | 37 | 21 | 19 | 11 | 19 | 11 |
| 18:00-19:00 | 25 | 23 | 13 | 11 | 13 | 11 |
| PM TOTAL | 67 | 67 | 33 | 33 | 33 | 33 |

# 4 MODELLING RESULTS

A comparison of the model statistics has been undertaken comparing the following:

- 2029 Infrastructure Full SLA
- 2029 with Candidate Sites

The statistics that have been compared are:

- Peak Hour Flows
- Journey times for key corridors
- Public transport journey times
- Global and town centre queue statistics
- Global network statistics

These were the key statistics reported in the 2029 Infrastructure Full SLA Model, so a direct comparison can be made.

## 4.1 Peak Hour Flow Comparison

Table 4.1 contains a flow summary of the key links on the network for the AM (08:00 – 09:00) and PM (17:00 – 18:00) peak hours for the 2029 Infrastructure Full SLA and the 2029 with Candidate Sites.

*Table 4.1 : Peak Hour flow (veh/hr)*

| | | AM | | PM | |
|---|---|---|---|---|---|
| Location | Direction | 2029 Infrastructure Full SLA | 2029 with Candidate Sites | 2029 Infrastructure Full SLA | 2029 with Candidate Sites |
| William Street | NB | 967 | 1,118 | 1,597 | 1,591 |
| | SB | 1,016 | 1,030 | 765 | 844 |
| Baldridgeburn | EB | 1,104 | 1,240 | 966 | 1,128 |
| | WB | 451 | 483 | 569 | 627 |
| Pilmuir Street | NB | 279 | 270 | 302 | 319 |
| | SB | 495 | 524 | 463 | 408 |
| Carnegie Drive | EB | 1,185 | 1,301 | 955 | 962 |
| | WB | 536 | 534 | 605 | 627 |
| Townhill Street | NB | 275 | 273 | 561 | 602 |
| | SB | 687 | 702 | 796 | 887 |
| Appin Crescent | EB | 696 | 674 | 1,107 | 1,155 |
| | WB | 1,148 | 1,090 | 898 | 834 |
| Halbeath Rd (E) | EB | 1,485 | 1,538 | 1,511 | 1,504 |
| | WB | 1,718 | 1,781 | 1,719 | 1,816 |
| St Margarets Drive | NB | 1,322 | 1,182 | 1,854 | 1,767 |
| | SB | 2,361 | 2,280 | 2,079 | 1,895 |
| Netherton Brd St | EB | 513 | 515 | 737 | 748 |
| | WB | 1,031 | 949 | 1,087 | 966 |
| Queensferry Rd (N) | NB | 1,231 | 976 | 1,618 | 1,492 |
| | SB | 1,620 | 1,553 | 1,422 | 1,371 |
| Queensferry Rd (S) | NB | 1,604 | 1,329 | 1,734 | 1,578 |
| | SB | 1,744 | 1,792 | 1,536 | 1,516 |
| Limekilns Rd | NB | 227 | 340 | 282 | 321 |
| | SB | 344 | 413 | 324 | 392 |
| Grange Road | NB | 369 | 527 | 347 | 434 |
| | SB | 216 | 210 | 486 | 406 |
| A985 Rosyth | EB | 867 | 973 | 740 | 792 |
| | WB | 788 | 799 | 895 | 853 |
| A823(M) | EB | 1,225 | 1,133 | 1,553 | 1,446 |
| | WB | 1,785 | 1,653 | 1,178 | 1,176 |
| Coal Road | SB | 1,265 | 1,236 | 849 | 1,022 |
| | NB | 898 | 962 | 1,454 | 1,379 |
| Western Distributor Roa | SB | 869 | 871 | 390 | 420 |
| | NB | 369 | 454 | 789 | 968 |
| Broomhall Road | EB | 1,013 | 1,116 | 1,337 | 1,295 |
| | WB | 1,241 | 1,230 | 930 | 1,127 |
| East Distrbutor Road | EB | 933 | 1,110 | 1,118 | 1,052 |
| | WB | 1,050 | 939 | 827 | 951 |
| Northern Link road | EB | 375 | 743 | 709 | 819 |
| | WB | 692 | 1,133 | 516 | 1,023 |

From Table 4.1 it can be seen that flows are generally greater with the Candidate Sites, as would be expected. There are no significant increases, but this may reflect that many of the roads are already close to capacity in the 2029 Infrastructure Full SLA scenario.

## 4.2 Journey Time Comparison

Journey time comparisons for two strategic routes through Dunfermline have been compared for the 2029 Infrastructure Full SLA and 2029 with Candidate Sites. The routes are as described as follows and detailed in Figure 4.1:

- Route 1: Follows the A823 from Sinclair Gardens Roundabout to Queensferry Road/ Carnegie Avenue Roundabout, along St Margarets Drive, Bothwell Street, Hospital Hill and Queensferry Road (Queensferry Road Corridor)
- Route 3: Follows the A907 from Sinclair Gardens Roundabout to Halbeath Interchange, along Halbeath Road (Halbeath Corridor)

