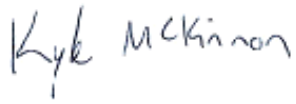
Nairn South Strategic Development Masterplan

Transport Appraisal



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Nairn South Strategic Development Masterplan

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Executive Summary

Introduction
AECOM have been commissioned by the Highland Council to undertake a Transport Appraisal of the Strategic Development Site known as Nairn South. The site is located to the south of Nairn town centre, immediately south of the existing Gordons' Sawmill.

The site is identified in the Inner Moray Firth Local Development Plan (IMFLDP) as NA8 Nairn South. The proposed development allocation on the site is mixed use including 520 residential homes, business and community uses. The purpose of the Transport Appraisal is to assist in development of the Nairn South Strategic Masterplan by identifying the transport infrastructure requirements associated with the development of Nairn South. This appraisal is informed by an assessment of the transportation constraints and opportunities of the routes from the Strategic Development site to Nairn Town Centre, local schools, other amenities, and the main employment centre of Inverness to the west.

In order to appraise the impact on local road network junctions, it is necessary to estimate the level of traffic anticipated to be generated by the strategic masterplan proposals.

A series of methods were applied to establish the most robust and representative means of testing the local road network's ability to cater for the Development.

The established level of traffic is subsequently applied on to the local road network in order to assess the ability of local junctions to accommodate the uplift in traffic.

The appraisal identified that an improved local road network could accommodate 320 residential units, together with the proposed business and community uses with the introduction of traffic signals at the junction of Cawdor Road and Balblair Road. This also relies upon the provision of Cawdor Road carriageway and footway widening between Millbank Crescent and Elizabeth Street and the introduction of an element of traffic calming adjacent to Elizabeth Street.

Infrastructure Recommendations
There are a number of key infrastructure elements along Cawdor Road that are required from the outset. Improved infrastructure along Balblair Road is only required when any form of transport access (pedestrian, cycle or vehicular) is provided onto Balblair Road

The infrastructure elements are as follows, with indicative costs provided:

- **Cawdor Road Infrastructure to be provided prior to the occupation of development**
  - Footpath widening at the Millbank Crescent junction with the B9090 Cawdor Road and Waverley Road - £20,000;
  - Footpath and carriageway widening on the B9090 Cawdor Road between Millbank Crescent and Elizabeth Street - £1.25M;
  - Traffic signal control of the B9090 Cawdor Road/ B9091 Balblair Road junction - £85,000
  - Traffic signal control of the A96 Inverness Road/ Waverley Road/ Manse Road if the full Nairn South development allocation is recommended as part of the emerging Master Plan - £85,000; and
  - The construction of a distributor-standard access road into the masterplan site permitting access to all the land holdings - £1.2M - £1.8M depending on the chosen alignment.

Overall cost of Cawdor Road infrastructure is, therefore, estimated at £1.355M. The distributor road is estimated at £1.2 to £1.8M. These indicative infrastructure costs do not include land or public utility costs. However, a 44% Optimism Bias has been applied to all elements. .

- **Balblair Road Infrastructure to be provided in relation to the occupation of development**

➢ Footway and carriageway widening, combined with traffic management, between Nairn South and Cawdor Road prior to any mode of transport being permitted to use Balblair Road for movement between Nairn South and the town centre – up to £900,000

Again, indicative infrastructure costs do not include land or public utility costs and a 44% Optimism Bias has been applied.

Associated Development Plan Implications
Existing transport policy, this being Policy 18 of the Highland Wide Local Development Plan (HwLDP) and the Inner Moray Firth Local Development Plan (IMFLDP) sets the context for the transport requirements for the Development.

The implications, given the additional work now undertaken and the infrastructure recommendations now provided, are as follows:

- Links to the town centre are strengthened by the infrastructure recommendations, which also address the current pinch points
- Improvements to the B9090 Cawdor Road, particularly for pedestrians and cyclists have been recommended
- Improvements are recommended to the B9091/B9090 junction which address its deficiencies
- The above Cawdor Road infrastructure recommendations should be provided prior to the occupation of any part of the Development
- A distributor-type link road is recommended that must provide access to all landholdings
- No link road connection between Cawdor Road and Balblair Road should be provided without the recommended Balblair Road Improvements being in place.
- Indeed, no form of transport access to Balblair Road should be provided without the recommended Balblair Road Improvements being in place.
- Improvements to Balblair Road are recommended which should be provided before any form of transport access to Balblair Road is permitted
- It is considered unnecessary to provide further consideration to a footbridge over the railway in the vicinity of Duncan Drive. The recommended footway improvements to Cawdor Road are considered sufficient.
- A developer contribution to the Nairn Bypass is no longer considered necessary
- Detailed consideration of the impact on existing residential areas from “through traffic“ is no longer considered necessary. This can be better controlled by a ‘monitoring’ condition/obligation applied to any planning consent to establish whether there is any resultant “through traffic” and, if so, to investigate the most appropriate solution depending on the scale of the monitored “through traffic” levels.
- Traffic signals at Waverley Road/A96 are not required with the lesser scale of development (320 residential units).

Capabilities on project:
Transportation

1 Introduction

1.1 General

AECOM have been commissioned by the Highland Council to undertake a Transport Appraisal of the Strategic Development Site known as Nairn South.

The site is identified in the Inner Moray Firth Local Development Plan (the Plan) as NA8 Nairn South. The proposed development allocation on the site is mixed use including 520 residential homes, business and community uses.

Immediately to the north of the development site is the existing J Gordon & Son Sawmill with its own expansion area identified in the Plan.

The Plan identifies other significant sites for housing/mixed use development in Nairn, these being: NA6 Delnies, NA4 Sandown, NA5 Lochloy and NA2 South Kingsteps.

1.2 Purpose of the Transport Appraisal

The Plan states that a new Nairn South Strategic Masterplan is to be prepared by the Council. A requirement of the Masterplan is the identification of the necessary local transport infrastructure required to support such a development and the existing land uses south of the Inverness – Aberdeen railway line.

Page 67 of the Plan sets out the proposed development allocation and planning strategy for Nairn South:

Table 1 - Site NA8 IMFLDP	
Site: NA8 Nairn South	
Area (ha): 25.9	**Uses:** 520 homes, business and community.
Requirements: The Council will prepare a new Nairn South Strategic Masterplan that the Council may adopt as Statutory Guidance, setting out physical development considerations and requirements including transport requirements in terms of vehicular, pedestrian and cycle access to both the Town Centre and the wider area; connectivity within the site; green network and footpath/cycleway connections; phasing; open space provision and developer contributions. Applications only to be considered following adoption of the revised masterplan. Developers will be required to produce a transport assessment addressing deficiencies in the transport network in line with the adopted masterplan. Further requirements notably include landscaping; flood risk; provision of a recreational access management plan; consideration of potential heritage impacts; and the avoidance of any adverse effect on the integrity of the Inner Moray Firth Special Protection Area/Ramsar.	

The purpose of the Transport Appraisal is to assist in development of the Nairn South Strategic Masterplan by identifying the road infrastructure requirements associated with the Nairn South development allocation. Transport policy to support the development of Nairn South is also suggested. This appraisal is informed by an assessment of the transportation constraints and opportunities of the routes from the Strategic Development site to Nairn Town Centre, local schools, other amenities, and the main employment centre of Inverness to the west (a copy of this work is included in Appendix A of this report). The outcome of this constraints and opportunities appraisal was the development of a series of infrastructure options ('long list') which were presented in a stakeholder consultation / engagement exercise involving Council Officers, Local Councillors, Community Councils and all interested parties in November 2015. The long list was subsequently refined to a shorter list of options to be taken forward for transport appraisal. The transport appraisal considers of the impact of the predicted trip generation of the Masterplan area on infrastructure options in order to identify the preferred infrastructure requirements and the level of infrastructure it can support.

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1.3 Study Network

The study network encompasses the routes from the A96(T) through Nairn town centre, south to the development site and then west to the A96(T) Inverness to Aberdeen trunk Road. These are Balblair Road and Cawdor Road and are shown in **Figure 1** below.

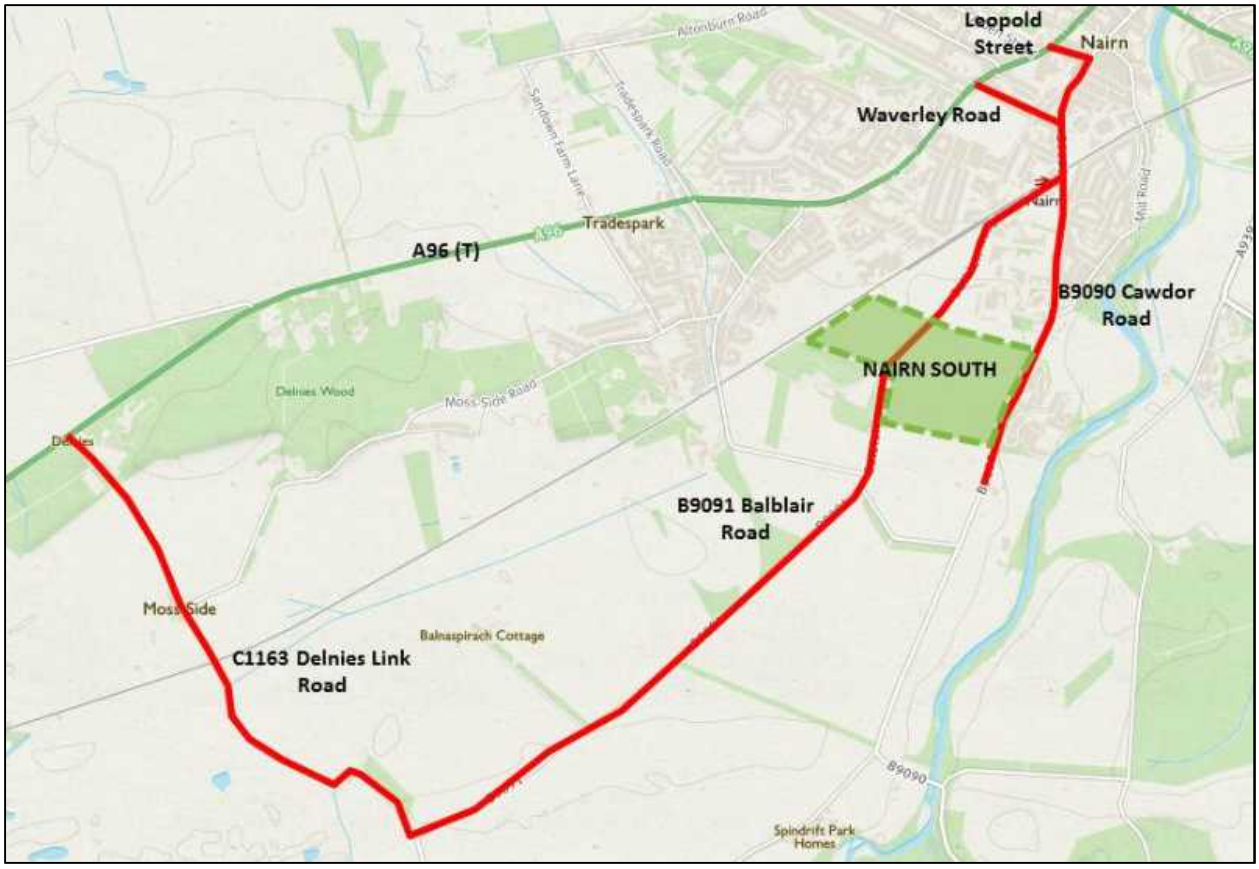

Figure 1- Study Area and Transportation Context

1.4 Report Structure

Following this chapter, the report has been structured as follows:

- **Chapter 2:** Travel Demand Assessment
- **Chapter 3**: Junction Appraisal
- **Chapter 4**: Infrastructure Recommendations
- **Chapter 5:** Transport Policy Review

2 Travel Demand Assessment

2.1 Introduction

The following chapter outlines the traffic and transport impact of the masterplan proposals on the local road network surrounding the site. This includes the calculation of people and vehicle trips likely to be generated by the masterplan proposals set out in the Plan. These can then be considered in the context of the existing transport infrastructure to determine if existing provision is sufficient to support the additional trips generated on the network. The road network has initially been tested based on the full masterplan proposals which comprise a housing allocation (total of 520 dwellings) and a business park sized at1575m^2 Gross Floor Area (GFA) as agreed with THC. Proposed community uses are anticipated to be negligible in terms of trip generation for the proposed development.

Chapter 4 will be used to identify any recommended modifications which may be required to accommodate the additional levels of traffic brought about by the masterplan proposals.

2.2 People Trip Assessment

A people trip assessment of the development proposals has been prepared using the TRICS (v7.2.4) database to establish trip rates for all people trips. A separate interrogation of the database has been conducted for the residential and business park elements of the masterplan. It should be noted, that to ensure a robust analysis of the masterplan traffic impacts, the TRICS residential land use type of 'Privately Owned Houses,' has been selected as this generates the highest number of trips (this residential land use typology does, however, include a proportion of properties for rent – typically 25%). Full TRICS Outputs are shown in **Appendix B.** Total people trip rates for both land use type associated with the masterplan are shown below in **Table 2**

Table 2 - People Trip Rates

	Privately Owned Housing		Business Park	
	In	Out	In	Out
AM Peak	0.195	0.792	1.844	0.408
PM Peak	0.586	0.352	0.593	2.279

2.2.1 Modal Split

Several data sources were investigated in order to determine a fully robust vehicle mode split.

Initially census data for the Nairn Census Locality ('Locality' denotes a grouping of high density postcodes in a settlement) in terms of 'Method of Travel to Work or Study' was inspected, as this was deemed to be the most representative of the site's characteristics geographically. The modal split results for this are shown below in **Table 3**:

Capabilities on project:
Transportation

Table 3 - Modal Split (Census 2011 Data)	
Mode	Mode Split
Car Driver	47.38%
Car Passenger	11.42%
Train	2.86%
Bus	5.90%
Cycle	5.09%
Pedestrian	25.47%
Other	1.88%
Total	100.00%

On review, it was concluded that the 'Car' mode share derived from the 2011 census data for the Nairn Locality was particularly low for the location of the development site. This may be explained by a large proportion of the Nairn Locality living in a more town centre oriented location in Nairn and therefore residents having more choice in terms of alternative modes of transport.

Consequently, the TRICs people trip assessment results were re-interrogated in order to establish if the modal split of the data sites was more robust in terms of the proportion of trips made by car. The results in Table 2.3 below demonstrate that the car driver proportion was more realistic when compared with the Census data for the Nairn Locality. However, it was noted that the TRICS results did not include any train users. Given the close proximity of Nairn Railway Station to the masterplan site, it is considered that a 0% mode share for train users is unrealistic.

Table 4 - Modal Split (TRICS)		
Mode	Privately Owned Homes Mode Split	Business Park Mode Split
Car Driver	59.55%	65.41%
Car Passenger	19.06%	9.56%
Train	0.00%	0.06%
Bus	3.06%	5.20%
Cycle	2.30%	0.23%
Pedestrian	15.54%	18.01%
Other	0.51%	1.53%
Total	100.00%	100.00%

It is considered that the modal split for the business park shown in **Table 4** is appropriate and this has been applied throughout the subsequent analysis.

The 2011 Scottish Census was re-interrogated in order to determine if a more appropriate modal split could be determined. Information for the outskirts of Nairn Town Centre (Nairn West) was extracted from the census and is shown below in **Table 5**:

Table 5 - Modal Split (Nairn West)

Mode	Mode Split
Car Driver	66.82%
Car Passenger	5.91%
Train	2.29%
Bus	3.18%
Cycle	5.53%
Pedestrian	13.16%
Other	3.12%
Total	100.00%

These results demonstrate a more robust assessment of the masterplan site in terms of likely mode share for commuters from the residential element of the site and to the proposed business park area. Therefore, it was decided that the results extracted from 2011 Census for Nairn West are the most appropriate and robust to be used for the transport appraisal of the infrastructure options being considered.

2.2.2 People Trips

Using the preferred modal split proportions, an estimation of the breakdown of total people trips by mode can be established. This involves using the allocated development sizes in the masterplan proposals along with the people trip rates extracted from TRICS and census modal split. By applying these together, the breakdown of estimated people trips by mode, shown in **Table 6**, was derived:

Table 6 - Residential Development Allocation (520 Dwellings) and Business Park (1575m^2) People Trips

Mode	Residential Development						Business Park					
	AM Peak (08:30-09:30)			PM Peak (17:15-18:15)			AM Peak (08:30-09:30)			PM Peak (17:15-18:15)		
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total
Car Driver	68	275	343	204	122	326	19	4	24	6	24	30
Car Passenger	6	24	30	18	11	29	2	0	2	1	2	3
Train	2	9	12	7	4	11	1	0	1	0	1	1
Bus	3	13	16	10	6	16	1	0	1	0	1	1

Table 6 - Residential Development Allocation (520 Dwellings) and Business Park (1575m^2) People Trips												
Mode	**Residential Development**						**Business Park**					
	AM Peak (08:30-09:30)			**PM Peak (17:15-18:15)**			**AM Peak (08:30-09:30)**			**PM Peak (17:15-18:15)**		
	Arr	**Dep**	**Total**	**Arr**	**Dep**	**Total**	**Arr**	**Dep**	**Total**	**Arr**	**Dep**	**Total**
Cycle	6	23	28	17	10	27	2	0	2	1	2	3
Pedestrian	13	54	68	40	24	64	4	1	5	1	5	6
OGV	3	13	16	9	6	15	1	0	1	0	1	1
Total	101	412	513	305	183	488	29	6	35	9	36	45

2.3 Vehicle Trips

For the implementation of the full masterplan proposals, which include 520 dwellings and a 1575m^2 Business Park, the following vehicle trips have been calculated based on the TRICS outputs and car mode share proportion:

Table 7 - Full Masterplan Vehicle Trips						
	Privately Owned Housing (520 Dwellings)			Business Park (1575m^2)		
	In	Out	Total	In	Out	Total
AM Peak	68	275	343	19	4	24
PM Peak	204	122	326	6	24	30

The background traffic has been factored up to represent year of opening background traffic, in this case 2022, prior to the distribution of the traffic associated with the masterplan being assigned to the local road network.

In order to verify that the vehicle trips shown in **Table 7** represent the most appropriate estimation of the level of vehicle trips which would be generated by the masterplan proposals, the TRICS database was re-interrogated for vehicle trips only. The results of this analysis are shown in **Table 8** below:

Table 8 - TRICS Vehicle Trips						
	Privately Owned Housing (520 Dwellings)			Business Park (1575m^2)		
	In	Out	Total	In	Out	Total
AM Peak	66	213	279	20	4	25
PM Peak	189	109	298	6	22	28

This assessment has verified that vehicle trips, shown in **Table 7**, represent the most robust test of the local road network.

2.4 Existing Background Traffic and Future Growth

The local road network that has been considered in this transport appraisal includes the following junctions:

- B9090 Cawdor Road/ B9091 Balblair Road;

- B9090 Cawdor Road/ Millbank Crescent/ Waverley Road.

Junctions on the A96 were not considered to be required to be evaluated as part of the traffic modelling exercise which concentrated on more local infrastructure and connections to the town centre. Also, the IMFLDP assessed the transport infrastructure implications of the development proposals in Nairn and concluded that the A96 junctions would operate satisfactorily.

However, in response to the stakeholder consultations that have been undertaken it was decided to undertake sensitivity testing of two A96 junctions using the robust traffic flow methodology applied to Nairn South in this appraisal:

- A96 Inverness Road/ Waverley Road/ Manse Road; and
- A96 Academy Street/ Leopold Street.

Background traffic levels have been established utilising existing data sources agreed with THC and include traffic counts and traffic model outputs for the Nairn area. The traffic flows for the Cawdor Road/ Balblair Road junction have been taken from base traffic survey data collected in 2011. The Highland Council's 2016 A96 VISUM Base model outputs have been used for the A96 junctions. Network flow diagrams have been produced for the base 2016 traffic volumes and are shown in **Appendix C**.

In order to emulate traffic growth in future years and provide a robust assessment, National Road Traffic Forecast (NRTF) high growth factors have been utilised.

3 Junction Appraisal

3.1 Appraisal

3.1.1 Introduction

The technical appraisal focusses on the operational capacity of the network junctions listed in **Section 2.4**, as the ability of these infrastructure components has a direct impact on the ability of the road links between to accommodate the predicted level of vehicle trips associated with the Nairn South development area.

Two industry standard software packages have been utilised for the capacity appraisal of the junctions on the local road network - LINSIG (Version 3.2.22.0) for traffic signal controlled and TRL's Junction 8 package for priority controlled junctions.

3.1.2 B9090 Cawdor Road/ Millbank Crescent/ Waverley Road Junction

Footpath widening has been incorporated to provide a more pedestrian friendly layout with shorter crossing distances on desire lines to Millbank Primary School. Drawing 60446943-SKE-C-0001 in Appendix E illustrates the proposed layout of the junction which has been analysed using TRL's Junction 8 PICADY software.

Table 9 provides a summary of the analysis of the junction performance during the AM and PM peak hour periods. Background traffic growth to a year of opening of 2022 and full development traffic flows have been applied based on an assumed 100 completions per year starting with the year 2018.

Table 9 - B9090 Cawdor Road/ Millbank Crescent/ Waverley Road Junction

2022 AM Peak Period with Full Development Traffic			
Movement	Ratio Flow to Capacity	Queue (PCU)	Delay (s)
Waverley Road	0.48	0.9	19.46
Cawdor Road	0.22	0.44	6.08
Millbank Crescent	0.21	0.27	10.54
High Street	0.44	0.88	9.42
2022 PM Peak Period with Full Development Traffic			
Waverley Road	0.40	0.67	13.23
Cawdor Road	0.07	0.12	5.31
Millbank Crescent	0.10	0.12	7.15
High Street	0.00	0.00	0.00

The results of the analysis of the updated junction layout demonstrate a maximum ratio of flow to capacity (RFC) of 0.48 (48%) and corresponding queue of 1 vehicle. It is concluded that the priority junction at Cawdor Road/ Millbank Crescent/ Waverley Road will operate satisfactorily.

3.1.3 B9090 Cawdor Road/ B9091 Balblair Road Junction

The B9090 Cawdor Road/ B9091 Balblair Road will require traffic signal control from the outset in order to accommodate the predicted future traffic flows. The junction's operational capacity has been analysed using LINSIG. Two options have been developed to improve both the pedestrian infrastructure and vehicle access and are illustrated by Drawings 11150864-SK208-B and 60446943-SKE-C-0004 in Appendix E.

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The appraisal assumes that all Nairn South development traffic uses the B9090 Cawdor Road. This is a worst case scenario for traffic modelling purposes. Any future use of Balblair Road by Nairn South traffic would decrease the RFC values.

Option 1 includes the widening of the Cawdor Road carriageway to 6.45m north of the railway bridge (Drawing 60446943-SKE-C-002:Option 4), traffic signalisation of the Cawdor Road / Balblair Road junction including new footway provision (Drawing 60446943-SKE-C-004:Option 5), stop line locations to accommodate the railway bridge and advanced cycle stoplines for cyclists, and a road cross-section south of the railway bridge with a priority/ give way section, on the southern approach to the junction which allows for a 2.3m footpath width for the entire length of Cawdor Road (Drawing 60446943-SKE-C-006:Option 4). The modelling results are shown in **Table 10**:

Table 10 - B9090 Cawdor Road/ B9091 Balblair Road Junction – Option 1

2022 AM Peak Period with Full Development Traffic			
Movement	Degree of Saturation	Mean Max Queue (PCU)	Average Delay (s/PCU)
Cawdor Road NB	86.0%	17.9	61.7
Balblair Road	44.4%	2.1	81.2
Cawdor Road SB	85.7%	14.5	71.6
Cawdor Road Give way SB	49.1%	11.5	19.9
Cawdor Road Give way NB	27.1%	0.2	1.3
2022 PM Peak Period with Full Development Traffic			
Cawdor Road NB	84.6%	14.1	69.7
Balblair Road	74.0%	4.5	102.9
Cawdor Road SB	83.8%	16.5	59.8
Cawdor Road Give way SB	61.0%	15.3	25.3
Cawdor Road Give way NB	23.5%	0.2	1.2

The results demonstrate that for the full Nairn South development allocation this road layout causes blocking of the junction due to a queue forming at the priority/ give way section. Analysis has demonstrated that an upper limit of 320 dwellings can be supported by this layout before the predicted queueing would block the junction. The results for a 320 dwelling development, which would have an expected year of opening of 2019, is shown in **Table 11** below:

Table 11 - B9090 Cawdor Road/ B9091 Balblair Road Junction – Option 1 (320 Dwellings)

2019 AM Peak Period with Full Development Traffic			
Movement	Degree of Saturation	Mean Max Queue (PCU)	Average Delay (s/PCU)

Capabilities on project:
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Table 11 - B9090 Cawdor Road/ B9091 Balblair Road Junction – Option 1 (320 Dwellings)			
2019 AM Peak Period with Full Development Traffic			
Cawdor Road NB	70.0%	12.1	50.3
Balblair Road	41.8%	1.9	79.9
Cawdor Road SB	68.6%	10.6	53.6
Cawdor Road Give way SB	39.2%	9.6	14.2
Cawdor Road Give way NB	21.1%	0.1	1.2
2022 PM Peak Period with Full Development Traffic			
Cawdor Road NB	62.3%	9.4	50.9
Balblair Road	54.4%	3.6	73.4
Cawdor Road SB	61.4%	9.1	50.6
Cawdor Road Give way SB	36.6%	9.0	12.4
Cawdor Road Give way NB	19.4%	0.1	1.2

Furthermore, by removing the give way feature between the Cawdor Road/ Balblair Road Junction and Elizabeth Street, described in Option 1 above, LINSIG testing demonstrated that the junction would operate satisfactorily for the full Nairn South development allocation. Results for this layout, which exclude the priority/ give way feature on approach to the junction are summarised in **Table 12** below.

Table 12 - B9090 Cawdor Road/ B9091 Balblair Road Junction – Option 1 (Give Way Feature Removed)			
2022 AM Peak Period with Full Development Traffic			
Movement	Degree of Saturation	Mean Max Queue (PCU)	Average Delay (s/PCU)
Cawdor Road NB	86.0%	17.9	61.7
Balblair Road	44.4%	2.1	81.2
Cawdor Road SB	85.7%	14.5	71.6
Cawdor Road Give way SB	17.5%	0.1	1.1
Cawdor Road Give way NB	27.1%	0.2	1.3
2022 PM Peak Period with Full Development Traffic			
Cawdor Road NB	84.6%	14.1	69.7
Balblair Road	74.0%	4.5	102.9
Cawdor Road SB	83.8%	16.5	59.8
Cawdor Road Give way SB	23.0%	1.2	0.1
Cawdor Road Give way NB	23.5%	0.2	1.2

However, this option would require a footpath layout on the B9090 Cawdor Road such that only 90% of the length between Millbank Crescent and Elizabeth Street would be widened to 2.3m. This would leave a 30m section of footway of adjacent to the residential properties near the Elizabeth Street junction retained at its current substantial width.

Table 12 indicates that with this modification the junction will operate satisfactorily with the full Nairn South development allocation with this footway layout.

Option 2 comprises the installation of traffic signals at the junction of Cawdor Road / Balblair Road in conjunction footway buildouts at the junction. In addition to this, localised sections of widening to the footway along Cawdor Road are provided by way of enhanced traffic calming on the northern and the southern sides of the railway bridge. This differs from Option 1 by providing give way sections on both approaches to the signals on the B9090 Cawdor Road. In order to provide these the carriageway has been narrowed to one-way operation requiring priority control measures for vehicles travelling in the southbound direction along Cawdor Road. This is illustrated by Drawing 11150864-SK208-B in **Appendix E** of this report.

The give way design features provide the opportunity for localised widening of the pedestrian footways on the eastern side of Cawdor Road to 2m, whilst the traffic signals control traffic through the road narrowing at the Nairn Station Bridge and permit large vehicles to safely negotiate turns at the junction.

Results of the LINSIG analysis for this layout of the B9090 Cawdor Road/ B9091 Balblair Road junction are provided in **Appendix D. Table 13** below provides a summary of the analysis for the worst case distribution which assumes 100% of trips from the Nairn South development area would use Cawdor Road.

Table 13 - B9090 Cawdor Road/ B9091 Balblair Road Junction – Option 2

2022 AM Peak Period with Full Development Traffic			
Movement	Degree of Saturation	Mean Max Queue (PCU)	Average Delay (s/PCU)
Cawdor Road NB	88.1%	18.5	65.7
Balblair Road	45.4%	2.1	82.4
Cawdor Road SB	85.7%	14.5	70.0
Cawdor Road Exit	49.1%	11.5	19.9
Cawdor Road Exit 2	27.1%	0.2	1.3
Cawdor Road Priority to Oncoming	54.9%	4.5	7.6
2022 PM Peak Period with Full Development Traffic			
Cawdor Road NB	83.5%	13.9	67.3
Balblair Road	75.8%	4.6	107.1
Cawdor Road SB	86.3%	17.3	63.0
Cawdor Road Exit	61.0%	15.3	25.4
Cawdor Road Exit 2	23.5%	0.2	1.2
Cawdor Road Priority to Oncoming	65.4%	5.5	9.0

The results indicate that the junction would perform unsatisfactorily as a result of the level of queuing forming on the southern arm of Cawdor Road from the give way feature. This queue is determined to be of sufficient length to block back through the junction and onto the northern approach. Further testing was carried which determined that

even a development of the scale of 100 dwellings could not be supported if the junction is progressed with this layout due to queueing at the give way sections. These results are shown in **Table 14** below.

Table 14 - B9090 Cawdor Road/ B9091 Balblair Road Junction – Option 2 (100 dwellings)			
2022 AM Peak Period with Full Development Traffic			
Movement	Degree of Saturation	Mean Max Queue (PCU)	Average Delay (s/PCU)
Cawdor Road NB	59.5%	8.3	51.1
Balblair Road	41.9%	1.9	80.6
Cawdor Road SB	52.4%	8.4	43.1
Cawdor Road Exit	33.0%	8.0	10.1
Cawdor Road Exit 2	15.4%	0.1	1.1
Cawdor Road Priority to Oncoming	37.8%	1.1	3.9
2022 PM Peak Period with Full Development Traffic			
Cawdor Road NB	58.3%	7.7	52.7
Balblair Road	53.3%	3.5	73.4
Cawdor Road SB	55.5%	8.7	45.7
Cawdor Road Exit	35.2%	8.8	11.4
Cawdor Road Exit 2	16.6%	0.1	1.1
Cawdor Road Priority to Oncoming	38.2%	1.1	4.0

The additional shortcoming of Option 2 is that it only provides footway widening for 44% of the length of the B9090 Cawdor Road between Elizabeth Street and Millbank Crescent. This is considered unsatisfactory.

Detailed results for all 3 traffic control arrangements at the junction are provided in **Appendix D.**

3.1.4 A96 Academy Street/ Leopold Street Junction

Leopold Street operates one-way only with traffic able to gain access to the A96 only. Summary results of the junction analysis are provided in **Table 15** below.

Table 15 - A96 Academy Street/ Leopold Street Junction			
2022 AM Peak Period with Full Development Traffic			
Movement	Degree of Saturation	Mean Max Queue (PCU)	Average Delay (s/PCU)
A96 SB	39.1%	6.3	7.6
Leopold Street	59.9%	4.6	51.1
A96 NB	42.3%	7.0	7.9
2022 PM Peak Period with Full Development Traffic			
A96 SB	41.8%	6.9	7.8
Leopold Street	66.9%	4.9	48.0
A96 NB	50.3%	9.0	8.7

The results in **Table 15** demonstrate that the junction operates satisfactorily in its current layout with 2022 baseline traffic flows and trips generated by the Nairn South development.

3.1.5 A96 Inverness Road/ Waverley Road/ Manse Road

The priority junction at Waverley Road and Manse Road with the A96 Inverness Road has been tested using Junction 8. The modelling results are shown below in **Table 16**:

Table 16 - A96 Inverness Road/ Waverley Road/ Manse Road – Existing Layout

2022 AM Peak Period with Full Development Traffic			
Movement	Ratio of Flow to Capacity	Queue (PCU)	Delay (s)
A96 Northbound– Left, Ahead and Right	0.222	0.27	24.88
Manse Road– Left, Ahead and Right	0.44	1.71	6.51
A96 Southbound– Left, Ahead and Right	1.13	35.79	253.05
Waverley Road– Left, Ahead and Right	0.04	0.05	4.41
2022 PM Peak Period with Full Development Traffic			
A96 Northbound– Left, Ahead and Right	0.23	0.29	28.01
Manse Road– Left, Ahead and Right	0.86	11.53	25.84
A96 Southbound– Left, Ahead and Right	0.39	0.63	15.56
Waverley Road– Left, Ahead and Right	0.10	0.22	4.23

Table 16 indicates that the junction would operate unsatisfactorily in both peak periods in its current layout. During the AM peak an RFC of 1.31 is indicated on the Waverley Road approach of the junction.

The transport appraisal undertaken as part of the IMFLDP indicated that the junction will operate satisfactorily. It is considered that the current results are a reflection of the 2022 year of opening and the robust nature of the traffic modelling applied to Nairn South.

The introduction of traffic signal control at the junction provides the opportunity to provide formal pedestrian crossing facilities into the junction. An indicative junction layout is shown illustrated by Figure 2 below.

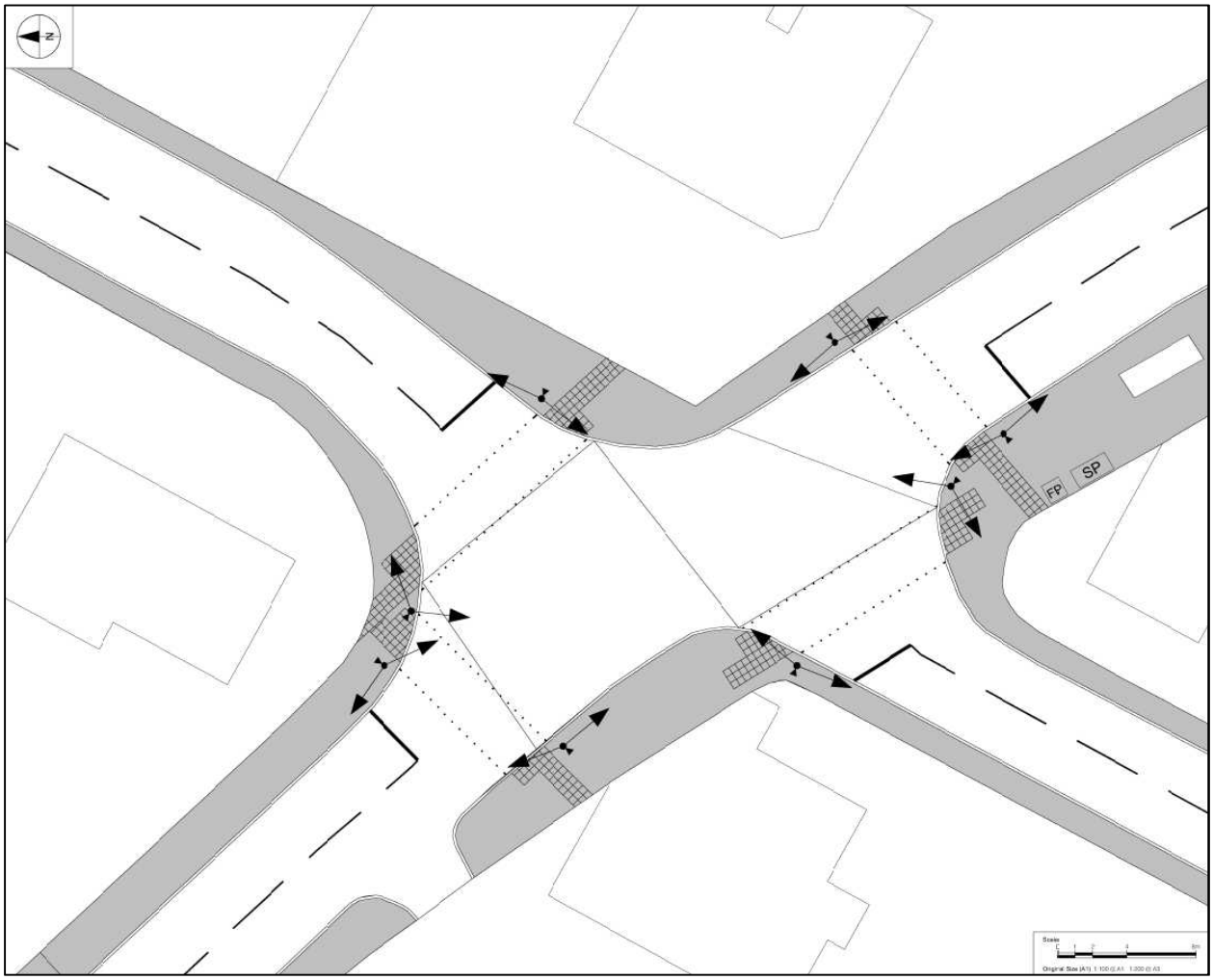


Figure 2 - Indicative Layout for Signalised A96/ Waverley Road/ Manse Road

The results of the LINSIG analysis is summarised in **Table 17**, below.

Table 17 - A96 Inverness Road/ Waverley Road/ Manse Road – Signal Controlled Option			
2022 AM Peak Period with Full Development Traffic			
Movement	Degree of Saturation	Mean Max Queue (PCU)	Average Delay (s/PCU)
Waverley Road NB	82.7%	17.5	56.4
A96 NB	82.0%	25.5	36.3
Manse Road	12.0%	1.0	41.4
A96 SB	61.8%	16.6	25.0
2022 PM Peak Period with Full Development Traffic			

Capabilities on project:
Transportation

Table 17 - A96 Inverness Road/ Waverley Road/ Manse Road – Signal Controlled Option			
Waverley Road NB	78.5%	6.8	101.3
A96 NB	69.3%	22.4	14.0
Manse Road	18.3%	1.3	62.8
A96 SB	54.0%	13.5	9.5

The results in Table 17 demonstrate that the junction will operate satisfactorily with the introduction of traffic signal control. Traffic signal control at this junction is only necessary if the full development (520 residential units) allocation of Nairn South is progressed rather than a lesser number of 320 units.

3.2 Summary

The local road network has been demonstrated to be able to accommodate the full Nairn South Development allocation of 520 houses, in addition to business park and community land uses with the following junction modifications:

- Traffic signal control of the Cawdor Road / Balblair Road junction including new footway provision, stop lines pulled back to accommodate the railway bridge and advanced cycle storage, and pedestrian crossing facilities; and
- Traffic signal control of the A96 / Manse Road / Waverley Road junction including pedestrian crossing facilities.

If it were decided that footway widening improvements for the full length of the B9090 Cawdor Road between Millbank Place and Elizabeth Street were a necessity (rather than 90%), only 320 houses plus the business park and community land uses could be accommodated. This lower level of housing also precludes the need to implement traffic signals at the A96 / Manse Road / Waverley Road junction.

4 Infrastructure Recommendations

4.1 The Recommended Level of Infrastructure Required prior to the Occupation of Development at Nairn South

4.1.1 Cawdor Road Overview

The most critical part of the local road network is the section of Cawdor Road from its junction with Elizabeth Street in the south, passing under the railway bridge, to its junction with Millbank Crescent, Westbury Road and Cawdor Street in the north. This also includes the area around the Balblair Road/Cawdor Road junction.

This part of Cawdor Road is characterised by both substandard roadway and footway widths. Cawdor Road is 6m wide. However, the effective or usable width of the road is narrower due to the effect of the adjacent retaining wall. The single footway on the east side is approximately 1.5m wide for most of its length between Millbank Crescent and Elizabeth Street.

The footway on the corner of Cawdor Street and Millbank Crescent is well used by pedestrians, including small groups of children assisted by a school crossing patroller. It is too narrow and congested to safely accommodate groups of people walking along Cawdor Road and others waiting to cross the road.

The existing geometry and condition of Cawdor Road, Balblair Road and their associated footways prejudice the safety of all road users, including pedestrians and children walking to and from school. The combination of a substandard effective carriageway width adjacent to a substandard footway along the critical section of Cawdor Road is a key constraint.

As such, it is considered that the local road network, particularly the critical section along Cawdor Road and at its junction with Balblair Road cannot safely absorb additional Nairn South development traffic without a level of infrastructure provision from the outset.

Traffic modelling indicates that 320 dwellings plus the business park and community land uses can be accommodated with traffic signal control of the existing Cawdor Road/Balblair Road junction, bridge layout and traffic management proposals adjacent to Elizabeth Street without works being required to the A96 Trunk Road. When the full allocation of 520 dwellings was tested for capacity it was found that it would only operate satisfactorily if a 30m section of pedestrian footpath is compromised to accommodate the removal of the proposed give-way traffic management section on the southern approach to the junction. This is deemed unsatisfactory in terms of pedestrian provision and safety and therefore, it is recommended that the site is restricted to 320 dwellings.

The infrastructure recommendations are as follows:

4.1.1.1 Cawdor Road/Cawdor Terrace/Westbury Road/Millbank Crescent junction

This junction should be improved as indicated in Drawing 60446943-SKE-C-101 in Appendix F which addresses the identified infrastructure deficiencies at this location.

Estimated Capital Cost: £20,000

4.1.1.2 Cawdor Road from Millbank Crescent to Nairn Station Railway Bridge

Roadway width improved to 6.45m from 6.0m to recognise the 0.45m buffer requirement adjacent to the west side retaining wall.

Capabilities on project:
Transportation

East side footway width improved to generally 2.3m to recognise a 2.0m footway requirement but also increased by a further 0.3m to recognise the constraint impact of the east side retaining wall as indicated in Drawing 60446943-SKE-C-101 in Appendix F.

Estimated Capital Cost: £550,000.

4.1.1.3 Cawdor Road/Balblair Road junction and Nairn Station Railway Bridge

Traffic signal control of the junction provides traffic management over this section of Cawdor Road - and is required from the outset. This includes advanced stop lines for cyclists on all three approaches. Footway width provision shall be 2.0m below the arch bridge widening to 2.3m either side. A pedestrian phase is required within the traffic signal sequencing. Pedestrian storage provision adjacent to the rail station steps is also required as indicated in Drawing 60446943-SKE-C-102 in Appendix F. This also allows for a right turning refuse vehicle from Balblair Road to Cawdor Road south.

Estimated Capital Cost: £85,000.

4.1.1.4 Cawdor Road from Balblair Road to Elizabeth Street

Roadway width improved to 6.45m from 6.0m to recognise the 0.45m buffer requirement adjacent to the west side retaining wall.

East side footway width improved to 2.3m to recognise a 2.0m footway requirement but also increased by a further 0.3m to recognise the constraint impact of the east side retaining wall as indicated in Drawing 60446943-SKE-C-103 in Appendix F.

Traffic management is required on Cawdor Road adjacent to Elizabeth Street to allow the improved footway width to be provided for the full length from Balblair Road to Elizabeth Street.

Estimated Capital Cost: £700,000.

4.1.2 Balblair Road Overview

Balblair Road is sub-standard in road width and there is an incomplete footway system. The presence of an industrial scale sawmill business on both sides of Balblair road and other business activities further north present road safety concerns for any form of transport movement associated with Nairn South travelling along Balblair Road to/from the town centre. There are a large number of cross-road movements of HGVs and forklift vehicles as a result of the sawmill business operating from both sides of the road.

A number of traffic management options have been considered. The recommendation is for a scheme which provides a safe environment for pedestrians and cyclists whilst restricting the level of potential through traffic by the use of traffic management incorporating one way sections and passing places.

4.1.2.1 Balblair Road from Nairn South to Cawdor Road

Roadway width of 3.5m (wider on bends) with passing places to allow alternate one-way working between Nairn South and the rail station access. This provides a level of traffic management which restrains vehicle speed and the level of traffic using the road whilst maintaining vehicular movement in both directions.

Two–way traffic working and a roadway width of 6.45m to recognise the 0.45m buffer requirement adjacent to north side retaining wall between the rail station access and Cawdor Road.

South side footway width improved to 3.0m between Nairn South and the sawmill access to allow for pedestrian and cycle movement/new cycle track along the length of Balblair Road which experiences sawmill traffic. South side footway of 2.5m from the sawmill access to Cawdor Road to recognise an adjacent low level of traffic whilst providing the minimum footway width requirement. All as illustrated in Drawing 60446943-SKE-C-104 in Appendix F.

Estimated Capital Cost: up to £900,000

4.1.3 Distributor Link Road between Cawdor Road and Balblair Road

The proposed Link Road requires to be a distributor-type link road of a suitable standard which would provide a separate convenient and attractive route from Balblair Road – when any form of transport mode access is provided to/from Balblair Road from Nairn South between Cawdor Road and Balblair Road.

There is an initial requirement for any access road associated with Nairn South development to be of distributor road standard and alignment, approved by THC. The initial length and alignment of the access road shall provide access into the various landholdings between Cawdor Road and Balblair Road identified in Drawing 60446943-SKE-C-105 in Appendix F before occupation of any part of the development, regardless of the scale of initial development.

If this initial length of distributor - standard road is a cul-de-sac, no more than 200 houses should be provided prior to provision of a second Cawdor Road access and completion of a distributor standard link between the two access points or completion of the connection between Cawdor Road and Balblair Road.

However, it should be re-affirmed that no distributor link road connection between Cawdor Road and Balblair Road should be provided before the recommended Balblair Road improvements have been provided. The distributor-standard road alignment should be approved by THC.

Estimated Capital Cost: £1.2 - £1.8 million – Internal to site development

4.2 Discounted Infrastructure Options

4.2.1 Nairn Bypass

Consideration has been given to the addition of ‘half diamond’ slip roads on the proposed Bypass at Cawdor Road to/from the Inverness direction. The traffic modelling has demonstrated that the Nairn South development allocation can be accommodated with improved infrastructure provision within Nairn only. As such, the slip roads are not required for this scale of Nairn South development.