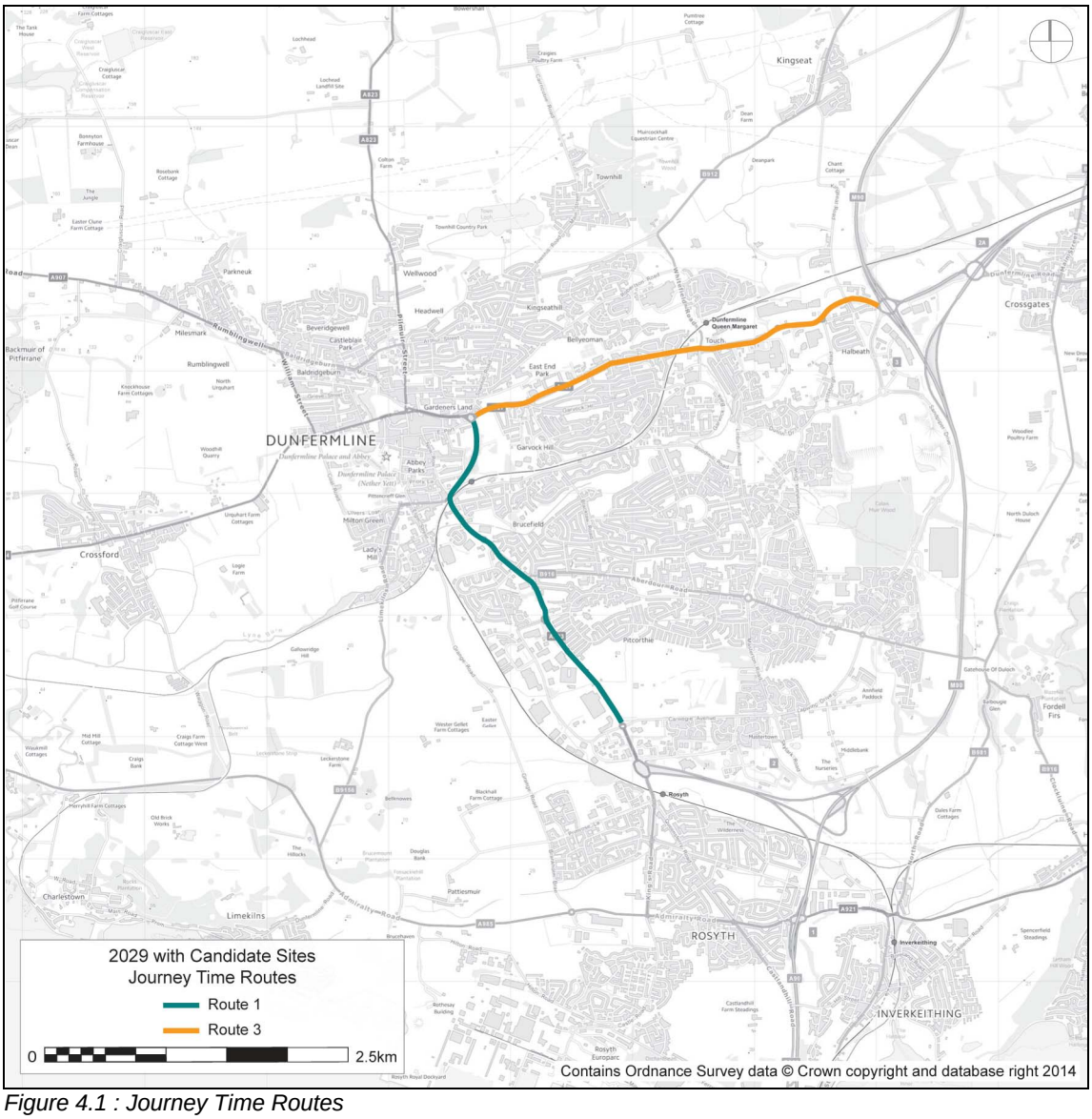


*Figure 4.1 : Journey Time Routes*

The journey time comparisons for the 2029 Infrastructure Full SLA and with Candidate Sites are shown in Appendix A.

### 4.2.1 Results for Route 1: Queensferry Road corridor

The northbound analysis shows that with the Candidate Sites in place, the journey times in the AM period are longer than in the 2029 Infrastructure Full SLA model, with the difference varying during the simulation period. In the PM period, the northbound journey time in the 2029 with Candidate Sites scenario is generally longer than in the 2029 Infrastructure Full SLA scenario.

In the Southbound direction AM period, the results show that with the Candidate Sites in place, the journey time are similar in both models up until 09:30. In the 2029 Infrastructure Full SLA model, journey times tend to reduce thereafter, while in the 2029 with Candidate Sites model, any changes are not as marked. In the PM period, the journey times are similar in both scenarios.

The patterns between the two scenarios are similar, with journey times generally longer in the 2029 with Candidate Sites model.

### 4.2.2 Results for Route 3: Halbeath Corridor

The eastbound analysis suggests that the journey times are similar in both models for the AM and PM period.

In the westbound direction, with the Candidate Sites in place, the journey times during the AM period are longer than in the 2029 Infrastructure Full SLA; this is most pronounced between 09:05 – 09:40 where journey times are generally 10min longer in the 2029 with Candidate Sites model. In the PM period, the journey times in the 2029 with Candidate Sites model are slightly longer than in the 2029 Infrastructure Full SLA.

The patterns between the two scenarios are similar, with journey times generally longer in the 2029 with Candidate Sites model.

## 4.3 Public Transport Journey Times

Table 4.2 and Table 4.3 show the average journey times for key town centre passenger transport routes for the AM and PM peak periods.

*Table 4.2 : Passenger Transport Journey Time Routes (AM Period)*

| AM | 2029 Infrastructure Full SLA | 2030 with Candidate Sites | Difference |
|---|---|---|---|
| 7 & 19 Nbd | 00:33:53 | 00:41:39 | -00:07:49 |
| 7 & 19 Sbd | 00:26:32 | 00:19:48 | +00:06:45 |
| 33 Wbd contd 1 | 00:13:49 | 00:20:18 | -00:06:29 |
| 33 Ebd | 00:12:49 | 00:30:46 | -00:17:57 |
| 55 Nbd | 00:37:12 | 00:40:20 | -00:03:08 |
| 55 Sbd | 00:26:44 | 00:21:38 | +00:05:05 |

Table 4.2 shows that in the AM peak period with the Candidate Sites in place, there is a variation in the bus journey times, with some longer and some shorter. The greatest difference is with the 33 Eastbound route, where the journey times are nearly 18min longer. The increase in journey time is a concern, but bus priority measures can be incorporated within the detailed design of the transportation mitigation measures to reduce the adverse impact on journey times.

*Table 4.3 : Passenger Transport Journey Time Routes (PM Period)*

| PM | 2029 Infrastructure Full SLA | 2030 with Candidate Sites | Difference |
|---|---|---|---|
| 7 & 19 Nbd | 00:25:20 | 00:17:13 | +00:08:07 |
| 7 & 19 Sbd | 00:25:10 | 00:16:32 | +00:08:38 |
| 33 Wbd contd 1 | 00:11:49 | 00:25:11 | - 00:13:22 |
| 33 Ebd | 00:15:30 | 00:12:17 | +00:03:13 |
| 55 Nbd | 00:21:42 | 00:29:54 | - 00:08:12 |
| 55 Sbd | 00:27:08 | 00:21:11 | + 00:05:57 |

Table 4.3 shows that in the PM peak period with the Candidate Sites in place, there is a variation in the bus journey times, with some longer and some shorter. The greatest difference is with the 33 Westbound route, where the journey times are nearly 13min longer.

## 4.4 Global Queue Statistics

Figure 4.2 and Figure 4.3 shows the average number of vehicles queueing across the whole model for the 2029 Infrastructure Full SLA and 2029 with Candidate Sites in place for the AM and PM periods.

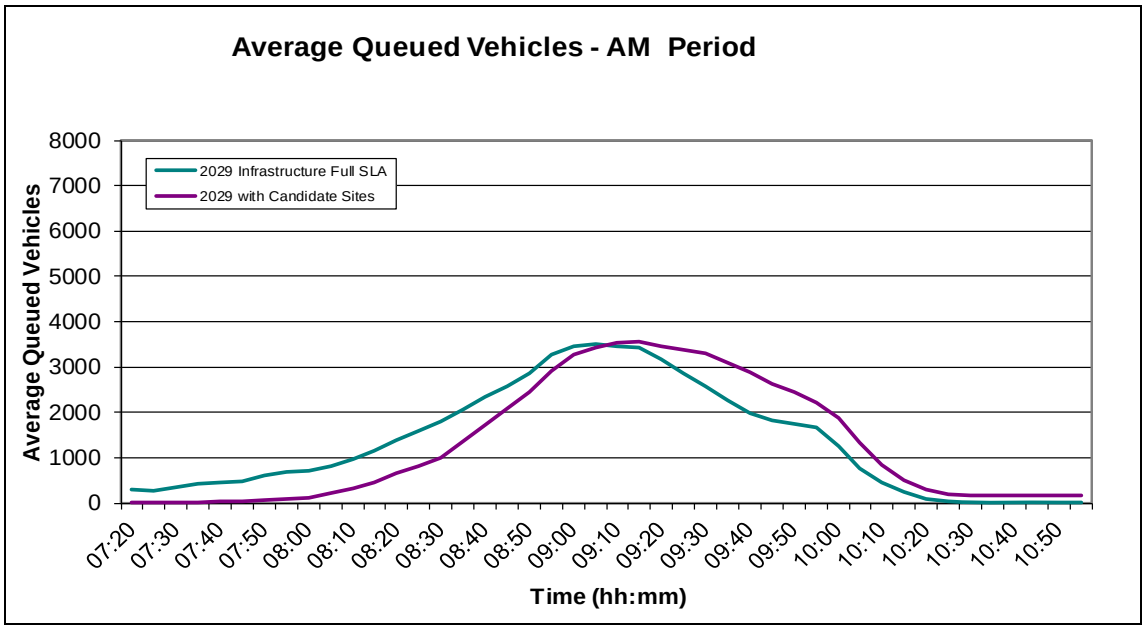


*Figure 4.2 : Average Queued Vehicles (AM Peak)*

In the AM period, the level of queueing with Candidate Sites in place is similar, with the time periods over which queueing occurs the only difference.

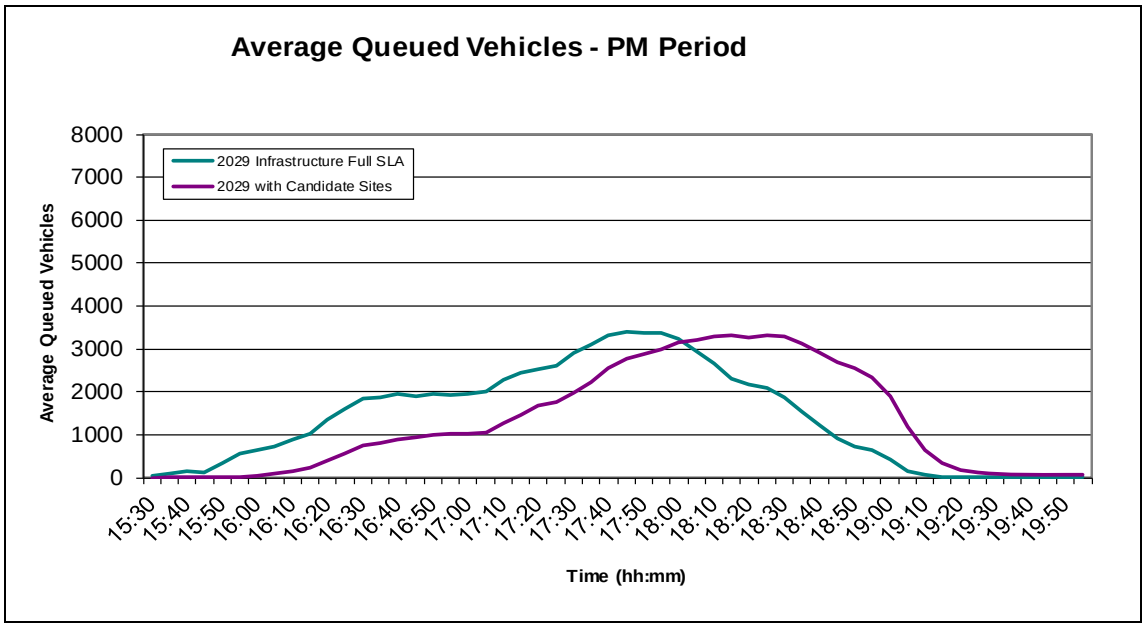


*Figure 4.3 : Average Queued Vehicles (PM Peak)*

The PM period is consistent with the AM period, where the level of queueing with Candidate Sites in place is similar; the time periods over which queueing occurs is the only difference.

Appendix B contains figures showing the levels of queueing in the town centre cordon for the AM and PM peak period.

The level of queueing with Candidate Sites in place is similar in the AM period, with the time periods over which queueing occurs the principal difference.

There is a similar pattern in the PM peak, although the queueing with the Candidate sites does not dissipate as noticeably as it does in the 2029 Infrastructure Full SLA model.