4.2.2 B9090 Cawdor Road/ B9091 Balblair Road Traffic Signal Control Option 2

Two options were considered for the B9090 Cawdor Road/ B9091 Balblair Road traffic signal control junction. Option 2 included give-way traffic management sections on both the northbound and southbound approaches to the junction on the B9090 Cawdor Road. It was found that this caused the junction to operate unsatisfactorily due to queue lengths blocking both the junction and the northern approach give-way section. This layout was tested first for the full masterplan allocation of 520 dwellings and then for just 100 dwellings. It was found that it could not accommodate even this level of development.

Capabilities on project:
Transportation

4.2.3 Footbridge Access to Duncan Drive from Nairn South

The proposed improvements for pedestrians along Cawdor Road identified in **Section 4.1** can provide both improved access to Nairn Academy and the town centre. As such, it is recommended that the previous Master Plan expenditure allocation for a footbridge be replaced by that required for the Cawdor Road footway improvements.

4.2.4 A96 Inverness Road/ Waverley Road/ Manse Road

If the full Nairn South residential allocation is developed, to the extent of 520 dwellings, it would be necessary to signalise the A96 Inverness Road/ Waverley Road / Manse Road junction. An indicative layout of the signalisation is shown in Drawing 60446943-SKE-C-0030 in Appendix E.

5 Transport Policy Interpretation

5.1 Highland-wide Local Development Plan – Policy 18

The Highland-wide Local Development Plan (Adopted by the Highland Council in 2012) sets out the local development policy for the Highland council area. Page 56 of the HwLDP sets out specific policies in relation to the development of Nairn South i.e. Policy 18 of the Plan. The transport-related aspects of Policy 18 are as follows:

Table 18 - Policy 18 HwLDP

Policy 18 Nairn South

The Council will support the allocation of land at Nairn South for mixed-use development. The principal use will be residential. Provision for employment opportunities must also be made as part of development proposals that are submitted to the Council for approval.

This allocation is subject to further assessment of the transport and infrastructure requirements that are necessary to enable development to progress.

The northern boundary of the allocation adjoins an area of land extending to 5.1 hectares. This land is reserved in the Nairnshire Local Plan (adopted December 2000) for expansion of timber processing and other uses. It is the intention of the Council that this reservation will continue in force. The possibility that the existing sawmill on Balblair Road may expand on to this reservation must be taken in to account in the design of proposals for development in Nairn South.

In the 2011-2016 period, the commencement of a first phase will be subject to the following requirements:

Phasing

- The limit to the development of the first phase of Nairn South will be determined by a co-ordinated masterplanning exercise to be carried out for the area outlined in Map 9. In advance of the masterplan being prepared, and subject to the requirements (including transport appraisal) below being met, the residential component of the first phase will be strictly limited to 250 houses;

Transport

- Links to the town centre must be strengthened with good connectivity between the development and the existing fabric of the town. In particular the current pinch points at the railway bridge and the junctions with the A96 through Nairn must form part of a solution to open up development in phase 1;
- Improvements to the B9090 Cawdor Road connection particularly for pedestrians and cyclists;
- Improvements to the B9091/B9090 junction will have to be identified and addressed as it is an unsatisfactory junction with poor visibility;
- Consideration must be given to provision of a distributor-type link road between Balblair Road and Cawdor Road, to reduce reliance on Balblair Road as a link between Nairn South and the town centre;
- Consideration must be given to provision of a footbridge over the railway in the vicinity of Duncan Drive, to facilitate walking and cycling journeys between Nairn South and schools, the town centre and other parts of the town;
- Construction of the A96 By-pass is a long term solution to divert through traffic away from the centre of Nairn and, subject to further discussions with Transport Scotland, the developer will be required to contribute to its provision;
- The scale of any development which can proceed ahead of the bypass will depend in the adequacy of the

alternative links referred to and the developer should demonstrate how these can be achieved;

- The impact on existing residential areas from "through traffic" should be considered in detail;
- Contributions will be sought to the improvement of active travel linkages into the town centre;
- Contributions will be sought to improved public transport linkages to and from the allocation; and,
- Contributions to the improvement of the local road network and connections with the strategic road network will be required

5.2 Inner Moray Firth Local Development Plan - NA8 Nairn South

The site is identified in the Inner Moray Firth Local Development Plan (the Plan) as NA8 Nairn South. Page 67 of the Plan sets out the proposed development allocation and planning strategy for Nairn South:

Table 19 - Site NA8 IMFLDP	
Site: NA8 Nairn South	
Area (ha): 25.9	**Uses:** 520 homes, business and community.
Requirements: The Council will prepare a new Nairn South Strategic Masterplan that the Council may adopt as Statutory Guidance, setting out physical development considerations and requirements including transport requirements in terms of vehicular, pedestrian and cycle access to both the Town Centre and the wider area; connectivity within the site; green network and footpath/cycleway connections; phasing; open space provision and developer contributions. Applications only to be considered following adoption of the revised masterplan. Developers will be required to produce a transport assessment addressing deficiencies in the transport network in line with the adopted masterplan. Further requirements notably include landscaping; flood risk; provision of a recreational access management plan; consideration of potential heritage impacts; and the avoidance of any adverse effect on the integrity of the Inner Moray Firth Special Protection Area/Ramsar.	

5.3 Implications on Development Plan

The Transport Appraisal has highlighted that 320 dwellings plus business park and community uses can be accommodated by the local road network, based on the assumption that certain infrastructure improvements are implemented.

It is considered that there is a base level of infrastructure that is required prior to any residential unit occupation rather than associated with a specific phases of development. Therefore it is considered that the existing Policy 18 clause, which stipulates that the first phase of development should be strictly limited to no more than 250 dwellings is no longer relevant.

An allocation of 520 houses, business uses and complementary community uses has been appraised as part of an overall Strategic Development Masterplan for the site. The outcome of the appraisal has identified a series of required infrastructure improvements which will be necessary to sustain a development size of 320 houses, business uses and complementary community uses.

The implications, given the additional work now undertaken and the infrastructure recommendations now provided are as follows:

- Links to the town centre are strengthened by the infrastructure recommendations, which also address the current pinch points

Capabilities on project:
Transportation

- Improvements to the B9090 Cawdor Road, particularly for pedestrians and cyclists have been recommended
- Improvements are recommended to the B9091/B9090 junction which address its deficiencies
- The above Cawdor Road infrastructure recommendations should be provided prior to the occupation of any part of the Development
- A distributor-type link road is recommended that must provide access to all landholdings
- No link road connection between Cawdor Road and Balblair Road should be provided without the recommended Balblair Road Improvements being in place.
- Indeed, no form of transport access to Balblair Road should be provided without the recommended Balblair Road Improvements being in place.
- Improvements to Balblair Road are recommended which should be provided before any form of transport access to Balblair Road is permitted
- It is considered unnecessary to provide further consideration to a footbridge over the railway in the vicinity of Duncan Drive. The recommended footway improvements to Cawdor Road are considered sufficient.
- A developer contribution to the Nairn Bypass is no longer considered necessary
- Detailed consideration of the impact on existing residential areas from “through traffic“ is no longer considered necessary. This can be better controlled by a ‘monitoring’ condition/obligation applied to any planning consent to establish whether there is any resultant “through traffic” and, if so, to investigate the most appropriate solution depending on the scale of the monitored “through traffic” levels.
- Traffic signals at Waverley Road/A96 are not required with the lesser scale of development (320 residential units).

Contributions should still be sought to improved public transport linkages to and from the Nairn South development area.

Previous reference to, ‘contributions will be sought to the improvement of general active travel linkages into the town centre,’ is considered no longer relevant as the requirements for the improvements to Cawdor Road and Balblair Road now satisfy this.

Appendix A – Route Appraisal, Constraints and Opportunities

Capabilities on project:
Transportation

1. Route Appraisal

1.1 Introduction

The following chapter provides an overview of the existing nature of the three potential green routes and additionally highlights their opportunities and constraints from a transportation perspective. The location of the routes are contained in the below **Figure A.1**.

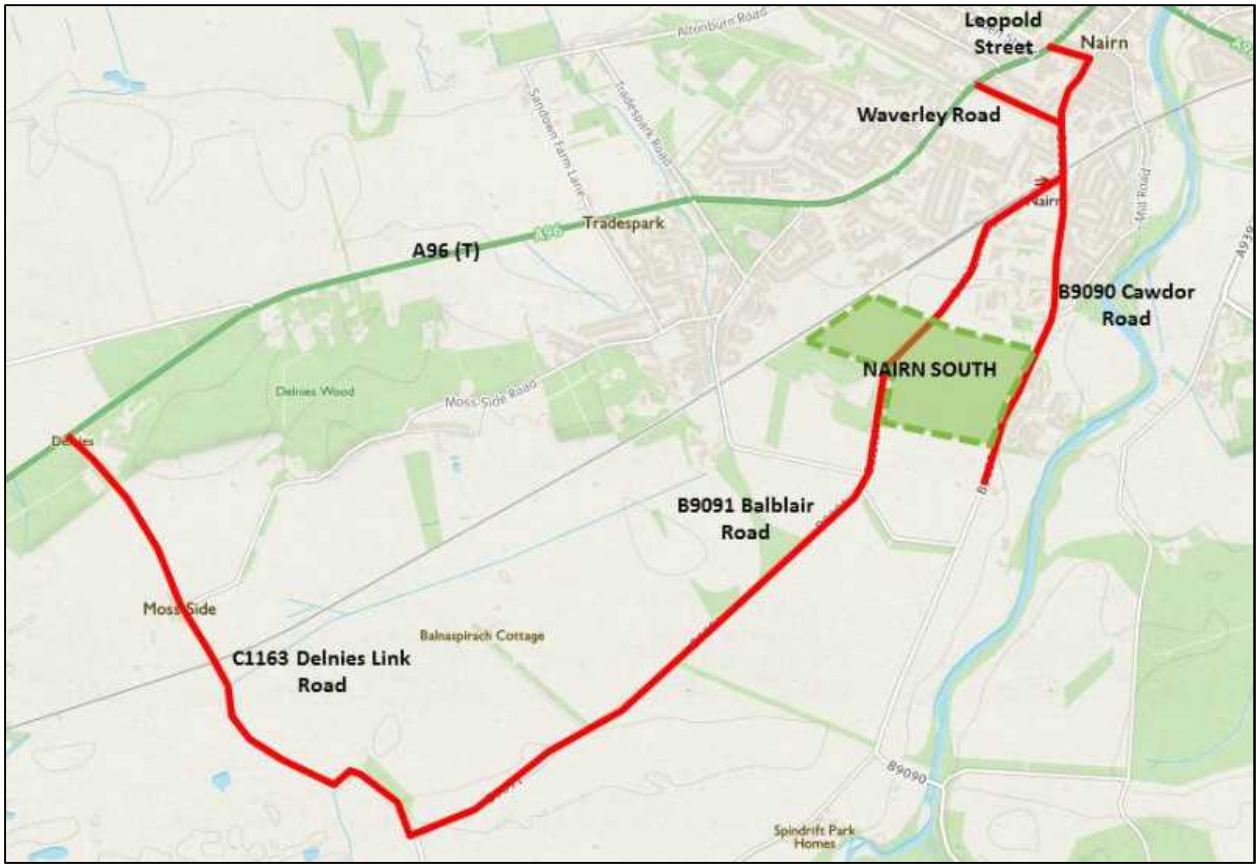


Figure A.1: Route Location Map

1.2 Cawdor Road / Cawdor Street / Waverley Road / Millbank Crescent Junction

Figure A.2 below illustrates the area under consideration.

Capabilities on project:
Transportation

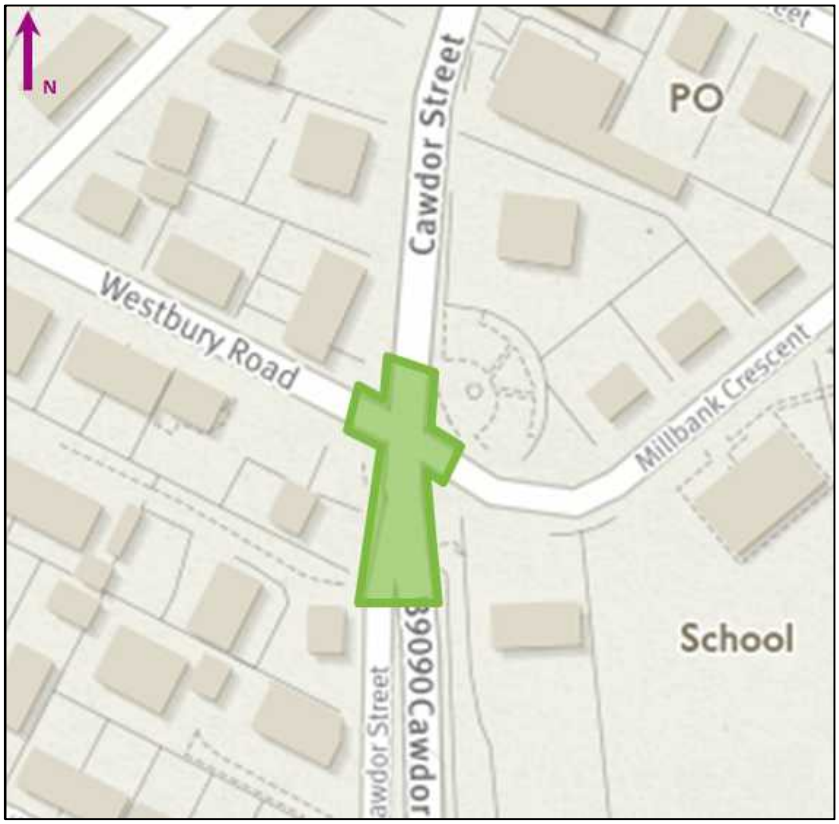


Figure A.2: Cawdor / Waverley / Millbank Junction – Extent of Appraisal Site

Cawdor Road/Cawdor Street/Waverley Road/Millbank Crescent junction takes the form of a large priority controlled crossroads with a fifth arm, Cawdor Street, joining the junction at an acute angle between the Cawdor Road and Waverley Road approaches. The junction serves as a key waypoint for pedestrians, cars and other vehicles, on route to Millbank Primary School and local nursery from the residential areas to the north, west and south. Activity for all road users peaks during the morning peak hour between 0800 and 0900 hours. A school crossing patrol is in operation at this time and at the end of the school day which is at 1500 hours.

Nairn War Memorial is located in the northeast corner of the junction consisting of a monument surrounded by paving slabs and a garden of remembrance to the rear. It is bounded by a series of cast metal bollards interlinked by a low level chain link rope. The distance for the boundary fence to the carriageway edge measures typically 2 metres in width. Available width demarcated as footway measures 1.6 metres wide. The openness of the memorial site provides good sight lines for both pedestrians and drivers. Between Cawdor Road north and Millbank Crescent, the junction corner is formed by a large compound curve varying in size between a 25 and 35 metres radius.

Capabilities on project:
Transportation

Photo M1 – Cawdor Street looking towards Nairn War Memorial

On the corner to the south of Millbank Street opposite the memorial, the footway width is typically 1.5 metres. Combined with a corner radius of approximately 6 metres it creates a restricted space for pedestrians and in particular parents negotiating the route with young children in buggies/pushchairs. A further constraint to pedestrians is the high sandstone walls which bound the adjacent residential properties “Tali Ayer” and Glenerne which restrict forward visibility and also accentuate the narrowness of the footway space.

Millbank Crescent is typically 7.5 – 8 metres in width with adjoining footways contiguous to the road carriageway.

The geometry of the Millbank approach to the junction is such that the “bellmouth” formed is 32 metres in width across which is an excessive distance for pedestrians to cross in one movement.

On the west side of the junction is Waverley Road and Cawdor Street. As previously indicated Cawdor Street, which provides access to the railway station and nearby residential streets, joins the junction at an acute angle. Road markings on the carriageway have been used to assist in improving the orientation of vehicles arriving at the give-way with Cawdor Road. However, the desirable orientation of a vehicle to 90 degrees is not possible. Cawdor Street climbs southbound away from the junction towards the station. At the same time Cawdor Road drops down under railway, resulting in a maximum level difference between the roads in the vicinity of the station of 6 metres.

A footway is available on the eastern side of Cawdor Street and is 1.6 metres in width. The western side of Cawdor Street is formed by stone boundary walls of residential properties. At the north end of Cawdor Street, at the junction, pedestrians must cross to the opposite side of Cawdor Street, and then walk along the carriageway (albeit in an area of hatched roadmarkings) and onto the footway at the end of Waverley Road. This is illustrated in Photograph 1 above. Alternatively, pedestrians can cross east over Cawdor Road onto the opposite footway there and continue either north of south. Again the layout of the junction at this location does not provide easy access for pedestrians.

Waverley Road joins the junction at 90 degrees. A footway is provided on the south side of the road and is typically 1.5 metres wide. The carriageway of Waverley Road is 6 metres wide and is edged by stone boundary walls of residential properties. Corner radii at the junction to the north and south sides are 1 metre and 6 metres respectively. Between Waverley Road and Cawdor Street there is an area of footway which varies in width between 2.5 metres and 4.5 metres shown in Photograph 1 above. This is bounded by hatched roadmarkings used to reduce the width of the road. The Combined width the footway and markings varies from 6 metres up to 7 metres. The crossing distance for pedestrians across Cawdor Road at this location is 10 metres footway to footway on route to Millbank Primary. There appears the opportunity to increase this width of footway to the extent of the road markings which would result in the reduction of the crossing width to 6.5 metres.

The following series of photographs provide an overview of the existing junction environment.

Photo M2 – Corner of Waverley Road looking south to Cawdor Road/Street

Photo M3 – Corner of Millbank Street looking towards Cawdor Street

Photo M4 – Cawdor Street approach to junction

Capabilities on project:
Transportation

Photos M5 & M6 – Cawdor Street looking north and south along Cawdor Road

Capabilities on project:
Transportation

1.3 B9090 Cawdor Road – Millbank Crescent to Nairn Railway Station Bridge

Figure A.3 below illustrates the area under consideration.

Figure A.3: Cawdor Road (Millbank Cres – Nairn Station Bridge) – Extent of Appraisal Site

Cawdor Road south of Millbank Crescent towards the Nairn Railway Station Bridge is bounded on both sides by stone retaining walls approximately 1.5 metres increasing to 2 metres as they near the bridge abutments. From the top of the retaining wall on the western side of Cawdor Road the ground rises in an approximate 1:2 slope to Cawdor Street and the railway station, 4.2 metres at its highest point above the wall. A footway runs along the east side of the road carriageway and is typically 1.4 metres wide with a width of 1.6 metres in the locality of the driveway entrance to Glenerne. From the top of the eastern retaining wall there is a verge in the region of 2 metres width. The ground rises in a typical slope of 1:2 to the edge of the grounds of the adjoining private residential properties.

The carriageway of Cawdor Road is in the region of 5.7 metres wide and at locations up to 6.3 metres wide between Millbank Crescent and the railway bridge. Lack of a footway on the western side of the carriageway results in vehicle drivers shying away from the wall, adjusting the positioning of their vehicle in relation to the retaining wall creating ‘space’ or ‘buffer’ and thus reducing the effective width of road available. The carriageway width physically reduces as it passes beneath the railway bridge due a height restriction of 3.8 metres over a width of approximately

3.5 metres. Carriageway narrowing beneath is used to ensure that vehicles are positioned at the highest point of the bridge arch. This is achieved using a physical island, 0.8 metres wide, positioned 1 metre off the western abutment wall which permits cyclists to pass through at the same time as other vehicles. Vehicles are required to negotiate the bridge in single file with priority given to vehicles travelling southbound on Cawdor Road. The carriageway cross-section under the bridge consists of a 1 metre cycle (bypass) lane, 0.8 metre island, 3.5 metre carriageway and 1.5 metre footway between the bridge abutments.

The following series of photographs provide an overview of the existing road environment.

Photo C1 – Cawdor Road looking south towards bridge from Cawdor Street

Capabilities on project:
Transportation

Photos C2 & C3 – Cawdor Road looking north from bridge

Photo C4 – Cawdor Road looking south through bridge arch

Given the nature of the bridge, it is evident that there is little scope for modest adjustments to the road features in order to improve provision for pedestrians, cyclists and vehicles.

1.4 B9090 Cawdor Road / B9091 Balblair Road Junction

Figure A.4 below illustrates the extent of the area under consideration.

Capabilities on project:
Transportation

Figure A.4: Cawdor Road / Balblair Road Junction – Extent of Appraisal Site

Balblair Road is located 20 metres south of the Nairn Station railway bridge at its junction with Cawdor Road. South of the bridge the road carriageway widens to 5.8 metres in width. The section of footway on the eastern side is at its widest point of 2.3 metres before rapidly decreasing to 1.4 metres as is the typical width north of the bridge highlighted previously. The carriageway on Cawdor Roads widens locally to in the region of 6 metres in the vicinity of the junction bell mouth. At this point the eastern footway has narrowed locally to 1 metre in width, widening to 1.3 metres as it passes beyond this point and maintains a relatively constant width.

Balblair Road is approximately 6 metres wide at its junction with Cawdor Road. It is bounded on both sides by masonry retaining walls but no footways adjacent to the carriageway. As with Cawdor Road, the lack of a footway on both sides of the carriageway results in drivers shying away from the edge of the carriageway and more towards the centreline of the road thus reducing the effective width of the road to less than 6 metres on approach to the junction.

Capabilities on project:
Transportation

Photo BC1 – Balblair Road looking northeast towards the junction

To the north side of Balblair Road, lies Nairn Railway Station. The ground climbs steeply from the top of the retaining wall up to the level of Nairn Station. The height of the retaining wall varies from 1.2 metres at the junction mouth with Cawdor road up to 1.5 metres at the entrance into the station's southern car park. Pedestrian access to the station from Balblair Road is afforded by a set of steep rising concrete steps (Photo BC2). No 'Equalities Act' compliant access to the station from the south is evident with the exception of a ramped platform access from the car park (Photo BC3). This does require, however, the disabled person to drive or be driven directly to the platform end as the car park surfacing is in poor condition.

Photo BC2 – Station steps from Balblair Road

Photo BC3 – South platform ramp looking from secondary car park

On the south side is located a garage and maintenance depot for refuse collection vehicles owned by the Highland Council. The height of the retaining wall varies from 1.2 metres at the Cawdor Road junction, decreasing to 0.5 metres at the access into the depot (Photo BC4). From the top of the wall the ground rises up at an approximate 1:2 slope to the level of the depot. At the junction with Cawdor Road the corner radii to the north and south of the bell mouth are 10 metres and 4 metres respectively.

Photo BC4 – Balblair Depot retaining wall

Sight lines at the junction give-way are substandard requiring the use of stopline such that drivers use greater caution when exiting from Balblair Road onto Cawdor Road. This is demonstrated by Photos BC5 and BC6 following.

Photo BC5 – Balblair Road sightlines, southwest corner looking north towards bridge

Photo BC6 – Cawdor Road sightline looking south from bridge (Balblair Road on right)

Capabilities on project:
Transportation

1.5 B9090 Cawdor Road – Nairn Railway Station Bridge to Elizabeth Street

Figure A.5 below illustrates the extent of the area under consideration.

Figure A.5: Cawdor Road (Nairn Station Bridge – Elizabeth St) – Extent of Appraisal Site

From Balblair Road southbound along Cawdor Road the carriageway narrows gradually from 6 metres to 4.8 metres as it approaches the junction with Elizabeth Street.

Between the Nairn Station bridge and Elizabeth Street the western side Cawdor Road is bounded by four properties – the Balblair refuse depot at the junction with Balblair Road, then two privately owned semi-detached bungalows, and subsequently the eastern boundary wall of Nairn County FC's grounds. These are protected from the carriageway by a masonry retaining wall in the case of the depot property and general masonry walls for the remainder of the length.

In respect to the bungalow properties they lie approximately 5.5 metres from their respective boundary walls and therefore the edge of Cawdor Road (Photo C6).

Capabilities on project:
Transportation

Photo C6 – Cawdor Road looking north from Elizabeth Street Junction
(3 private residential dwellings in close proximity to the road corridor can be seen in the foreground)

There is no footway provided along the western side, therefore the carriageway butts against the boundary walls. As has been observed over the length of Cawdor Road from Millbank Crescent vehicles shy away from the walls reducing the available effective width for two-way traffic.

Along the eastern side of Cawdor Road the grounds of multiple residential properties form the boundary of the adopted road. The boundary treatment is again masonry walls some of which, and in particular near the station bridge, are providing ground retention. At the junction with Elizabeth Street there is a large single bungalow dwelling and private grounds (Photo C6 – right side of image). The bungalow has been extended over time and now lies in very close proximity to the garden boundary wall with Cawdor Street. As with the section of Cawdor Road north of the bridge, a footway runs along the eastern side of the carriageway, 1.3 metres wide, widening to 1.6 metres at the junction with Elizabeth Street (Photo C7).

Photo C7 – Cawdor Road looking further north towards Nairn Station Bridge

The Elizabeth Street junction is relatively wide at the bellmouth, providing a crossing width for pedestrians of 20 metres. Corner radii on the north and south side of the bellmouth measure 20 metres and 10 metres respectively.

Photo C8 – Cawdor Road / Elizabeth Street Junction

Capabilities on project:
Transportation

1.6 B9091 Balblair Road

The B9091 Balblair Road extends from its junction with the B9090 Cawdor in a generally southwest direction passed Nairn County FC, Nairn Station, Gordon's Sawmill and the various development sites on the east and west sides of the road, south of the current limit of the urban area.

A plan showing Balblair Road broken down by sections is contained in the below **Figure A.6.**

Figure A.6: Balblair Road (Cawdor Road – Gordon's Sawmill) – Extent of Appraisal Site

The width of the road varies from 6 metres down to 5.7 metres over **Section 1**; 5.7 metres to 5.4 metres over section **Section 2**; 6.1 metres down to 5.1 metres over **Section 3**; 5.1 metres to 7.8 metres back to 4.3 metres over **Section 4**; 4.2 metres to 4.2 metres over **Section 5** and then a generally consistent width of 6 metres over **Section 6** south of the current limit of the urban area of Nairn

Photo B1a & B1b – Balblair Road looking north and south respectively adjacent to NCFC's grounds

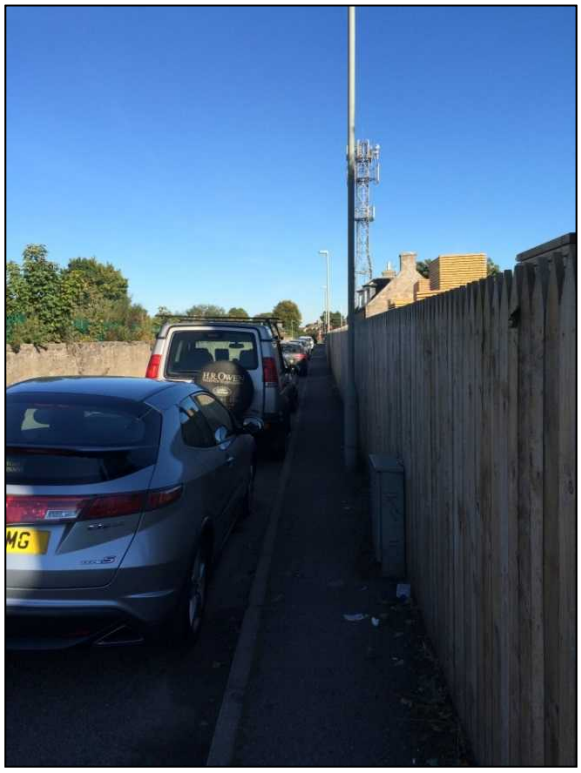


Photo B2 – Balblair Road looking north adjacent to Gordon's Sawmill storage yard, located south of Gordon's Cottages (showing narrow footway)

Photo B3 – Balblair Road looking south adjacent to Gordon's Sawmill storage yard (towards old mill building in the middle ground, and Parklane Cottage beyond)

Capabilities on project:
Transportation

Photo B4 – Balblair Road looking north (Parklane Cottage in right of image) and adjacent to the site of a former mill building, now replaced by a staff car park (with narrow footway)

Photo B5 – Balblair Road looking south (Balbalir Terrace cottages in left of image), towards sawmill access (left, middle ground) with inbound timber transport vehicle crossing from storage yard (right, middle ground)

Photo B6a & B6b – Balblair Road looking south from sawmill access with outbound timber transport lorry turning south, and view from the access towards the processed timber storage area

Photo B7 – Sawmill access Weighbridge from Balblair Road

Photo B8 – Balblair Road looking north from Howden's Cottages towards the sawmill access (right middle ground) and storage yard (left middle ground)

Capabilities on project:
Transportation

Photo B9 – Southern access to sawmill storage yard currently used for access to the weighbridge by timber delivery vehicles (illustrated in Photos B5 – B7)

Photo B10 – Balblair Road looking south from vantage point in Photo 9 towards the southern limit of the Nairn urban area (signified by the brief narrowing of the road, middle ground left)

Capabilities on project:
Transportation

1.7 B9091 Balblair Road – C1163 Delnies-Kildrummie-Howford Road

Figure A.7 below illustrates the area under consideration and identifies the location of photographs which assist in highlighting key locations of the route. Due to prevailing lighting conditions at the time of collection, photos D1 – D10 are the route viewed in the northbound direction. Photos D11 – D15 show the C1163 Delnies Road from the Balblair Road junction in the westbound direction, again due to the prevailing lighting conditions.

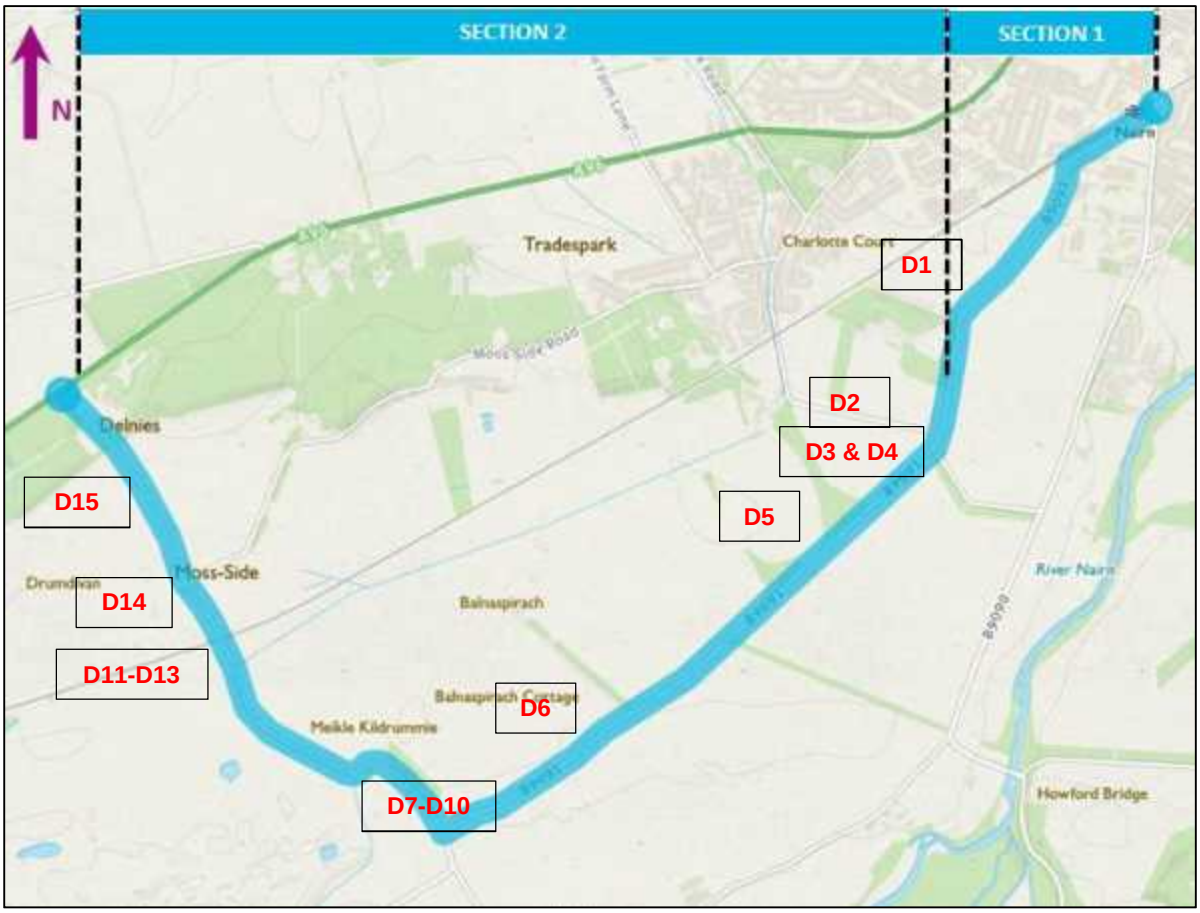


Figure A.7: Balblair Road (Gordon's Sawmill – Nairn Station Bridge) – Extent of Appraisal Site

Photos D1 and D2 illustrate the section of Balblair Road adjacent to the development area to the south of the current urban fringe of Nairn formed by Gordon's Sawmill, and north of the unclassified road connecting Balblair Road to Cawdor Road. Photos D3 – D10 illustrate the route from vantage points along Balblair Road from the unclassified Cawdor – Balblair link road to its junction with the C1163 Delnies Road. Photos D11 – D13 illustrate the route from vantage points along the C1163 Delnies Road from its junction with the B9091 Balblair Road. A summary commentary is provided in each photo description.

Capabilities on project:
Transportation

Photo D1 – Balblair Road looking north to current urban limit of Nairn (with Gordon's Sawmill in distance, right)

Photo D2 - Balblair Road looking north towards southern boundary of the Nairn South development area (located beyond field access seen on right)

Photo D3 – Balblair Road facing north at junction of existing unclassified road linking to Cawdor Road to the south of the development area

Photo D4 – Bablair Road facing north at silage pit/bale store at junction of unclassified road

Capabilities on project:
Transportation

Photo D5 - Balblair Road looking north from widened carriageway area opposite tree plantation

Photo D6 – Balblair Road facing north from the widened carriageway at the junction for Balnaspirach

Photo D7 – Balblair Road facing north existing s-bend
(from an area of widened carriageway)

Photo D8 – Balblair Road facing north at entry to bend with carriageway widened on the inside of left-bend ahead (a gravel run-over area can be seen on left verge)

Photo D9 – Balblair Road facing north towards uphill s-bend

Photo D10 – Balblair Road facing north from passing area north of junction with C1163 Delnies Road

Capabilities on project:
Transportation

Photo D11 – C1163 Delnies Road facing west approaching masonry arch bridge over Inverness – Aberdeen railway (passing place on left)

Photo D12 – C1163 Delnies Road facing west at railway bridge crossing (demonstrating space for only one vehicle on bridge)

Capabilities on project:
Transportation

Photo D13 – C1163 Delnies Road railway bridge crossing

Photo D14 – C1163 Delnies Road after railway bridge crossing
(the oncoming vehicle is stopped opposite an unmarked passing area)

Capabilities on project:
Transportation

Photo D15 – C1163 Delnies Road facing west towards Delnies Wood at only marked/designated passing place on the route from Nairn

The A96(T) Delnies junction - C1163 Delnies Road – B9091 Balblair Road route to Nairn is one used by HGVs carrying both unprocessed timber and the finished timber products to and from the Gordon's Sawmill site. This avoids the route from the north using the town centre and Cawdor Road with its restriction at the railway station bridge. Whilst the route avoids the bridge restriction on Cawdor Road and the Cawdor Road / Balbair Road junction it is not free from its own constraints. South of the sawmill site towards the unclassified Cawdor Road link the road is typically of suitable width to permit two-way traffic use. However, south of the link road the width is restricted to the extent that it essentially functions as a single track road. Its width is such that cars are able to pass each other with care on some sections but in general vehicle drivers are required to use areas in the road where the carriageway has been widened, particularly when meeting an oncoming HGV. As noted with Photo D15, only one passing place is conspicuously marked.

The C1163 Delnies Road crosses the Aberdeen – Inverness railway line via a narrow masonry arch bridge, wide enough for vehicles to be able to cross in only direction at a time.

1.8 A96 Dualling Inverness to Aberdeen Trunk Road Improvements

Transport Scotland's, " Strategic Transport Projects Review (STPR)," was published in 2008, and set out the Scottish Government's transport investment priorities over the coming decades.

Specific trunk road interventions emerging from the review included upgrading the A96 between Inverness and Nairn to dual carriageway standard, including a bypass of Nairn. The intention to fully dual the A96 to Aberdeen was thereafter announced in December 2011, when Scottish Ministers published their Infrastructure Investment Plan. This document contained a commitment by the Scottish Government to dual the A96 between Inverness and

Aberdeen by 2030, thus (along with the A9 Perth – Inverness) completing the dual carriageway network between all Scottish cities.

A route options assessment (Stage 2 Assessment as defined in the Design Manual for Roads and Bridges (DMRB)) has been completed by Transport Scotland for the section of the A96 between Inverness and Nairn including a bypass. A preferred option has now been selected for the project. Figure A.8 below provides an illustration of the preferred bypass option.

Key features of the preferred option for a Nairn Bypass:

- Compact grade separated interchange (Nairn West) located between Blackcastle Farm and Delnies Junction;
- B9091 Balblair Road is severed to the south of the Nairn South strategic development site by the proposed bypass;
- A new link road north of the bypass connecting B9091 Balblair Road to the C1163 towards Delnies with a new rail underbridge;
- A new overbridge carrying the B9090 Cawdor Road over the Nairn Bypass;
- The existing Balblair Road-Cawdor Road link road south of the development site is replaced by an improved road alignment;
- A new link road south of the bypass connecting B9090 Cawdor Road to the southern portion of B9091 Balblair Road severed by the bypass;
- A new overbridge carrying the A939 Gantown on Spey Road over the Nairn Bypass; and
- Compact grade separated interchange (Nairn East) which replaces the existing A96(T) / B111 Auldearn / Drumduan Road staggered priority controlled junction.

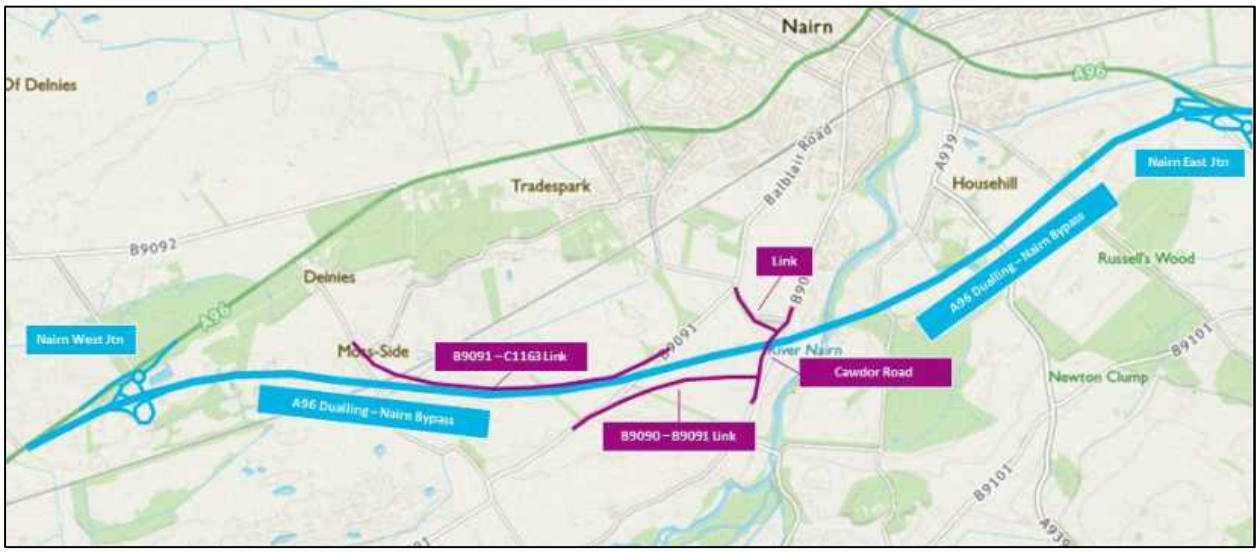


Figure A.8 – Nairn Bypass Key Features

During the route selection process, options for the Nairn bypass were considered which featured an intermediate junction between the Nairn East and West interchanges on the A939 Grantown on Spey Road. However, these

Capabilities on project:
Transportation

were discounted during the Stage 2 Route Assessment leaving the preferred option illustrated above and appended to this report.

Traffic modelling for the route options assessment has considered the strategic land allocations for Nairn contained in the LDP.

Some initial consultation has been undertaken in regard to the A96 Dualling Project (including Nairn Bypass) for the purpose of determining the receptiveness of Transport Scotland to the possibility of a (potentially) 'developer delivered' intermediate access onto the bypass at Cawdor Road thus providing better access onto the strategic road network from the south of Nairn.

Transport Scotland's policy position is a presumption against new access onto the trunk road network, particularly if the purpose of the access is enablement for a private development. However, if as in the case of Nairn South and other LDP sites, development is required to provide strategic/economic benefits then access will be considered.

Transport Scotland has indicated that the chosen preferred option does not preclude the provision of an intermediate interchange/junction at Cawdor Road. Subject to Transport Scotland being satisfied that there would no-net-detriment to the trunk road resulting from a new interchange, such a proposal may be considered.

A further schematic illustration of the Nairn Bypass preferred option, including an indicative intermediate interchange with Cawdor Road is provided by Drawing No. 60446943_SKE-C-0013 in Appendix E to this report.

1.9 Masterplan Site Active Travel Provision

1.9.1 Walking

As previously mentioned, there are a number of areas close to the masterplan site where pedestrian facilities are not currently at a desirable standard to encourage trips on foot from the site. The 2010 Nairn Active Travel Masterplan prepared for THC by Halcrow Ltd identified the B9090 as a potential active travel core network, with extensions continued in to the masterplan site also. The idea being that this would create a direct route for pedestrians between the masterplan site and Nairn town centre.

As previously described, the railway bridge at Nairn Railway Station creates a 'pinchpoint' on the B9090 Cawdor Road which creates a barrier to the pedestrian route to the town centre as well as Millbank Primary School on Millbank Crescent. Opportunities which could alleviate this issue have been identified in **Chapter 0** of this report.

Further afield from the site, pedestrian footpaths on the B9090 at Nairn High Street and on the A96 through Nairn are provided on both sides of the carriageway.

Capabilities on project:
Transportation

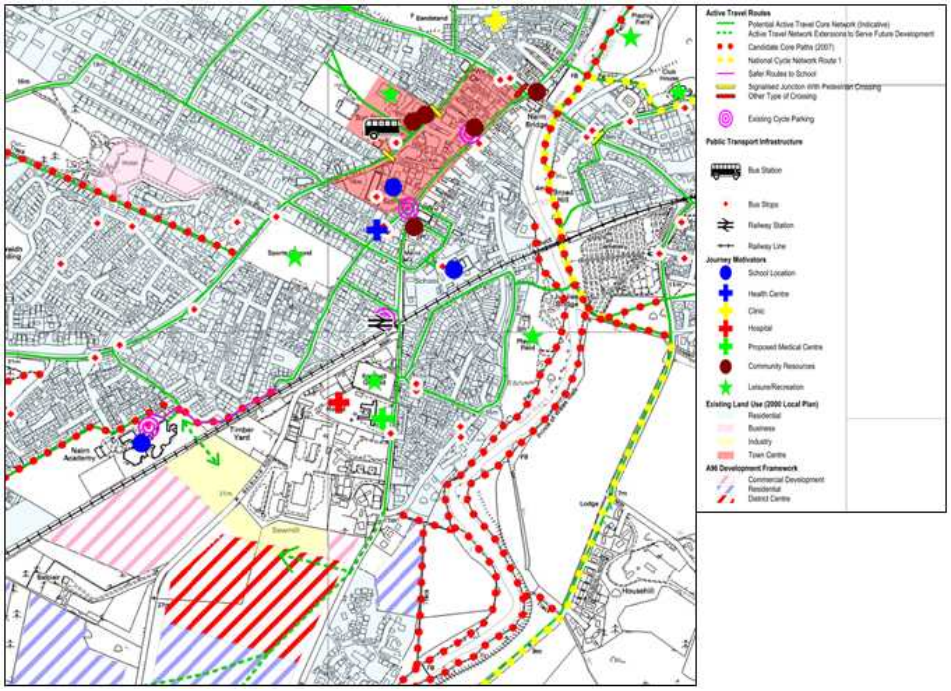


Figure A.9 - Nairn Active Travel Masterplan

Figure A.9 above shows an excerpt from the Nairn Active Travel Masterplan, showing the potential routes identified in the report between the Nairn South Masterplan site and Nairn town centre.

1.9.2 Cycling

National Cycle Route 1 (NCN 1) passes through Nairn on the east side of the River Nairn, approaching from the south on the A939 before continuing off road along the river towards Nairn Dunbar Golf Course. NCN 1 connects Nairn to Inverness depending on the individual cyclist's level of fitness.

As with the walking routes, the Aberdeen to Inverness railway line currently creates a barrier between the masterplan site and Nairn town centre. Mitigation measures, to improve this are detailed in **Chapter 0** of this report.