## 4.5 Global Summary Statistics

The network summary statistics have been extracted for each model and are detailed in Table 4.4 and Table 4.5 for the AM and PM periods respectively.

*Table 4.4 : Network summary Statistics, AM Period*

| Scenario | Total Network Time (hours) | Total Distance (km) | Vehicles | Average Network Speed (mph) | Average Journey Time (sec) |
|---|---|---|---|---|---|
| 2029 Infrastructure Full SLA | 11,260 | 265,974 | 74,878 | 14.7 | 541 |
| 2030 with Candidate Sites | 14,876 | 282,330 | 78,036 | 11.8 | 686 |

Table 4.4 shows the model has approximately 3,158 additional vehicles in the AM period. The average speed reduces from 14.7mph to 11.8mph while average journey times increase by 2min 25s.

*Table 4.5 : Network summary Statistics, PM Period*

| Scenario | Total Network Time hours) | Total Distance (km) | Vehicles | Average Network Speed (mph) | Average Journey Time (sec) |
|---|---|---|---|---|---|
| 2029 Infrastructure Full SLA | 11,475 | 299,904 | 86,400 | 16.2 | 478 |
| 2030 with Candidate Sites | 18,325 | 325,570 | 90,634 | 11.1 | 728 |

Table 4.5 shows the model has approximately 4,234 additional vehicles in the PM period. The average speed reduces from 16.27mph to 11.1mph while average journey times increase by 4min 10s.

## 4.6 Effect of NLR of Routeing

An assessment was made of the effect the NLR has on longer distance routes that pass through Dunfermline in each direction along the east-west axis between the A92 at Halbeath to the east, and the A907 at Carnock Road to the west. The results are shown in Table 4.6.

*Table 4.6 : Routeing of Through Trips on East West Axis (Both Directions) AM & PM Periods*

AM

| | A92 at Halbeath (Zone 133) | | |
|---|---|---|---|
| Zone Origin | Via NLR | Via town | **Total** |
| A907 west (Zone 149) | **212** | **124** | **336** |

PM

| | A92 at Halbeath (Zone 133) | | |
|---|---|---|---|
| Zone Origin | Via NLR | Via town | **Total** |
| A907 west (Zone 149) | **206** | **131** | **337** |

AM

| | A907 west (Zone 149) | | |
|---|---|---|---|
| Zone Origin | Via NLR | Via town | **Total** |
| A92 at Halbeath (Zone 133) | **163** | **55** | **218** |

PM

| | A907 west (Zone 149) | | |
|---|---|---|---|
| Zone Origin | Via NLR | Via town | **Total** |
| A92 at Halbeath (Zone 133) | **148** | **67** | **215** |

In the AM, 63% of the eastbound trips (212/336) and 75% (163/218) of west bound trips use the NLR as opposed to passing through the town.

The corresponding figures for the PM are 61% (206/337) eastbound and 69% 148/215) westbound. This suggests that the NLR will play a strategic role in the road hierarchy for longer distance trips as well as serving local trips.

## 5 SUMMARY OF RESULTS

The 2011 SIAS Report *Dunfermline Strategic Land Allocation Transport Assessment (SIAS Ref. 73799, July 2011)* provides a useful background to this study and should be read in conjunction with this Report. The 2011 Report (*SIAS Ref. 73799*) presented results which suggested that the various housing scenarios tested could be accommodated on the road network with appropriate physical mitigation measures being implemented to provide additional capacity on the road network. Given the urban make up of Dunfermline town centre, and the historic layout of many of its streets, it is not possible to continually deliver physical road capacity improvements within the space available.

This is particularly the case on arterial corridors such as Townhill Road, Pilmuir Street, and Baldridgeburn/Mill Street to the north of the town centre, where many of the roads have residential frontages along their length.

The town centre itself has seen an expansion and enhancement of the retail offer available, much of which is centred along Carnegie Drive. This reduces opportunities to deliver new road infrastructure to provide additional capacity.

The bridge over Tower Burn to the west of the town centre, which is limited to single lane operation in each direction, also acts as a constraint on road capacity.

In the future, it is likely that mitigation will comprise of a package of measures that do not solely rely on providing additional road capacity. With advancements in communication technology, it is likely that levels of home or remote working will continue to increase, as will on-line shopping; this change will, for many people, reduce the need to travel on a daily basis.

When considering the candidate housing proposals, it is likely that mitigation would include the housing sites being served by high speed broad band connections, which would allow people to work and shop for home should they have the opportunity or inclination to do so.

This assessment of the additional LDP allocation considers a worst case scenario, where all houses and employment land are built out and trip making is similar to historic trends. Neither of these outcomes are likely in reality and, therefore, the results need to be viewed in that context.

It should also be noted that the models run out (i.e. are free flowing and do not gridlock) and, therefore, the demand created by the additional land allocations can be catered for on the existing road network + identified transportation mitigation measures. In reality, the level of demand modelled, and the subsequent effect on journey times, speeds, and queueing, is unlikely to materialise.

The extension of the NLR will provide an alternative east-west route through Dunfermline which avoids the need to pass through the town centre. This will bring relief to routes that pass through the town centre, on the north-south axis as well as east-west axis. An assessment that considered these longer distance routes on the east-west axis in both directions from the A92 at Halbeath to the east, and the A907 at Carnock Road to the west showed that between 60% and 75% of trips may re-route and use the NLR. This suggests that the NLR will play a strategic role in the road hierarchy for longer distance trips, as well as serving local trips.

# A 2029 JOURNEY TIME ANALYSIS

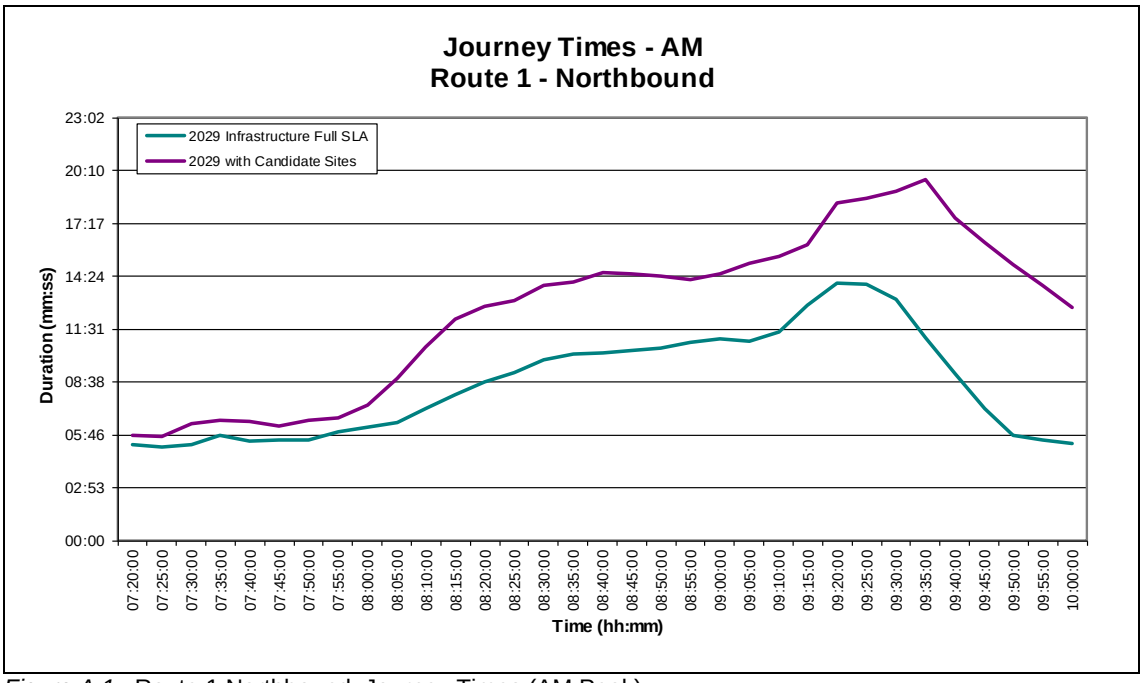


*Figure A.1 :* Route 1 Northbound, Journey Times (AM Peak)

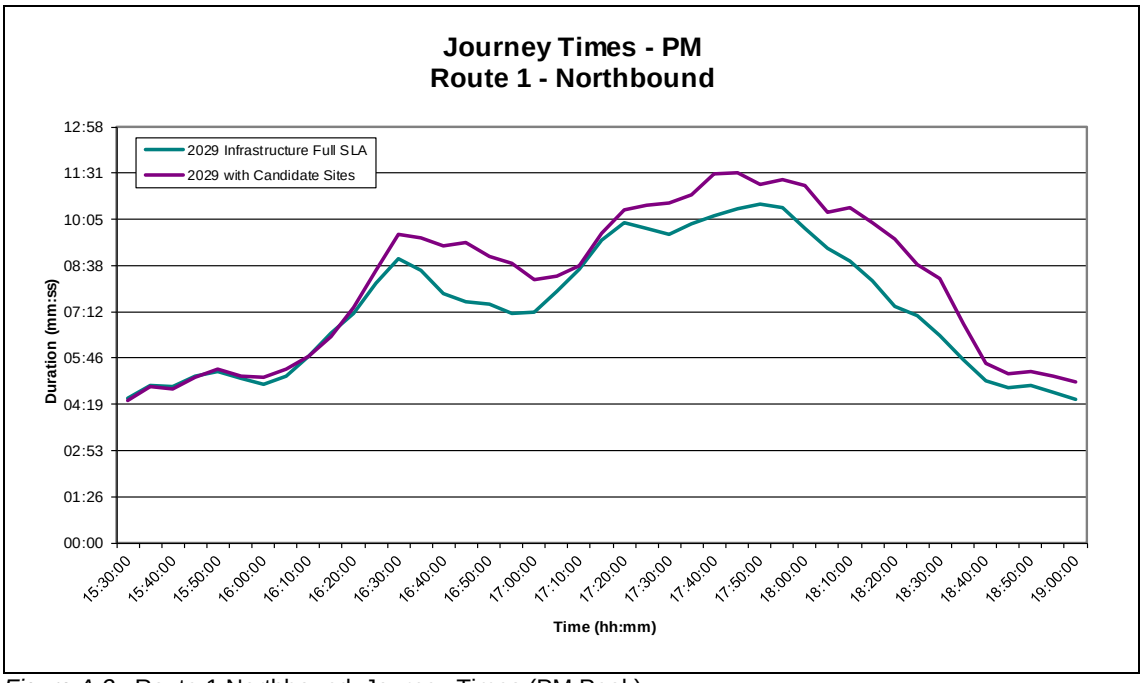


*Figure A.2 :* Route 1 Northbound, Journey Times (PM Peak)