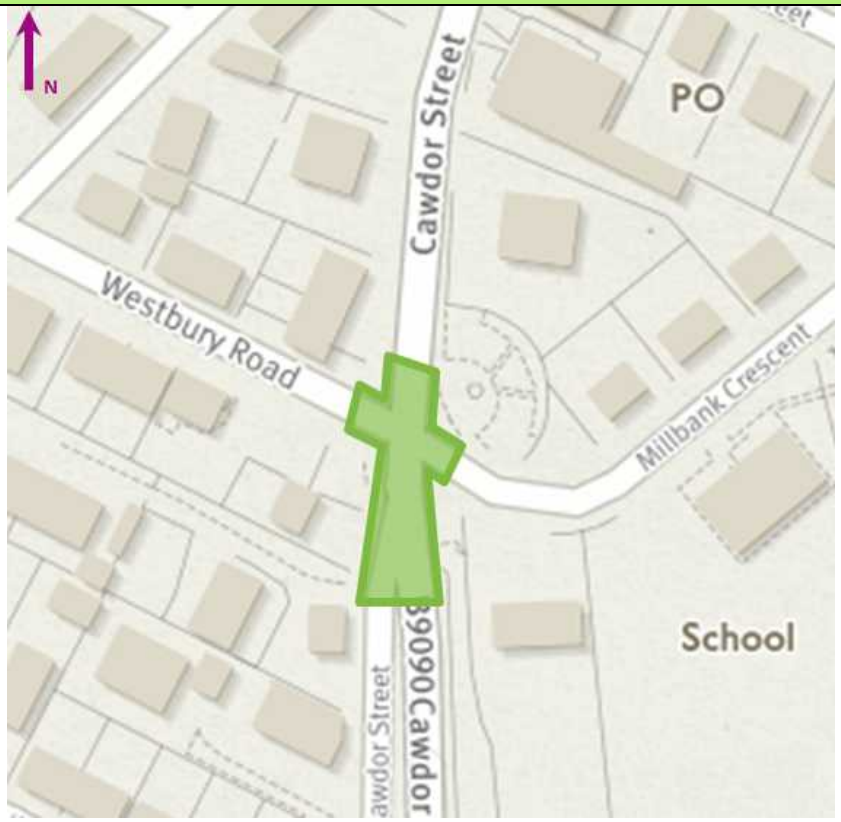
2. Constraints and Opportunities

2.1 Introduction

With cognisance to the observations contained in **Chapter 1**, the following section provides an overview of the constraints and opportunities present on each of the routes, with a view to informing potential interventions that may be required.

2.2 Opportunities and Constraints

Table A.1: Summary of Infrastructure Constraints

Cawdor Road/Millbank Crescent/Cawdor Street/Waverley Road Junction	
	• Overall, large expanse of carriageway at junction for pedestrians to cross. • Large crossing width on Millbank Crescent for pedestrians. • Large crossing width from Westbury/Waverley Road to Millbank Crescent. • Cawdor Road footway substandard in width. • Third party land issues in relation to potential improvements.

Capabilities on project:
Transportation

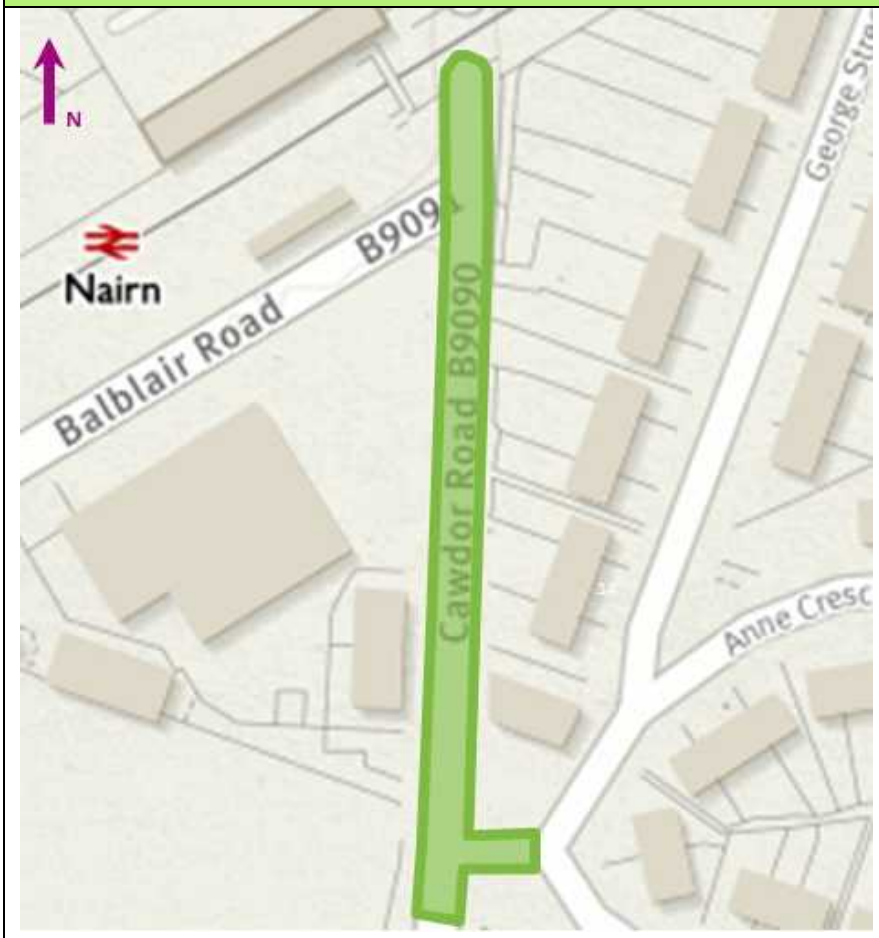
B9090 Cawdor Road – Millbank to Nairn Station Bridge	
	• Carriageway narrow. • Footway along east side only. • Footway substandard in width. • Retaining wall forming boundary along east & west side. • Vehicle drivers shy away from west retaining wall reducing effective road width. • Level difference between road and adjoining land in relation to potential improvements. • Carriageway narrows at Nairn Station Bridge due to height/width restriction. • Third party land issues in relation to potential improvements.

Capabilities on project:
Transportation

B9090 Cawdor Road / B9091 Balblair Road Junction	
	• Carriageway Narrow on both Cawdor and Balblair Roads. • Further restriction in carriageway width on Cawdor Road at Nairn Station Bridge due to height/width restriction. • Footway along east side only of Cawdor Road. • Footway substandard in width. • No footways on Balblair Road approach to junction. • Retaining wall forming boundary between road and adjoining property. • Vehicle drivers shy away from west retaining wall on Cawdor Road and on both sides of Balblair Road reducing effective road width. • Level difference between road and adjoining land in relation to potential improvements. • Third party land issues in relation to potential improvements. • Lack of pedestrian refuge at station access. • Lack of Equalities Act compliant access to station from south. • Reduced visibility for traffic on Balblair Road entering Cawdor Road. • Limited radius for vehicles on Balblair Road turning onto Cawdor Road South.

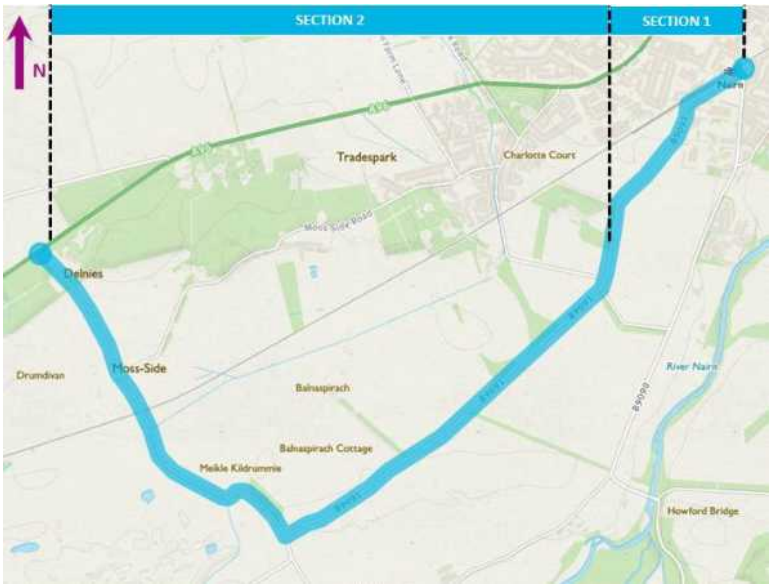
Capabilities on project:
Transportation

B9090 Cawdor Road – Nairn Station Bridge to Elizabeth Street

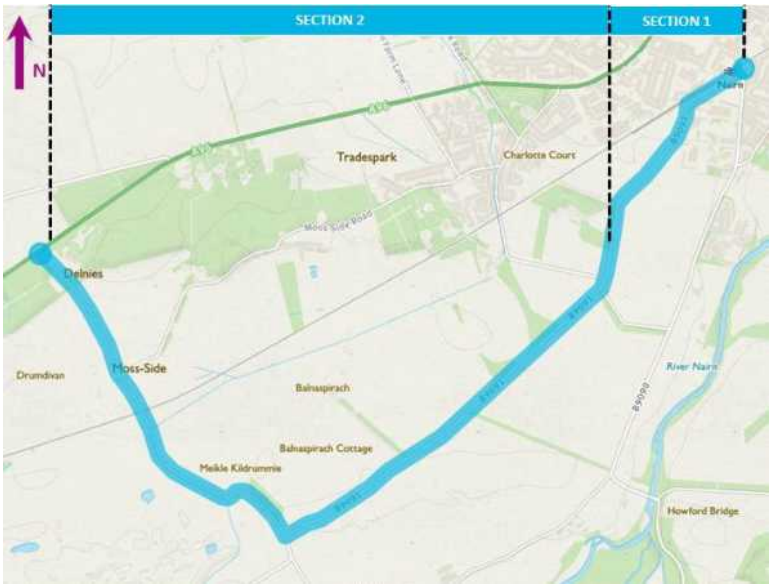


- Carriageway narrow.
- Footway along east side only.
- Footway substandard in width.
- Retaining walls forming boundary between the road and adjacent property.
- Vehicle drivers shy away from west retaining wall reducing effective road width.
- Level difference between road and adjoining land in some locations, particularly near bridge in relation to potential improvements.
- Carriageway narrows at Nairn Station Bridge due to height/width restriction.
- Proximity of properties near Elizabeth Street on both sides of Cawdor Road in relation to potential improvements.
- Third party land issues in relation to potential improvements.

Capabilities on project:
Transportation

Balblair Road – Section 1	
	• Carriageway width varies but is generally narrow (4-6m). • Footway provision varies in extent and, where provided, is of substandard width. • Masonry walls forming boundary between the road and much of the adjacent property. Some sections provide ground retention. • Vehicle drivers shy away from retaining walls, and other walls, where these abut the carriageway reducing the effective road width. • Level difference between road and adjoining land in some locations, particularly near Cawdor Road junction in relation to potential improvements. • Proximity of some properties to the road. • Active sawmill business which spans both sides of the road. Vehicles cross from side to side at access points. Planned growth of operation. • Third party land issues in relation to potential improvements.

Capabilities on project:
Transportation

Balblair Road – Section 2 (B9091 Balblair Road – C1163 Delnies-Kildrummie-Howford Road Link)	
	• Carriageway narrow particularly for large vehicles. • National speed limit applies. • Used as route for large vehicles to/from A96 and Gordon's Sawmill in Nairn. • Carriageway widening provided in places to permit two vehicles to pass in opposite directions. These are unsigned resulting in a degree of driver indecision in terms of traffic movement. • Passing places not to Council standard at some locations. • Humped back bridge carries road over Aberdeen to Inverness railway line. Sightlines are poor. Warning signs not provided. • Balblair Road / Delnies (B9091 / C1163) junction – 90^{o} bend and substandard sightlines. • Third party land issues in relation to potential improvements.

Capabilities on project:
Transportation

2.3 Summary of Infrastructure Opportunities

Following the constraints review a series of options (referred to as the 'long list') were developed that would enhance the connectivity of the Nairn South Development area in terms of access by pedestrians, cyclists and vehicles. **Table A.2** on the following pages provides a summary of the improvement options 'long list.' This list was put through an initial sifting exercise which considered the general practicalities of the delivery of each option, the benefit(s) delivered in comparison with the alternative options for the particular section of road network being considered, and relative cost of delivery. From this initial sift a reduced list of options to be taken forward for further detailed appraisal was developed.

Table A.2 - Summary of Infrastructure Opportunities

Ref	Location	Option(s) "Long List"	Option(s) Discounted	Option(s) taken forward for further consideration
1	**Cawdor Road / Cawdor Terrace / Westbury Road / Millbank Crescent Junction**	A) Reduction in pedestrian crossing widths at junction through a combination of pavement widening and new refuge island. (AECOM Drawing: 60446943-SKE-C-0001 & 0002)	None	A) Reduction in pedestrian crossing widths at junction through a combination of pavement widening and new refuge island.
2	**Cawdor Road – Millbank Crescent to Nairn Station Railway Bridge**	A) Options to achieve a new road cross-section to provide 0.45m buffer to the road retaining wall, a 6.0m wide road carriageway and 2.3m wide eastern footway (AECOM Drawing: 60446943-SKE-C-0001 & 0002). B) Options to achieve a new road cross-section to provide 0.45m buffer to the road retaining wall, a 6.5m wide road carriageway and 3.0m wide eastern footway (AECOM Drawing: 60446943-SKE-C-0020 & 0021) C) Enhanced traffic calming and partial footway improvements in combination with traffic signal control at Cawdor Road / Balblair Road junction (Drawing: 11150864-SK 208-Rev B)	B) Options to achieve a new road cross-section to provide 0.45m buffer to the road retaining wall, a 6.5m wide road carriageway and 3.0m wide eastern footway. *Discounted due to the impact of achieving the dimensions and on the basis that Option A) would be satisfactory.*	A) Options to achieve a new road cross-section to provide 0.45m buffer to the road retaining wall, a 6.0m wide road carriageway and 2.3m wide eastern footway. C) Enhanced traffic calming and partial footway improvements in combination with traffic signal control at Cawdor Road / Balblair Road junction.
3	**Nairn Station Railway Bridge**	A) Widened footway under railway bridge to 2m in combination with traffic signal control with advanced stoplines for cyclists on Cawdor Road (north and south of the bridge width and height restriction) and on Balbair Road (AECOM Drawing: 60446943-SKE-C-0003) B) Traffic signal control as above option with widened footway up to 3.0m via new underpass in existing bridge abutment (AECOM Drawing: 60446943-SKE-C-0003) C) Enhanced traffic calming and partial footway improvements in combination with traffic signal control at Cawdor Road / Balblair Road junction (Drawing: 11150864-SK 208-RevB) D) Replacement railway bridge structure to provide new improved road cross-section (AECOM Drawing: 60446943-SKE-C-0003)	B) Traffic signal control with widened footway up to 3.0m via new underpass in existing bridge abutment. *Discounted as any engineering solution will have a potential significant impact on the existing bridge structure for a similar benefit provided by Option A).*	A) Widened footway under railway bridge to 2m in combination with traffic signal control with advanced stoplines for cyclists on Cawdor Road (north and south of the bridge width and height restriction) and on Balbair Road. C) Enhanced traffic calming and partial footway improvements in combination with traffic signal control at Cawdor Road / Balblair Road junction. D) Replacement railway bridge structure to provide new improved road cross-section.
4	**Cawdor Road / Balblair Road Junction**	A) Traffic signals and improved junction geometry on Cawdor south corner and 2m pedestrian build out adjacent to station steps in conjunction with altered road cross-section to provide 0.45m buffer to the road retaining wall, and up to 6.5m wide road carriageway (AECOM Drawing: 60446943-SKE-C-0003) B) Alternative option to provide 2m wide pedestrian storage point adjacent to station steps by cutting into embankment (AECOM Drawing: 60446943-SKE-C-0004)	A) Traffic signals and improved junction geometry on Cawdor Road south corner and 2m pedestrian build out adjacent to station steps along with altered road cross-section on Balblair Road approach. *Discounted due to footway build out option at station steps in combination with the various carriageway width options does not permit the safe negotiation of the junction by council refuse vehicles associated with the Balblair Depot compound.*	B) Traffic signals and improved junction geometry on Cawdor south corner and provide 2m pedestrian storage point adjacent to station steps by cutting into the embankment.

	INFRASTRUCTURE OPPORTUNITIES			
Ref	**Location**	**Option(s) "Long List"**	**Option(s) Discounted**	**Option(s) taken forward for further consideration**
5	**Cawdor Road – Balblair Road to Elizabeth Street**	A) Options to achieve a new improved road cross-section to provide 0.45m buffer to the retaining wall, a 6.0m wide road carriageway and a 2.3 m wide eastern footway. Localised carriageway narrowing in conjunction with a priority working traffic calming feature in the location of the residential properties near the junction of Elizabeth Street (AECOM Drawing: 60446943-SKE-C-0005 & 0006) B) Options to achieve a new improved road cross-section to provide 0.45m buffer to the retaining wall, up to 6.5m wide road carriageway and up to 3.0m wide eastern footway. Localised carriageway narrowing in conjunction with a priority working traffic calming feature in the location of the residential properties near the junction of Elizabeth Street (AECOM Drawing: 60446943-SKE-C-0024 & 0025)	B) Options to achieve a new road cross-section to provide 0.45m buffer to the retaining wall, a 6.5m wide road carriageway and 3.0m wide eastern footway. *Discounted due to the impact of achieving the dimensions and on the basis that Option A) would be satisfactory.*	A) Options to achieve a new road cross-section to provide 0.45m buffer to the retaining wall, a 6.0m wide road carriageway, and 2.3m wide eastern footway. Localised carriageway narrowing in conjunction with a priority working traffic calming feature in the location of the residential properties near the junction of Elizabeth Street.
6	**Elizabeth Street / George Street to Mill Road Residential Area**	A) Introduction of traffic calming in the residential area along George Street, Elizabeth Street and Mill Road (AECOM Drawing: 60446943-SKE-C-0007)	A) Introduction of traffic calming in the residential area along George Street, Elizabeth Street and Mill Road. *Discounted as the precise details and the need for the Introduction of traffic calming in the residential area along George Street, Elizabeth Street and on Mill Road between the junctions of George Street and Elizabeth Street should be monitored post development build-out and included as part of any planning consent conditions and/or formal planning agreement rather than an infrastructure option required at the time of potential development. This option does not deliver any traffic capacity enhancement but addresses potential rat-running.*	None
7	**Balblair Road – Cawdor Road to Gordon's Sawmill**	A) Options to achieve a new road cross-section to provide 0.45m buffer to the retaining wall, a 6.0m wide road carriageway and 2.3m wide eastern footway to the southern limit of the Gordon's Sawmill site in combination with traffic calming features and upgraded access to sawmill (AECOM Drawing: 60446943-SKE-C-0008). B) Options to achieve a new road cross-section to provide 0.45m buffer to the retaining wall, a 6.5m wide road carriageway and 3.0m wide eastern footway to the southern limit of the Gordon's Sawmill site in combination with traffic calming features and upgraded access to sawmill (AECOM Drawing: 60446943-SKE-C-0027). C) Create a 'No Through Road' (TSRGD 2011, Diag 816), restricting vehicular use of Balblair Road except for access to local premises by introducing physical measures and promoting a Traffic Regulation Order. Several locations have been considered for the point closure associated with the stopping up (AECOM Drawing: 60446943-SKE-C-0008). D) Restrict vehicular use of Balblair Road to one-way operation over the section of Balblair Road between Cawdor Road and the sawmill access and provide footway widening (AECOM Drawing: 60446943-SKE-C-0012).	B) Options to achieve a new road cross-section to provide 0.45m buffer to the retaining wall, a 6.5m wide road carriageway and 3.0m wide eastern footway. *Discounted due to the impact of achieving the dimensions and on the basis that Option A) would be satisfactory.*	A) New road cross-section to provide 0.45m buffer to the retaining wall, a 6.0m wide road carriageway, and 2.3m wide eastern footway to the southern limit of the Gordon's Sawmill site in combination with traffic calming features and upgraded access to sawmill. C) Create a 'No Through Road' (TSRGD 2011, Diag 816), restricting vehicular use of Balblair Road except for access to local premises by introducing physical measures and promoting a Traffic Regulation Order. Several locations have been considered for the point closure associated with the stopping up. D) Restrict vehicular use of Balblair Road to one-way operation over the section of Balblair Road between Cawdor Road and the sawmill access and provide footway widening.

Table A.2 - Summary of Infrastructure Opportunities

Ref	Location	Option(s) "Long List"	Option(s) Discounted	Option(s) taken forward for further consideration
8	**Balblair Road to Cawdor Road Distributor Link Road**	A) Construct a new junction on Balblair Road south of the proposed Gordon's Sawmill expansion area. Adopted distributor link road alignment to permit access to all land holdings in area between Balblair Road and Cawdor Road. New junction with Cawdor Road (AECOM Drawing: 60446943-SKE-C-0012).	None	A) Construct a new junction on Balblair Road south of the proposed Gordon's Sawmill expansion area. Adopted distributor link road alignment to permit access to all land holdings in area between Balblair Road and Cawdor Road. New junction with Cawdor Road.
9	**Balblair Road to C1163 Delnies Road**	A) All existing areas of carriageway widening/passing place to be clearly signposted. Areas of carriageway widening/passing place not conforming to Council Guidelines to be upgraded and clearly signposted. Additional passing places to be provided as appropriate and signposted. Signing to be added on approaches to railway crossing. Improvement to the B9091/C1163 junction (AECOM Drawing: 60446943-SKE-C-0014). B) Advanced delivery of B9090 Balblair Road – C1163 to Delnies and Cawdor Road – B9090 Balblair Road link roads (proposed as part of the A96 Nairn Bypass improvements) by the developer parties to support Nairn South (AECOM Drawing: 60446943-SKE-C-0014).	A) All existing areas of carriageway widening/passing place to be clearly signposted. Areas of carriageway widening/passing place not conforming to Council Guidelines to be upgraded and clearly signposted. Additional passing places to be provided as appropriate and signposted. Signing to be added on approaches to railway crossing. Improvement to the B9091/C1163 junction. *Discounted: an improvement in the safe operation of the single track road is achieved by the provision of compliant and additional passing places along this route. However, it does not provide a sufficiently improved alternative route to the A96(T) from Nairn South.* B) Advanced delivery of B9090 Balblair Road – C1163 to Delnies and Cawdor Road – B9090 Balblair Road link roads (proposed as part of the A96 Nairn Bypass improvements) by the developer parties to support Nairn South. *Discounted due to the significant level of advanced investment required to deliver the side road improvements (Current Est: £9.1M). The scale of works far exceeds the viability levels expected for the scale of development at Nairn South.*	None
10	**Proposed Nairn Bypass**	A) Addition of slip roads connecting Cawdor Road to the proposed A96 Dualling Project Nairn Bypass. This will provide a "half diamond" interchange catering for traffic heading to/from Inverness (AECOM Drawing: 60446943-SKE-C-0013).	None	A) Addition of slip roads connecting Cawdor Road to the proposed A96 Dualling Project Nairn Bypass. This will provide a "half diamond" interchange catering for traffic heading to/from Inverness.
11	**Access to Duncan Drive from Nairn South**	A) Construct a new foot / cycle bridge crossing of Aberdeen-Inverness railway line with ramped access, connecting Strategic Masterplan Area with Nairn Academy. B) New distributor road bridged over Aberdeen to Inverness railway line to the Nairn South development.	B) New distributor road bridged over Aberdeen to Inverness railway line to the Nairn South development. *Discounted as the approaches will be required to be of suitable length in order to achieve the desirable road gradients and the necessary height of the bridge over the railway. The impact on the existing built environment and issues of deliverability leads to this option being discounted.*	A) Construct a new foot / cycle bridge crossing of Aberdeen-Inverness railway line with ramped access, connecting Strategic Masterplan Area with Nairn Academy. The need for this option or otherwise will largely be determined by the suitability of the options being considered for Balblair Road and Cawdor Road as an alternative, to which the footbridge construction cost could be offset.

Appendix B – TRICS Outputs

Calculation Reference: AUDIT-204601-160120-0143

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : A - HOUSES PRIVATELY OWNED
MULTI-MODAL VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	EX	ESSEX	1 days
04	EAST ANGLIA		
	SF	SUFFOLK	1 days
05	EAST MIDLANDS		
	LN	LINCOLNSHIRE	1 days
07	YORKSHIRE & NORTH LINCOLNSHIRE		
	NE	NORTH EAST LINCOLNSHIRE	2 days
10	WALES		
	CF	CARDIFF	1 days
13	MUNSTER		
	WA	WATERFORD	1 days
15	GREATER DUBLIN		
	DL	DUBLIN	1 days
17	ULSTER (NORTHERN IRELAND)		
	AN	ANTRIM	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Filtering Stage 2 selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter:	Number of dwellings
Actual Range:	180 to 437 (units:)
Range Selected by User:	180 to 491 (units:)

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/07 to 24/06/14

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	3 days
Tuesday	4 days
Thursday	1 days
Friday	1 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	9 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Edge of Town Centre	1
Suburban Area (PPS6 Out of Centre)	3
Edge of Town	5

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Residential Zone	8

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Filtering Stage 3 selection:

Use Class:

C3	9 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 1 mile:

1,001 to 5,000	1 days
10,001 to 15,000	2 days
15,001 to 20,000	3 days
20,001 to 25,000	2 days
25,001 to 50,000	1 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

5,001 to 25,000	1 days
50,001 to 75,000	2 days
75,001 to 100,000	1 days
100,001 to 125,000	1 days
125,001 to 250,000	3 days
250,001 to 500,000	1 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	3 days
1.1 to 1.5	6 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

No	9 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

LIST OF SITES relevant to selection parameters

1 AN-03-A-08 HOUSES & FLATS ANTRIM
BALLINDERRY ROAD

LISBURN
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 204
Survey date: TUESDAY *29/10/13* *Survey Type: MANUAL*

2 CF-03-A-02 MIXED HOUSES CARDIFF
DROPE ROAD

CARDIFF
Edge of Town
Residential Zone
Total Number of dwellings: 196
Survey date: FRIDAY *05/10/07* *Survey Type: MANUAL*

3 DL-03-A-02 SEMI DETACHED DUBLIN
COLLINS AVENUE

DUBLIN
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 437
Survey date: MONDAY *25/06/07* *Survey Type: MANUAL*

4 EX-03-A-01 SEMI-DET. ESSEX
MILTON ROAD
CORRINGHAM
STANFORD-LE-HOPE
Edge of Town
Residential Zone
Total Number of dwellings: 237
Survey date: TUESDAY *13/05/08* *Survey Type: MANUAL*

5 LN-03-A-02 MIXED HOUSES LINCOLNSHIRE
HYKEHAM ROAD

LINCOLN
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 186
Survey date: MONDAY *14/05/07* *Survey Type: MANUAL*

6 NE-03-A-02 SEMI DETACHED & DETACHED NORTH EAST LINCOLNSHIRE
HANOVER WALK

SCUNTHORPE
Edge of Town
No Sub Category
Total Number of dwellings: 432
Survey date: MONDAY *12/05/14* *Survey Type: MANUAL*

7 NE-03-A-03 PRIVATE HOUSES NORTH EAST LINCOLNSHIRE
STATION ROAD

SCUNTHORPE
Edge of Town Centre
Residential Zone
Total Number of dwellings: 180
Survey date: TUESDAY *20/05/14* *Survey Type: MANUAL*

LIST OF SITES relevant to selection parameters (Cont.)

8	SF-03-A-02 STOKE PARK DRIVE MAIDENHALL IPSWICH Edge of Town Residential Zone Total Number of dwellings:	SEMI DET./TERRACED	230	SUFFOLK
	Survey date: THURSDAY		*24/05/07*	*Survey Type: MANUAL*
9	WA-03-A-04 MAYPARK LANE WATERFORD Edge of Town Residential Zone Total Number of dwellings:	DETACHED	280	WATERFORD
	Survey date: TUESDAY		*24/06/14*	*Survey Type: MANUAL*

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL VEHICLES
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	9	265	0.060	9	265	0.242	9	265	0.302
08:00 - 09:00	9	265	0.127	9	265	0.410	9	265	0.537
09:00 - 10:00	9	265	0.142	9	265	0.183	9	265	0.325
10:00 - 11:00	9	265	0.115	9	265	0.159	9	265	0.274
11:00 - 12:00	9	265	0.139	9	265	0.145	9	265	0.284
12:00 - 13:00	9	265	0.189	9	265	0.167	9	265	0.356
13:00 - 14:00	9	265	0.156	9	265	0.169	9	265	0.325
14:00 - 15:00	9	265	0.200	9	265	0.202	9	265	0.402
15:00 - 16:00	9	265	0.288	9	265	0.199	9	265	0.487
16:00 - 17:00	9	265	0.295	9	265	0.184	9	265	0.479
17:00 - 18:00	9	265	0.364	9	265	0.209	9	265	0.573
18:00 - 19:00	9	265	0.267	9	265	0.210	9	265	0.477
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.342			2.479			4.821

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	180 - 437 (units:)
Survey date date range:	01/01/07 - 24/06/14
Number of weekdays (Monday-Friday):	9
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	1

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL TAXIS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	9	265	0.003	9	265	0.002	9	265	0.005
08:00 - 09:00	9	265	0.001	9	265	0.002	9	265	0.003
09:00 - 10:00	9	265	0.002	9	265	0.001	9	265	0.003
10:00 - 11:00	9	265	0.003	9	265	0.003	9	265	0.006
11:00 - 12:00	9	265	0.003	9	265	0.002	9	265	0.005
12:00 - 13:00	9	265	0.001	9	265	0.001	9	265	0.002
13:00 - 14:00	9	265	0.001	9	265	0.000	9	265	0.001
14:00 - 15:00	9	265	0.003	9	265	0.003	9	265	0.006
15:00 - 16:00	9	265	0.002	9	265	0.001	9	265	0.003
16:00 - 17:00	9	265	0.003	9	265	0.003	9	265	0.006
17:00 - 18:00	9	265	0.002	9	265	0.002	9	265	0.004
18:00 - 19:00	9	265	0.001	9	265	0.001	9	265	0.002
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.025			0.021			0.046

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	180 - 437 (units:)
Survey date date range:	01/01/07 - 24/06/14
Number of weekdays (Monday-Friday):	9
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	1

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL OGVS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	9	265	0.003	9	265	0.002	9	265	0.005
08:00 - 09:00	9	265	0.002	9	265	0.002	9	265	0.004
09:00 - 10:00	9	265	0.003	9	265	0.003	9	265	0.006
10:00 - 11:00	9	265	0.002	9	265	0.003	9	265	0.005
11:00 - 12:00	9	265	0.001	9	265	0.002	9	265	0.003
12:00 - 13:00	9	265	0.002	9	265	0.002	9	265	0.004
13:00 - 14:00	9	265	0.001	9	265	0.002	9	265	0.003
14:00 - 15:00	9	265	0.001	9	265	0.002	9	265	0.003
15:00 - 16:00	9	265	0.002	9	265	0.002	9	265	0.004
16:00 - 17:00	9	265	0.003	9	265	0.001	9	265	0.004
17:00 - 18:00	9	265	0.000	9	265	0.000	9	265	0.000
18:00 - 19:00	9	265	0.000	9	265	0.000	9	265	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.020			0.021			0.041

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	180 - 437 (units:)
Survey date date range:	01/01/07 - 24/06/14
Number of weekdays (Monday-Friday):	9
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	1

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL PSVS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	9	265	0.000	9	265	0.000	9	265	0.000
08:00 - 09:00	9	265	0.001	9	265	0.001	9	265	0.002
09:00 - 10:00	9	265	0.000	9	265	0.000	9	265	0.000
10:00 - 11:00	9	265	0.000	9	265	0.000	9	265	0.000
11:00 - 12:00	9	265	0.000	9	265	0.000	9	265	0.000
12:00 - 13:00	9	265	0.000	9	265	0.000	9	265	0.000
13:00 - 14:00	9	265	0.000	9	265	0.000	9	265	0.000
14:00 - 15:00	9	265	0.000	9	265	0.000	9	265	0.000
15:00 - 16:00	9	265	0.000	9	265	0.000	9	265	0.000
16:00 - 17:00	9	265	0.000	9	265	0.000	9	265	0.000
17:00 - 18:00	9	265	0.000	9	265	0.000	9	265	0.000
18:00 - 19:00	9	265	0.000	9	265	0.000	9	265	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.001			0.001			0.002

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	180 - 437 (units:)
Survey date date range:	01/01/07 - 24/06/14
Number of weekdays (Monday-Friday):	9
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	1

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL CYCLISTS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	9	265	0.004	9	265	0.009	9	265	0.013
08:00 - 09:00	9	265	0.004	9	265	0.018	9	265	0.022
09:00 - 10:00	9	265	0.003	9	265	0.004	9	265	0.007
10:00 - 11:00	9	265	0.003	9	265	0.006	9	265	0.009
11:00 - 12:00	9	265	0.004	9	265	0.003	9	265	0.007
12:00 - 13:00	9	265	0.005	9	265	0.005	9	265	0.010
13:00 - 14:00	9	265	0.005	9	265	0.007	9	265	0.012
14:00 - 15:00	9	265	0.005	9	265	0.007	9	265	0.012
15:00 - 16:00	9	265	0.018	9	265	0.013	9	265	0.031
16:00 - 17:00	9	265	0.012	9	265	0.006	9	265	0.018
17:00 - 18:00	9	265	0.012	9	265	0.010	9	265	0.022
18:00 - 19:00	9	265	0.013	9	265	0.010	9	265	0.023
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.088			0.098			0.186

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	180 - 437 (units:)
Survey date date range:	01/01/07 - 24/06/14
Number of weekdays (Monday-Friday):	9
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	1

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL VEHICLE OCCUPANTS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	9	265	0.070	9	265	0.290	9	265	0.360
08:00 - 09:00	9	265	0.160	9	265	0.607	9	265	0.767
09:00 - 10:00	9	265	0.162	9	265	0.234	9	265	0.396
10:00 - 11:00	9	265	0.137	9	265	0.204	9	265	0.341
11:00 - 12:00	9	265	0.166	9	265	0.185	9	265	0.351
12:00 - 13:00	9	265	0.231	9	265	0.212	9	265	0.443
13:00 - 14:00	9	265	0.193	9	265	0.218	9	265	0.411
14:00 - 15:00	9	265	0.270	9	265	0.257	9	265	0.527
15:00 - 16:00	9	265	0.431	9	265	0.270	9	265	0.701
16:00 - 17:00	9	265	0.427	9	265	0.261	9	265	0.688
17:00 - 18:00	9	265	0.478	9	265	0.285	9	265	0.763
18:00 - 19:00	9	265	0.353	9	265	0.304	9	265	0.657
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			3.078			3.327			6.405

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	180 - 437 (units:)
Survey date date range:	01/01/07 - 24/06/14
Number of weekdays (Monday-Friday):	9
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	1

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL PEDESTRIANS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	9	265	0.021	9	265	0.050	9	265	0.071
08:00 - 09:00	9	265	0.029	9	265	0.128	9	265	0.157
09:00 - 10:00	9	265	0.034	9	265	0.052	9	265	0.086
10:00 - 11:00	9	265	0.031	9	265	0.037	9	265	0.068
11:00 - 12:00	9	265	0.034	9	265	0.044	9	265	0.078
12:00 - 13:00	9	265	0.028	9	265	0.033	9	265	0.061
13:00 - 14:00	9	265	0.031	9	265	0.040	9	265	0.071
14:00 - 15:00	9	265	0.067	9	265	0.052	9	265	0.119
15:00 - 16:00	9	265	0.135	9	265	0.069	9	265	0.204
16:00 - 17:00	9	265	0.073	9	265	0.041	9	265	0.114
17:00 - 18:00	9	265	0.073	9	265	0.052	9	265	0.125
18:00 - 19:00	9	265	0.053	9	265	0.051	9	265	0.104
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.609			0.649			1.258

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	180 - 437 (units:)
Survey date date range:	01/01/07 - 24/06/14
Number of weekdays (Monday-Friday):	9
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	1

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL BUS/TRAM PASSENGERS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	9	265	0.000	9	265	0.024	9	265	0.024
08:00 - 09:00	9	265	0.002	9	265	0.034	9	265	0.036
09:00 - 10:00	9	265	0.003	9	265	0.017	9	265	0.020
10:00 - 11:00	9	265	0.002	9	265	0.008	9	265	0.010
11:00 - 12:00	9	265	0.005	9	265	0.005	9	265	0.010
12:00 - 13:00	9	265	0.007	9	265	0.007	9	265	0.014
13:00 - 14:00	9	265	0.006	9	265	0.006	9	265	0.012
14:00 - 15:00	9	265	0.009	9	265	0.006	9	265	0.015
15:00 - 16:00	9	265	0.018	9	265	0.006	9	265	0.024
16:00 - 17:00	9	265	0.013	9	265	0.002	9	265	0.015
17:00 - 18:00	9	265	0.024	9	265	0.005	9	265	0.029
18:00 - 19:00	9	265	0.028	9	265	0.003	9	265	0.031
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.117			0.123			0.240

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	180 - 437 (units:)
Survey date date range:	01/01/07 - 24/06/14
Number of weekdays (Monday-Friday):	9
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	1

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL RAIL PASSENGERS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	9	265	0.000	9	265	0.000	9	265	0.000
08:00 - 09:00	9	265	0.000	9	265	0.000	9	265	0.000
09:00 - 10:00	9	265	0.000	9	265	0.000	9	265	0.000
10:00 - 11:00	9	265	0.000	9	265	0.000	9	265	0.000
11:00 - 12:00	9	265	0.000	9	265	0.000	9	265	0.000
12:00 - 13:00	9	265	0.000	9	265	0.000	9	265	0.000
13:00 - 14:00	9	265	0.000	9	265	0.000	9	265	0.000
14:00 - 15:00	9	265	0.000	9	265	0.000	9	265	0.000
15:00 - 16:00	9	265	0.000	9	265	0.000	9	265	0.000
16:00 - 17:00	9	265	0.000	9	265	0.000	9	265	0.000
17:00 - 18:00	9	265	0.000	9	265	0.000	9	265	0.000
18:00 - 19:00	9	265	0.000	9	265	0.000	9	265	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.000			0.000			0.000

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	180 - 437 (units:)
Survey date date range:	01/01/07 - 24/06/14
Number of weekdays (Monday-Friday):	9
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	1

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL COACH PASSENGERS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	9	265	0.000	9	265	0.000	9	265	0.000
08:00 - 09:00	9	265	0.000	9	265	0.004	9	265	0.004
09:00 - 10:00	9	265	0.000	9	265	0.000	9	265	0.000
10:00 - 11:00	9	265	0.000	9	265	0.000	9	265	0.000
11:00 - 12:00	9	265	0.000	9	265	0.000	9	265	0.000
12:00 - 13:00	9	265	0.000	9	265	0.000	9	265	0.000
13:00 - 14:00	9	265	0.000	9	265	0.000	9	265	0.000
14:00 - 15:00	9	265	0.002	9	265	0.000	9	265	0.002
15:00 - 16:00	9	265	0.002	9	265	0.000	9	265	0.002
16:00 - 17:00	9	265	0.000	9	265	0.000	9	265	0.000
17:00 - 18:00	9	265	0.000	9	265	0.000	9	265	0.000
18:00 - 19:00	9	265	0.000	9	265	0.000	9	265	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.004			0.004			0.008

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	180 - 437 (units:)
Survey date date range:	01/01/07 - 24/06/14
Number of weekdays (Monday-Friday):	9
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	1

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL PUBLIC TRANSPORT USERS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	9	265	0.000	9	265	0.024	9	265	0.024
08:00 - 09:00	9	265	0.002	9	265	0.038	9	265	0.040
09:00 - 10:00	9	265	0.003	9	265	0.017	9	265	0.020
10:00 - 11:00	9	265	0.002	9	265	0.008	9	265	0.010
11:00 - 12:00	9	265	0.005	9	265	0.005	9	265	0.010
12:00 - 13:00	9	265	0.007	9	265	0.007	9	265	0.014
13:00 - 14:00	9	265	0.006	9	265	0.006	9	265	0.012
14:00 - 15:00	9	265	0.011	9	265	0.006	9	265	0.017
15:00 - 16:00	9	265	0.020	9	265	0.006	9	265	0.026
16:00 - 17:00	9	265	0.013	9	265	0.002	9	265	0.015
17:00 - 18:00	9	265	0.024	9	265	0.005	9	265	0.029
18:00 - 19:00	9	265	0.028	9	265	0.003	9	265	0.031
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.121			0.127			0.248

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	180 - 437 (units:)
Survey date date range:	01/01/07 - 24/06/14
Number of weekdays (Monday-Friday):	9
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	1

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL PEOPLE
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	9	265	0.095	9	265	0.372	9	265	0.467
08:00 - 09:00	9	265	0.195	9	265	0.792	9	265	0.987
09:00 - 10:00	9	265	0.203	9	265	0.307	9	265	0.510
10:00 - 11:00	9	265	0.173	9	265	0.255	9	265	0.428
11:00 - 12:00	9	265	0.209	9	265	0.238	9	265	0.447
12:00 - 13:00	9	265	0.270	9	265	0.256	9	265	0.526
13:00 - 14:00	9	265	0.235	9	265	0.272	9	265	0.507
14:00 - 15:00	9	265	0.352	9	265	0.322	9	265	0.674
15:00 - 16:00	9	265	0.605	9	265	0.358	9	265	0.963
16:00 - 17:00	9	265	0.525	9	265	0.311	9	265	0.836
17:00 - 18:00	9	265	0.586	9	265	0.352	9	265	0.938
18:00 - 19:00	9	265	0.446	9	265	0.367	9	265	0.813
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			3.894			4.202			8.096

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	180 - 437 (units:)
Survey date date range:	01/01/07 - 24/06/14
Number of weekdays (Monday-Friday):	9
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	1

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

Calculation Reference: AUDIT-204601-160120-0131

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 02 - EMPLOYMENT
Category : B - BUSINESS PARK
MULTI-MODAL VEHICLES

Selected regions and areas:

03	SOUTH WEST		
	DC	DORSET	1 days
05	EAST MIDLANDS		
	NT	NOTTINGHAMSHIRE	1 days
06	WEST MIDLANDS		
	SH	SHROPSHIRE	1 days
15	GREATER DUBLIN		
	DL	DUBLIN	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Filtering Stage 2 selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Gross floor area
Actual Range: 1300 to 2400 (units: sqm)
Range Selected by User: 975 to 4000 (units: sqm)

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/07 to 27/11/14

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Tuesday	1 days
Wednesday	1 days
Thursday	2 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	4 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Suburban Area (PPS6 Out of Centre)	3
Neighbourhood Centre (PPS6 Local Centre)	1

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Built-Up Zone	1
High Street	1
No Sub Category	2

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Filtering Stage 3 selection:

Use Class:

B1	4 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 1 mile:

10,001 to 15,000	1 days
25,001 to 50,000	3 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

100,001 to 125,000	1 days
250,001 to 500,000	2 days
500,001 or More	1 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	2 days
1.1 to 1.5	2 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

No	4 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

LIST OF SITES relevant to selection parameters

1 DC-02-B-01 BUSINESS PARK DORSET
COMMERCIAL ROAD

POOLE
Suburban Area (PPS6 Out of Centre)
Built-Up Zone
Total Gross floor area: 1570 sqm
Survey date: THURSDAY *17/07/08* *Survey Type: MANUAL*

2 DL-02-B-06 OFFICE PARK DUBLIN
MAIN STREET
DUNDRUM
DUBLIN
Neighbourhood Centre (PPS6 Local Centre)
High Street
Total Gross floor area: 2400 sqm
Survey date: WEDNESDAY *01/10/14* *Survey Type: MANUAL*

3 NT-02-B-01 BUSINESS PARK NOTTINGHAMSHIRE
PARK LANE

NOTTINGHAM
Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Gross floor area: 2321 sqm
Survey date: THURSDAY *17/05/07* *Survey Type: MANUAL*

4 SH-02-B-03 BUSINESS CENTRE SHROPSHIRE
CASTLE STREET
HADLEY
TELFORD
Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Gross floor area: 1300 sqm
Survey date: TUESDAY *16/06/09* *Survey Type: MANUAL*

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

MANUALLY DESELECTED SITES

Site Ref	Reason for Deselection
AN-02-B-01	Size
HO-02-B-02	London
HO-02-B-02	London

TRIP RATE for Land Use 02 - EMPLOYMENT/B - BUSINESS PARK
MULTI-MODAL VEHICLES
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	4	1898	0.461	4	1898	0.132	4	1898	0.593
08:00 - 09:00	4	1898	1.291	4	1898	0.277	4	1898	1.568
09:00 - 10:00	4	1898	1.067	4	1898	0.422	4	1898	1.489
10:00 - 11:00	4	1898	0.698	4	1898	0.527	4	1898	1.225
11:00 - 12:00	4	1898	0.672	4	1898	0.751	4	1898	1.423
12:00 - 13:00	4	1898	0.553	4	1898	0.725	4	1898	1.278
13:00 - 14:00	4	1898	0.764	4	1898	0.580	4	1898	1.344
14:00 - 15:00	4	1898	0.487	4	1898	0.501	4	1898	0.988
15:00 - 16:00	4	1898	0.527	4	1898	0.685	4	1898	1.212
16:00 - 17:00	4	1898	0.395	4	1898	0.922	4	1898	1.317
17:00 - 18:00	4	1898	0.369	4	1898	1.396	4	1898	1.765
18:00 - 19:00	4	1898	0.184	4	1898	0.685	4	1898	0.869
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			7.468			7.603			15.071

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	1300 - 2400 (units: sqm)
Survey date date range:	01/01/07 - 27/11/14
Number of weekdays (Monday-Friday):	4
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	5

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 02 - EMPLOYMENT/B - BUSINESS PARK
MULTI-MODAL TAXIS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	4	1898	0.040	4	1898	0.040	4	1898	0.080
08:00 - 09:00	4	1898	0.013	4	1898	0.013	4	1898	0.026
09:00 - 10:00	4	1898	0.013	4	1898	0.013	4	1898	0.026
10:00 - 11:00	4	1898	0.013	4	1898	0.013	4	1898	0.026
11:00 - 12:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
12:00 - 13:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
13:00 - 14:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
14:00 - 15:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
15:00 - 16:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
16:00 - 17:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
17:00 - 18:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
18:00 - 19:00	4	1898	0.013	4	1898	0.013	4	1898	0.026
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.092			0.092			0.184

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	1300 - 2400 (units: sqm)
Survey date date range:	01/01/07 - 27/11/14
Number of weekdays (Monday-Friday):	4
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	5

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 02 - EMPLOYMENT/B - BUSINESS PARK
MULTI-MODAL OGVS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
08:00 - 09:00	4	1898	0.013	4	1898	0.013	4	1898	0.026
09:00 - 10:00	4	1898	0.026	4	1898	0.026	4	1898	0.052
10:00 - 11:00	4	1898	0.026	4	1898	0.026	4	1898	0.052
11:00 - 12:00	4	1898	0.013	4	1898	0.000	4	1898	0.013
12:00 - 13:00	4	1898	0.053	4	1898	0.053	4	1898	0.106
13:00 - 14:00	4	1898	0.026	4	1898	0.013	4	1898	0.039
14:00 - 15:00	4	1898	0.013	4	1898	0.026	4	1898	0.039
15:00 - 16:00	4	1898	0.013	4	1898	0.013	4	1898	0.026
16:00 - 17:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
17:00 - 18:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
18:00 - 19:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.183			0.170			0.353

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	1300 - 2400 (units: sqm)
Survey date date range:	01/01/07 - 27/11/14
Number of weekdays (Monday-Friday):	4
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	5

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 02 - EMPLOYMENT/B - BUSINESS PARK
MULTI-MODAL PSVS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
08:00 - 09:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
09:00 - 10:00	4	1898	0.026	4	1898	0.013	4	1898	0.039
10:00 - 11:00	4	1898	0.013	4	1898	0.013	4	1898	0.026
11:00 - 12:00	4	1898	0.000	4	1898	0.013	4	1898	0.013
12:00 - 13:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
13:00 - 14:00	4	1898	0.026	4	1898	0.013	4	1898	0.039
14:00 - 15:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
15:00 - 16:00	4	1898	0.000	4	1898	0.013	4	1898	0.013
16:00 - 17:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
17:00 - 18:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
18:00 - 19:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.065			0.065			0.130

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	1300 - 2400 (units: sqm)
Survey date date range:	01/01/07 - 27/11/14
Number of weekdays (Monday-Friday):	4
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	5

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 02 - EMPLOYMENT/B - BUSINESS PARK
MULTI-MODAL CYCLISTS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	4	1898	0.000	4	1898	0.013	4	1898	0.013
08:00 - 09:00	4	1898	0.026	4	1898	0.000	4	1898	0.026
09:00 - 10:00	4	1898	0.013	4	1898	0.000	4	1898	0.013
10:00 - 11:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
11:00 - 12:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
12:00 - 13:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
13:00 - 14:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
14:00 - 15:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
15:00 - 16:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
16:00 - 17:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
17:00 - 18:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
18:00 - 19:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.039			0.013			0.052

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	1300 - 2400 (units: sqm)
Survey date date range:	01/01/07 - 27/11/14
Number of weekdays (Monday-Friday):	4
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	5

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 02 - EMPLOYMENT/B - BUSINESS PARK
MULTI-MODAL VEHICLE OCCUPANTS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	4	1898	0.540	4	1898	0.119	4	1898	0.659
08:00 - 09:00	4	1898	1.410	4	1898	0.290	4	1898	1.700
09:00 - 10:00	4	1898	1.186	4	1898	0.487	4	1898	1.673
10:00 - 11:00	4	1898	0.777	4	1898	0.619	4	1898	1.396
11:00 - 12:00	4	1898	0.777	4	1898	0.869	4	1898	1.646
12:00 - 13:00	4	1898	0.698	4	1898	0.869	4	1898	1.567
13:00 - 14:00	4	1898	0.817	4	1898	0.790	4	1898	1.607
14:00 - 15:00	4	1898	0.553	4	1898	0.514	4	1898	1.067
15:00 - 16:00	4	1898	0.659	4	1898	0.883	4	1898	1.542
16:00 - 17:00	4	1898	0.474	4	1898	1.107	4	1898	1.581
17:00 - 18:00	4	1898	0.408	4	1898	1.818	4	1898	2.226
18:00 - 19:00	4	1898	0.145	4	1898	0.817	4	1898	0.962
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			8.444			9.182			17.626

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	1300 - 2400 (units: sqm)
Survey date date range:	01/01/07 - 27/11/14
Number of weekdays (Monday-Friday):	4
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	5

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 02 - EMPLOYMENT/B - BUSINESS PARK
MULTI-MODAL PEDESTRIANS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	4	1898	0.013	4	1898	0.026	4	1898	0.039
08:00 - 09:00	4	1898	0.263	4	1898	0.092	4	1898	0.355
09:00 - 10:00	4	1898	0.132	4	1898	0.132	4	1898	0.264
10:00 - 11:00	4	1898	0.198	4	1898	0.171	4	1898	0.369
11:00 - 12:00	4	1898	0.158	4	1898	0.303	4	1898	0.461
12:00 - 13:00	4	1898	0.277	4	1898	0.263	4	1898	0.540
13:00 - 14:00	4	1898	0.303	4	1898	0.250	4	1898	0.553
14:00 - 15:00	4	1898	0.211	4	1898	0.171	4	1898	0.382
15:00 - 16:00	4	1898	0.224	4	1898	0.145	4	1898	0.369
16:00 - 17:00	4	1898	0.105	4	1898	0.119	4	1898	0.224
17:00 - 18:00	4	1898	0.105	4	1898	0.290	4	1898	0.395
18:00 - 19:00	4	1898	0.079	4	1898	0.119	4	1898	0.198
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.068			2.081			4.149

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	1300 - 2400 (units: sqm)
Survey date date range:	01/01/07 - 27/11/14
Number of weekdays (Monday-Friday):	4
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	5

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 02 - EMPLOYMENT/B - BUSINESS PARK
MULTI-MODAL BUS/TRAM PASSENGERS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
08:00 - 09:00	4	1898	0.132	4	1898	0.026	4	1898	0.158
09:00 - 10:00	4	1898	0.079	4	1898	0.066	4	1898	0.145
10:00 - 11:00	4	1898	0.053	4	1898	0.066	4	1898	0.119
11:00 - 12:00	4	1898	0.026	4	1898	0.053	4	1898	0.079
12:00 - 13:00	4	1898	0.000	4	1898	0.026	4	1898	0.026
13:00 - 14:00	4	1898	0.079	4	1898	0.066	4	1898	0.145
14:00 - 15:00	4	1898	0.026	4	1898	0.040	4	1898	0.066
15:00 - 16:00	4	1898	0.026	4	1898	0.040	4	1898	0.066
16:00 - 17:00	4	1898	0.013	4	1898	0.000	4	1898	0.013
17:00 - 18:00	4	1898	0.079	4	1898	0.171	4	1898	0.250
18:00 - 19:00	4	1898	0.079	4	1898	0.053	4	1898	0.132
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.592			0.607			1.199

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	1300 - 2400 (units: sqm)
Survey date date range:	01/01/07 - 27/11/14
Number of weekdays (Monday-Friday):	4
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	5

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 02 - EMPLOYMENT/B - BUSINESS PARK
MULTI-MODAL TOTAL RAIL PASSENGERS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
08:00 - 09:00	4	1898	0.013	4	1898	0.000	4	1898	0.013
09:00 - 10:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
10:00 - 11:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
11:00 - 12:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
12:00 - 13:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
13:00 - 14:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
14:00 - 15:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
15:00 - 16:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
16:00 - 17:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
17:00 - 18:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
18:00 - 19:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.013			0.000			0.013

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	1300 - 2400 (units: sqm)
Survey date date range:	01/01/07 - 27/11/14
Number of weekdays (Monday-Friday):	4
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	5

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 02 - EMPLOYMENT/B - BUSINESS PARK
MULTI-MODAL COACH PASSENGERS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
08:00 - 09:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
09:00 - 10:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
10:00 - 11:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
11:00 - 12:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
12:00 - 13:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
13:00 - 14:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
14:00 - 15:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
15:00 - 16:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
16:00 - 17:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
17:00 - 18:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
18:00 - 19:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.000			0.000			0.000

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	1300 - 2400 (units: sqm)
Survey date date range:	01/01/07 - 27/11/14
Number of weekdays (Monday-Friday):	4
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	5

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 02 - EMPLOYMENT/B - BUSINESS PARK
MULTI-MODAL PUBLIC TRANSPORT USERS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	4	1898	0.000	4	1898	0.000	4	1898	0.000
08:00 - 09:00	4	1898	0.145	4	1898	0.026	4	1898	0.171
09:00 - 10:00	4	1898	0.079	4	1898	0.066	4	1898	0.145
10:00 - 11:00	4	1898	0.053	4	1898	0.066	4	1898	0.119
11:00 - 12:00	4	1898	0.026	4	1898	0.053	4	1898	0.079
12:00 - 13:00	4	1898	0.000	4	1898	0.026	4	1898	0.026
13:00 - 14:00	4	1898	0.079	4	1898	0.066	4	1898	0.145
14:00 - 15:00	4	1898	0.026	4	1898	0.040	4	1898	0.066
15:00 - 16:00	4	1898	0.026	4	1898	0.040	4	1898	0.066
16:00 - 17:00	4	1898	0.013	4	1898	0.000	4	1898	0.013
17:00 - 18:00	4	1898	0.079	4	1898	0.171	4	1898	0.250
18:00 - 19:00	4	1898	0.079	4	1898	0.053	4	1898	0.132
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.605			0.607			1.212

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	1300 - 2400 (units: sqm)
Survey date date range:	01/01/07 - 27/11/14
Number of weekdays (Monday-Friday):	4
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	5

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 02 - EMPLOYMENT/B - BUSINESS PARK
MULTI-MODAL TOTAL PEOPLE
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	4	1898	0.553	4	1898	0.158	4	1898	0.711
08:00 - 09:00	4	1898	1.844	4	1898	0.408	4	1898	2.252
09:00 - 10:00	4	1898	1.410	4	1898	0.685	4	1898	2.095
10:00 - 11:00	4	1898	1.028	4	1898	0.856	4	1898	1.884
11:00 - 12:00	4	1898	0.962	4	1898	1.225	4	1898	2.187
12:00 - 13:00	4	1898	0.975	4	1898	1.159	4	1898	2.134
13:00 - 14:00	4	1898	1.199	4	1898	1.107	4	1898	2.306
14:00 - 15:00	4	1898	0.790	4	1898	0.725	4	1898	1.515
15:00 - 16:00	4	1898	0.909	4	1898	1.067	4	1898	1.976
16:00 - 17:00	4	1898	0.593	4	1898	1.225	4	1898	1.818
17:00 - 18:00	4	1898	0.593	4	1898	2.279	4	1898	2.872
18:00 - 19:00	4	1898	0.303	4	1898	0.988	4	1898	1.291
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			11.159			11.882			23.041

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

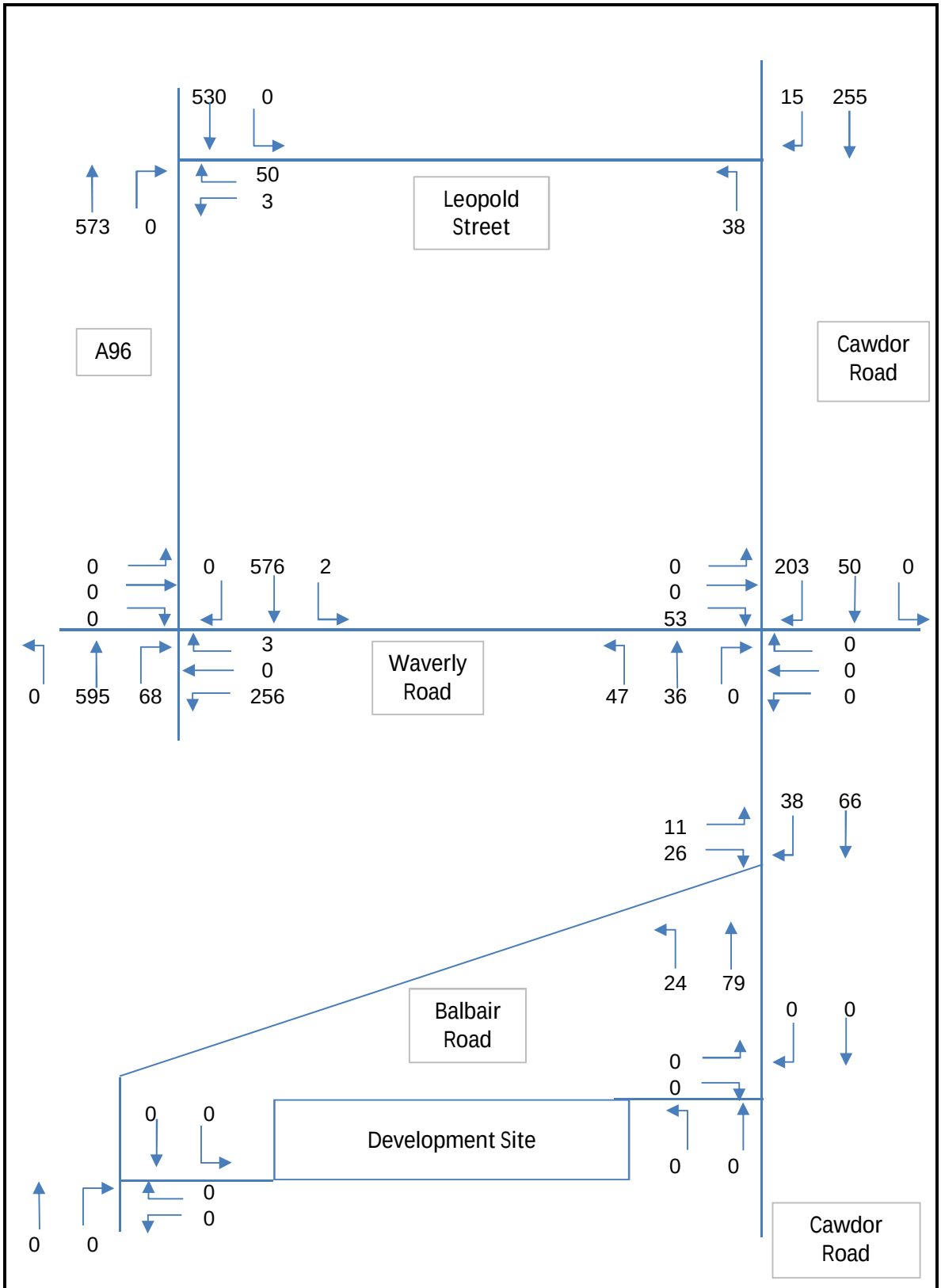
*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

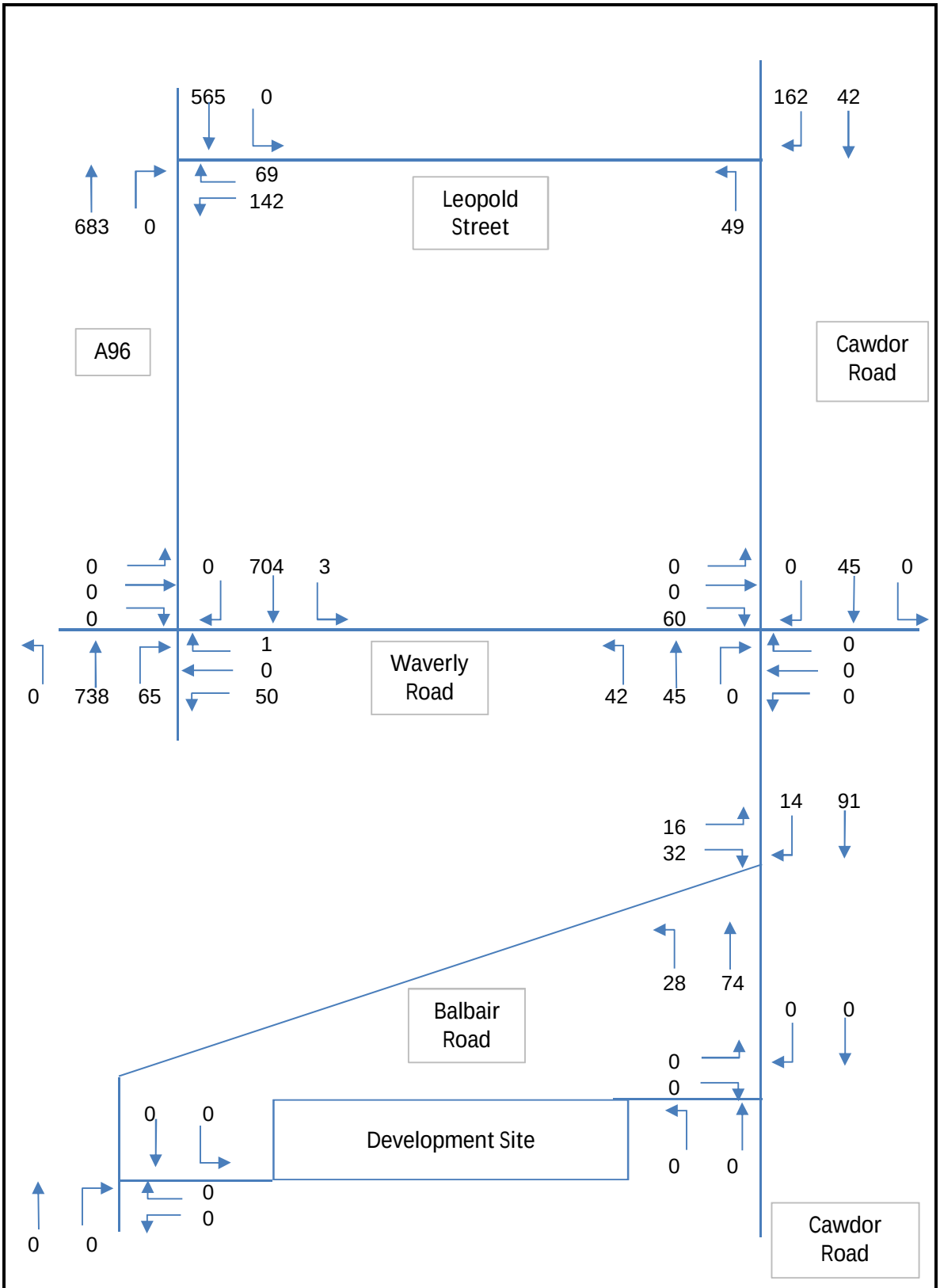
Trip rate parameter range selected:	1300 - 2400 (units: sqm)
Survey date date range:	01/01/07 - 27/11/14
Number of weekdays (Monday-Friday):	4
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	5

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

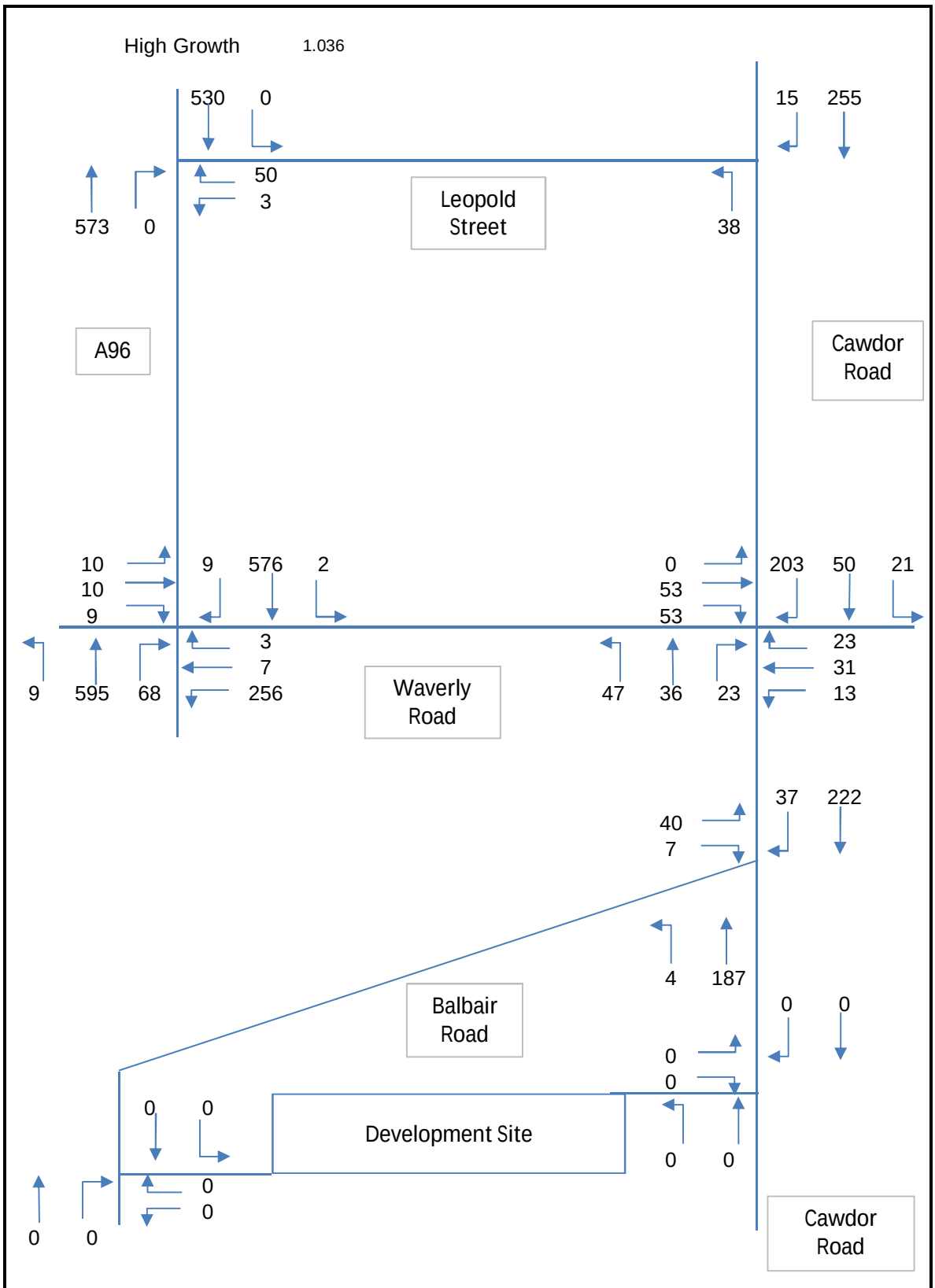
Appendix C – Network Flow Diagrams



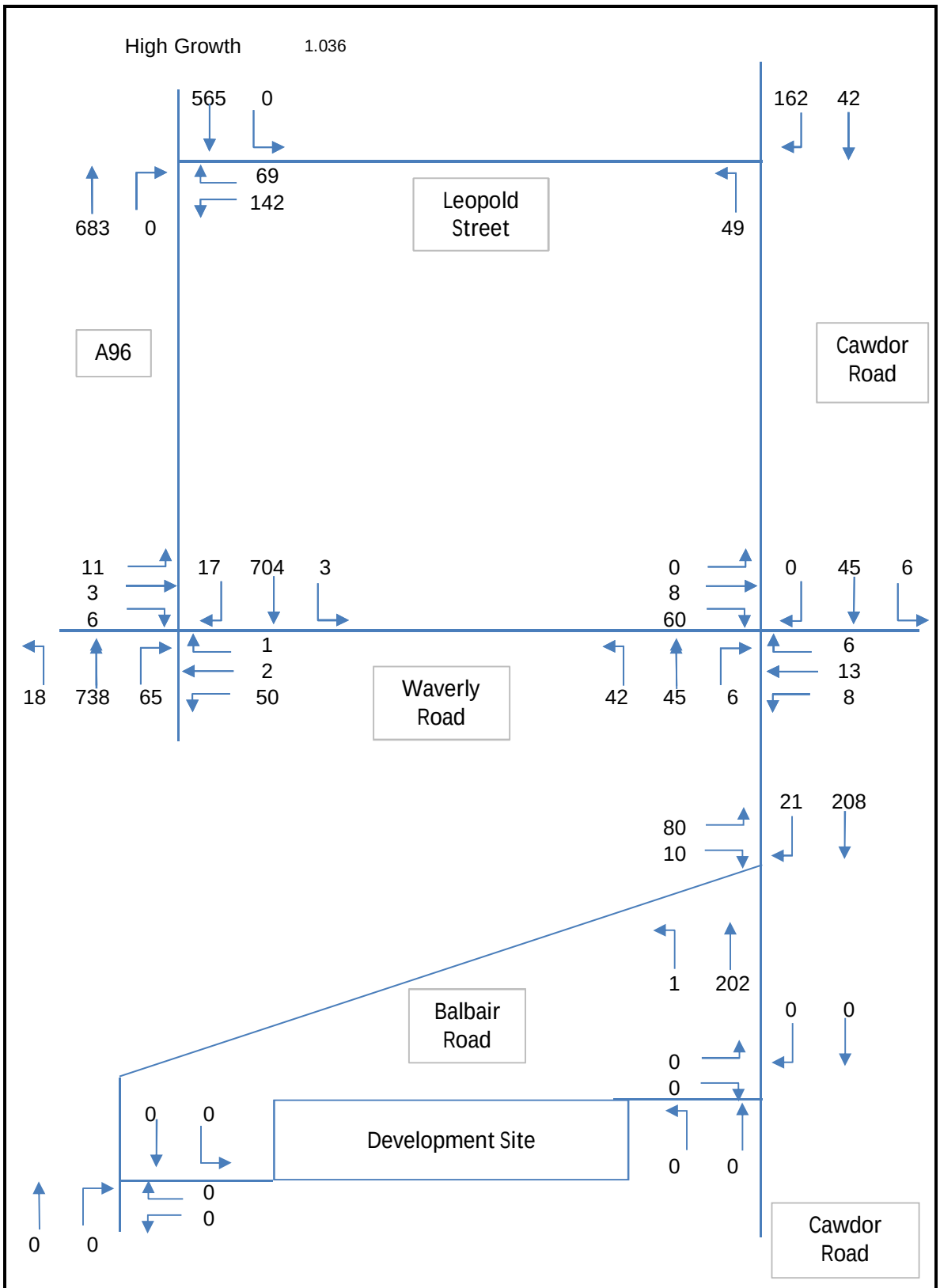
Project: Nairn South SDP	AECOM	Title: AM Base 2013 Sheet 1
Client: THC		Date: Jan-16 Prep by KMcK Check by JH



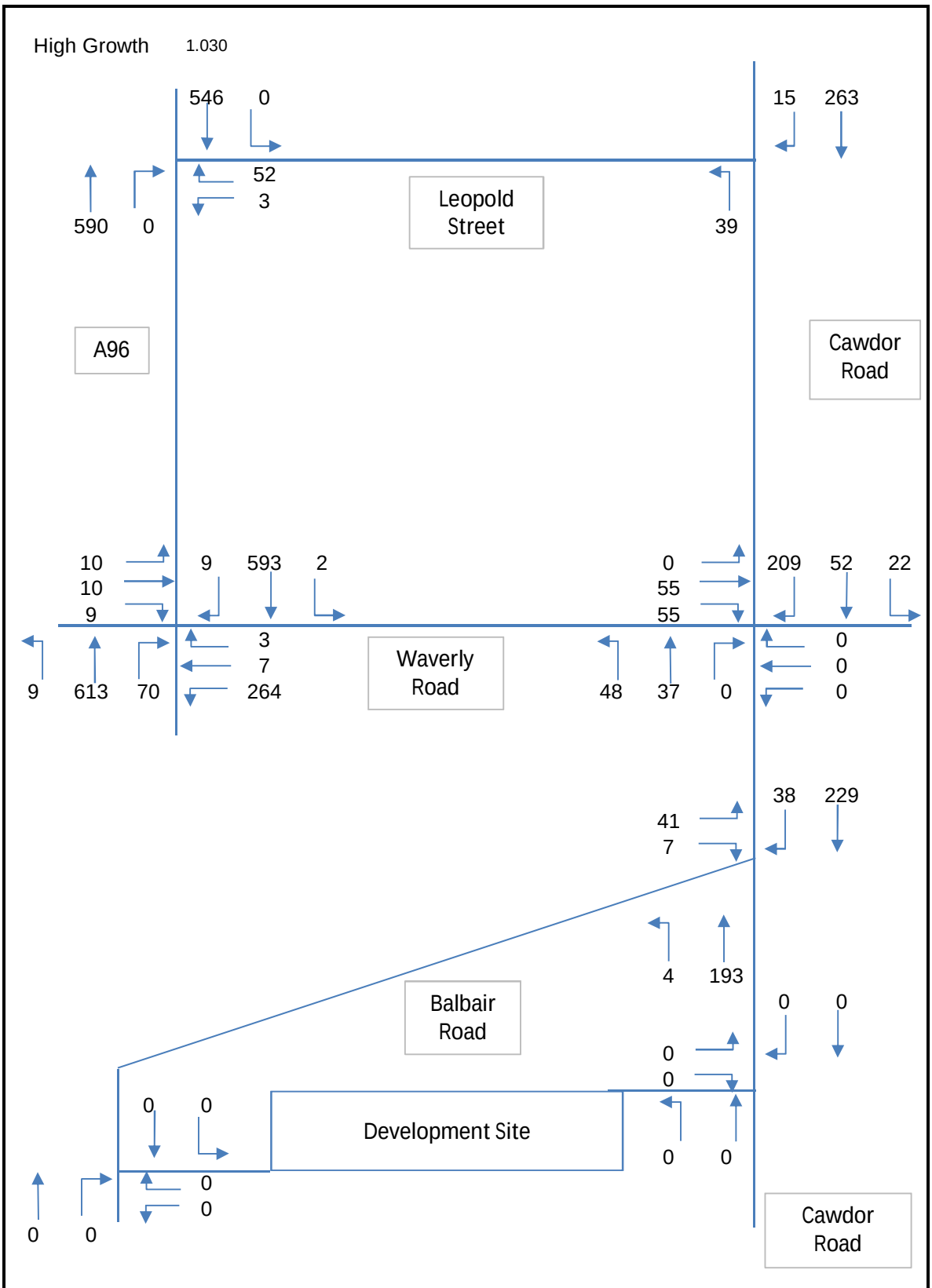
Project Nairn South SDP		Title PM Base 2013	Sheet 2
Client THC	AECOM	Date Jan-16	Prep by KMcK Check by JH



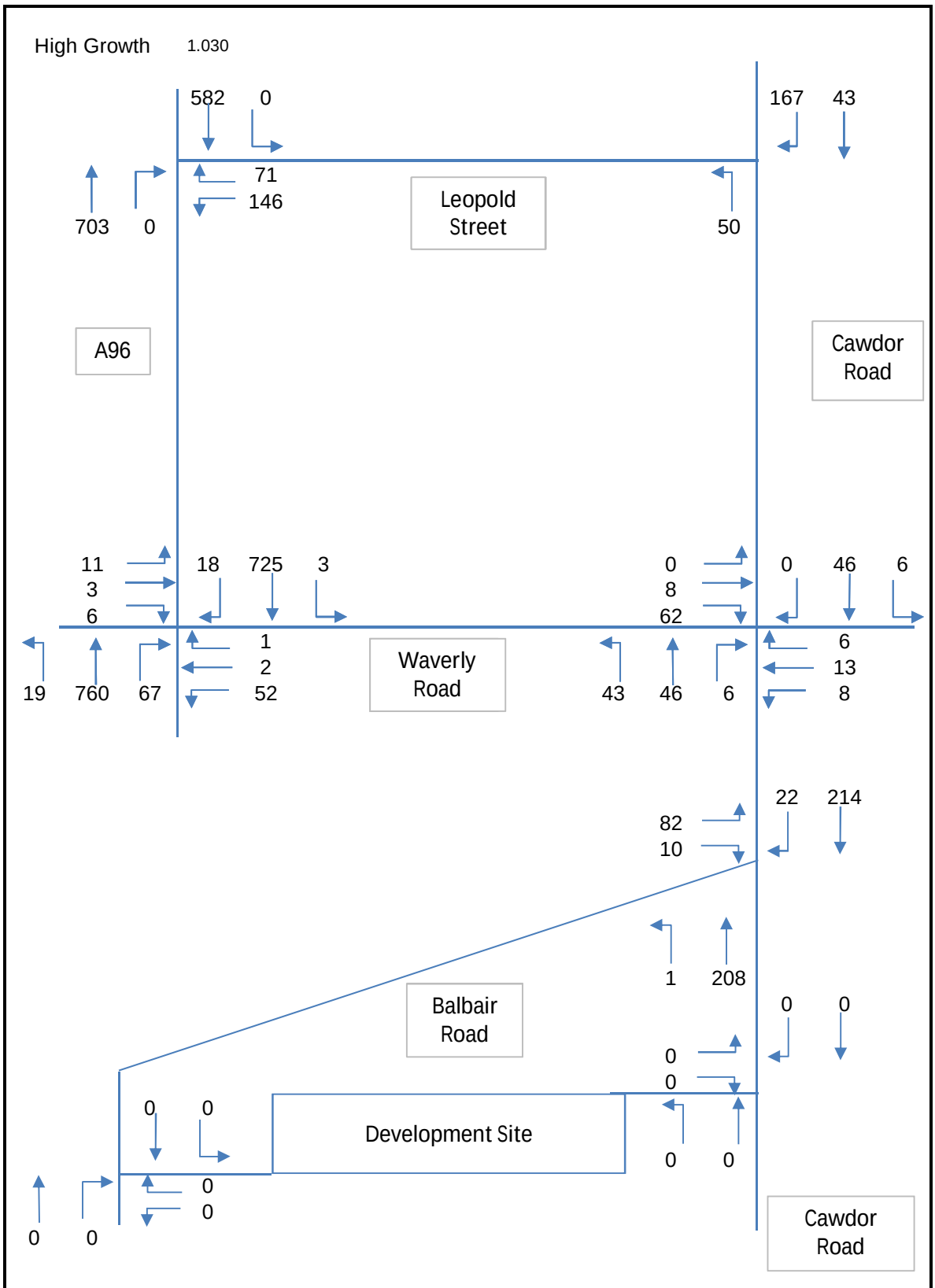
Project: Nairn South SDP	AECOM	Title: AM Base 2016 (08.30-09.30) Sheet 3
Client: THC		Date: Jan-16 Prep by: KMcK Check by: JH



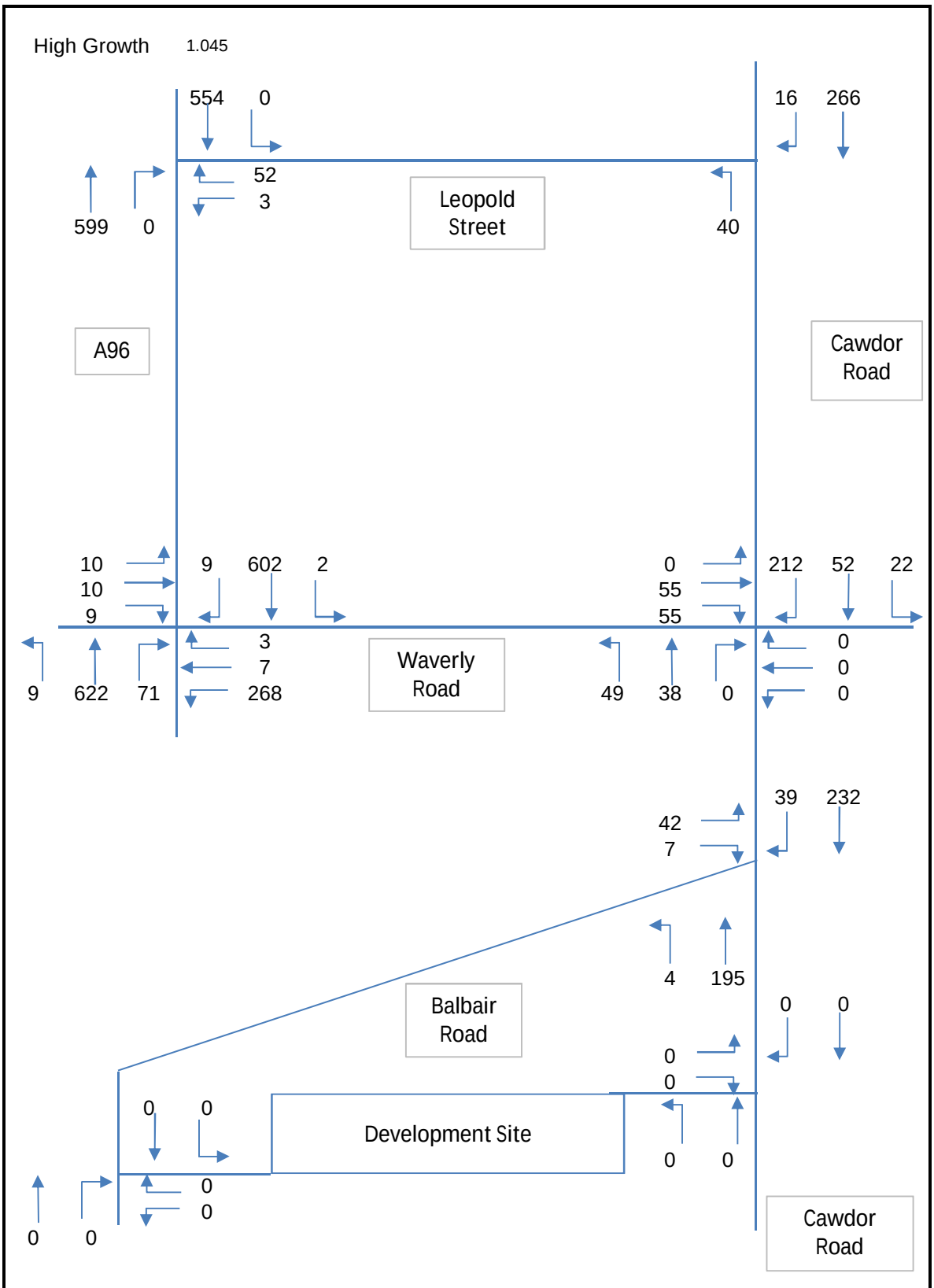
Project: Nairn South SDP	AECOM	Title: PM Base 2016 (17.15-18.15) Sheet 4
Client: THC		Date: Jan-16 Prep by KMcK Check by JH



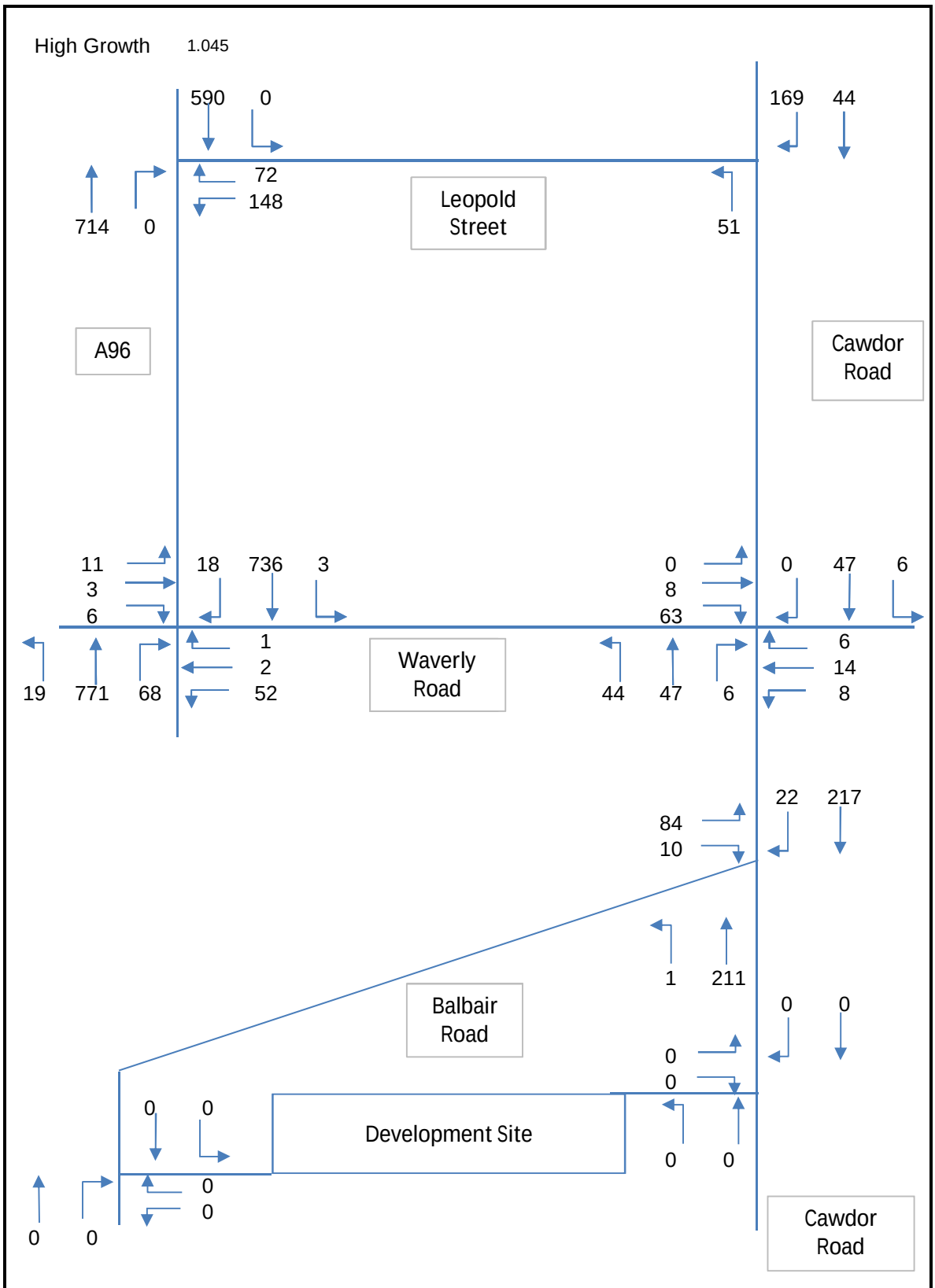
Project Nairn South SDP	AECOM	Title Sheet 5 AM Background Traffic 2018 (08.30-09.30)
Client THC		Date Prep by Check by Jan-16 KMcK JH



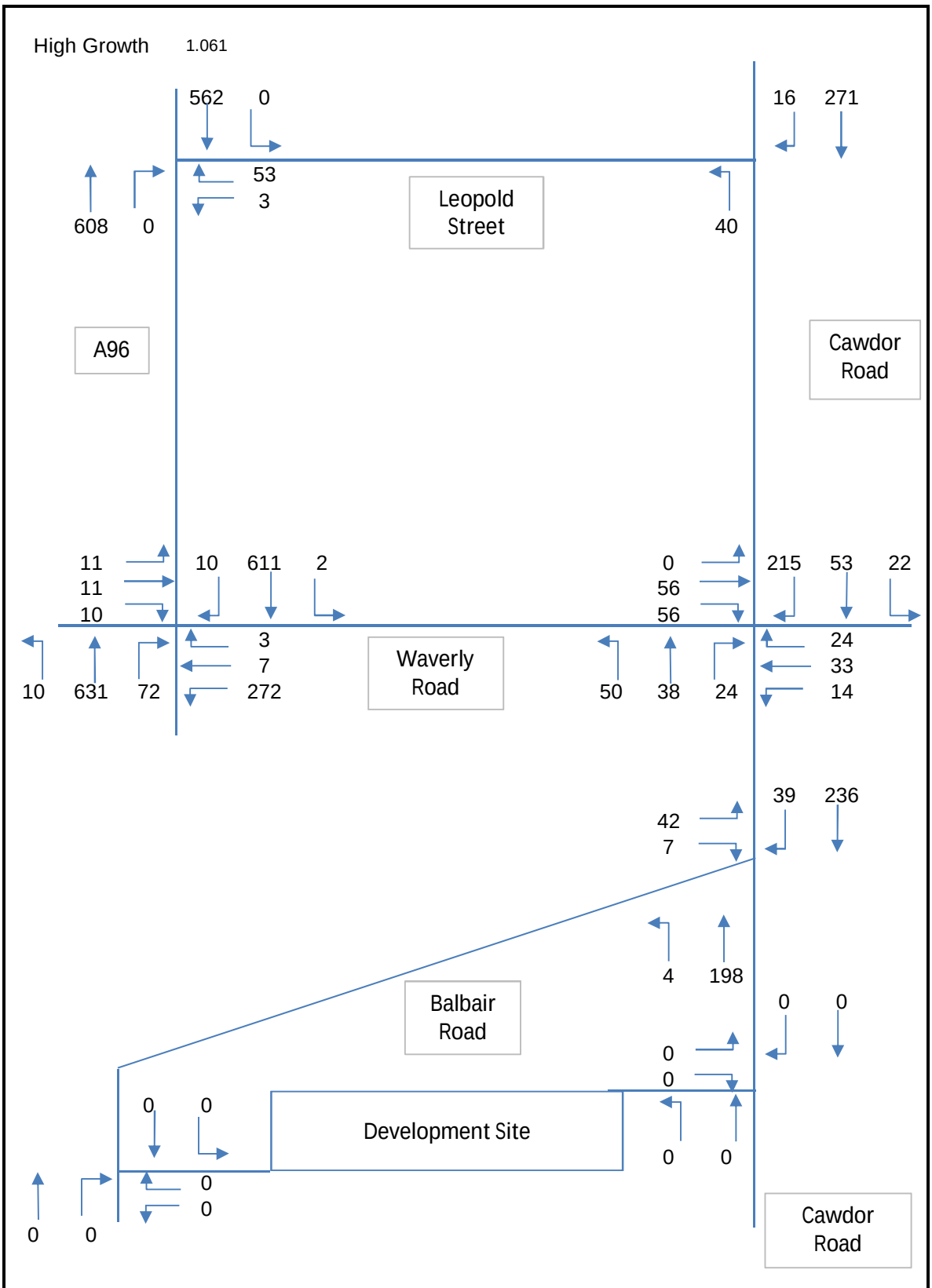
Project Nairn South SDP	AECOM	Title Sheet 6 PM Background Traffic 2018 (17.15-18.15)
Client THC		Date Prep by Check by Jan-16 KMcK JH