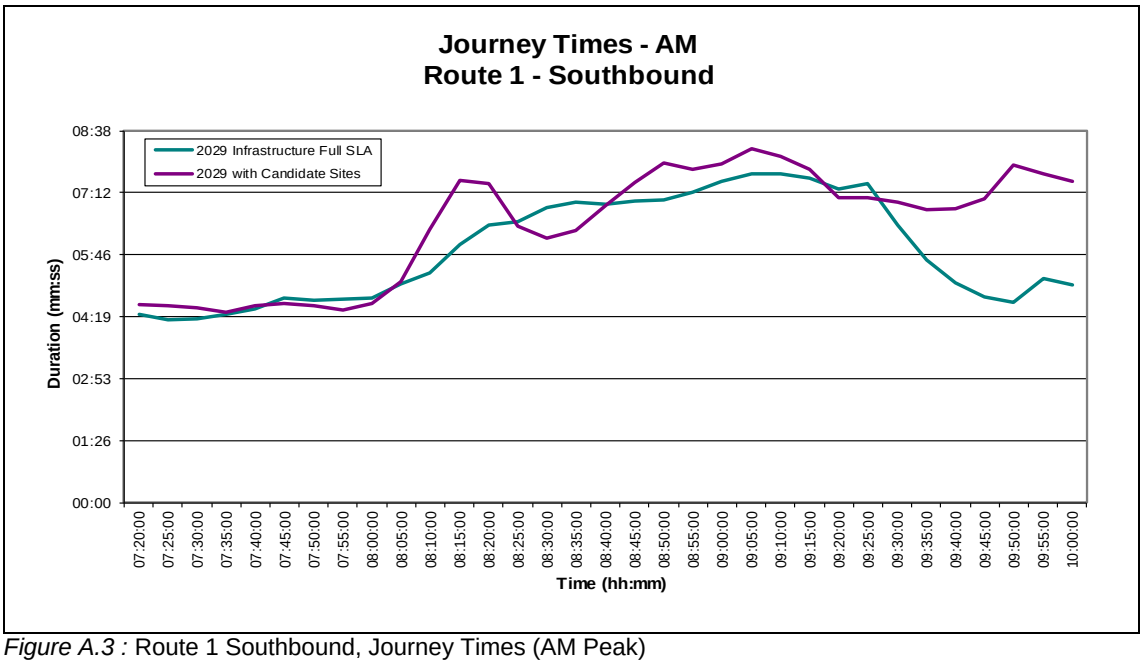


*Figure A.3 :* Route 1 Southbound, Journey Times (AM Peak)

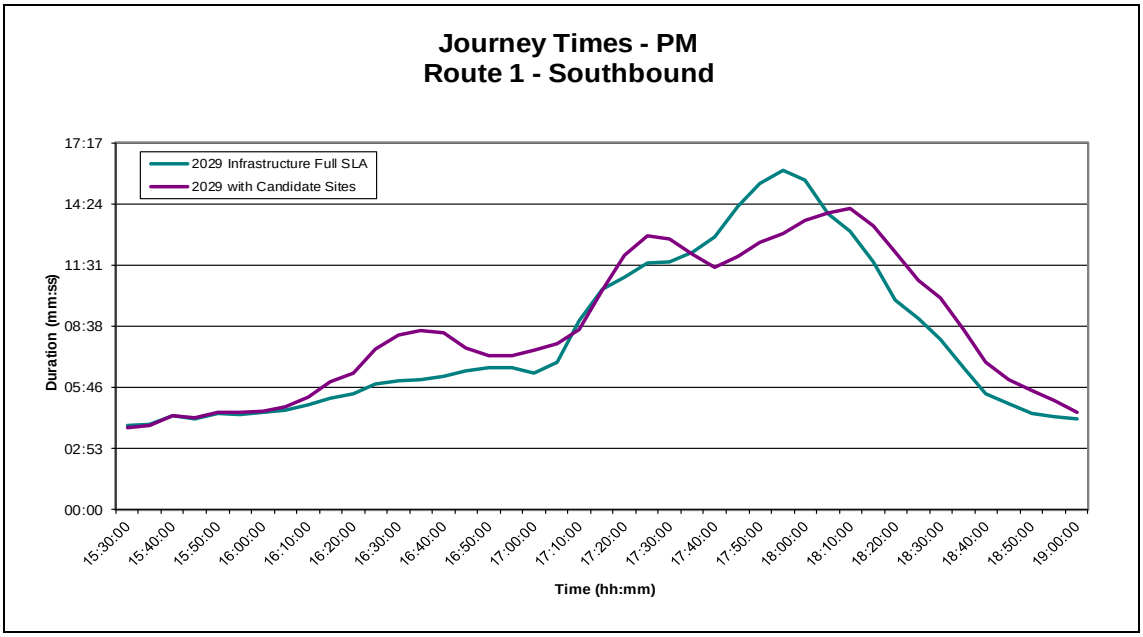


*Figure A.4 :* Route 1 Southbound, Journey Times (PM Peak)

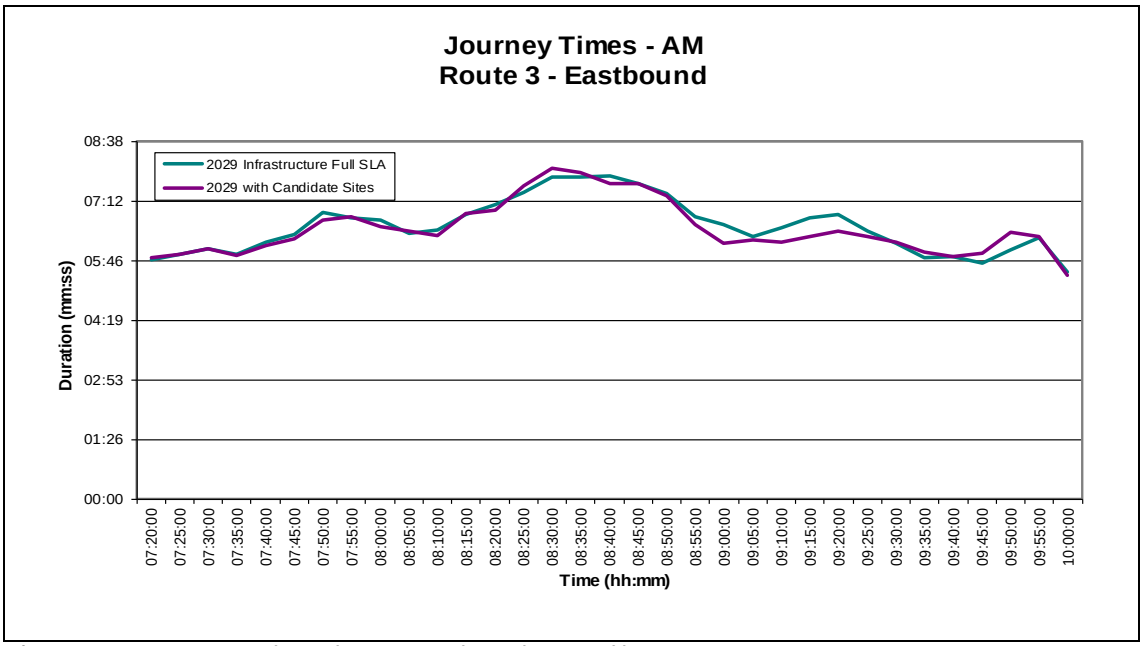


*Figure A.5 :* Route 3 Eastbound, Journey Times (AM Peak)