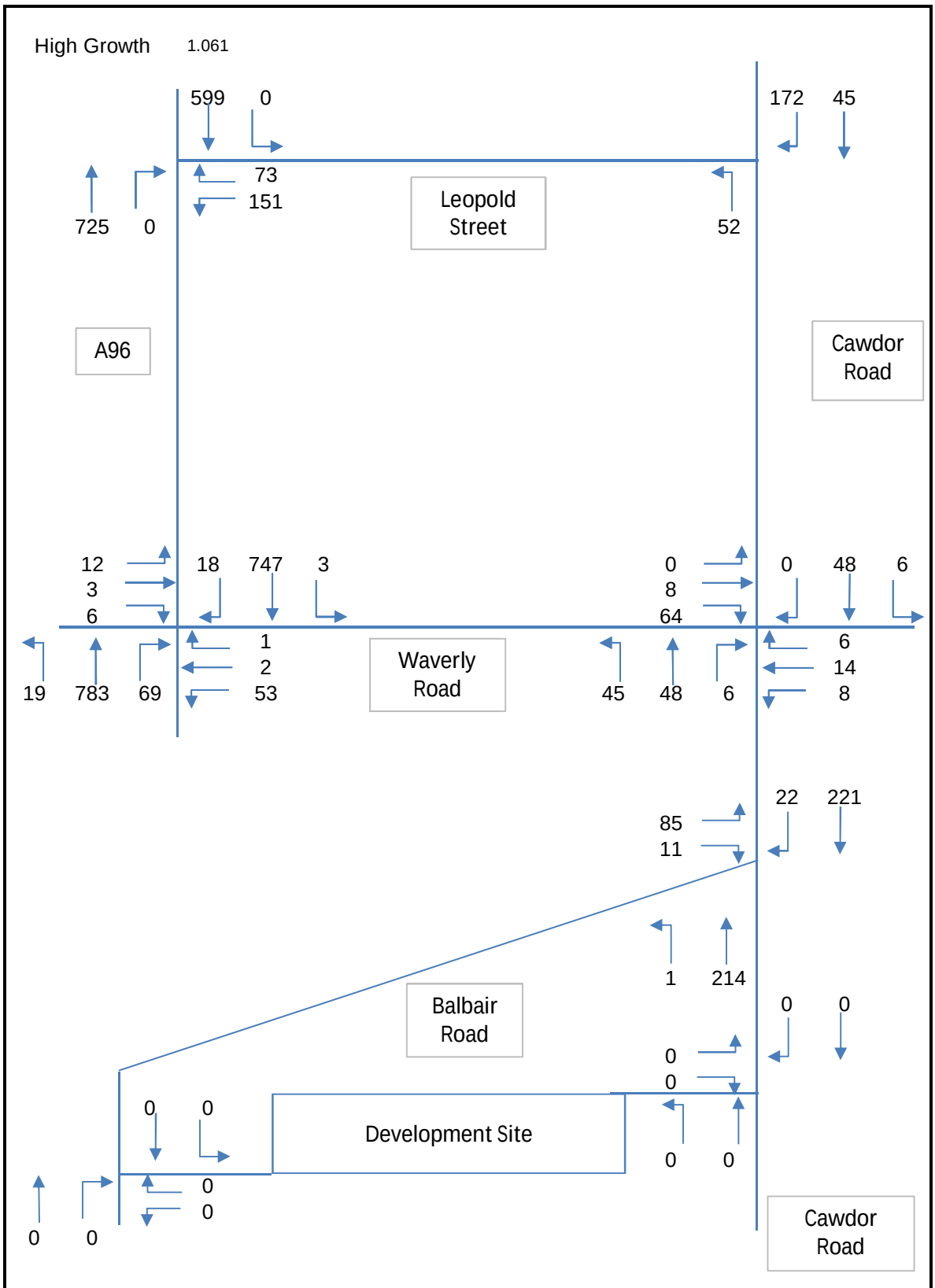
Project Nairn South SDP	AECOM	Title Sheet 7 AM Background Traffic 2019 (08.30-09.30)
Client THC		Date Prep by Check by Jan-16 KMcK JH



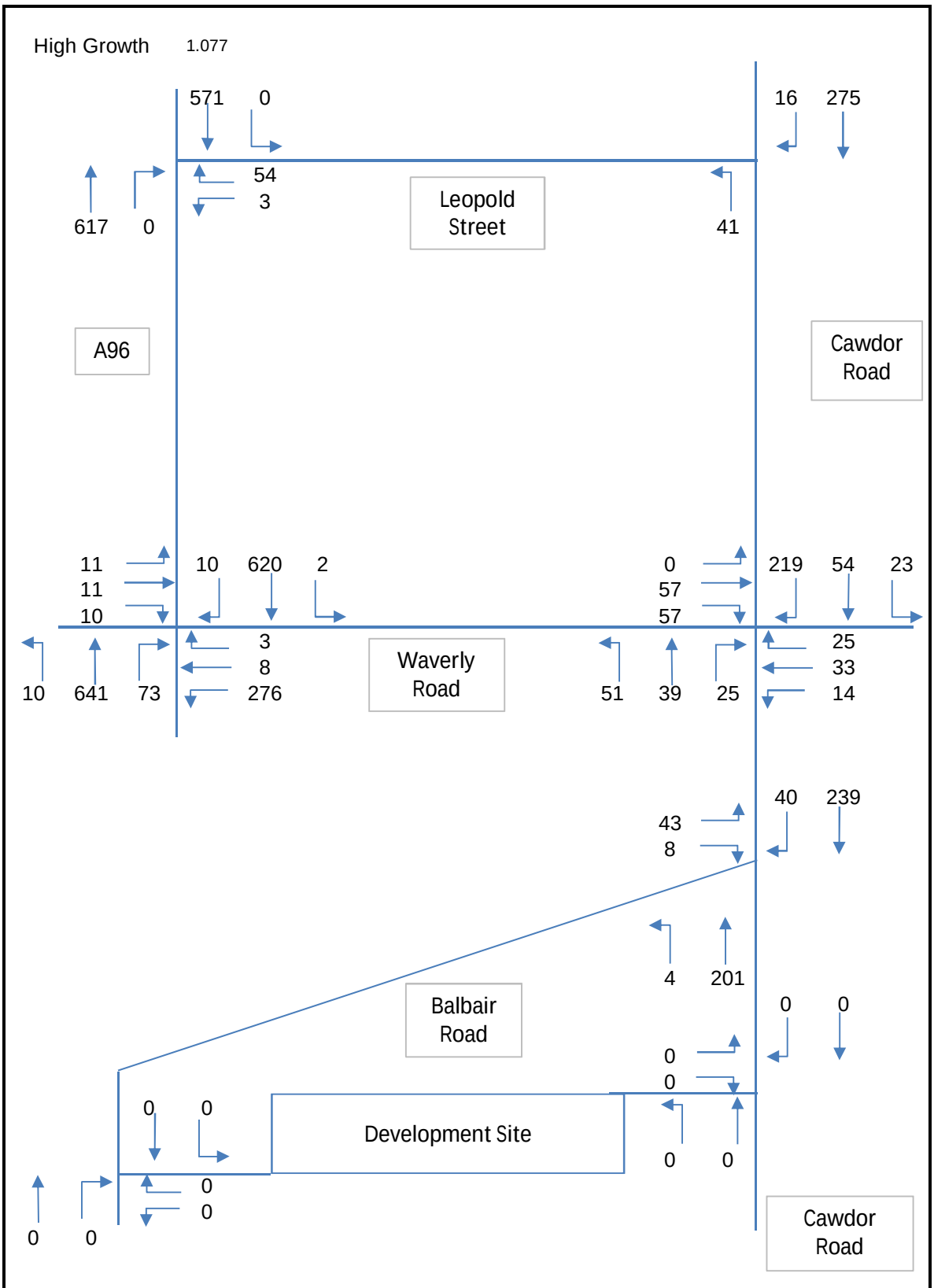
Project Nairn South SDP	AECOM	Title Sheet 8 PM Background Traffic 2019 (17.15-18.15)
Client THC		Date Prep by Check by Jan-16 KMcK JH



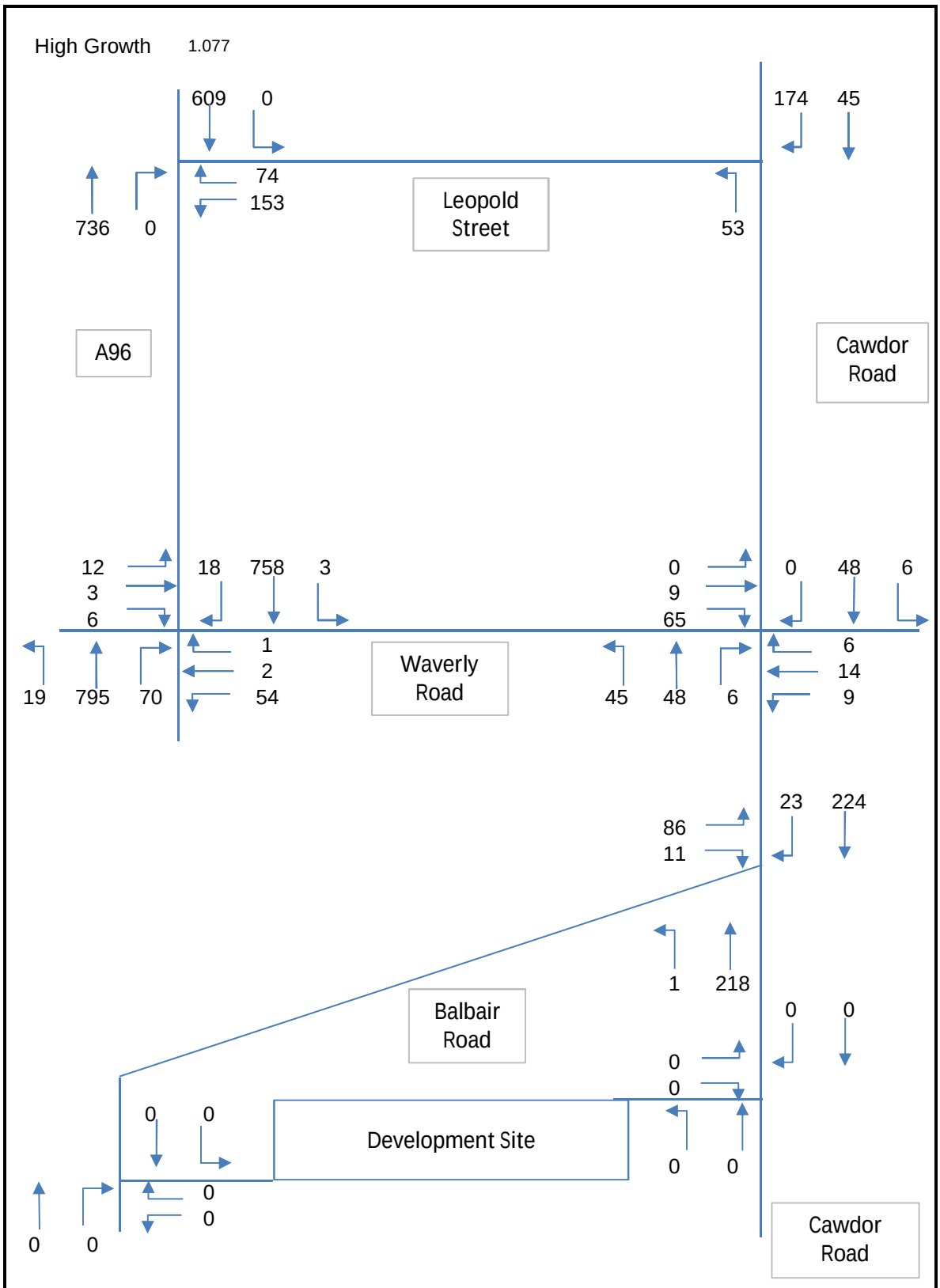
Project Nairn South SDP	AECOM	Title Sheet 9 AM Background Traffic 2020 (08.30-09.30)
Client THC		Date Prep by Check by Jan-16 KMcK JH



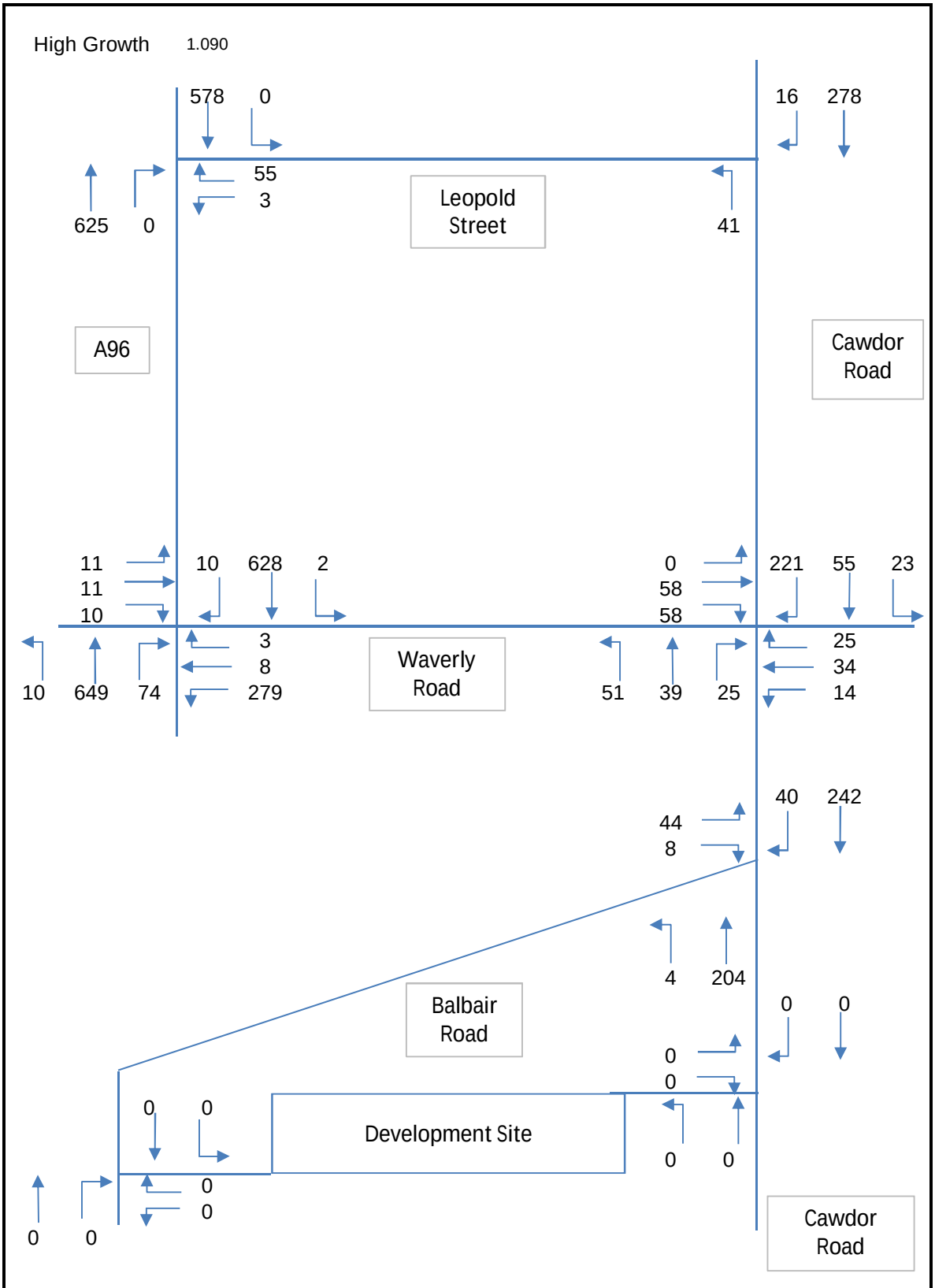
Project Nairn South SDP	AECOM	Title Sheet 10 PM Background Traffic 2020 (17.15-18.15)
Client THC		Date Prep by Check by Jan-16 KMcK JH



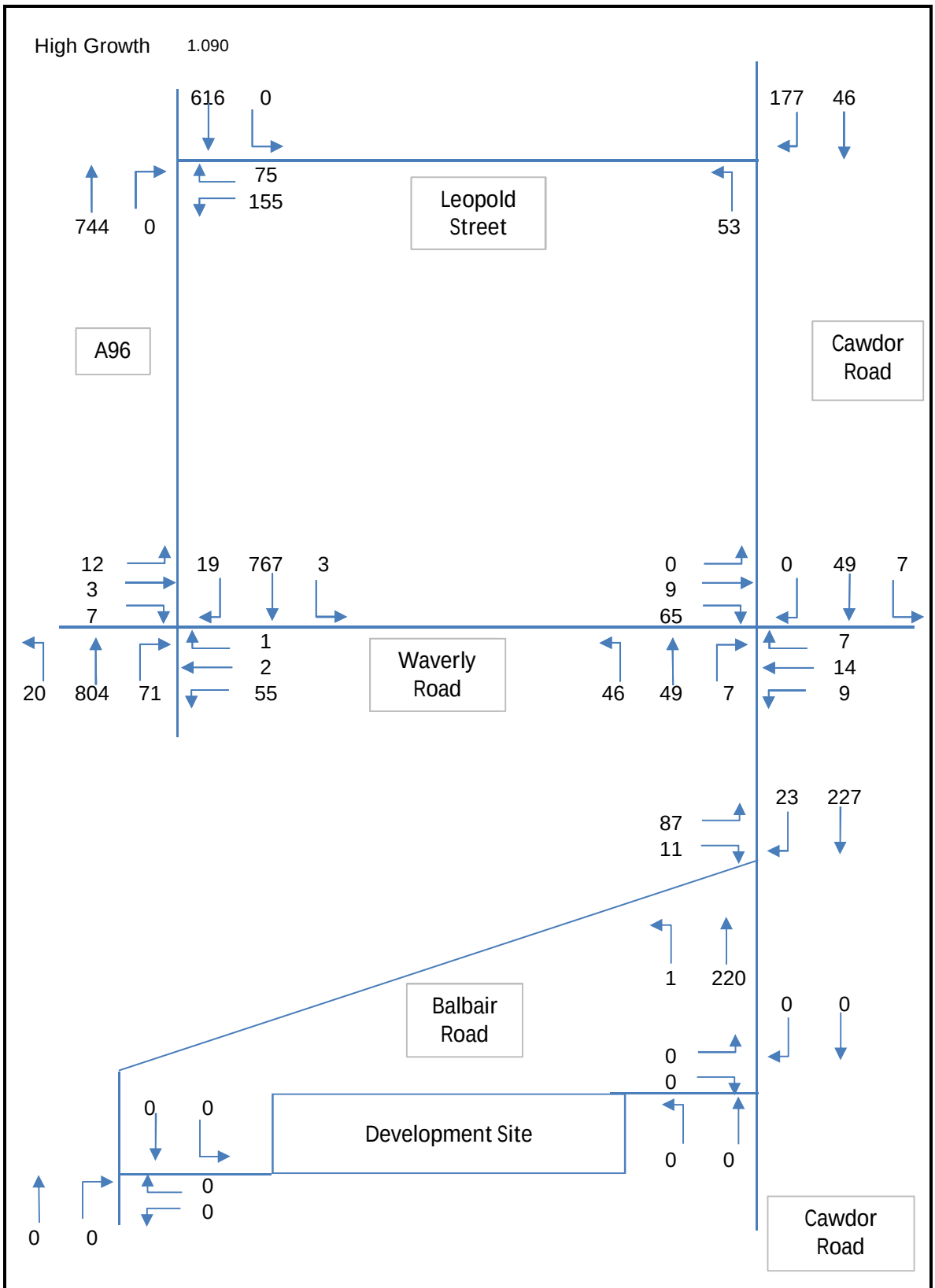
Project Nairn South SDP	AECOM	Title Sheet 11 AM Background Traffic 2021 (08.30-09.30)
Client THC		Date Prep by Check by Jan-16 KMcK JH



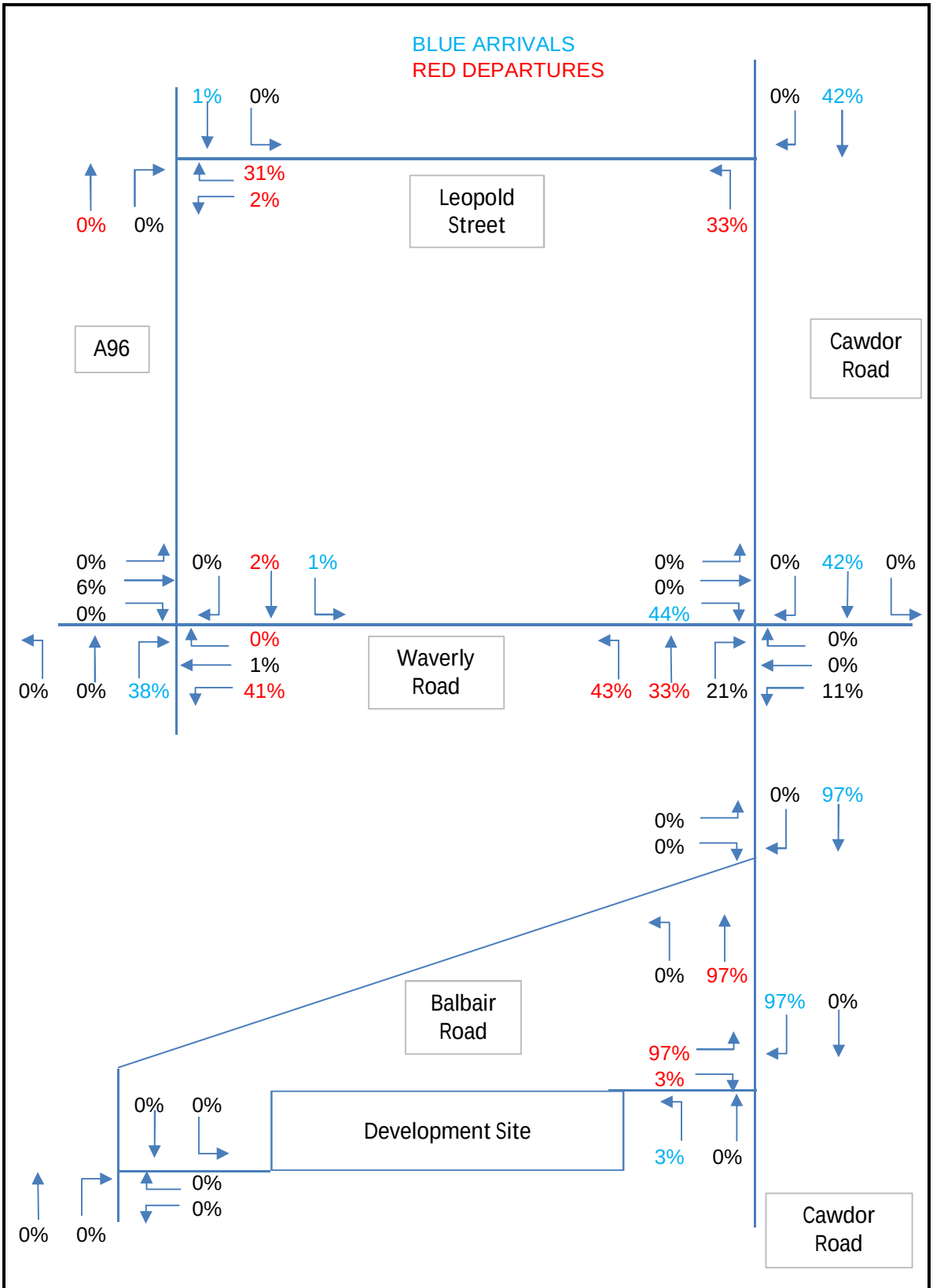
Project Nairn South SDP	AECOM	Title Sheet 12 PM Background Traffic 2021 (17.15-18.15)
Client THC		Date Prep by Check by Jan-16 KMcK JH



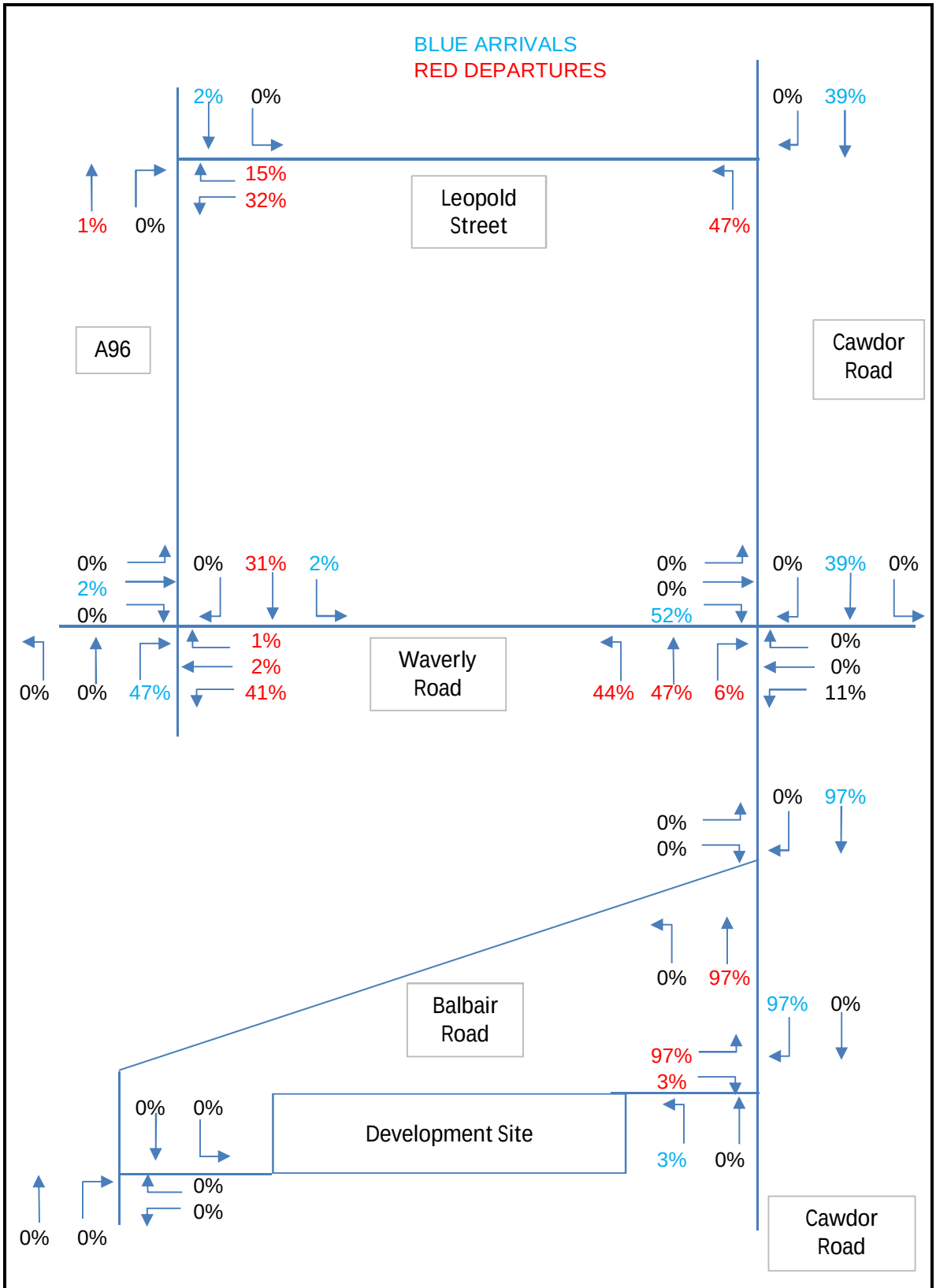
Project Nairn South SDP	AECOM	Title Sheet 13 AM Background Traffic 2022 (08.30-09.30)
Client THC		Date Prep by Check by Jan-16 KMcK JH



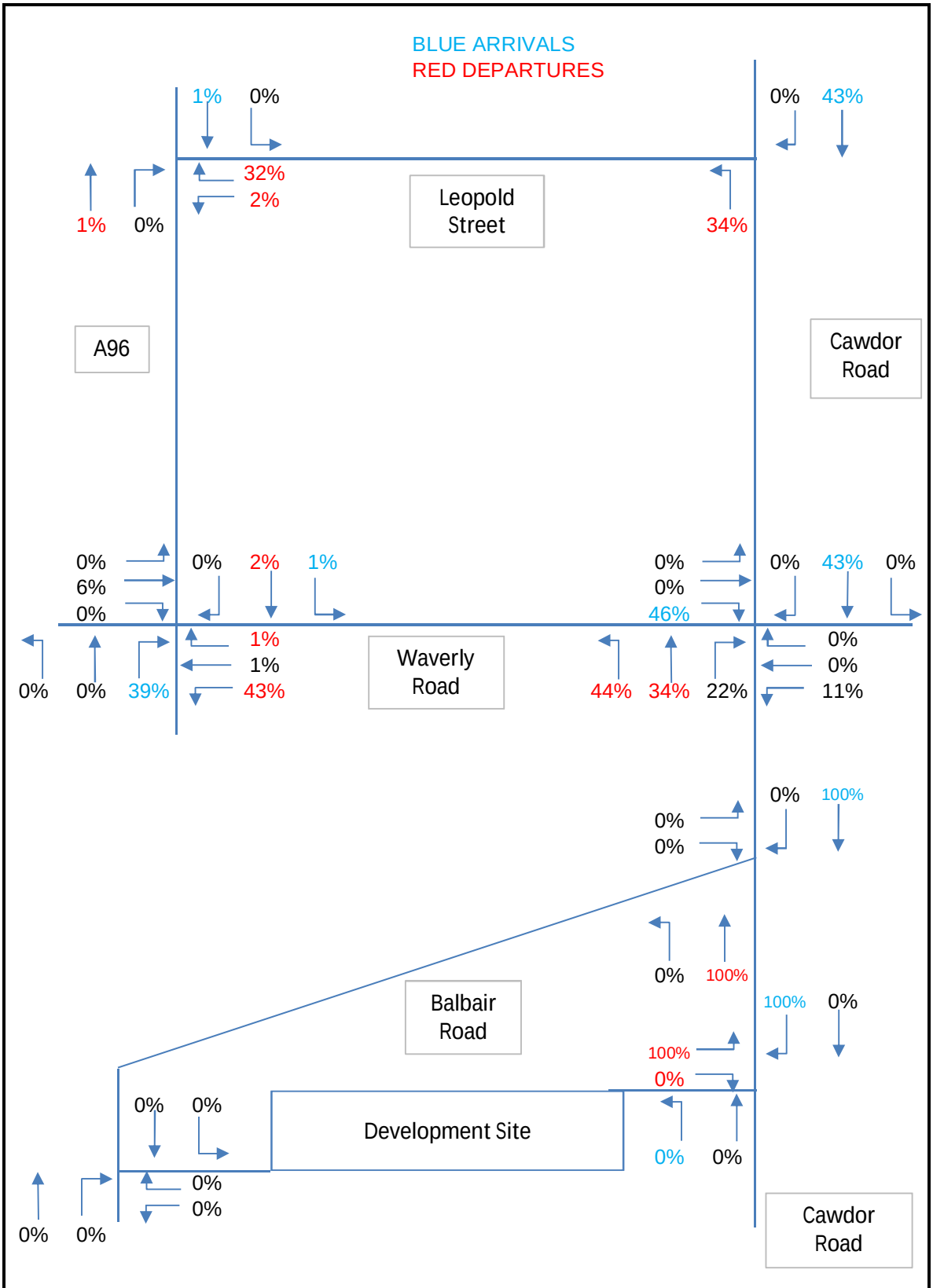
Project Nairn South SDP	AECOM	Title Sheet 14 PM Background Traffic 2022 (17.15-18.15)
Client THC		Date Prep by Check by Jan-16 KMcK JH



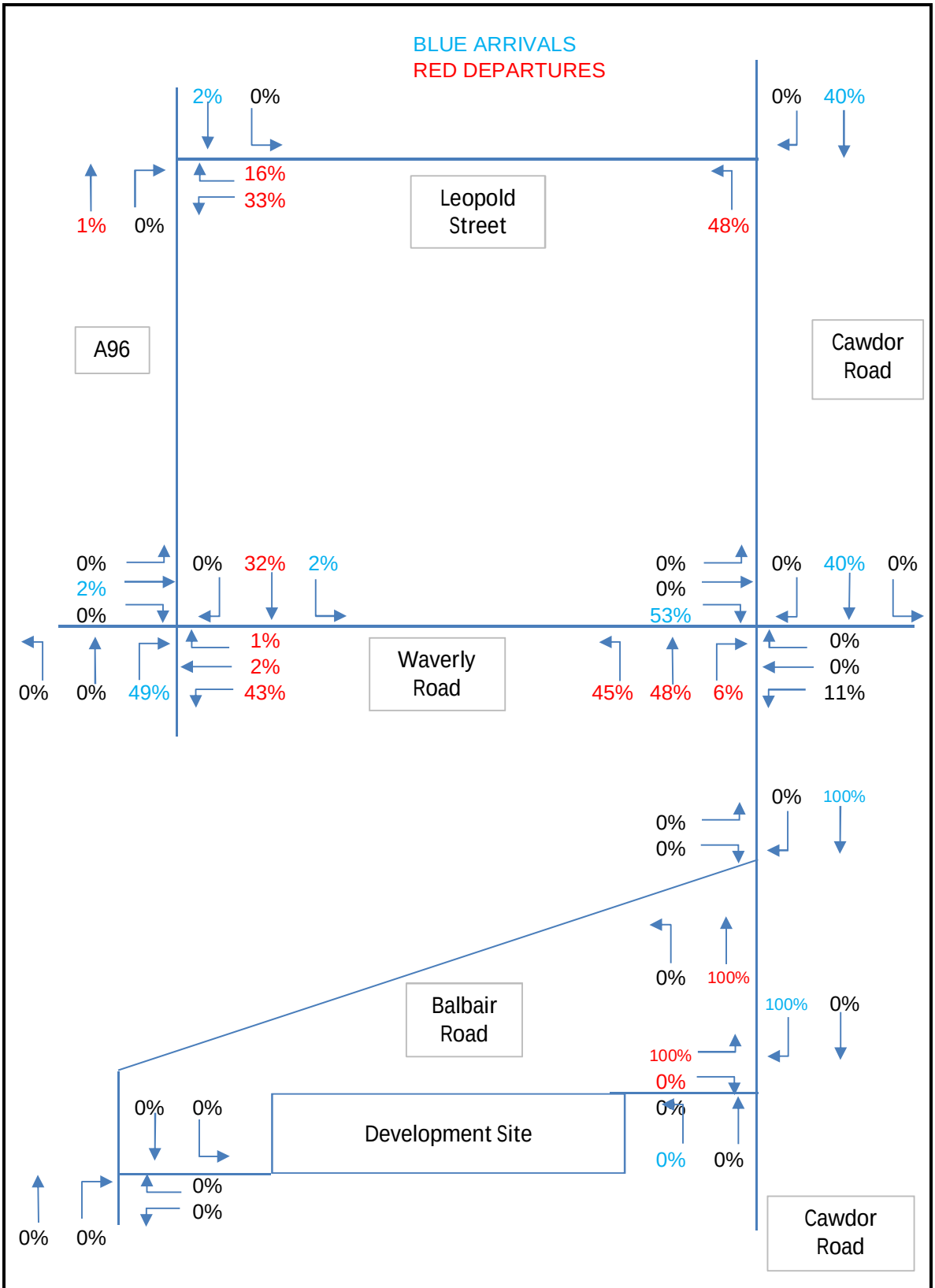
Project: Nairn South SDP	AECOM	Title: AM Residential Distribution 100% Cawdor Road Access — Sheet 15
Client: THC		Date: Jan-16 — Prep by: KMcK — Check by: JH



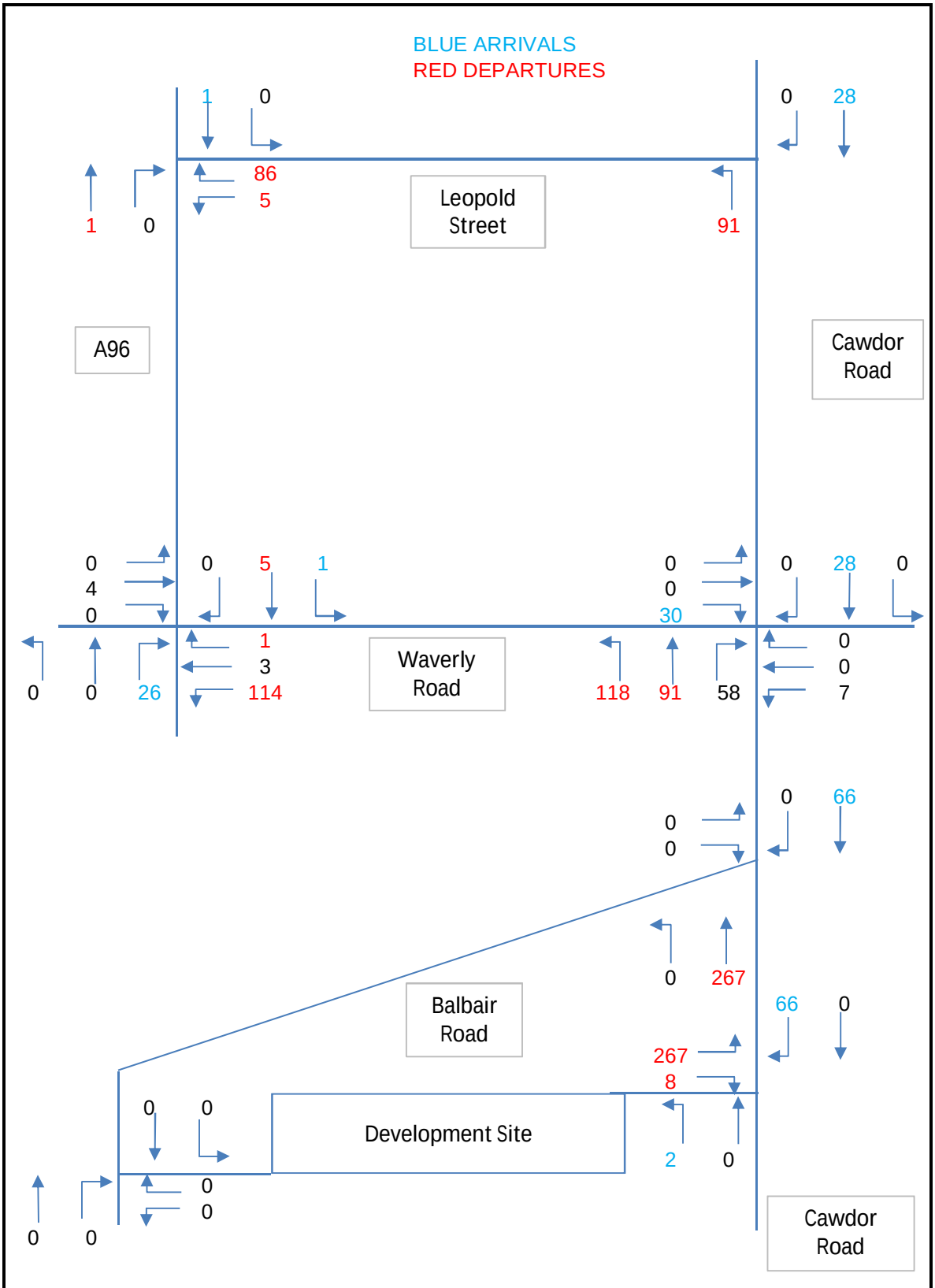
Project: Nairn South SDP	AECOM	Title: PM Residential Distribution 100% Cawdor Road Access — Sheet 16
Client: THC		Date: Jan-16 — Prep by: KMcK — Check by: JH



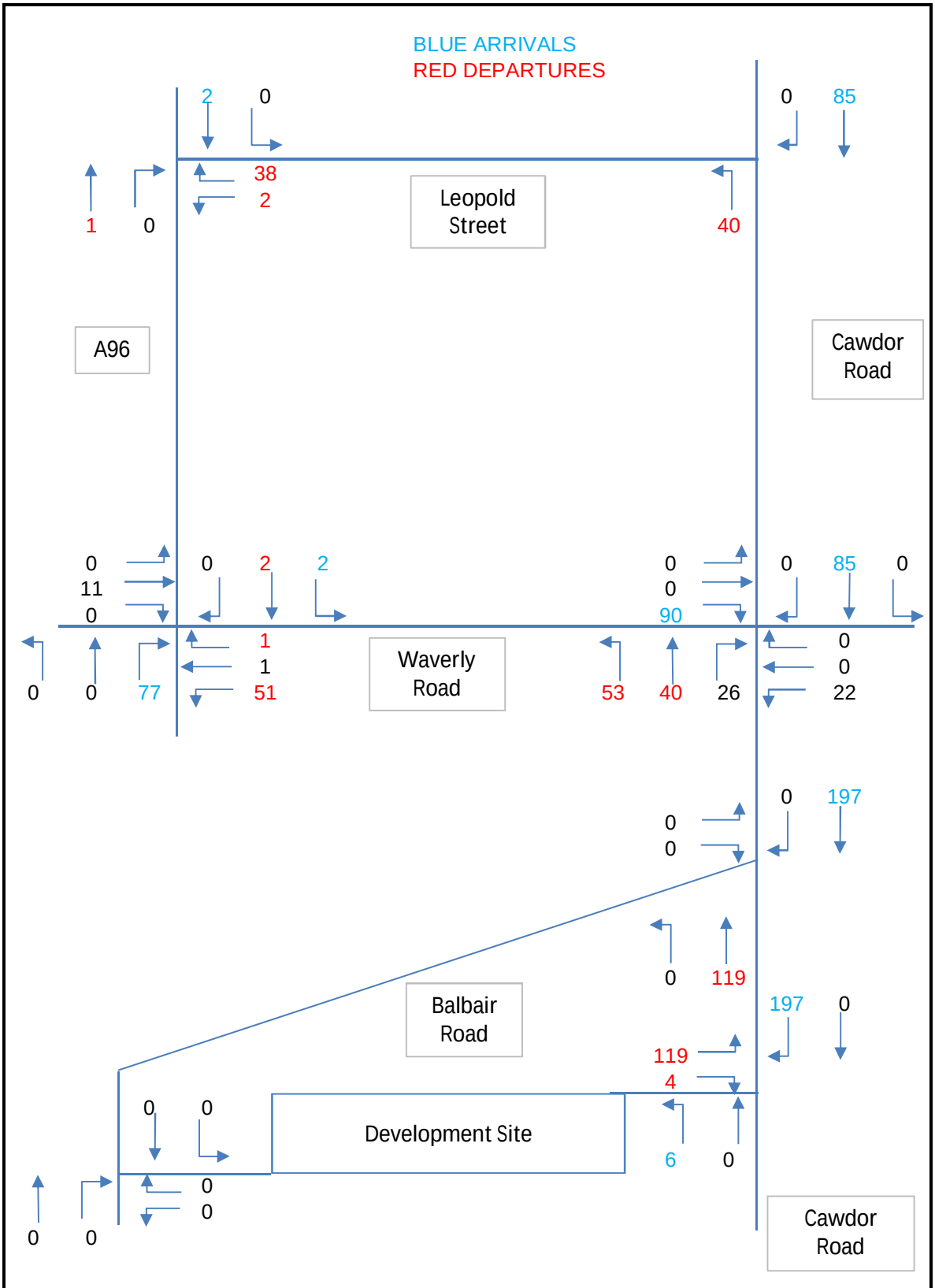
Project: Nairn South SDP	AECOM	Title: AM Business Park Distribution — Sheet 17
Client: THC		Date: Jan-16 — Prep by: KMcK — Check by: JH



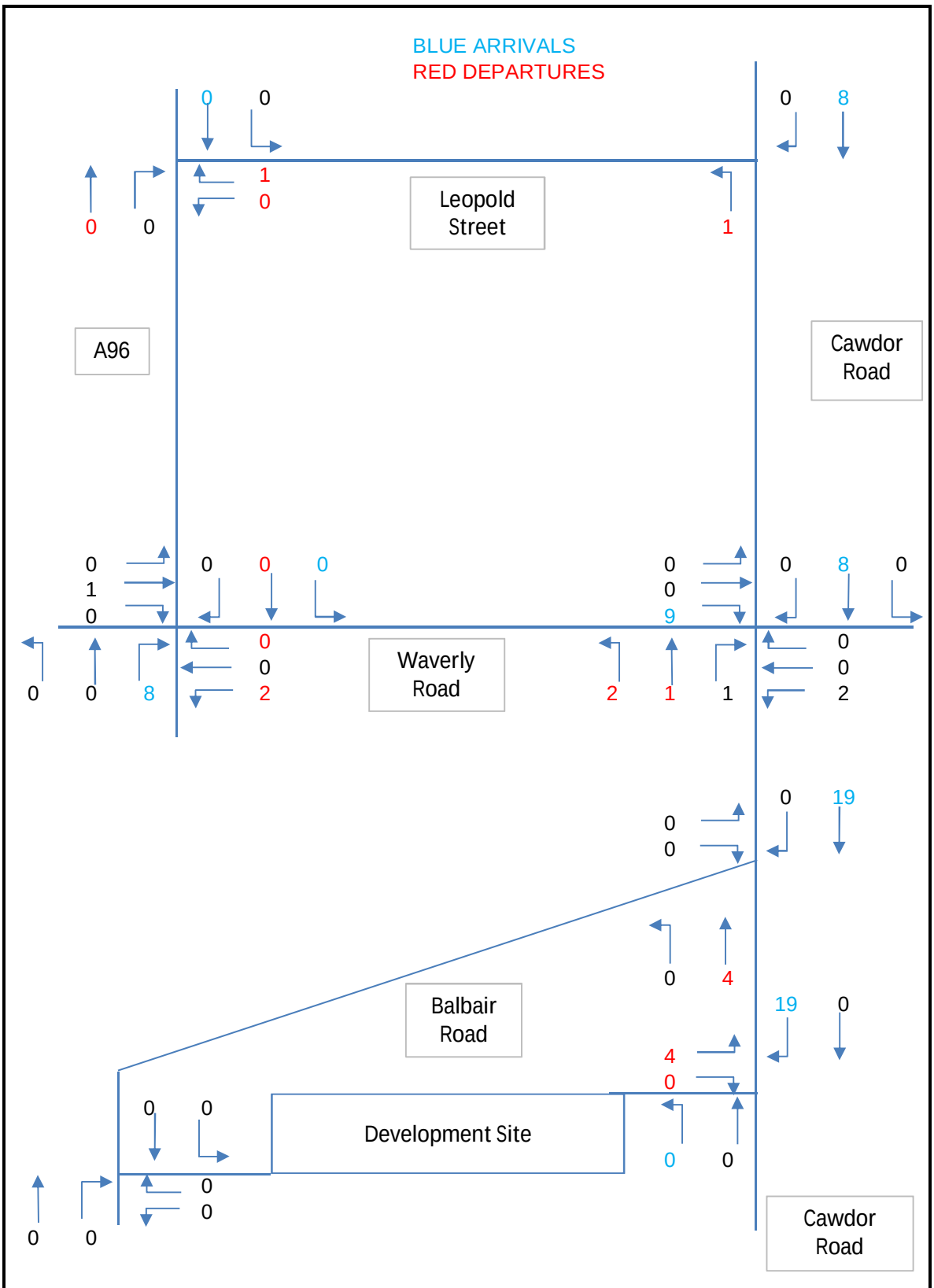
Project: Nairn South SDP	AECOM	Title: PM Business Park Distribution — Sheet 18
Client: THC		Date: Jan-16 — Prep by: KMcK — Check by: JH