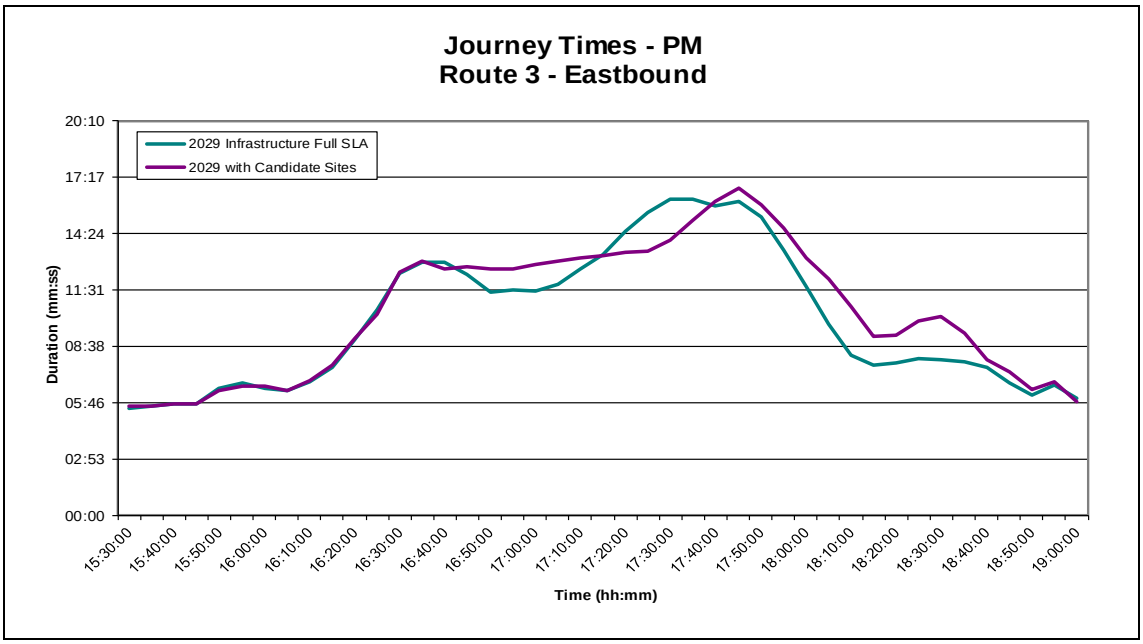


*Figure A.6 :* Route 3 Eastbound, Journey Times (PM Peak)

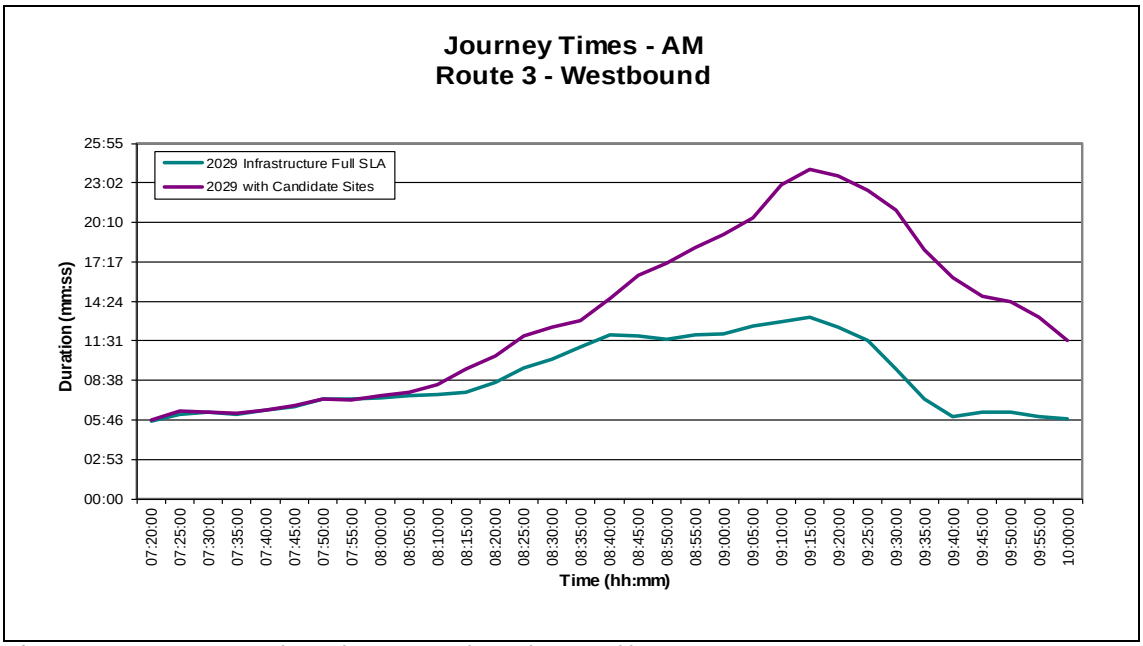


*Figure A.7 :* Route 3 Westbound, Journey Times (AM Peak)