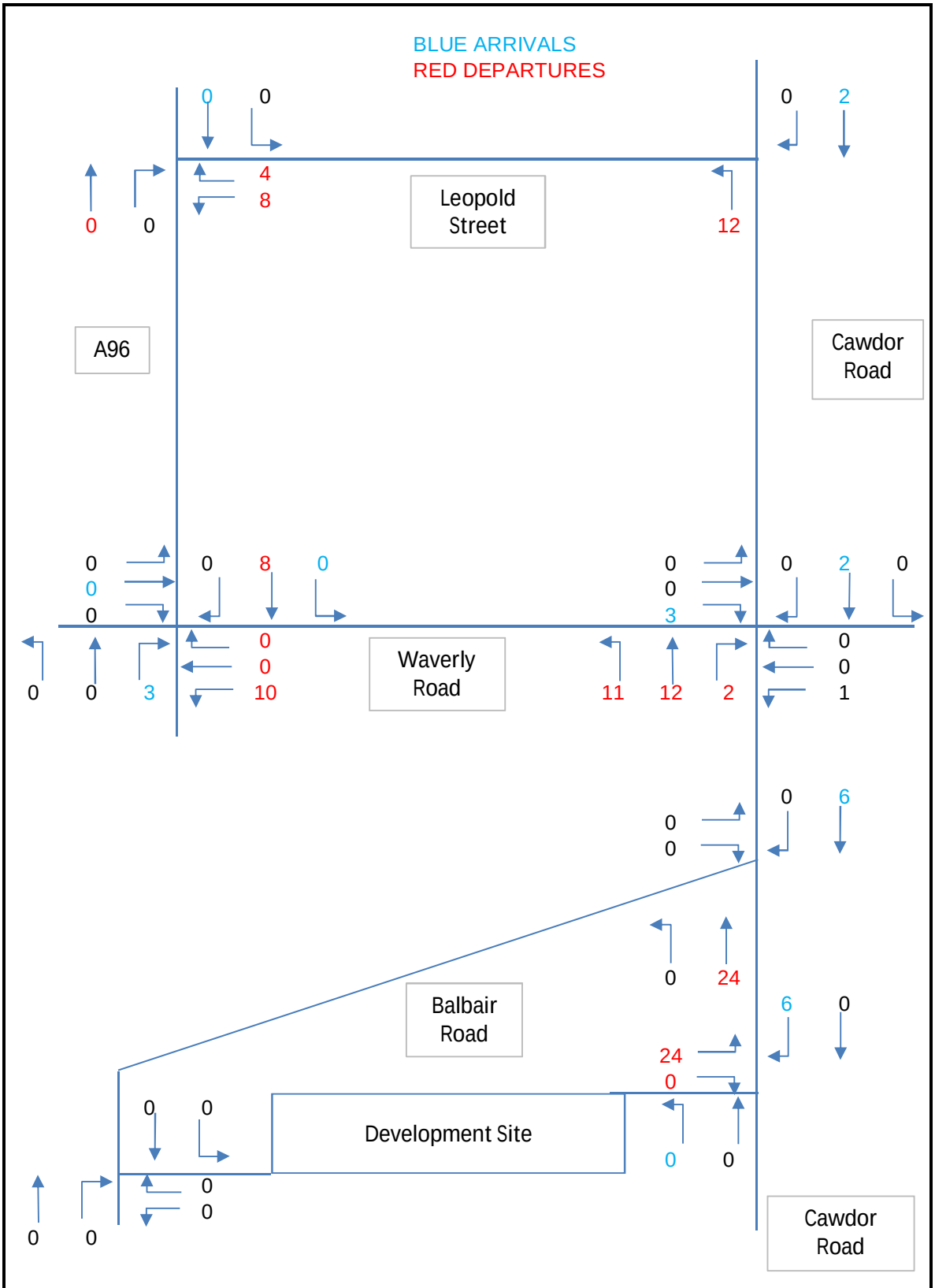
Project: Nairn South SDP	AECOM	Title: AM Residential Generation 100% Cawdor Road Access; Sheet 19
Client: THC		Date: Jan-16; Prep by: KMcK; Check by: JH



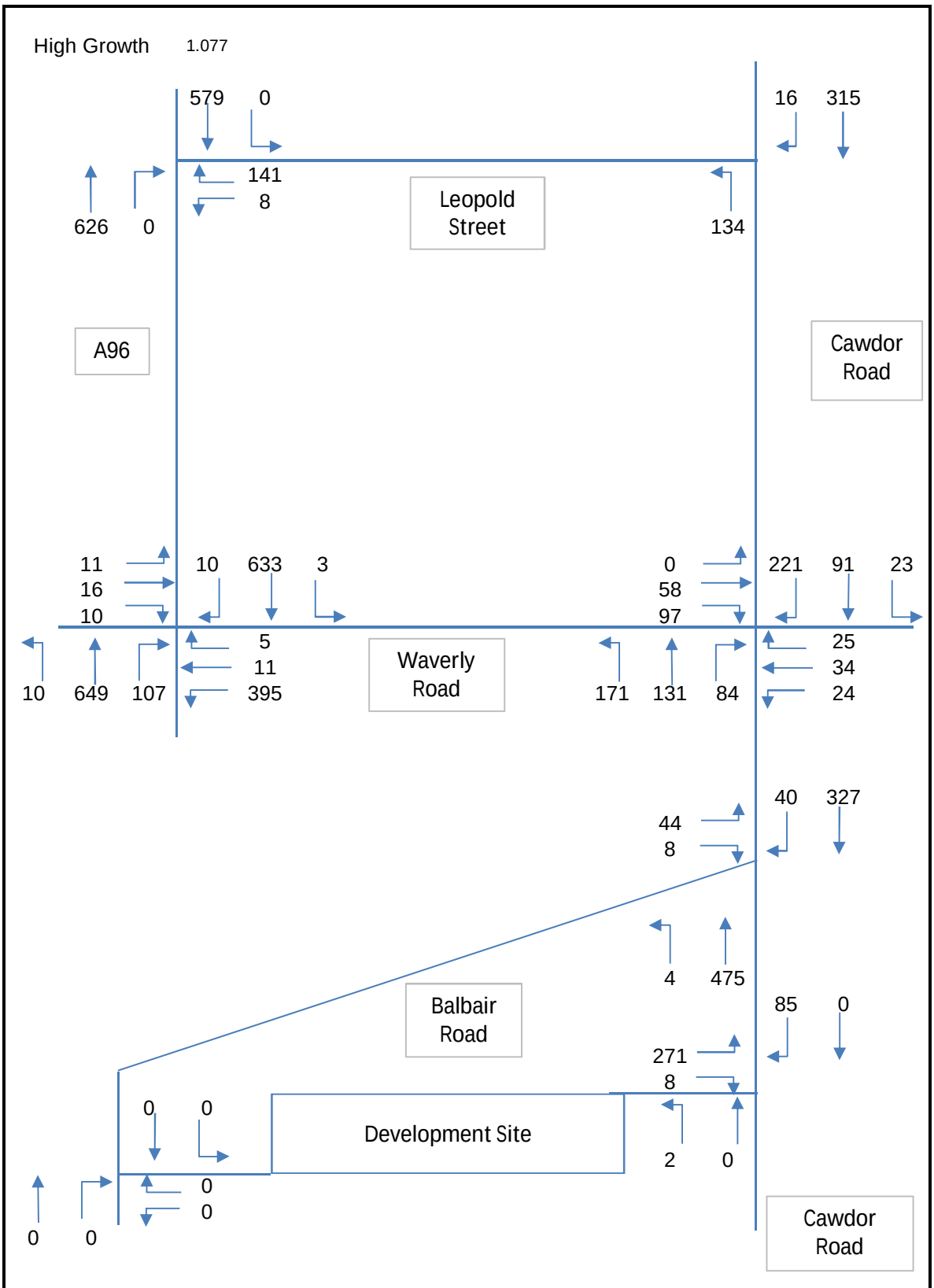
Project: Nairn South SDP	AECOM	Title: PM Residential Generation 100% Cawdor Road Access Sheet 20
Client: THC		Date: Jan-16 Prep by KMcK Check by JH



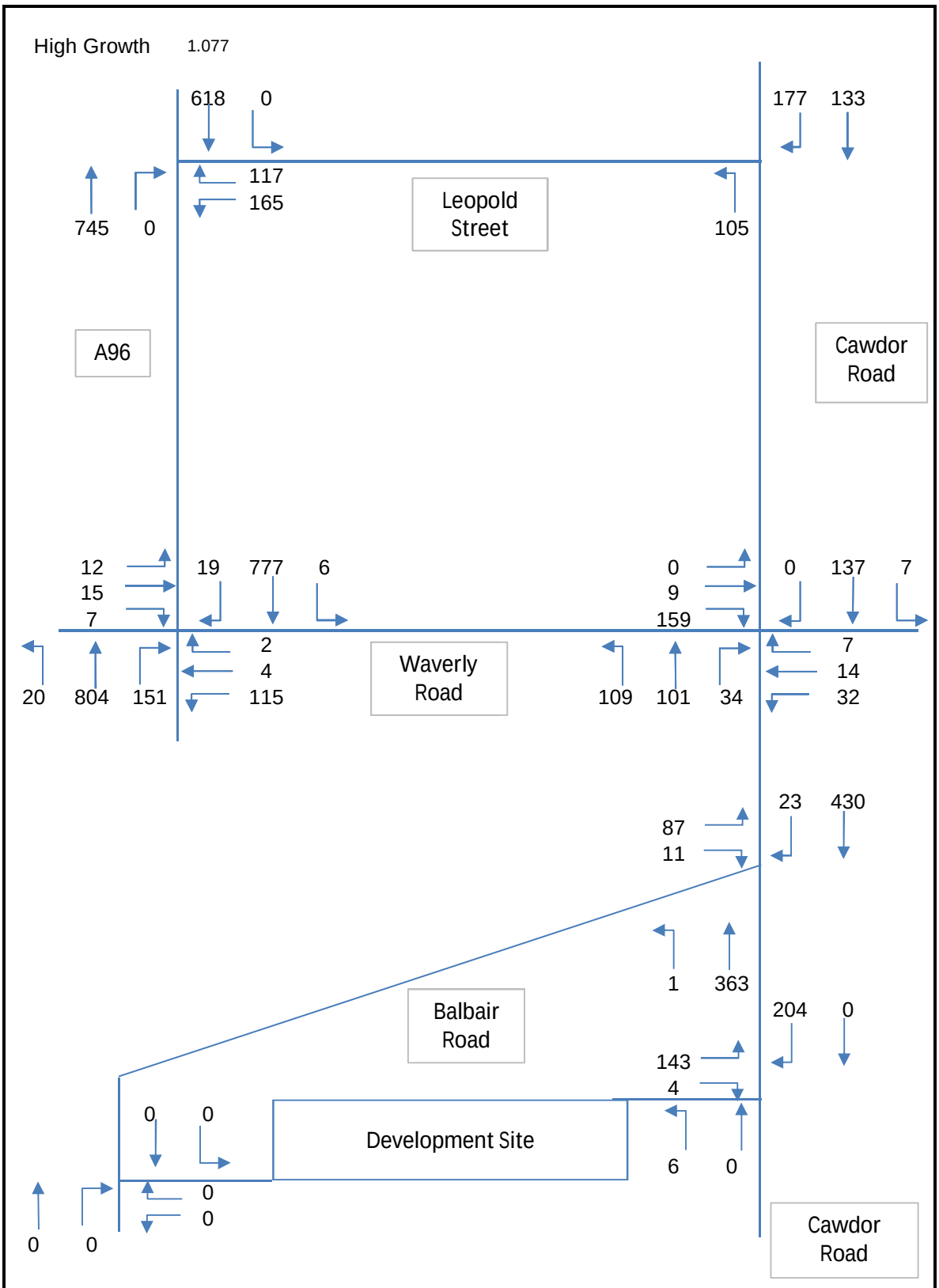
Project Nairn South SDP	AECOM	Title AM Business Park Trip Generation Sheet 21
Client THC		Date Jan-16 Prep by KMcK Check by JH



Project: Nairn South SDP	AECOM	Title: PM Business Park Trip Generation — Sheet 22
Client: THC		Date: Jan-16 — Prep by: KMcK — Check by: JH



Project Nairn South SDP	AECOM	Title Sheet 23 AM 2022 + Development Cawdor Road Access
Client THC		Date Prep by Check by Jan-16 KMcK JH



Project Nairn South SDP	AECOM	Title Sheet 24 PM 2022 + Development Cawdor Road Access
Client THC		Date Prep by Check by Jan-16 KMcK JH

Appendix D – Junction Analysis Results

Junctions 8

PICADY 8 - Priority Intersection Module

Version: 8.0.4.487 [15039,24/03/2014]

Filename: High Street Waverly Road.arc8
Path: P:\UKEDI4-TP\projects\#Set up new projects\Development - Nairn South Strategic Development Plan Transport Appraisal\03 EXECUTION\8 - Data & Calcs\Junction Analysis
Report generation date: 03/02/2016 09:56:30

» (Default Analysis Set) - Scenario 1, 2022 AM + Full Dev
» (Default Analysis Set) - Scenario 2, 2022 PM + Full Dev

Summary of junction performance

	2022 AM + Full Dev				2022 PM + Full Dev			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	A1 - Scenario 1							
Stream B-ACD	0.90	19.46	0.48	C				
Stream A-BCD	0.44	6.08	0.22	A				
Stream A-B	-	-	-	-				
Stream A-C	-	-	-	-				
Stream D-ABC	0.27	10.54	0.21	B				
Stream C-ABD	0.88	9.42	0.44	A				
Stream C-D	-	-	-	-				
Stream C-A	-	-	-	-				
	A1 - Scenario 2							
Stream B-ACD					0.67	13.23	0.40	B
Stream A-BCD					0.12	5.31	0.07	A
Stream A-B					-	-	-	-
Stream A-C					-	-	-	-
Stream D-ABC					0.12	7.15	0.10	A
Stream C-ABD					0.00	0.00	0.00	A
Stream C-D					-	-	-	-
Stream C-A					-	-	-	-

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle.

"D1 - Scenario 1, 2022 AM + Full Dev " model duration: 08:00 - 09:30
"D2 - Scenario 2, 2022 PM + Full Dev" model duration: 17:00 - 18:30

Run using Junctions 8.0.4.487 at 03/02/2016 09:56:29

File summary

Title	High Street / Waverly Road
Location	Nairn
Site Number	
Date	27/01/2016
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	MCKINNONK
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75			N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCU	PCU	perHour	s	-Min	perMin

(Default Analysis Set) - Scenario 1, 2022 AM + Full Dev

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	N/A			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 1, 2022 AM + Full Dev	Scenario 1	2022 AM + Full Dev		ONE HOUR	08:00	09:30	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Major Road Direction	Arm Order	Junction Delay (s)	Junction LOS
1	(untitled)	Crossroads	Two-way	A,B,C,D	11.29	B

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description	Arm Type
A	A	High Street NB		Major
B	B	Waverly Road		Minor
C	C	High Street SB		Major
D	D	Millbank Crescent		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
A	7.50		0.00		2.20	100.00	✓	0.00
C	7.50		0.00		2.20	250.00	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
B	One lane	3.20										30	78
D	One lane	3.85										12	35

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B	Slope for D-C
1	A-D	631.874	-	-	-	-	-	-	0.229	0.327	0.229	-	-	-
1	B-A	536.180	0.091	0.231	0.231	-	-	-	0.145	0.330	-	0.231	0.231	0.115
1	B-C	686.517	0.098	0.249	-	-	-	-	-	-	-	-	-	-
1	B-D, nearside lane	536.180	0.091	0.231	0.231	-	-	-	0.145	0.330	0.145	-	-	-
1	B-D, offside lane	536.180	0.091	0.231	0.231	-	-	-	0.145	0.330	0.145	-	-	-
1	C-B	718.741	0.260	0.260	0.372	-	-	-	-	-	-	-	-	-
1	D-A	700.942	-	-	-	-	-	-	0.254	-	0.100	-	-	-
1	D-B, nearside lane	541.075	0.146	0.146	0.333	-	-	-	0.233	0.233	0.092	-	-	-
1	D-B, offside lane	541.075	0.146	0.146	0.333	-	-	-	0.233	0.233	0.092	-	-	-
1	D-C	541.075	-	0.146	0.333	0.116	0.233	0.233	0.233	0.233	0.092	-	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	386.00	100.000
B	ONE HOUR	✓	155.00	100.000
C	ONE HOUR	✓	335.00	100.000
D	ONE HOUR	✓	83.00	100.000

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.000	171.000	131.000	84.000
	B	97.000	0.000	0.000	58.000
	C	91.000	221.000	0.000	23.000
	D	24.000	34.000	25.000	0.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.00	0.44	0.34	0.22
	B	0.63	0.00	0.00	0.37
	C	0.27	0.66	0.00	0.07
	D	0.29	0.41	0.30	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	1.000	1.000	1.000	1.000
	B	1.000	1.000	1.000	1.000
	C	1.000	1.000	1.000	1.000
	D	1.000	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.0	0.0	0.0	0.0
	B	0.0	0.0	0.0	0.0
	C	0.0	0.0	0.0	0.0
	D	0.0	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.48	19.46	0.90	C
A-BCD	0.22	6.08	0.44	A
A-B	-	-	-	-
A-C	-	-	-	-
D-ABC	0.21	10.54	0.27	B
C-ABD	0.44	9.42	0.88	A
C-D	-	-	-	-
C-A	-	-	-	-

Main Results for each time segment

Main results: (08:00-08:15)

Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	116.69	115.15	0.00	413.64	0.282	0.39	12.002	B
A-BCD	92.52	91.65	0.00	714.46	0.129	0.22	5.778	A
A-B	112.16	112.16	0.00	-	-	-	-	-
A-C	85.92	85.92	0.00	-	-	-	-	-
D-ABC	62.49	61.90	0.00	481.88	0.130	0.15	8.559	A
C-ABD	189.93	188.28	0.00	691.53	0.275	0.41	7.134	A
C-D	12.56	12.56	0.00	-	-	-	-	-
C-A	49.71	49.71	0.00	-	-	-	-	-

Main results: (08:15-08:30)

Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	139.34	138.70	0.00	389.08	0.358	0.55	14.341	B
A-BCD	119.83	119.51	0.00	732.19	0.164	0.30	5.879	A
A-B	128.63	128.63	0.00	-	-	-	-	-
A-C	98.54	98.54	0.00	-	-	-	-	-
D-ABC	74.62	74.44	0.00	461.43	0.162	0.19	9.299	A
C-ABD	233.73	233.10	0.00	687.02	0.340	0.57	7.929	A
C-D	13.60	13.60	0.00	-	-	-	-	-
C-A	53.83	53.83	0.00	-	-	-	-	-

Main results: (08:30-08:45)

Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	170.66	169.29	0.00	355.90	0.480	0.89	19.147	C
A-BCD	163.91	163.34	0.00	757.90	0.216	0.44	6.061	A
A-B	147.83	147.83	0.00	-	-	-	-	-
A-C	113.25	113.25	0.00	-	-	-	-	-
D-ABC	91.38	91.09	0.00	433.26	0.211	0.26	10.513	B
C-ABD	298.61	297.41	0.00	681.46	0.438	0.87	9.364	A
C-D	14.17	14.17	0.00	-	-	-	-	-
C-A	56.06	56.06	0.00	-	-	-	-	-

Main results: (08:45-09:00)

Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	170.66	170.59	0.00	355.42	0.480	0.90	19.455	C
A-BCD	164.16	164.15	0.00	757.83	0.217	0.44	6.078	A
A-B	147.69	147.69	0.00	-	-	-	-	-
A-C	113.14	113.14	0.00	-	-	-	-	-
D-ABC	91.38	91.38	0.00	432.80	0.211	0.27	10.543	B
C-ABD	298.84	298.81	0.00	681.50	0.439	0.88	9.424	A
C-D	14.12	14.12	0.00	-	-	-	-	-
C-A	55.88	55.88	0.00	-	-	-	-	-

Main results: (09:00-09:15)

Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	139.34	140.67	0.00	388.33	0.359	0.57	14.612	B
A-BCD	120.13	120.68	0.00	732.05	0.164	0.31	5.903	A
A-B	128.47	128.47	0.00	-	-	-	-	-
A-C	98.42	98.42	0.00	-	-	-	-	-
D-ABC	74.62	74.90	0.00	460.73	0.162	0.20	9.338	A
C-ABD	234.00	235.17	0.00	687.05	0.341	0.59	7.997	A
C-D	13.55	13.55	0.00	-	-	-	-	-
C-A	53.61	53.61	0.00	-	-	-	-	-

Main results: (09:15-09:30)

Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	116.69	117.38	0.00	412.59	0.283	0.40	12.224	B
A-BCD	92.92	93.25	0.00	714.13	0.130	0.22	5.808	A
A-B	111.93	111.93	0.00	-	-	-	-	-
A-C	85.75	85.75	0.00	-	-	-	-	-
D-ABC	62.49	62.67	0.00	480.98	0.130	0.15	8.609	A
C-ABD	190.24	190.89	0.00	691.38	0.275	0.42	7.206	A
C-D	12.50	12.50	0.00	-	-	-	-	-
C-A	49.47	49.47	0.00	-	-	-	-	-

(Default Analysis Set) - Scenario 2, 2022 PM + Full Dev

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	N/A			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 2, 2022 PM + Full Dev	Scenario 2	2022 PM + Full Dev		ONE HOUR	17:00	18:30	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Major Road Direction	Arm Order	Junction Delay (s)	Junction LOS
1	(untitled)	Crossroads	Two-way	A,B,C,D	10.66	B

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description	Arm Type
A	A	High Street NB		Major
B	B	Waverly Road		Minor
C	C	High Street SB		Major
D	D	Millbank Crescent		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
A	7.50		0.00		2.20	100.00	✓	0.00
C	7.50		0.00		2.20	250.00	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
B	One lane	3.20										30	78
D	One lane	3.85										12	35

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B	Slope for D-C
1	A-D	631.874	-	-	-	-	-	-	0.229	0.327	0.229	-	-	-
1	B-A	536.180	0.091	0.231	0.231	-	-	-	0.145	0.330	-	0.231	0.231	0.115
1	B-C	686.517	0.098	0.249	-	-	-	-	-	-	-	-	-	-
1	B-D, nearside lane	536.180	0.091	0.231	0.231	-	-	-	0.145	0.330	0.145	-	-	-
1	B-D, offside lane	536.180	0.091	0.231	0.231	-	-	-	0.145	0.330	0.145	-	-	-
1	C-B	718.741	0.260	0.260	0.372	-	-	-	-	-	-	-	-	-
1	D-A	700.942	-	-	-	-	-	-	0.254	-	0.100	-	-	-
1	D-B, nearside lane	541.075	0.146	0.146	0.333	-	-	-	0.233	0.233	0.092	-	-	-
1	D-B, offside lane	541.075	0.146	0.146	0.333	-	-	-	0.233	0.233	0.092	-	-	-
1	D-C	541.075	-	0.146	0.333	0.116	0.233	0.233	0.233	0.233	0.092	-	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	244.00	100.000
B	ONE HOUR	✓	168.00	100.000
C	ONE HOUR	✓	144.00	100.000
D	ONE HOUR	✓	53.00	100.000

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.000	109.000	101.000	34.000
	B	159.000	0.000	0.000	9.000
	C	137.000	0.000	0.000	7.000
	D	32.000	14.000	7.000	0.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.00	0.45	0.41	0.14
	B	0.95	0.00	0.00	0.05
	C	0.95	0.00	0.00	0.05
	D	0.60	0.26	0.13	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	1.000	1.000	1.000	1.000
	B	1.000	1.000	1.000	1.000
	C	1.000	1.000	1.000	1.000
	D	1.000	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.0	0.0	0.0	0.0
	B	0.0	0.0	0.0	0.0
	C	0.0	0.0	0.0	0.0
	D	0.0	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.40	13.23	0.67	B
A-BCD	0.07	5.31	0.12	A
A-B	-	-	-	-
A-C	-	-	-	-
D-ABC	0.10	7.15	0.12	A
C-ABD	0.00	0.00	0.00	A
C-D	-	-	-	-
C-A	-	-	-	-

Main Results for each time segment

Main results: (17:00-17:15)

Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	126.48	125.08	0.00	482.08	0.262	0.35	10.046	B
A-BCD	32.62	32.35	0.00	711.11	0.046	0.07	5.303	A
A-B	78.42	78.42	0.00	-	-	-	-	-
A-C	72.66	72.66	0.00	-	-	-	-	-
D-ABC	39.90	39.61	0.00	583.22	0.068	0.07	6.619	A
C-ABD	0.00	0.00	0.00	668.07	0.000	0.00	0.000	A
C-D	5.27	5.27	0.00	-	-	-	-	-
C-A	103.14	103.14	0.00	-	-	-	-	-

Main results: (17:15-17:30)

Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	151.03	150.58	0.00	471.46	0.320	0.46	11.203	B
A-BCD	40.82	40.73	0.00	726.67	0.056	0.09	5.248	A
A-B	92.67	92.67	0.00	-	-	-	-	-
A-C	85.87	85.87	0.00	-	-	-	-	-
D-ABC	47.65	47.58	0.00	574.36	0.083	0.09	6.834	A
C-ABD	0.00	0.00	0.00	658.14	0.000	0.00	0.000	A
C-D	6.29	6.29	0.00	-	-	-	-	-
C-A	123.16	123.16	0.00	-	-	-	-	-

Main results: (17:30-17:45)

Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	184.97	184.17	0.00	456.91	0.405	0.66	13.159	B
A-BCD	53.17	53.05	0.00	748.13	0.071	0.12	5.182	A
A-B	111.84	111.84	0.00	-	-	-	-	-
A-C	103.64	103.64	0.00	-	-	-	-	-
D-ABC	58.35	58.25	0.00	562.06	0.104	0.11	7.143	A
C-ABD	0.00	0.00	0.00	644.51	0.000	0.00	0.000	A
C-D	7.71	7.71	0.00	-	-	-	-	-
C-A	150.84	150.84	0.00	-	-	-	-	-

Main results: (17:45-18:00)

Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	184.97	184.94	0.00	456.87	0.405	0.67	13.234	B
A-BCD	53.20	53.20	0.00	748.16	0.071	0.12	5.184	A
A-B	111.83	111.83	0.00	-	-	-	-	-
A-C	103.62	103.62	0.00	-	-	-	-	-
D-ABC	58.35	58.35	0.00	562.02	0.104	0.12	7.146	A
C-ABD	0.00	0.00	0.00	644.47	0.000	0.00	0.000	A
C-D	7.71	7.71	0.00	-	-	-	-	-
C-A	150.84	150.84	0.00	-	-	-	-	-

Main results: (18:00-18:15)

Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	151.03	151.80	0.00	471.39	0.320	0.48	11.293	B
A-BCD	40.86	40.97	0.00	726.72	0.056	0.09	5.251	A
A-B	92.65	92.65	0.00	-	-	-	-	-
A-C	85.85	85.85	0.00	-	-	-	-	-
D-ABC	47.65	47.74	0.00	574.30	0.083	0.09	6.837	A
C-ABD	0.00	0.00	0.00	658.07	0.000	0.00	0.000	A
C-D	6.29	6.29	0.00	-	-	-	-	-
C-A	123.16	123.16	0.00	-	-	-	-	-

Main results: (18:15-18:30)

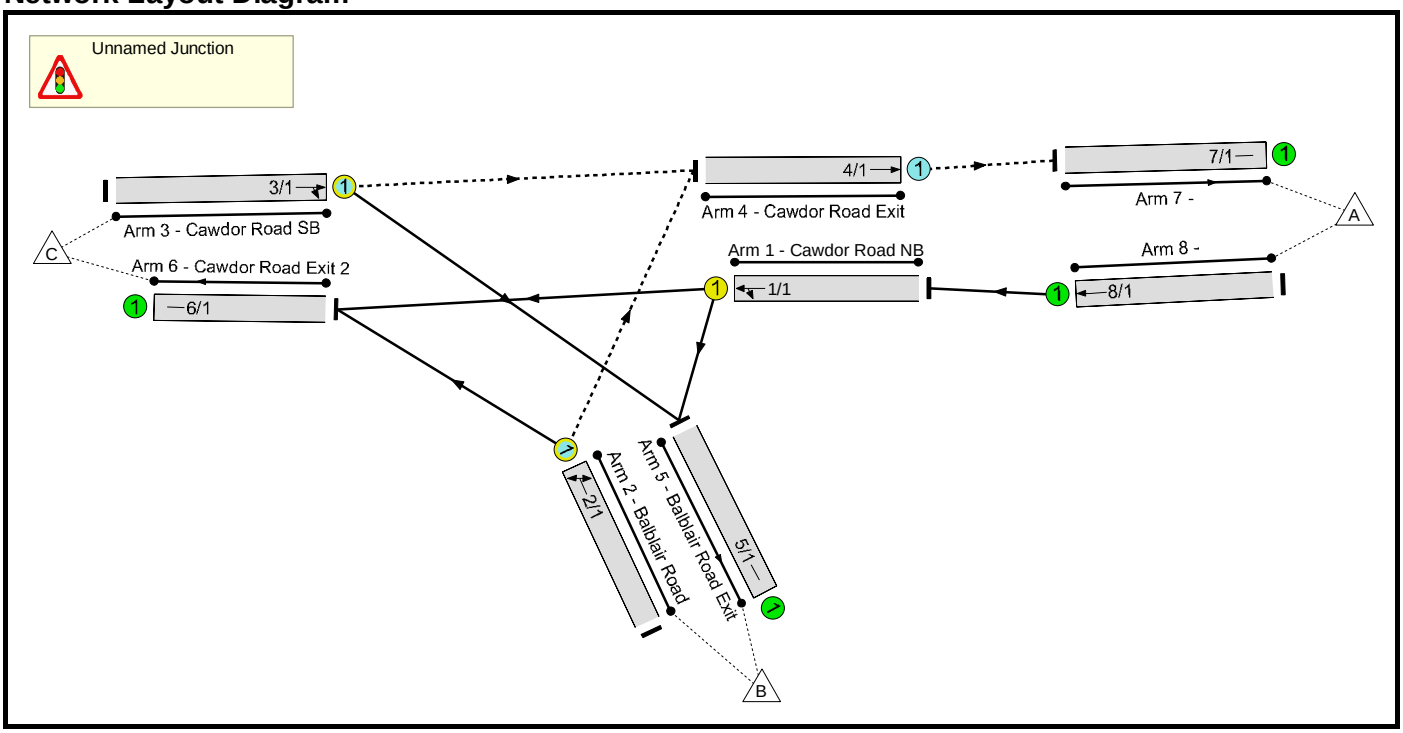
Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	126.48	126.95	0.00	481.93	0.262	0.36	10.154	B
A-BCD	32.69	32.78	0.00	711.17	0.046	0.07	5.310	A
A-B	78.38	78.38	0.00	-	-	-	-	-
A-C	72.63	72.63	0.00	-	-	-	-	-
D-ABC	39.90	39.97	0.00	583.12	0.068	0.07	6.630	A
C-ABD	0.00	0.00	0.00	667.94	0.000	0.00	0.000	A
C-D	5.27	5.27	0.00	-	-	-	-	-
C-A	103.14	103.14	0.00	-	-	-	-	-

Full Input Data And Results

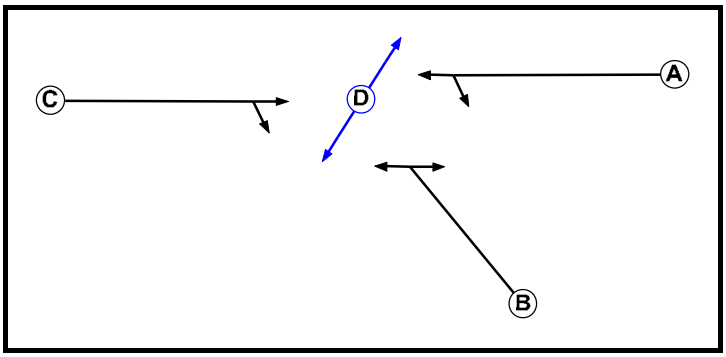
User and Project Details

Project:	**Nairn South Masterplan**
Title:	**Option 1 B9090 Cawdor Road/ B9091 Balblair Road**
File name:	AECOM Give Way Signalised Cawdor Road_Balbair Road.lsg3x
Company:	AECOM

Network Layout Diagram



Phase Diagram



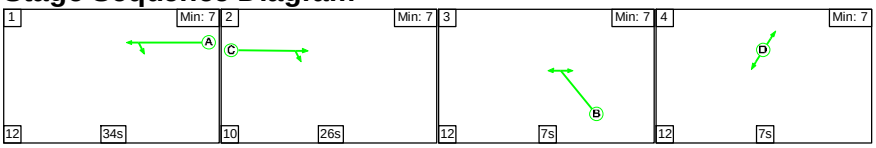
Full Input Data And Results

Phase Intergreens Matrix

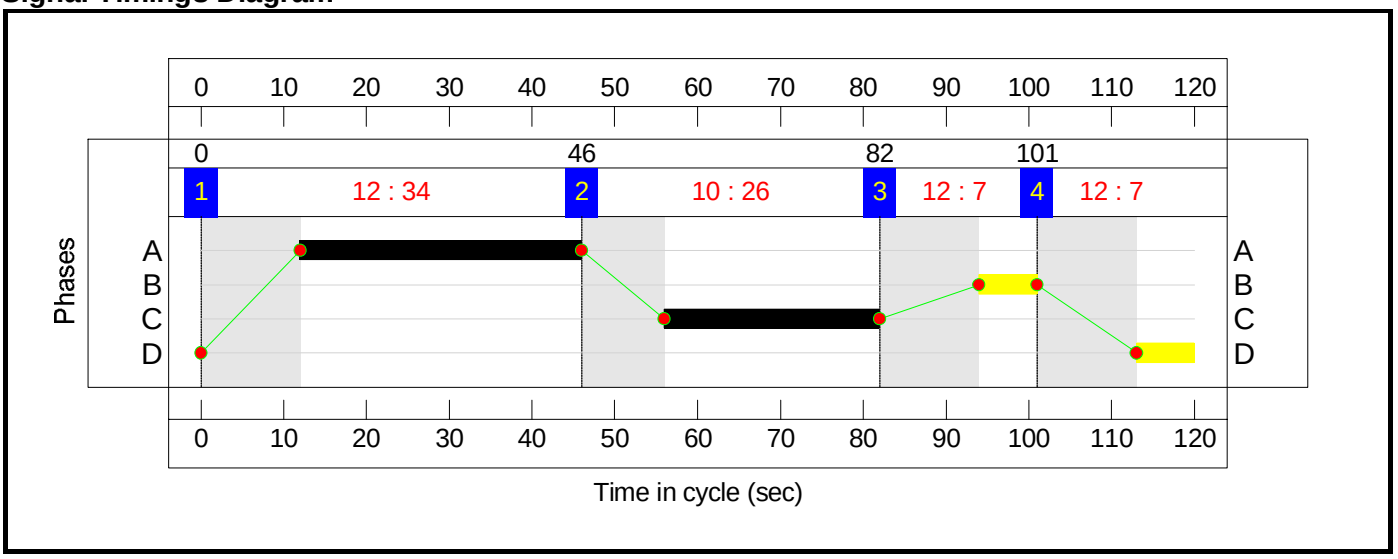
		Starting Phase			
		A	B	C	D
Terminating Phase	A		-	10	-
	B	-		-	12
	C	-	12		-
	D	12	-	-	

Scenario 1: '2022 AM + Full Dev Caw Dist' (FG1: '2022 AM + Full Dev Cawdor Dist', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram



Signal Timings Diagram



Full Input Data And Results

Network Results

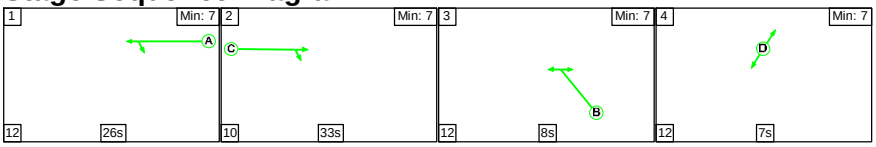
Item	Lane Description	Lane Type	Controller Stream	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Arriving (pcu)	Leaving (pcu)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	**N/A**	-	-	-	**86.0%**	-	-	-	-
Unnamed Junction	-	-	**N/A**	-	-	-	**86.0%**	-	-	-	-
1/1	Cawdor Road NB Left Ahead	U	N/A	479	1909	557	86.0%	479	479	61.7	17.9
2/1	Balblair Road Right Left	O	N/A	52	1758	117	44.4%	52	52	81.2	2.1
3/1	Cawdor Road SB Ahead Right	O	N/A	367	1903	428	85.7%	367	367	71.6	14.5
4/1	Cawdor Road Exit Ahead	O	N/A	335	1915	682	49.1%	335	335	19.9	11.5
5/1	Balblair Road Exit	U	N/A	44	Inf	Inf	0.0%	44	44	0.0	0.0
6/1	Cawdor Road Exit 2	U	N/A	519	1915	1915	27.1%	519	519	1.3	0.2
7/1		U	N/A	335	Inf	Inf	0.0%	335	335	0.0	0.0
8/1	Ahead	U	N/A	479	1915	1915	25.0%	479	479	1.3	0.2

C1 PRC for Signalled Lanes (%): 4.6 Total Delay for Signalled Lanes (pcuHr): 16.69 Cycle Time (s): 120
PRC Over All Lanes (%): 4.6 Total Delay Over All Lanes(pcuHr): 18.90

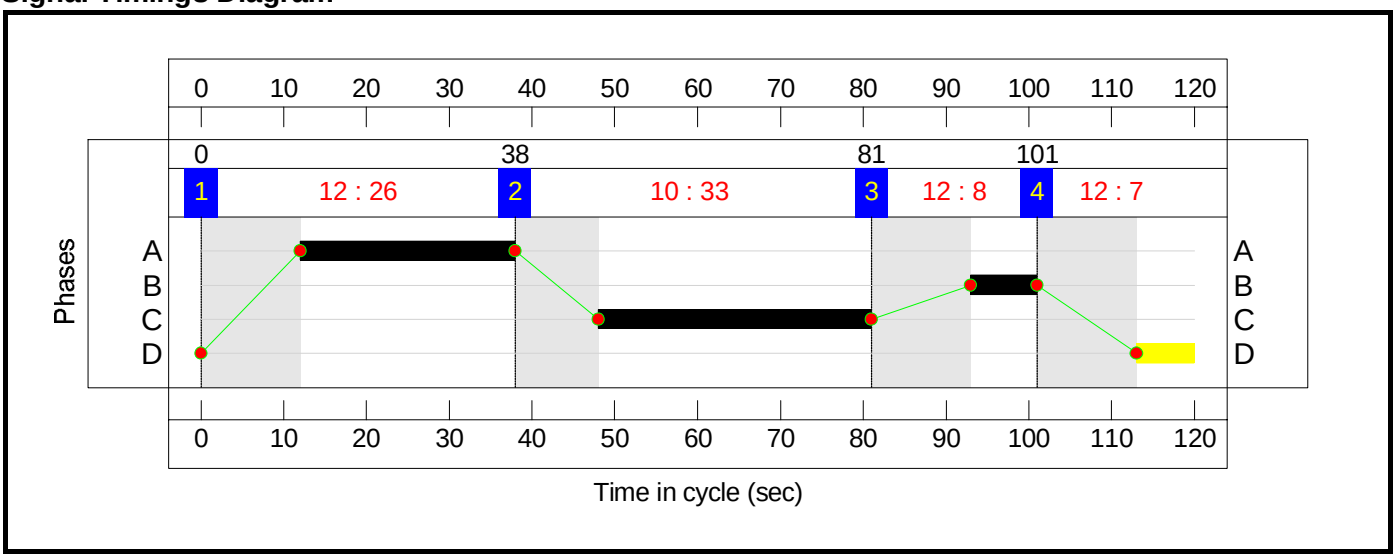
Full Input Data And Results

Scenario 2: '2022 PM + Full Dev Caw Dist' (FG2: '2022 PM + Full Dev Cawdor Dist', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram



Signal Timings Diagram



Full Input Data And Results

Network Results

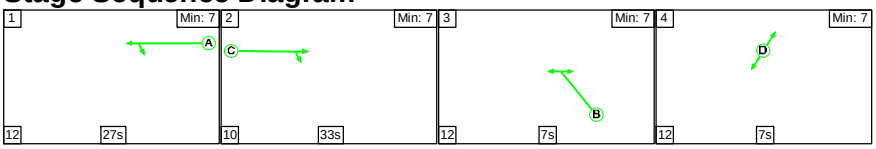
Item	Lane Description	Lane Type	Controller Stream	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Arriving (pcu)	Leaving (pcu)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	**N/A**	-	-	-	**84.6%**	-	-	-	-
Unnamed Junction	-	-	**N/A**	-	-	-	**84.6%**	-	-	-	-
1/1	Cawdor Road NB Left Ahead	U	N/A	364	1913	430	84.6%	364	364	69.7	14.1
2/1	Balblair Road Right Left	O	N/A	98	1766	132	74.0%	98	98	102.9	4.5
3/1	Cawdor Road SB Ahead Right	O	N/A	453	1909	541	83.8%	453	453	59.8	16.5
4/1	Cawdor Road Exit Ahead	O	N/A	441	1915	723	61.0%	441	441	25.3	15.3
5/1	Balblair Road Exit	U	N/A	24	Inf	Inf	0.0%	24	24	0.0	0.0
6/1	Cawdor Road Exit 2	U	N/A	450	1915	1915	23.5%	450	450	1.2	0.2
7/1		U	N/A	441	Inf	Inf	0.0%	441	441	0.0	0.0
8/1	Ahead	U	N/A	364	1915	1915	19.0%	364	364	1.2	0.1

C1 PRC for Signalled Lanes (%): 6.4 Total Delay for Signalled Lanes (pcuHr): 17.37 Cycle Time (s): 120
PRC Over All Lanes (%): 6.4 Total Delay Over All Lanes(pcuHr): 20.75

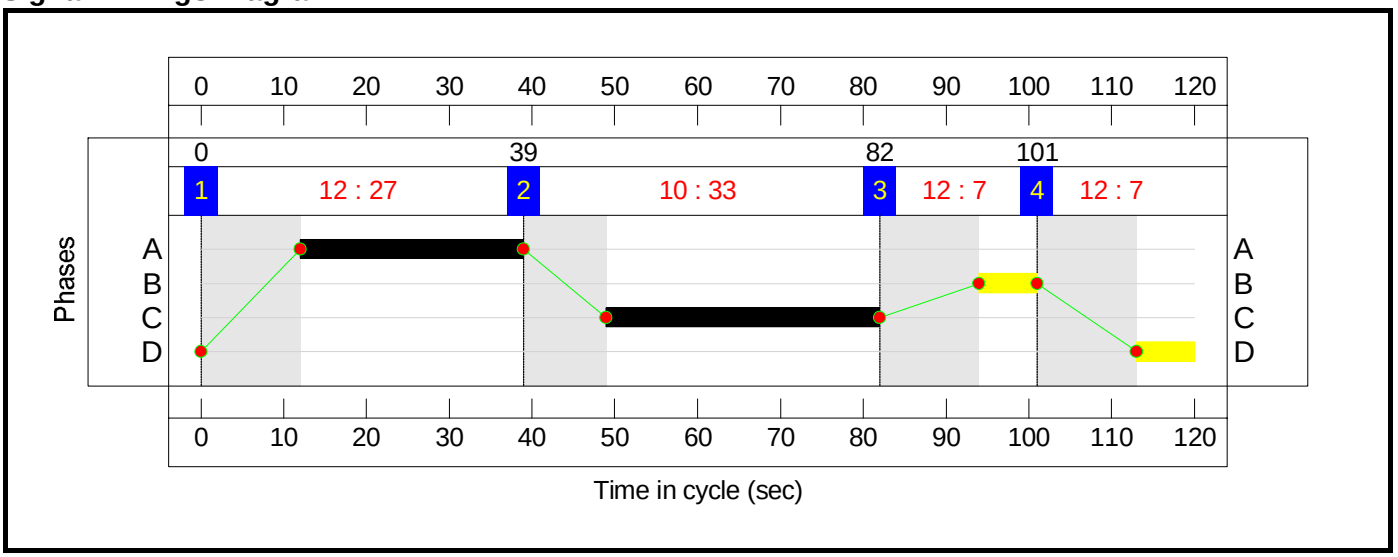
Full Input Data And Results

Scenario 5: '2018 AM + 120 Dwells' (FG3: '2018 AM + 120 Dwells', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram



Signal Timings Diagram



Full Input Data And Results

Network Results

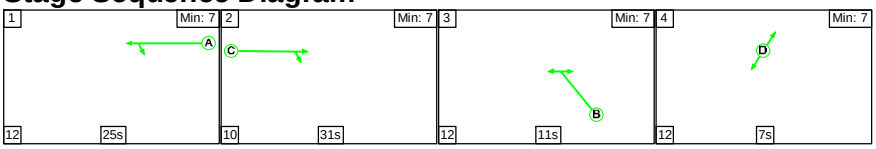
Item	Lane Description	Lane Type	Controller Stream	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Arriving (pcu)	Leaving (pcu)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	**N/A**	-	-	-	**58.1%**	-	-	-	-
Unnamed Junction	-	-	**N/A**	-	-	-	**58.1%**	-	-	-	-
1/1	Cawdor Road NB Left Ahead	U	N/A	258	1904	444	58.1%	258	258	50.4	8.3
2/1	Balblair Road Right Left	O	N/A	48	1760	117	40.9%	48	48	79.5	1.9
3/1	Cawdor Road SB Ahead Right	O	N/A	282	1900	538	52.4%	282	282	43.2	8.4
4/1	Cawdor Road Exit Ahead	O	N/A	251	1915	760	33.0%	251	251	10.1	8.0
5/1	Balblair Road Exit	U	N/A	42	Inf	Inf	0.0%	42	42	0.0	0.0
6/1	Cawdor Road Exit 2	U	N/A	295	1915	1915	15.4%	295	295	1.1	0.1
7/1		U	N/A	251	Inf	Inf	0.0%	251	251	0.0	0.0
8/1	Ahead	U	N/A	258	1915	1915	13.5%	258	258	1.1	0.1

C1 PRC for Signalled Lanes (%): 55.0 Total Delay for Signalled Lanes (pcuHr): 8.05 Cycle Time (s): 120
PRC Over All Lanes (%): 55.0 Total Delay Over All Lanes(pcuHr): 8.93

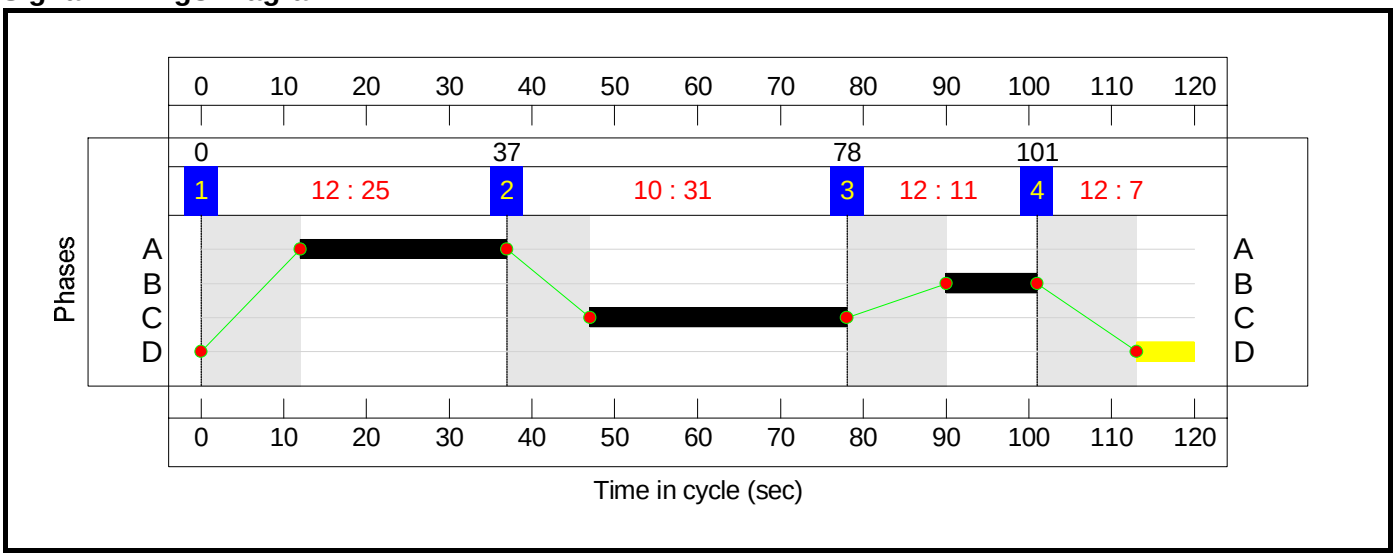
Full Input Data And Results

Scenario 6: '2018 PM + 120 Dwells' (FG4: '2018 PM + 120 Dwells', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram



Signal Timings Diagram



Full Input Data And Results

Network Results

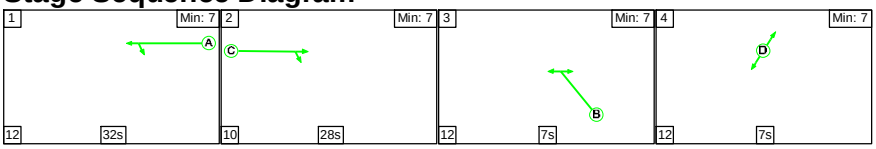
Item	Lane Description	Lane Type	Controller Stream	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Arriving (pcu)	Leaving (pcu)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	**N/A**	-	-	-	**57.0%**	-	-	-	-
Unnamed Junction	-	-	**N/A**	-	-	-	**57.0%**	-	-	-	-
1/1	Cawdor Road NB Left Ahead	U	N/A	236	1912	414	57.0%	236	236	52.0	7.7
2/1	Balblair Road Right Left	O	N/A	92	1767	177	52.1%	92	92	72.3	3.4
3/1	Cawdor Road SB Ahead Right	O	N/A	282	1906	508	55.5%	282	282	45.8	8.7
4/1	Cawdor Road Exit Ahead	O	N/A	270	1915	767	35.2%	270	270	11.4	8.8
5/1	Balblair Road Exit	U	N/A	23	Inf	Inf	0.0%	23	23	0.0	0.0
6/1	Cawdor Road Exit 2	U	N/A	317	1915	1915	16.6%	317	317	1.1	0.1
7/1		U	N/A	270	Inf	Inf	0.0%	270	270	0.0	0.0
8/1	Ahead	U	N/A	236	1915	1915	12.3%	236	236	1.1	0.1

C1 PRC for Signalled Lanes (%): 58.0 Total Delay for Signalled Lanes (pcuHr): 8.84 Cycle Time (s): 120
PRC Over All Lanes (%): 58.0 Total Delay Over All Lanes(pcuHr): 9.87

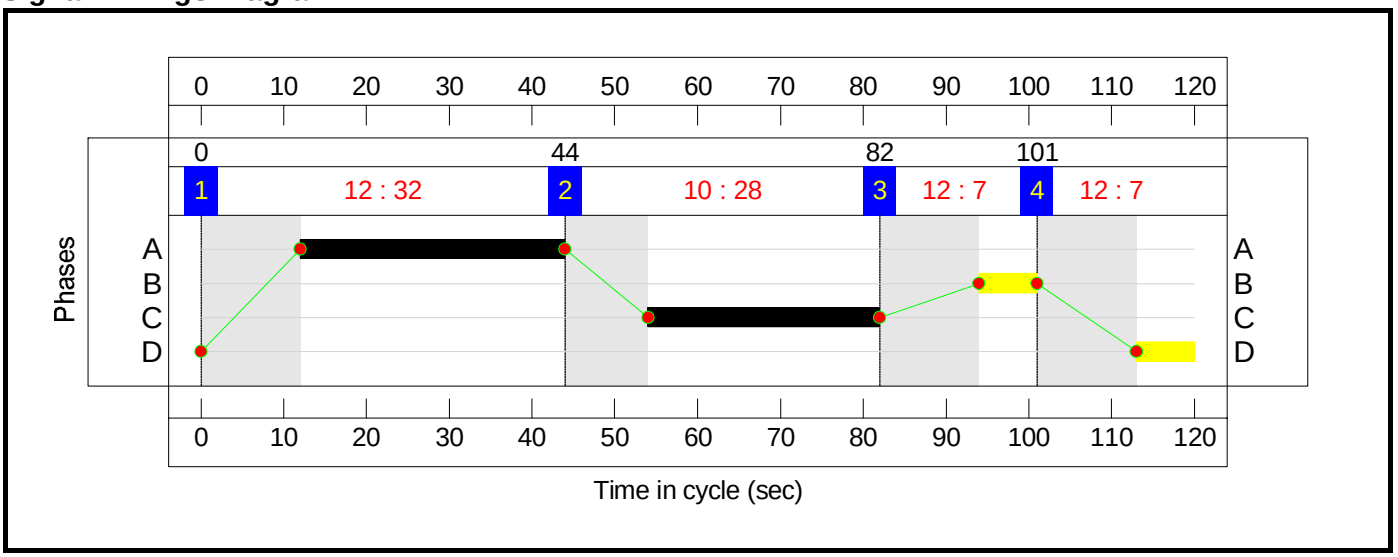
Full Input Data And Results

Scenario 7: '2020 AM + 320 Dwells' (FG7: '2020 AM + 320 Dwells', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram



Signal Timings Diagram



Full Input Data And Results

Network Results

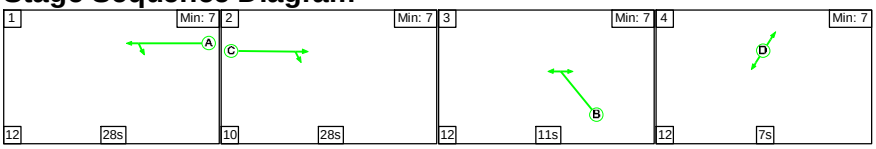
Item	Lane Description	Lane Type	Controller Stream	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Arriving (pcu)	Leaving (pcu)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	**N/A**	-	-	-	**70.0%**	-	-	-	-
Unnamed Junction	-	-	**N/A**	-	-	-	**70.0%**	-	-	-	-
1/1	Cawdor Road NB Left Ahead	U	N/A	367	1907	524	70.0%	367	367	50.3	12.1
2/1	Balblair Road Right Left	O	N/A	49	1760	117	41.8%	49	49	79.9	1.9
3/1	Cawdor Road SB Ahead Right	O	N/A	315	1901	459	68.6%	315	315	53.6	10.6
4/1	Cawdor Road Exit Ahead	O	N/A	283	1915	722	39.2%	283	283	14.2	9.6
5/1	Balblair Road Exit	U	N/A	43	Inf	Inf	0.0%	43	43	0.0	0.0
6/1	Cawdor Road Exit 2	U	N/A	405	1915	1915	21.1%	405	405	1.2	0.1
7/1		U	N/A	283	Inf	Inf	0.0%	283	283	0.0	0.0
8/1	Ahead	U	N/A	367	1915	1915	19.2%	367	367	1.2	0.1

C1 PRC for Signalled Lanes (%): 28.6 Total Delay for Signalled Lanes (pcuHr): 10.91 Cycle Time (s): 120
PRC Over All Lanes (%): 28.6 Total Delay Over All Lanes(pcuHr): 12.28

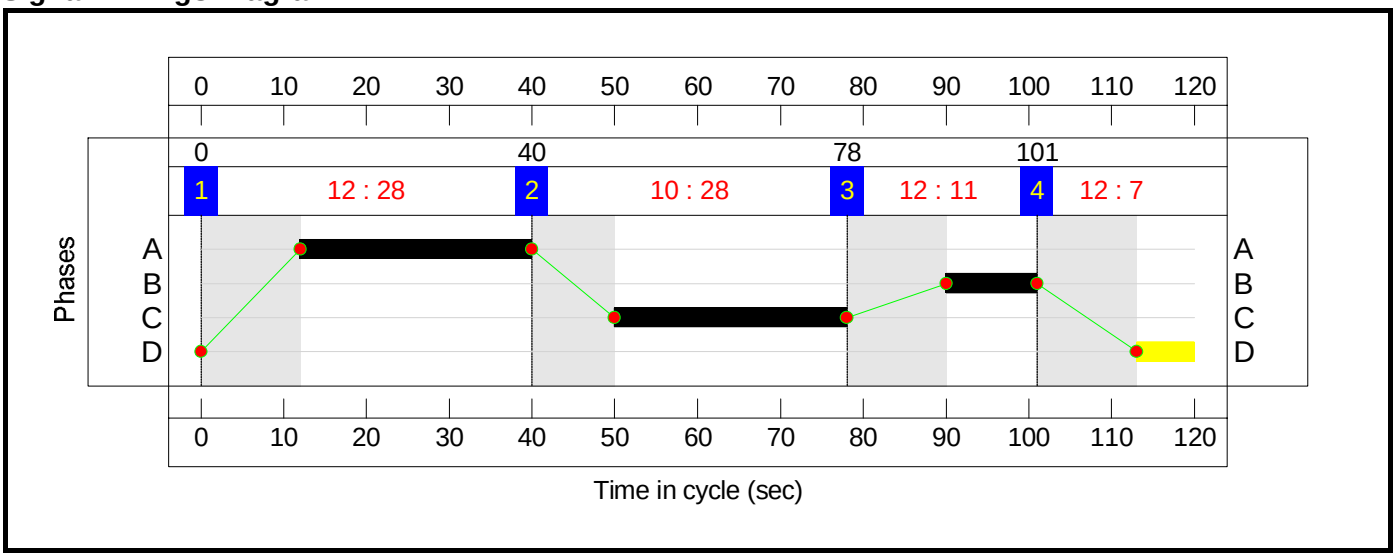
Full Input Data And Results

Scenario 8: '2020 PM + 320 Dwells' (FG8: '2020 PM + 320 Dwells', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram



Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Arriving (pcu)	Leaving (pcu)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	**N/A**	-	-	-	**62.3%**	-	-	-	-
Unnamed Junction	-	-	**N/A**	-	-	-	**62.3%**	-	-	-	-
1/1	Cawdor Road NB Left Ahead	U	N/A	288	1913	462	62.3%	288	288	50.9	9.4
2/1	Balblair Road Right Left	O	N/A	96	1765	177	54.4%	96	96	73.4	3.6
3/1	Cawdor Road SB Ahead Right	O	N/A	283	1906	461	61.4%	283	283	50.6	9.1
4/1	Cawdor Road Exit Ahead	O	N/A	272	1915	749	36.3%	272	272	12.4	9.0
5/1	Balblair Road Exit	U	N/A	23	Inf	Inf	0.0%	23	23	0.0	0.0
6/1	Cawdor Road Exit 2	U	N/A	372	1915	1915	19.4%	372	372	1.2	0.1
7/1		U	N/A	272	Inf	Inf	0.0%	272	272	0.0	0.0
8/1	Ahead	U	N/A	288	1915	1915	15.0%	288	288	1.1	0.1

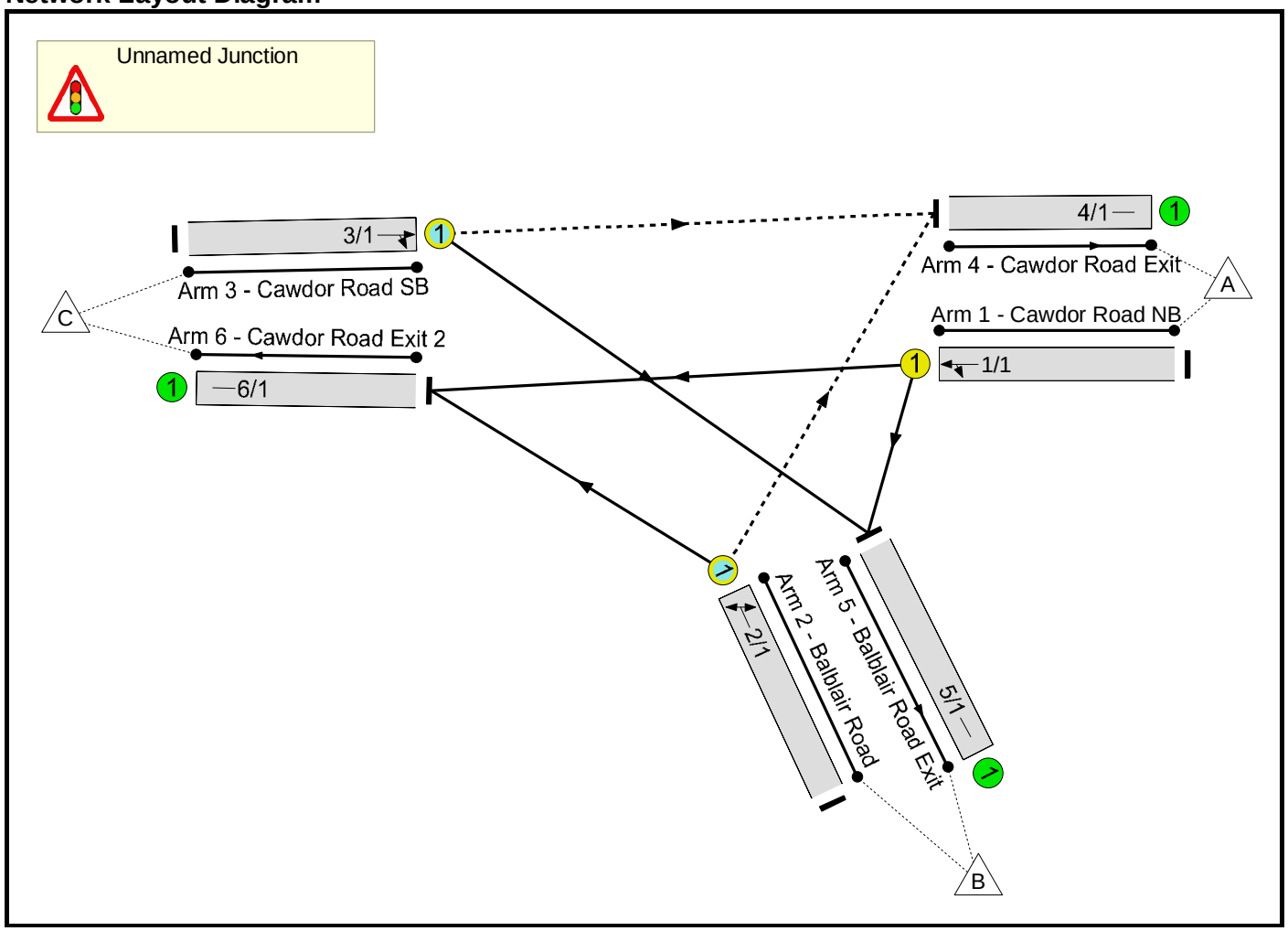
C1 PRC for Signalled Lanes (%): 44.5 Total Delay for Signalled Lanes (pcuHr): 10.00 Cycle Time (s): 120
PRC Over All Lanes (%): 44.5 Total Delay Over All Lanes(pcuHr): 11.15

Full Input Data And Results

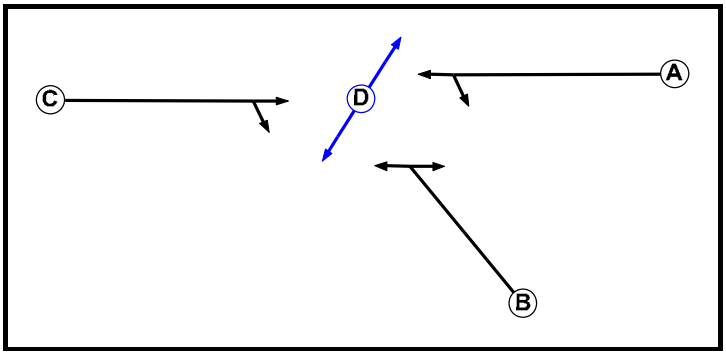
User and Project Details

Project:	**Nairn South Masterplan**
Title:	**Option 1 Revised B9090 Cawdor Road/ B9091 Balblair Road**
File name:	AECOM Signalised Cawdor Road_Balbair Road.lsg3x
Company:	AECOM

Network Layout Diagram



Phase Diagram



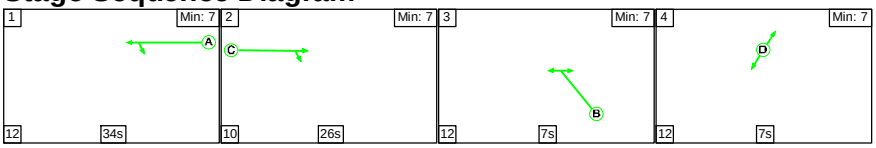
Full Input Data And Results

Phase Intergreens Matrix

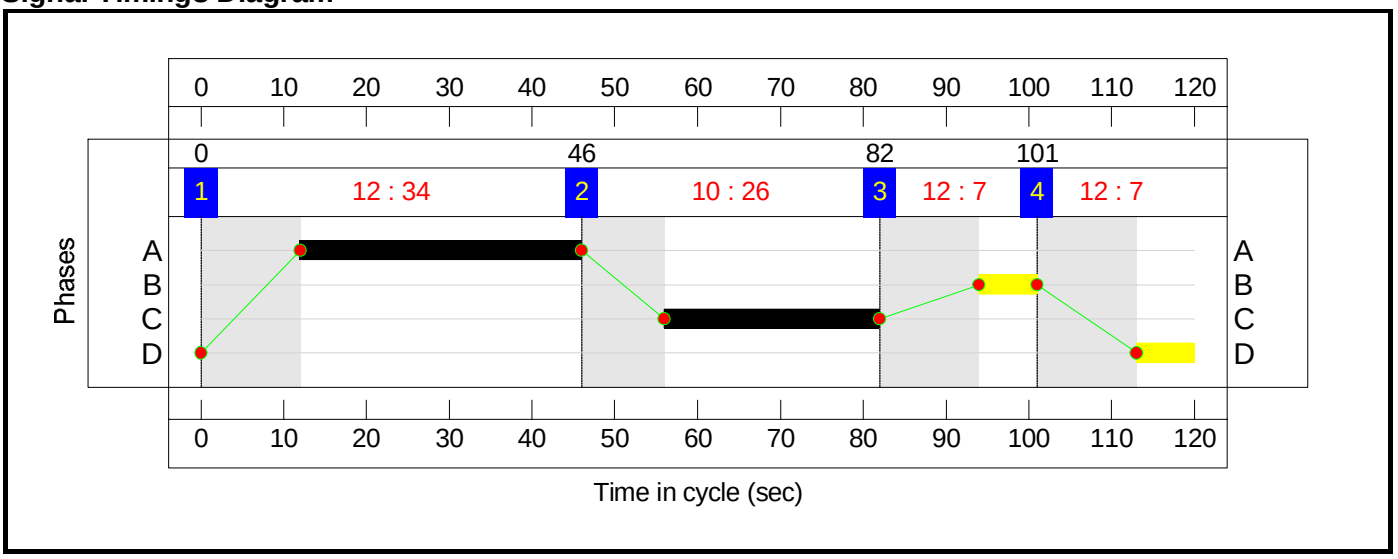
	Starting Phase			
Terminating Phase	A	B	C	D
A		-	10	-
B	-		-	12
C	-	12		-
D	12	-	-	

Scenario 1: '2022 AM + Full Dev Cawdor Dist' (FG1: '2022 AM + Full Dev Cawdor Dist', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram



Signal Timings Diagram



Full Input Data And Results

Network Results

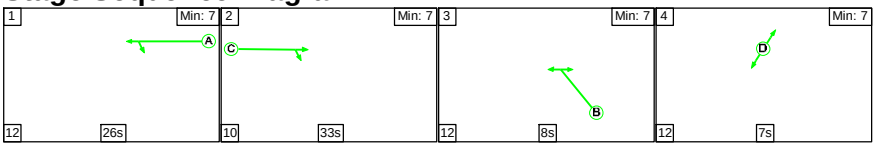
Item	Lane Description	Lane Type	Controller Stream	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Arriving (pcu)	Leaving (pcu)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	**N/A**	-	-	-	**86.0%**	-	-	-	-
Unnamed Junction	-	-	**N/A**	-	-	-	**86.0%**	-	-	-	-
1/1	Cawdor Road NB Left Ahead	U	N/A	479	1909	557	86.0%	479	479	61.7	17.9
2/1	Balblair Road Right Left	O	N/A	52	1758	117	44.4%	52	52	81.2	2.1
3/1	Cawdor Road SB Ahead Right	O	N/A	367	1903	428	85.7%	367	367	71.6	14.5
4/1	Cawdor Road Exit	U	N/A	335	1915	1915	17.5%	335	335	1.1	0.1
5/1	Balblair Road Exit	U	N/A	44	Inf	Inf	0.0%	44	44	0.0	0.0
6/1	Cawdor Road Exit 2	U	N/A	519	1915	1915	27.1%	519	519	1.3	0.2

C1 PRC for Signalled Lanes (%): 4.6 Total Delay for Signalled Lanes (pcuHr): 16.69 Cycle Time (s): 120
PRC Over All Lanes (%): 4.6 Total Delay Over All Lanes(pcuHr): 16.98

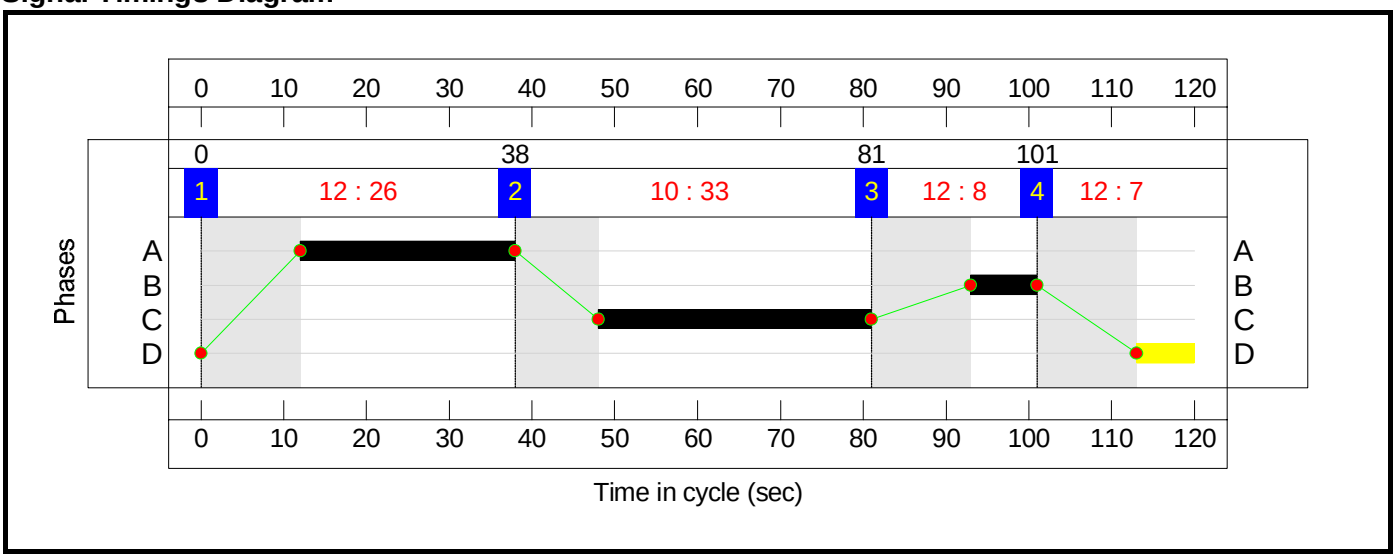
Full Input Data And Results

Scenario 2: '2022 PM + Full Dev Cawdor Dist' (FG2: '2022 PM + Full Dev Cawdor Dist', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram



Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Arriving (pcu)	Leaving (pcu)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	**N/A**	-	-	-	**84.6%**	-	-	-	-
Unnamed Junction	-	-	**N/A**	-	-	-	**84.6%**	-	-	-	-
1/1	Cawdor Road NB Left Ahead	U	N/A	364	1913	430	84.6%	364	364	69.7	14.1
2/1	Balblair Road Right Left	O	N/A	98	1766	132	74.0%	98	98	102.9	4.5
3/1	Cawdor Road SB Ahead Right	O	N/A	453	1909	541	83.8%	453	453	59.8	16.5
4/1	Cawdor Road Exit	U	N/A	441	1915	1915	23.0%	441	441	1.2	0.1
5/1	Balblair Road Exit	U	N/A	24	Inf	Inf	0.0%	24	24	0.0	0.0
6/1	Cawdor Road Exit 2	U	N/A	450	1915	1915	23.5%	450	450	1.2	0.2

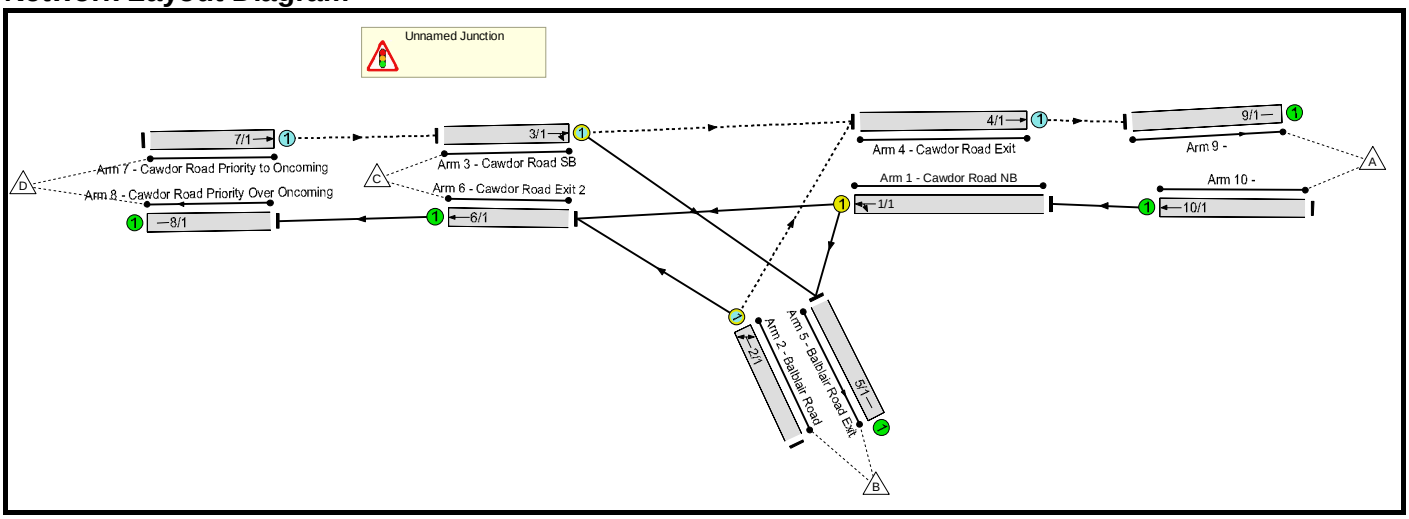
C1 PRC for Signalled Lanes (%): 6.4 Total Delay for Signalled Lanes (pcuHr): 17.37 Cycle Time (s): 120
PRC Over All Lanes (%): 6.4 Total Delay Over All Lanes(pcuHr): 17.68

Full Input Data And Results

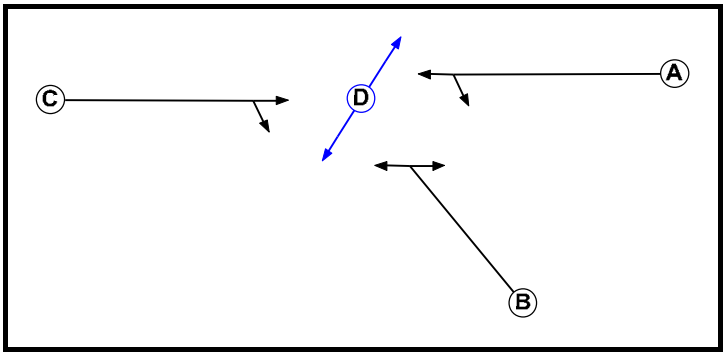
User and Project Details

Project:	**Nairn South**
Title:	**Option 2 B9090 Cawdor Road/ B9091 Balblair Road**
File name:	Give Way Signalised Cawdor Road_Balbair Road.lsg3x
Company:	AECOM

Network Layout Diagram



Phase Diagram



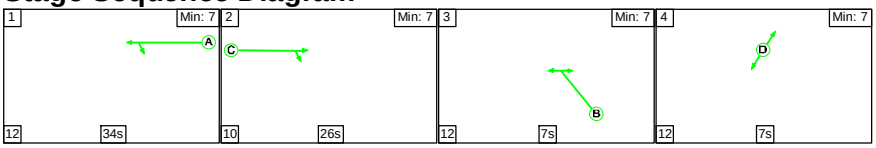
Full Input Data And Results

Phase Intergreens Matrix

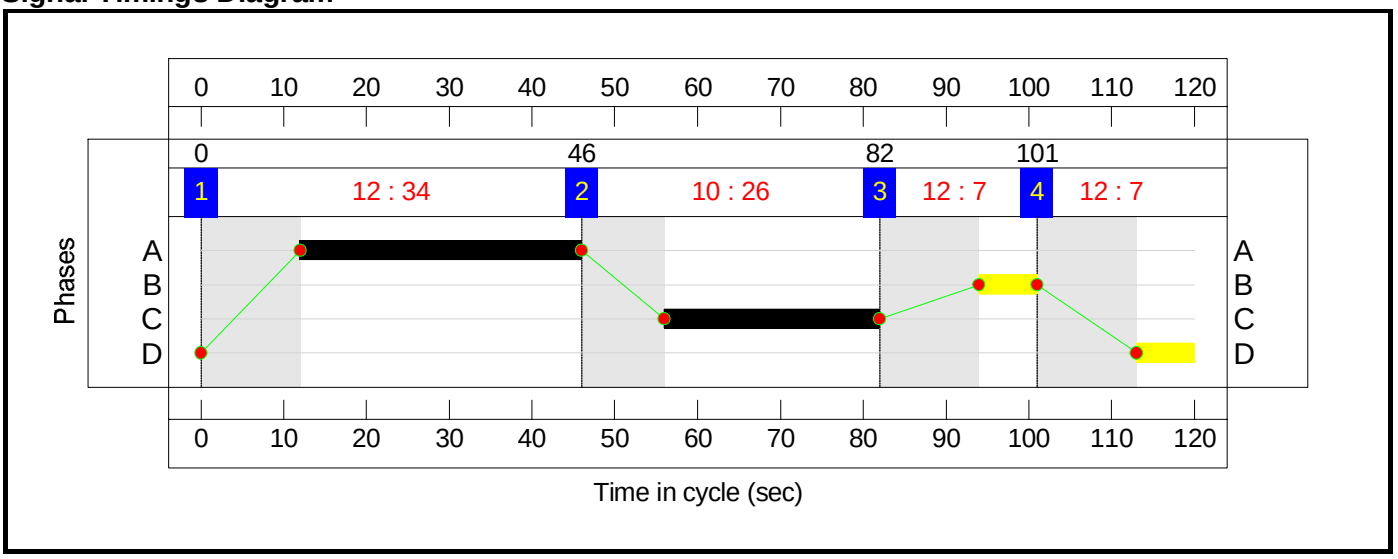
	Starting Phase			
Terminating Phase	A	B	C	D
A		-	10	-
B	-		-	12
C	-	12		-
D	12	-	-	

Scenario 1: '2022 AM + Full Dev Cawdor Dist' (FG1: '2022 AM + Full Dev Cawdor Road Dist', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram



Signal Timings Diagram



Full Input Data And Results

Network Results

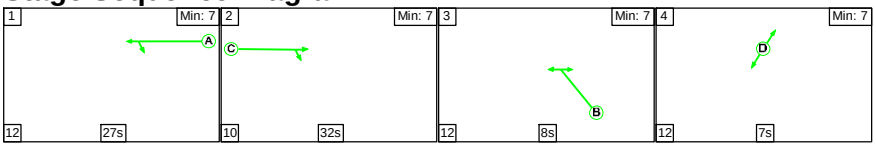
Item	Lane Description	Lane Type	Controller Stream	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Arriving (pcu)	Leaving (pcu)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	**N/A**	-	-	-	**88.1%**	-	-	-	-
Unnamed Junction	-	-	**N/A**	-	-	-	**88.1%**	-	-	-	-
1/1	Cawdor Road NB Left Ahead	U	N/A	479	1864	544	88.1%	479	479	65.7	18.5
2/1	Balblair Road Right Left	O	N/A	52	1717	114	45.4%	52	52	82.4	2.1
3/1	Cawdor Road SB Ahead Right	O	N/A	367	1903	428	85.7%	367	367	70.0	14.5
4/1	Cawdor Road Exit Ahead	O	N/A	335	1915	682	49.1%	335	335	19.9	11.5
5/1	Balblair Road Exit	U	N/A	44	Inf	Inf	0.0%	44	44	0.0	0.0
6/1	Cawdor Road Exit 2 Ahead	U	N/A	519	1915	1915	27.1%	519	519	1.3	0.2
7/1	Cawdor Road Priority to Oncoming Ahead	O	N/A	367	1915	668	54.9%	367	367	7.6	4.5
8/1	Cawdor Road Priority Over Oncoming	U	N/A	519	Inf	Inf	0.0%	519	519	0.0	0.0
9/1		U	N/A	335	Inf	Inf	0.0%	335	335	0.0	0.0
10/1	Ahead	U	N/A	479	Inf	Inf	0.0%	479	479	0.0	0.0

C1 PRC for Signalled Lanes (%): 2.2 Total Delay for Signalled Lanes (pcuHr): 17.07 Cycle Time (s): 120
PRC Over All Lanes (%): 2.2 Total Delay Over All Lanes(pcuHr): 19.89

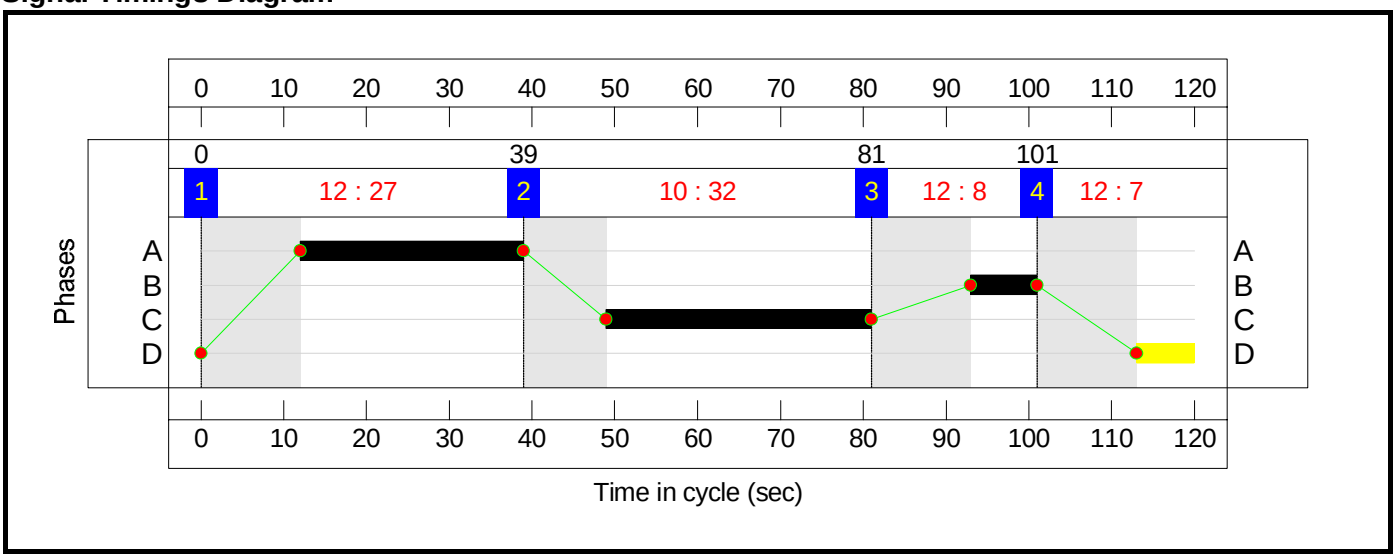
Full Input Data And Results

Scenario 2: '2022 PM + Full Dev Cawdor Dist' (FG2: '2022 PM + Full Dev Cawdor Road Dist', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram



Signal Timings Diagram



Full Input Data And Results

Network Results

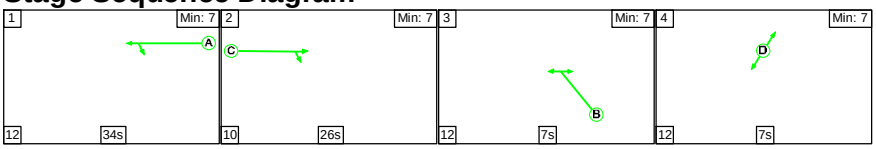
Item	Lane Description	Lane Type	Controller Stream	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Arriving (pcu)	Leaving (pcu)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	**N/A**	-	-	-	**86.3%**	-	-	-	-
Unnamed Junction	-	-	**N/A**	-	-	-	**86.3%**	-	-	-	-
1/1	Cawdor Road NB Left Ahead	U	N/A	364	1868	436	83.5%	364	364	67.3	13.9
2/1	Balblair Road Right Left	O	N/A	98	1724	129	75.8%	98	98	107.1	4.6
3/1	Cawdor Road SB Ahead Right	O	N/A	453	1909	525	86.3%	453	453	63.0	17.3
4/1	Cawdor Road Exit Ahead	O	N/A	441	1915	723	61.0%	441	441	25.4	15.3
5/1	Balblair Road Exit	U	N/A	24	Inf	Inf	0.0%	24	24	0.0	0.0
6/1	Cawdor Road Exit 2 Ahead	U	N/A	450	1915	1915	23.5%	450	450	1.2	0.2
7/1	Cawdor Road Priority to Oncoming Ahead	O	N/A	453	1915	692	65.4%	453	453	9.0	5.5
8/1	Cawdor Road Priority Over Oncoming	U	N/A	450	Inf	Inf	0.0%	450	450	0.0	0.0
9/1		U	N/A	441	Inf	Inf	0.0%	441	441	0.0	0.0
10/1	Ahead	U	N/A	364	Inf	Inf	0.0%	364	364	0.0	0.0

C1 PRC for Signalled Lanes (%): 4.3 Total Delay for Signalled Lanes (pcuHr): 17.64 Cycle Time (s): 120
PRC Over All Lanes (%): 4.3 Total Delay Over All Lanes(pcuHr): 22.04

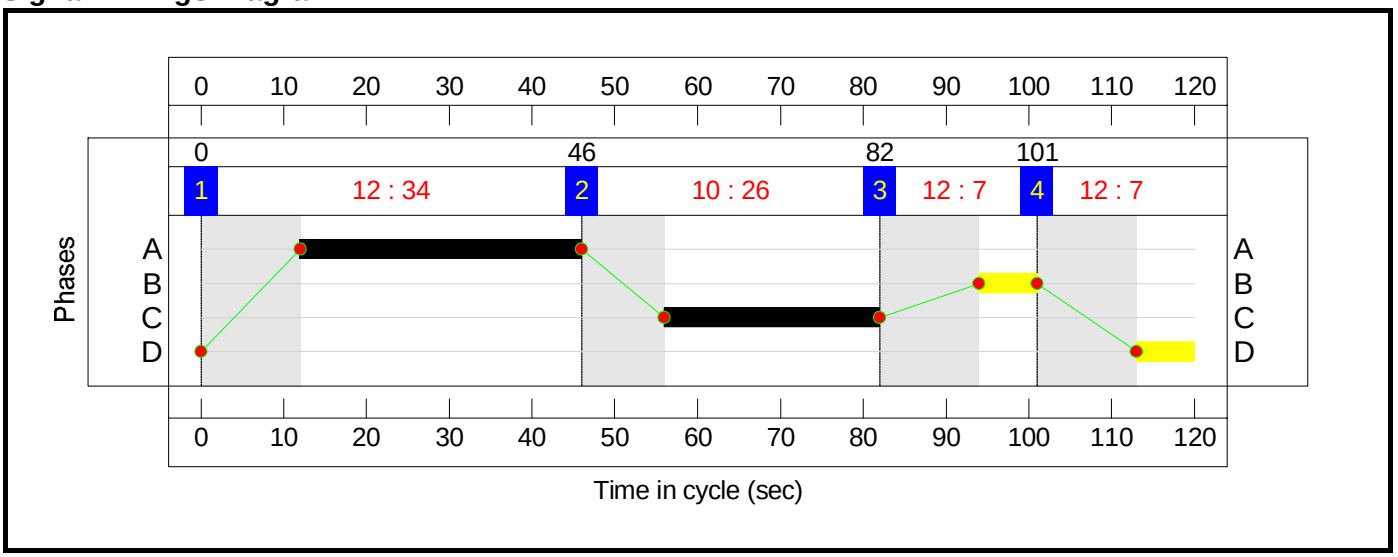
Full Input Data And Results

Scenario 5: '2021 AM + 420 Dwells' (FG3: '2021 AM + 420 Dwells', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram



Signal Timings Diagram



Full Input Data And Results

Network Results

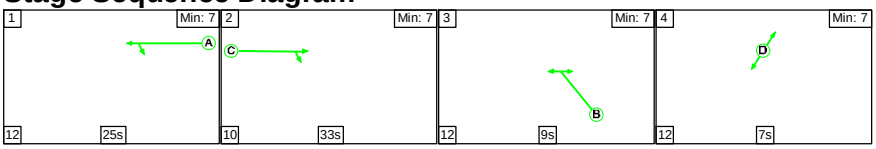
Item	Lane Description	Lane Type	Controller Stream	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Arriving (pcu)	Leaving (pcu)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	**N/A**	-	-	-	**77.6%**	-	-	-	-
Unnamed Junction	-	-	**N/A**	-	-	-	**77.6%**	-	-	-	-
1/1	Cawdor Road NB Left Ahead	U	N/A	421	1863	543	77.5%	421	421	53.2	14.4
2/1	Balblair Road Right Left	O	N/A	51	1716	114	44.6%	51	51	81.9	2.0
3/1	Cawdor Road SB Ahead Right	O	N/A	332	1901	428	77.6%	332	332	61.1	12.0
4/1	Cawdor Road Exit Ahead	O	N/A	300	1915	703	42.7%	300	300	16.3	10.2
5/1	Balblair Road Exit	U	N/A	44	Inf	Inf	0.0%	44	44	0.0	0.0
6/1	Cawdor Road Exit 2 Ahead	U	N/A	460	1915	1915	24.0%	460	460	1.2	0.2
7/1	Cawdor Road Priority to Oncoming Ahead	O	N/A	332	1915	689	48.2%	332	332	5.8	3.1
8/1	Cawdor Road Priority Over Oncoming	U	N/A	460	Inf	Inf	0.0%	460	460	0.0	0.0
9/1		U	N/A	300	Inf	Inf	0.0%	300	300	0.0	0.0
10/1	Ahead	U	N/A	421	Inf	Inf	0.0%	421	421	0.0	0.0