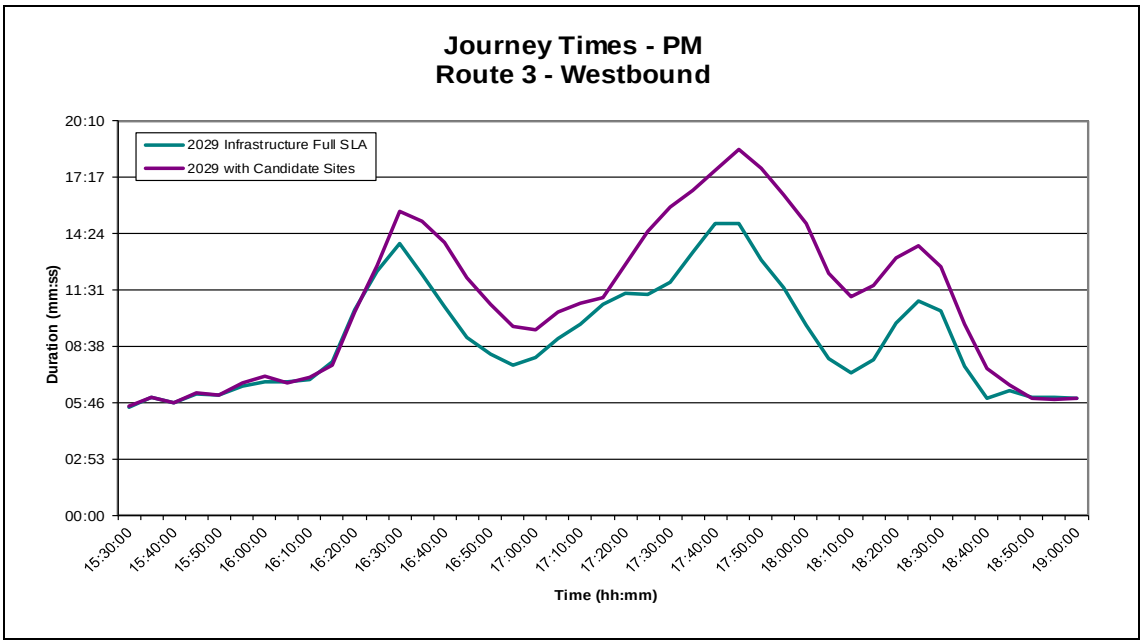


*Figure A.8 :* Route 3 Westbound, Journey Times (PM Peak)

## B 2029 TOWN CENTRE QUEUE SUMMARY

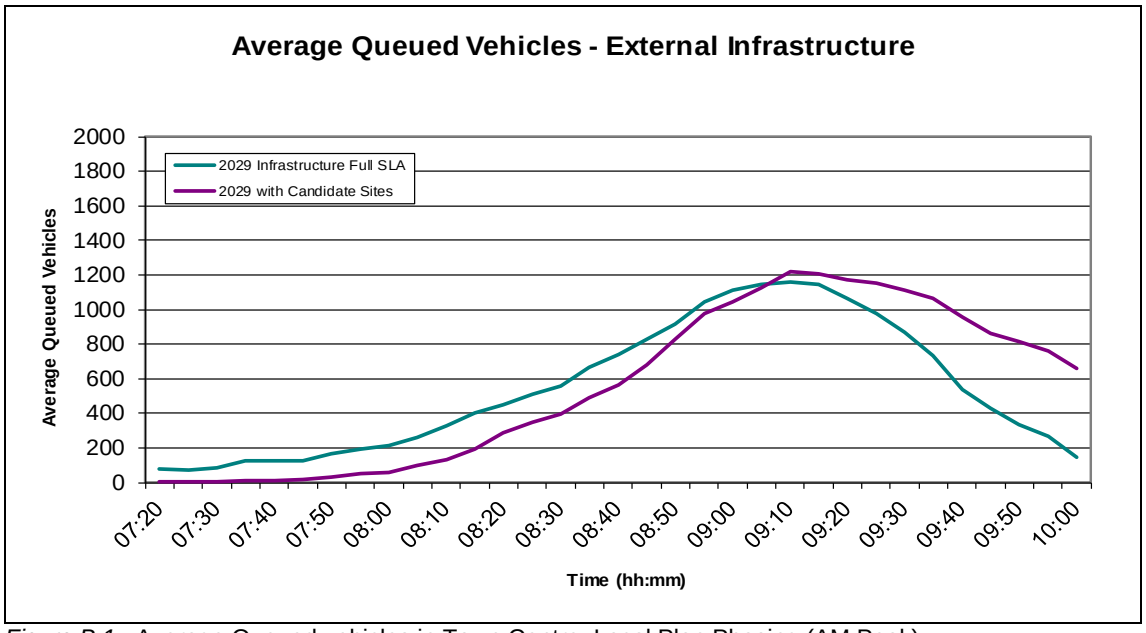


*Figure B.1 :* Average Queued vehicles in Town Centre, Local Plan Phasing (AM Peak)

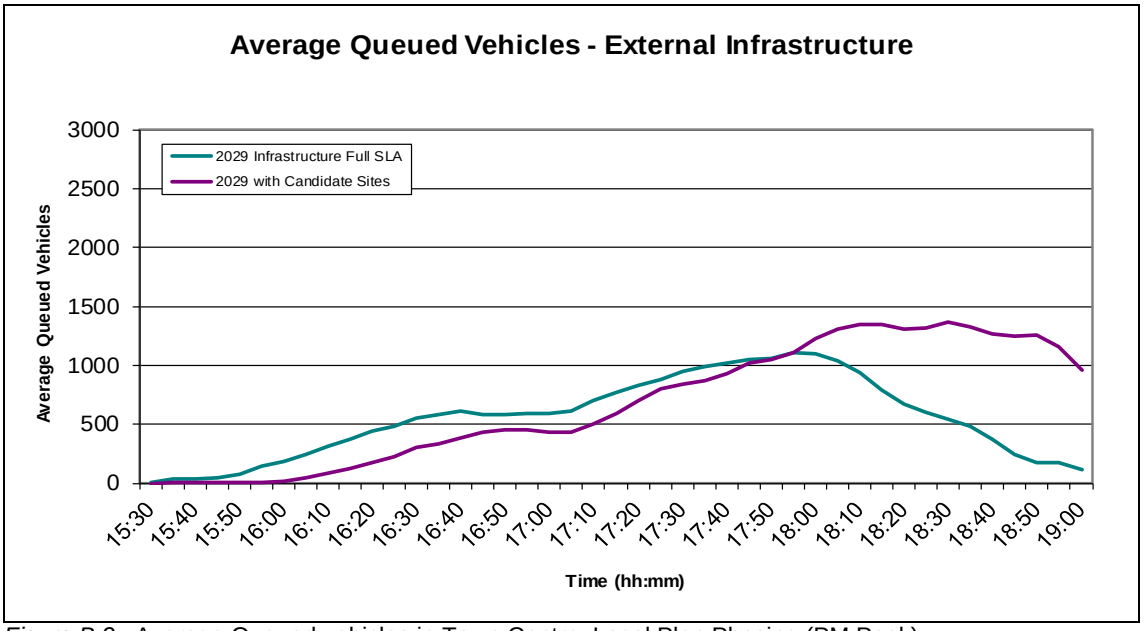


*Figure B.2 :* Average Queued vehicles in Town Centre, Local Plan Phasing (PM Peak)