C1 PRC for Signalled Lanes (%): 15.9 Total Delay for Signalled Lanes (pcuHr): 13.01 Cycle Time (s): 120
PRC Over All Lanes (%): 15.9 Total Delay Over All Lanes(pcuHr): 15.06

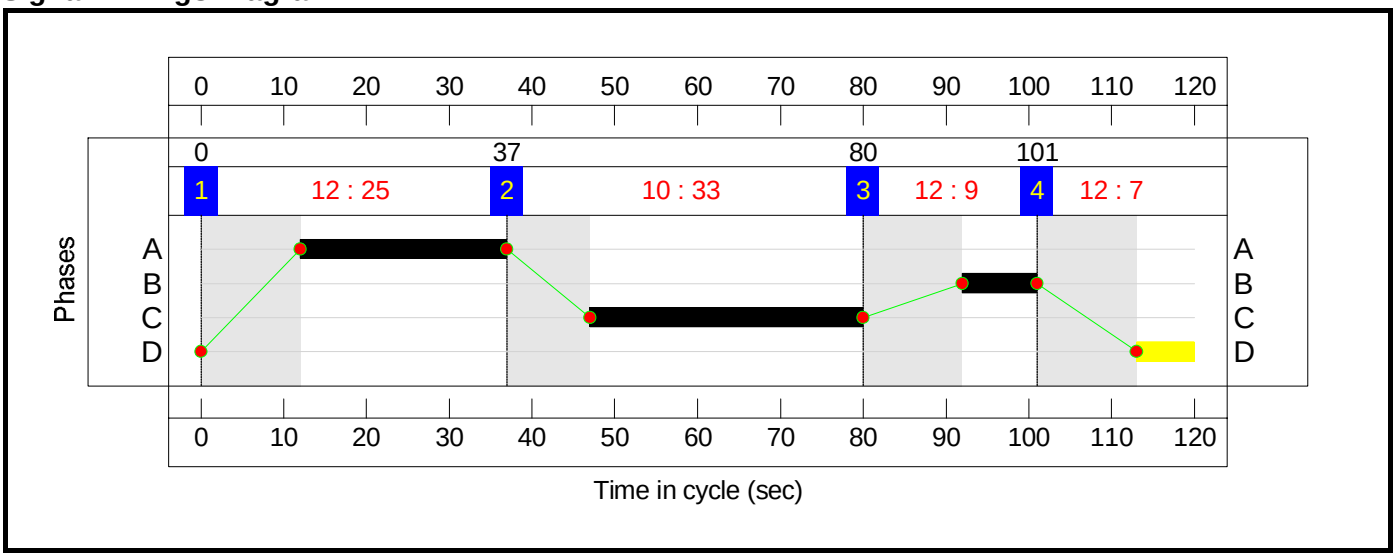
Full Input Data And Results

Scenario 6: '2021 PM + 420 Dwells' (FG4: '2021 PM + 420 Dwells', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram



Signal Timings Diagram



Full Input Data And Results

Network Results

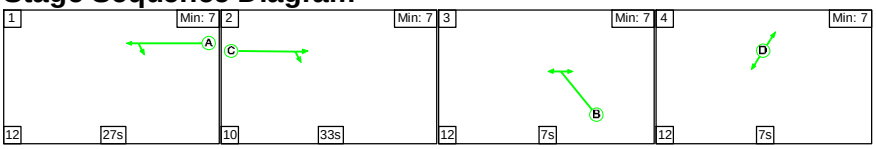
Item	Lane Description	Lane Type	Controller Stream	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Arriving (pcu)	Leaving (pcu)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	**N/A**	-	-	-	**77.6%**	-	-	-	-
Unnamed Junction	-	-	**N/A**	-	-	-	**77.6%**	-	-	-	-
1/1	Cawdor Road NB Left Ahead	U	N/A	314	1868	405	77.6%	314	314	63.4	11.4
2/1	Balblair Road Right Left	O	N/A	97	1724	144	67.5%	97	97	90.4	4.1
3/1	Cawdor Road SB Ahead Right	O	N/A	407	1909	541	75.2%	407	407	51.6	13.8
4/1	Cawdor Road Exit Ahead	O	N/A	395	1915	740	53.4%	395	395	20.7	13.6
5/1	Balblair Road Exit	U	N/A	24	Inf	Inf	0.0%	24	24	0.0	0.0
6/1	Cawdor Road Exit 2 Ahead	U	N/A	399	1915	1915	20.8%	399	399	1.2	0.1
7/1	Cawdor Road Priority to Oncoming Ahead	O	N/A	407	1915	710	57.3%	407	407	6.7	3.7
8/1	Cawdor Road Priority Over Oncoming	U	N/A	399	Inf	Inf	0.0%	399	399	0.0	0.0
9/1		U	N/A	395	Inf	Inf	0.0%	395	395	0.0	0.0
10/1	Ahead	U	N/A	314	Inf	Inf	0.0%	314	314	0.0	0.0

C1 PRC for Signalled Lanes (%): 16.0 Total Delay for Signalled Lanes (pcuHr): 13.79 Cycle Time (s): 120
PRC Over All Lanes (%): 16.0 Total Delay Over All Lanes(pcuHr): 16.95

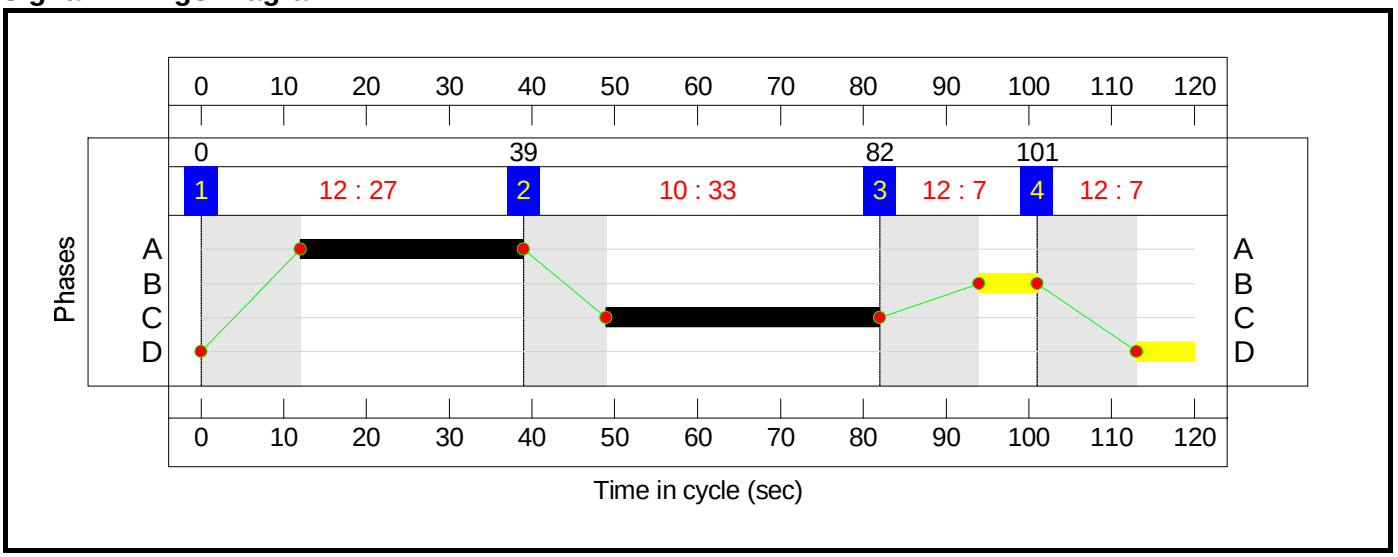
Full Input Data And Results

Scenario 7: '2018 AM + 120 Dwells' (FG7: '2018 AM + 120 Dwells', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram



Signal Timings Diagram



Full Input Data And Results

Network Results

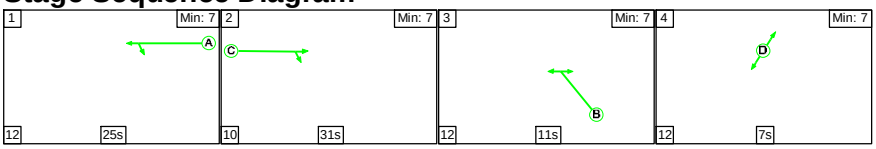
Item	Lane Description	Lane Type	Controller Stream	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Arriving (pcu)	Leaving (pcu)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	**N/A**	-	-	-	**59.5%**	-	-	-	-
Unnamed Junction	-	-	**N/A**	-	-	-	**59.5%**	-	-	-	-
1/1	Cawdor Road NB Left Ahead	U	N/A	258	1859	434	59.5%	258	258	51.1	8.3
2/1	Balblair Road Right Left	O	N/A	48	1718	115	41.9%	48	48	80.6	1.9
3/1	Cawdor Road SB Ahead Right	O	N/A	282	1900	538	52.4%	282	282	43.1	8.4
4/1	Cawdor Road Exit Ahead	O	N/A	251	1915	760	33.0%	251	251	10.1	8.0
5/1	Balblair Road Exit	U	N/A	42	Inf	Inf	0.0%	42	42	0.0	0.0
6/1	Cawdor Road Exit 2 Ahead	U	N/A	295	1915	1915	15.4%	295	295	1.1	0.1
7/1	Cawdor Road Priority to Oncoming Ahead	O	N/A	282	1915	747	37.8%	282	282	3.9	1.1
8/1	Cawdor Road Priority Over Oncoming	U	N/A	295	Inf	Inf	0.0%	295	295	0.0	0.0
9/1		U	N/A	251	Inf	Inf	0.0%	251	251	0.0	0.0
10/1	Ahead	U	N/A	258	Inf	Inf	0.0%	258	258	0.0	0.0

C1 PRC for Signalled Lanes (%): 51.3 Total Delay for Signalled Lanes (pcuHr): 8.12 Cycle Time (s): 120
PRC Over All Lanes (%): 51.3 Total Delay Over All Lanes(pcuHr): 9.22

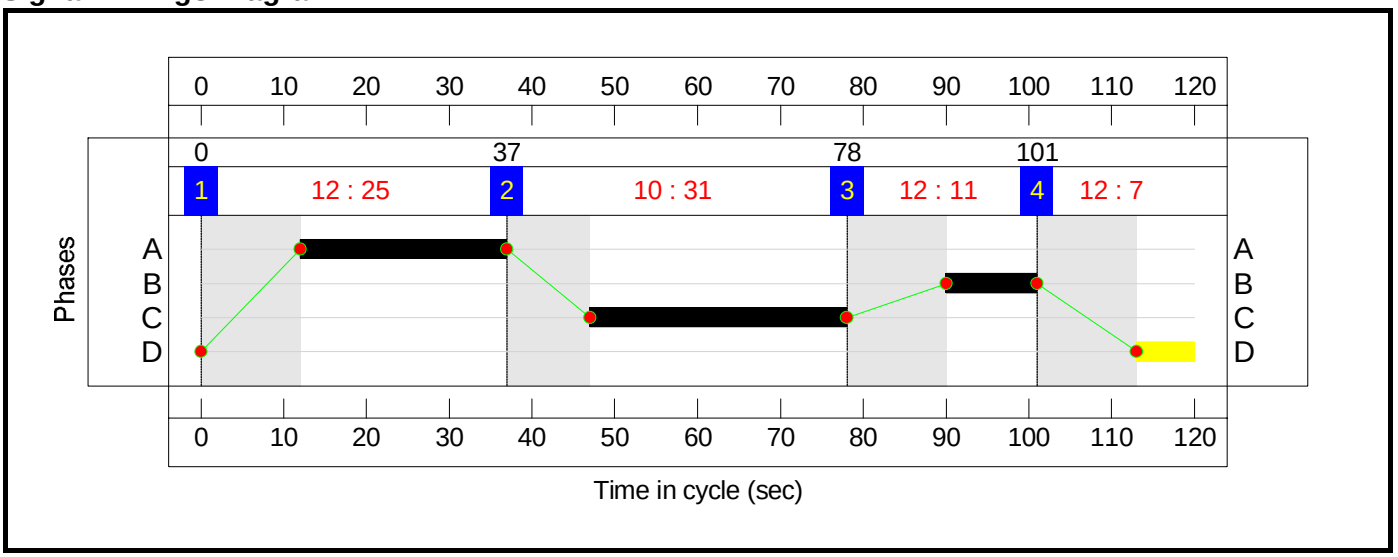
Full Input Data And Results

Scenario 8: '2018 PM + 120 Dwells' (FG8: '2018 PM + 120 Dwells', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram



Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Arriving (pcu)	Leaving (pcu)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	**N/A**	-	-	-	**58.3%**	-	-	-	-
Unnamed Junction	-	-	**N/A**	-	-	-	**58.3%**	-	-	-	-
1/1	Cawdor Road NB Left Ahead	U	N/A	236	1867	405	58.3%	236	236	52.7	7.7
2/1	Balblair Road Right Left	O	N/A	92	1725	173	53.3%	92	92	73.4	3.5
3/1	Cawdor Road SB Ahead Right	O	N/A	282	1906	508	55.5%	282	282	45.7	8.7
4/1	Cawdor Road Exit Ahead	O	N/A	270	1915	767	35.2%	270	270	11.4	8.8
5/1	Balblair Road Exit	U	N/A	23	Inf	Inf	0.0%	23	23	0.0	0.0
6/1	Cawdor Road Exit 2 Ahead	U	N/A	317	1915	1915	16.6%	317	317	1.1	0.1
7/1	Cawdor Road Priority to Oncoming Ahead	O	N/A	282	1915	739	38.2%	282	282	4.0	1.1
8/1	Cawdor Road Priority Over Oncoming	U	N/A	317	Inf	Inf	0.0%	317	317	0.0	0.0
9/1		U	N/A	270	Inf	Inf	0.0%	270	270	0.0	0.0
10/1	Ahead	U	N/A	236	Inf	Inf	0.0%	236	236	0.0	0.0

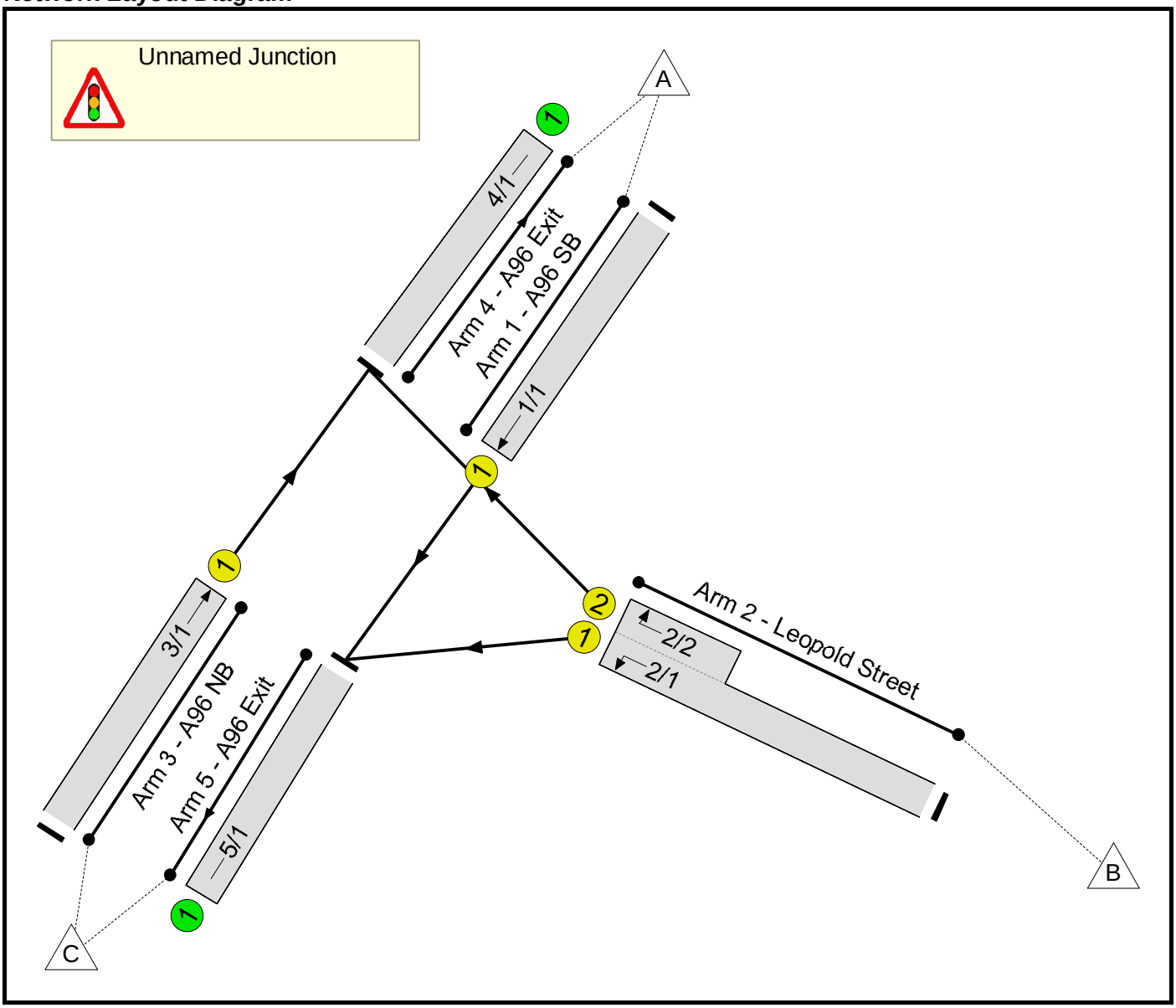
C1 PRC for Signalled Lanes (%): 54.3 Total Delay for Signalled Lanes (pcuHr): 8.92 Cycle Time (s): 120
PRC Over All Lanes (%): 54.3 Total Delay Over All Lanes(pcuHr): 10.18

Full Input Data And Results

User and Project Details

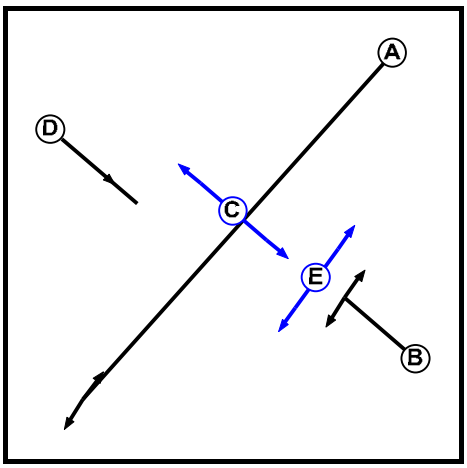
Project:	**Nairn South Masterplan**
Title:	**A96/ Leopold Street**
File name:	Leopold Street Junction.lsg3x
Company:	AECOM

Network Layout Diagram



Full Input Data And Results

Phase Diagram



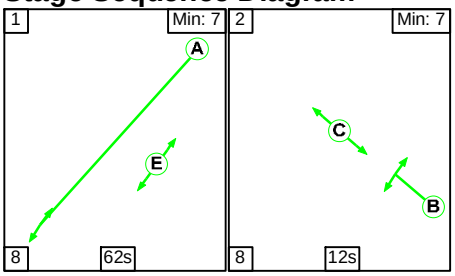
Full Input Data And Results

Phase Intergreens Matrix

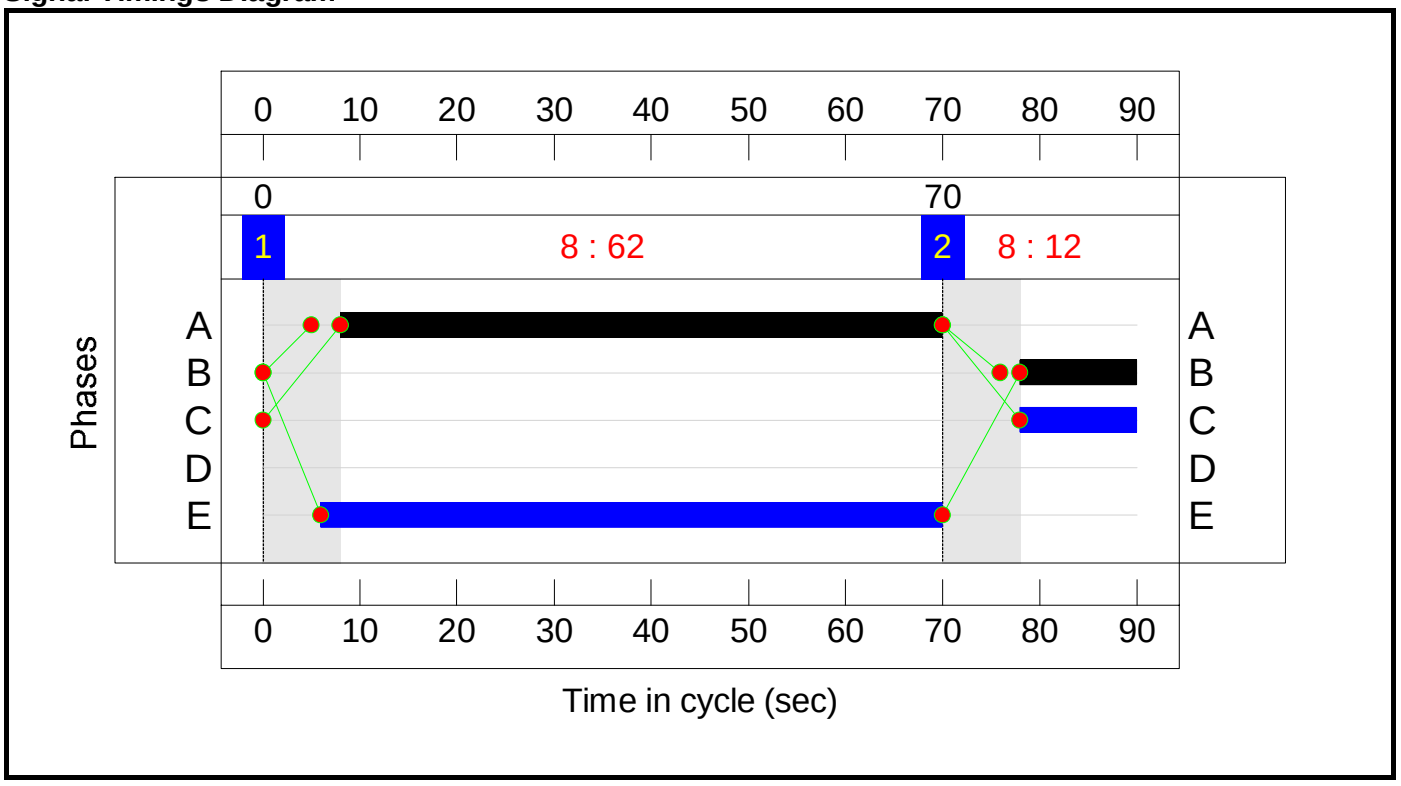
		Starting Phase				
		A	B	C	D	E
Terminating Phase	A		6	8	8	-
	B	5		-	6	6
	C	8	-		8	-
	D	5	5	5		-
	E	-	8	-	-	

Scenario 1: '2022 AM + Full Dev' (FG1: '2022 AM + Full Dev', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram



Signal Timings Diagram



Full Input Data And Results

Network Results

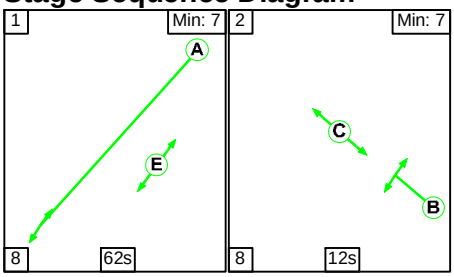
Item	Lane Description	Lane Type	Controller Stream	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Arriving (pcu)	Leaving (pcu)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	**N/A**	-	-	-	**59.9%**	-	-	-	-
Unnamed Junction	-	-	**N/A**	-	-	-	**59.9%**	-	-	-	-
1/1	A96 SB Ahead	U	N/A	579	2115	1481	39.1%	579	579	7.6	6.3
2/1+2/2	Leopold Street Right Left	U	N/A	175	1922:1908	17+276	59.9 : 59.9%	175	175	51.1	4.6
3/1	A96 NB Ahead	U	N/A	626	2115	1481	42.3%	626	626	7.9	7.0
4/1	A96 Exit	U	N/A	791	Inf	Inf	0.0%	791	791	0.0	0.0
5/1	A96 Exit	U	N/A	589	Inf	Inf	0.0%	589	589	0.0	0.0

C1 PRC for Signalled Lanes (%): 50.3 Total Delay for Signalled Lanes (pcuHr): 5.07 Cycle Time (s): 90
PRC Over All Lanes (%): 50.3 Total Delay Over All Lanes(pcuHr): 5.07

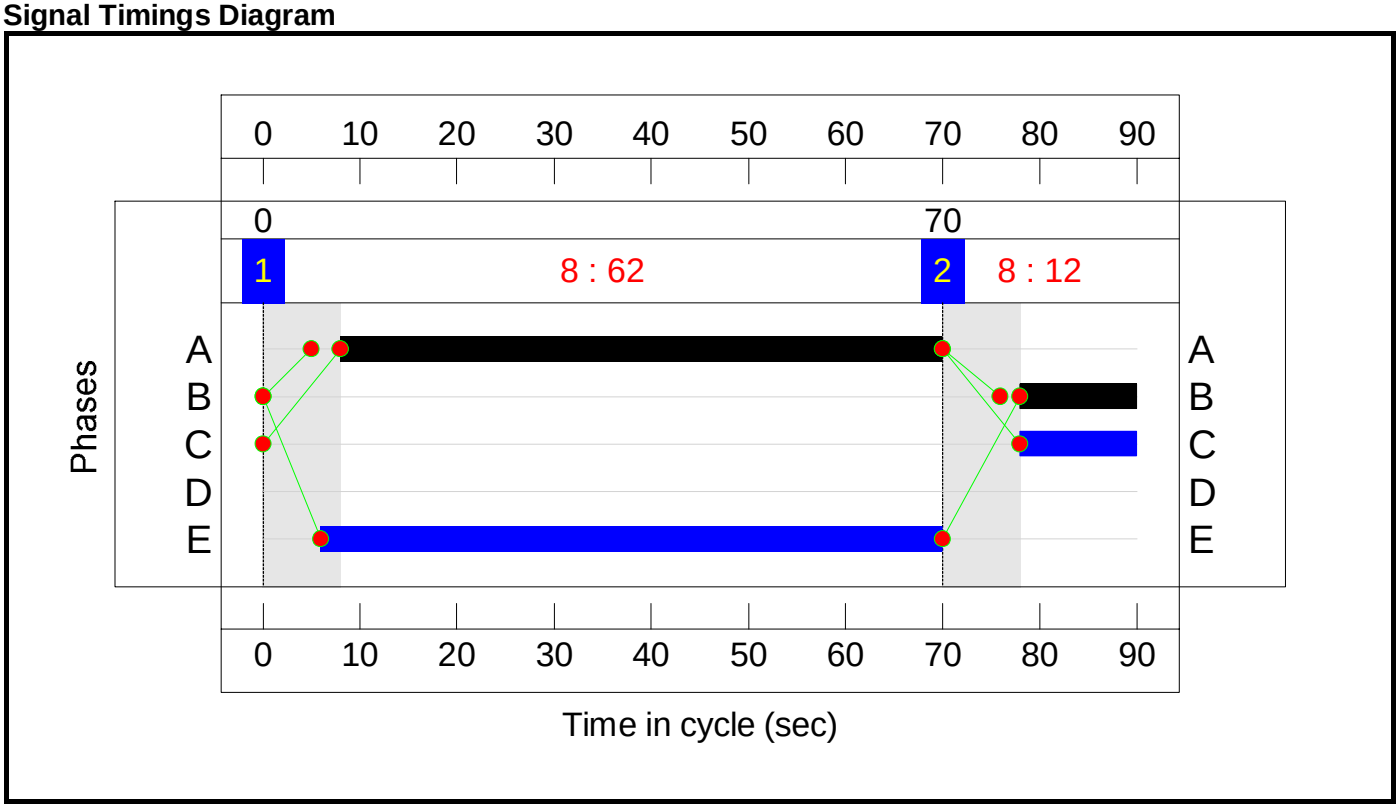
Full Input Data And Results

Scenario 2: '2022 PM + Full Dev' (FG2: '2022 PM + Full Dev', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram



Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Arriving (pcu)	Leaving (pcu)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	**N/A**	-	-	-	**66.9%**	-	-	-	-
Unnamed Junction	-	-	**N/A**	-	-	-	**66.9%**	-	-	-	-
1/1	A96 SB Ahead	U	N/A	619	2115	1481	41.8%	619	619	7.8	6.9
2/1+2/2	Leopold Street Right Left	U	N/A	294	1922:1908	248+191	66.9 : 66.9%	294	294	48.0	4.9
3/1	A96 NB Ahead	U	N/A	745	2115	1481	50.3%	745	745	8.7	9.0
4/1	A96 Exit	U	N/A	873	Inf	Inf	0.0%	873	873	0.0	0.0
5/1	A96 Exit	U	N/A	785	Inf	Inf	0.0%	785	785	0.0	0.0

C1 PRC for Signalled Lanes (%): 34.5 Total Delay for Signalled Lanes (pcuHr): 7.06 Cycle Time (s): 90
PRC Over All Lanes (%): 34.5 Total Delay Over All Lanes(pcuHr): 7.06

Junctions 8

PICADY 8 - Priority Intersection Module

Version: 8.0.4.487 [15039,24/03/2014]

Filename: A96 Waverly Road.arc8
Path: P:\UKEDI4-TP\projects\#Set up new projects\Development - Nairn South Strategic Development Plan Transport Appraisal\03 EXECUTION\8 - Data & Calcs\Junction Analysis
Report generation date: 24/02/2016 13:25:43

Summary of junction performance

	2020 AM + 320 Dwells				2020 PM + 320 Dwells				2022 AM + Full Dev				2022 PM + Full De			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	L
	A1 - Scenario 1															
Stream B-ACD	0.20	19.17	0.17	C					0.27	24.88	0.22	C				
Stream A-BCD	1.16	5.55	0.34	A					1.71	6.51	0.44	A				
Stream A-B	-	-	-	-					-	-	-	-				
Stream A-C	-	-	-	-					-	-	-	-				
Stream D-ABC	6.11	60.73	0.89	F					35.79	253.05	1.13	F				
Stream C-ABD	0.05	4.42	0.03	A					0.05	4.41	0.04	A				
Stream C-D	-	-	-	-					-	-	-	-				
Stream C-A	-	-	-	-					-	-	-	-				
	A1 - Scenario 2															
Stream B-ACD					0.12	17.12	0.11	C					0.29	28.01	0.23	
Stream A-BCD					1.91	5.75	0.42	A					11.53	25.84	0.86	
Stream A-B					-	-	-	-					-	-	-	
Stream A-C					-	-	-	-					-	-	-	
Stream D-ABC					0.32	11.95	0.24	B					0.63	15.56	0.39	
Stream C-ABD					0.16	4.29	0.09	A					0.22	4.23	0.10	
Stream C-D					-	-	-	-					-	-	-	
Stream C-A					-	-	-	-					-	-	-	

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle.

"D1 - Scenario 1, 2022 AM + Full Dev " model duration: 08:00 - 09:30
"D2 - Scenario 2, 2022 PM + Full Dev" model duration: 17:00 - 18:30
"D3 - Scenario 1, 2020 AM + 320 Dwells" model duration: 08:00 - 09:30
"D4 - Scenario 2, 2020 PM + 320 Dwells" model duration: 17:00 - 18:30

Run using Junctions 8.0.4.487 at 24/02/2016 13:25:41

File summary

Title	A96/ Waverly Road
Location	Nairn
Site Number	
Date	27/01/2016
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	MCKINNONK
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75			N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCU	PCU	perHour	s	-Min	perMin

(Default Analysis Set) - Scenario 1, 2022 AM + Full Dev

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	N/A			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 1, 2022 AM + Full Dev	Scenario 1	2022 AM + Full Dev		ONE HOUR	08:00	09:30	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Major Road Direction	Arm Order	Junction Delay (s)	Junction LOS
1	(untitled)	Crossroads	Two-way	A,B,C,D	137.91	F

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description	Arm Type
A	A	A96 NB		Major
B	B	Manse Road		Minor
C	C	A96 SB		Major
D	D	Waverly Road		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
A	7.88		0.00		2.20	84.00	✓	0.00
C	7.88		0.00		2.20	128.00	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
B	One lane	2.35										30	46
D	One lane	2.40										18	32

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B	Slope for D-C
1	A-D	622.609	-	-	-	-	-	-	0.222	0.316	0.222	-	-	-
1	B-A	476.737	0.080	0.202	0.202	-	-	-	0.127	0.288	-	0.202	0.202	0.101
1	B-C	610.407	0.086	0.217	-	-	-	-	-	-	-	-	-	-
1	B-D, nearside lane	476.737	0.080	0.202	0.202	-	-	-	0.127	0.288	0.127	-	-	-
1	B-D, offside lane	476.737	0.080	0.202	0.202	-	-	-	0.127	0.288	0.127	-	-	-
1	C-B	648.089	0.231	0.231	0.329	-	-	-	-	-	-	-	-	-
1	D-A	605.391	-	-	-	-	-	-	0.215	-	0.085	-	-	-
1	D-B, nearside lane	469.151	0.125	0.125	0.283	-	-	-	0.198	0.198	0.078	-	-	-
1	D-B, offside lane	469.151	0.125	0.125	0.283	-	-	-	0.198	0.198	0.078	-	-	-
1	D-C	469.151	-	0.125	0.283	0.099	0.198	0.198	0.198	0.198	0.078	-	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	770.00	100.000
B	ONE HOUR	✓	37.00	100.000
C	ONE HOUR	✓	647.00	100.000
D	ONE HOUR	✓	444.00	100.000

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.000	10.000	649.000	111.000
	B	10.000	0.000	11.000	16.000
	C	634.000	10.000	0.000	3.000
	D	427.000	12.000	5.000	0.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.00	0.01	0.84	0.14
	B	0.27	0.00	0.30	0.43
	C	0.98	0.02	0.00	0.00
	D	0.96	0.03	0.01	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	1.000	1.000	1.000	1.000
	B	1.000	1.000	1.000	1.000
	C	1.000	1.000	1.000	1.000
	D	1.000	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.0	0.0	0.0	0.0
	B	0.0	0.0	0.0	0.0
	C	0.0	0.0	0.0	0.0
	D	0.0	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.22	24.88	0.27	C
A-BCD	0.44	6.51	1.71	A
A-B	-	-	-	-
A-C	-	-	-	-
D-ABC	1.13	253.05	35.79	F
C-ABD	0.04	4.41	0.05	A
C-D	-	-	-	-
C-A	-	-	-	-

Main Results for each time segment

Main results: (08:00-08:15)

Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	27.86	27.47	0.00	311.41	0.089	0.10	12.663	B
A-BCD	193.46	191.26	0.00	866.97	0.223	0.55	5.327	A
A-B	5.86	5.86	0.00	-	-	-	-	-
A-C	380.37	380.37	0.00	-	-	-	-	-
D-ABC	334.27	326.21	0.00	488.27	0.685	2.01	21.289	C
C-ABD	15.68	15.59	0.00	832.59	0.019	0.02	4.406	A
C-D	2.22	2.22	0.00	-	-	-	-	-
C-A	469.19	469.19	0.00	-	-	-	-	-

Main results: (08:15-08:30)

Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	33.26	33.09	0.00	266.54	0.125	0.14	15.409	C
A-BCD	276.09	274.84	0.00	920.57	0.300	0.86	5.595	A
A-B	6.31	6.31	0.00	-	-	-	-	-
A-C	409.81	409.81	0.00	-	-	-	-	-
D-ABC	399.15	388.88	0.00	465.83	0.857	4.58	41.889	E
C-ABD	21.59	21.56	0.00	868.64	0.025	0.03	4.249	A
C-D	2.64	2.64	0.00	-	-	-	-	-
C-A	557.41	557.41	0.00	-	-	-	-	-

Main results: (08:30-08:45)

Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	40.74	40.29	0.00	197.66	0.206	0.25	22.810	C
A-BCD	440.13	436.87	0.00	1000.53	0.440	1.68	6.430	A
A-B	6.19	6.19	0.00	-	-	-	-	-
A-C	401.47	401.47	0.00	-	-	-	-	-
D-ABC	488.85	422.26	0.00	433.74	1.127	21.23	131.833	F
C-ABD	32.03	31.96	0.00	917.51	0.035	0.05	4.065	A
C-D	3.20	3.20	0.00	-	-	-	-	-
C-A	677.13	677.13	0.00	-	-	-	-	-

Main results: (08:45-09:00)

Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	40.74	40.65	0.00	185.07	0.220	0.27	24.884	C
A-BCD	442.41	442.27	0.00	1002.41	0.441	1.71	6.508	A
A-B	6.15	6.15	0.00	-	-	-	-	-
A-C	399.23	399.23	0.00	-	-	-	-	-
D-ABC	488.85	430.62	0.00	433.63	1.127	35.79	253.050	F
C-ABD	32.10	32.09	0.00	917.02	0.035	0.05	4.069	A
C-D	3.20	3.20	0.00	-	-	-	-	-
C-A	677.06	677.06	0.00	-	-	-	-	-

Main results: (09:00-09:15)

Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	33.26	33.73	0.00	248.08	0.134	0.16	16.831	C
A-BCD	278.20	281.41	0.00	923.15	0.301	0.91	5.671	A
A-B	6.28	6.28	0.00	-	-	-	-	-
A-C	407.73	407.73	0.00	-	-	-	-	-
D-ABC	399.15	453.05	0.00	465.71	0.857	22.31	233.935	F
C-ABD	21.66	21.72	0.00	867.86	0.025	0.03	4.254	A
C-D	2.64	2.64	0.00	-	-	-	-	-
C-A	557.35	557.35	0.00	-	-	-	-	-

Main results: (09:15-09:30)

Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	27.86	28.07	0.00	301.38	0.092	0.10	13.184	B
A-BCD	195.36	196.70	0.00	868.59	0.225	0.58	5.388	A
A-B	5.83	5.83	0.00	-	-	-	-	-
A-C	378.50	378.50	0.00	-	-	-	-	-
D-ABC	334.27	413.61	0.00	488.17	0.685	2.48	74.550	F
C-ABD	15.76	15.79	0.00	831.91	0.019	0.02	4.412	A
C-D	2.22	2.22	0.00	-	-	-	-	-
C-A	469.12	469.12	0.00	-	-	-	-	-

(Default Analysis Set) - Scenario 2, 2022 PM + Full Dev

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	N/A			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 2, 2022 PM + Full Dev	Scenario 2	2022 PM + Full Dev		ONE HOUR	17:00	18:30	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Major Road Direction	Arm Order	Junction Delay (s)	Junction LOS
1	(untitled)	Crossroads	Two-way	A,B,C,D	22.68	C

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description	Arm Type
A	A	A96 NB		Major
B	B	Manse Road		Minor
C	C	A96 SB		Major
D	D	Waverly Road		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
A	7.88		0.00		2.20	84.00	✓	0.00
C	7.88		0.00		2.20	128.00	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
B	One lane	2.35										30	46
D	One lane	2.40										18	32

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B	Slope for D-C
1	A-D	622.609	-	-	-	-	-	-	0.222	0.316	0.222	-	-	-
1	B-A	476.737	0.080	0.202	0.202	-	-	-	0.127	0.288	-	0.202	0.202	0.101
1	B-C	610.407	0.086	0.217	-	-	-	-	-	-	-	-	-	-
1	B-D, nearside lane	476.737	0.080	0.202	0.202	-	-	-	0.127	0.288	0.127	-	-	-
1	B-D, offside lane	476.737	0.080	0.202	0.202	-	-	-	0.127	0.288	0.127	-	-	-
1	C-B	648.089	0.231	0.231	0.329	-	-	-	-	-	-	-	-	-
1	D-A	605.391	-	-	-	-	-	-	0.215	-	0.085	-	-	-
1	D-B, nearside lane	469.151	0.125	0.125	0.283	-	-	-	0.198	0.198	0.078	-	-	-
1	D-B, offside lane	469.151	0.125	0.125	0.283	-	-	-	0.198	0.198	0.078	-	-	-
1	D-C	469.151	-	0.125	0.283	0.099	0.198	0.198	0.198	0.198	0.078	-	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	984.00	100.000
B	ONE HOUR	✓	35.00	100.000
C	ONE HOUR	✓	803.00	100.000
D	ONE HOUR	✓	135.00	100.000

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.000	20.000	804.000	160.000
	B	7.000	0.000	12.000	16.000
	C	778.000	19.000	0.000	6.000
	D	129.000	4.000	2.000	0.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.00	0.02	0.82	0.16
	B	0.20	0.00	0.34	0.46
	C	0.97	0.02	0.00	0.01
	D	0.96	0.03	0.01	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	1.000	1.000	1.000	1.000
	B	1.000	1.000	1.000	1.000
	C	1.000	1.000	1.000	1.000
	D	1.000	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.0	0.0	0.0	0.0
	B	0.0	0.0	0.0	0.0
	C	0.0	0.0	0.0	0.0
	D	0.0	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.23	28.01	0.29	D
A-BCD	0.86	25.84	11.53	D
A-B	-	-	-	-
A-C	-	-	-	-
D-ABC	0.39	15.56	0.63	C
C-ABD	0.10	4.23	0.22	A
C-D	-	-	-	-
C-A	-	-	-	-

Main Results for each time segment

Main results: (17:00-17:15)

Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	26.35	25.96	0.00	293.14	0.090	0.10	13.456	B
A-BCD	352.16	347.39	0.00	938.29	0.375	1.19	6.093	A
A-B	9.43	9.43	0.00	-	-	-	-	-
A-C	379.22	379.22	0.00	-	-	-	-	-
D-ABC	101.64	100.51	0.00	458.13	0.222	0.28	10.036	B
C-ABD	39.38	39.12	0.00	892.52	0.044	0.06	4.217	A
C-D	4.33	4.33	0.00	-	-	-	-	-
C-A	560.84	560.84	0.00	-	-	-	-	-

Main results: (17:15-17:30)

Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	31.46	31.27	0.00	244.67	0.129	0.14	16.854	C
A-BCD	533.57	529.09	0.00	1010.45	0.528	2.31	7.559	A
A-B	8.52	8.52	0.00	-	-	-	-	-
A-C	342.51	342.51	0.00	-	-	-	-	-
D-ABC	121.36	120.93	0.00	428.13	0.283	0.39	11.702	B
C-ABD	58.43	58.28	0.00	945.64	0.062	0.10	4.057	A
C-D	5.08	5.08	0.00	-	-	-	-	-
C-A	658.37	658.37	0.00	-	-	-	-	-

Main results: (17:30-17:45)

Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	38.54	38.01	0.00	173.79	0.222	0.27	26.412	D
A-BCD	940.70	912.19	0.00	1120.03	0.840	9.44	18.174	C
A-B	3.46	3.46	0.00	-	-	-	-	-
A-C	139.24	139.24	0.00	-	-	-	-	-
D-ABC	148.64	147.71	0.00	381.73	0.389	0.62	15.320	C
C-ABD	105.19	104.75	0.00	1041.14	0.101	0.21	3.846	A
C-D	5.96	5.96	0.00	-	-	-	-	-
C-A	772.97	772.97	0.00	-	-	-	-	-

Main results: (17:45-18:00)

Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	38.54	38.47	0.00	166.89	0.231	0.29	28.007	D
A-BCD	980.17	971.81	0.00	1137.67	0.862	11.53	25.839	D
A-B	2.51	2.51	0.00	-	-	-	-	-
A-C	100.73	100.73	0.00	-	-	-	-	-
D-ABC	148.64	148.59	0.00	379.89	0.391	0.63	15.556	C
C-ABD	107.02	106.99	0.00	1037.67	0.103	0.22	3.871	A
C-D	5.95	5.95	0.00	-	-	-	-	-
C-A	771.15	771.15	0.00	-	-	-	-	-

Main results: (18:00-18:15)

Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	31.46	32.00	0.00	235.37	0.134	0.16	17.746	C
A-BCD	569.76	605.00	0.00	1037.95	0.549	2.71	9.246	A
A-B	7.64	7.64	0.00	-	-	-	-	-
A-C	307.20	307.20	0.00	-	-	-	-	-
D-ABC	121.36	122.27	0.00	426.58	0.285	0.40	11.864	B
C-ABD	59.66	60.11	0.00	939.65	0.063	0.11	4.096	A
C-D	5.07	5.07	0.00	-	-	-	-	-
C-A	657.15	657.15	0.00	-	-	-	-	-

Main results: (18:15-18:30)

Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	26.35	26.58	0.00	290.68	0.091	0.10	13.644	B
A-BCD	358.98	364.73	0.00	944.04	0.380	1.28	6.332	A
A-B	9.27	9.27	0.00	-	-	-	-	-
A-C	372.56	372.56	0.00	-	-	-	-	-
D-ABC	101.64	102.10	0.00	457.76	0.222	0.29	10.134	B
C-ABD	39.75	39.92	0.00	890.85	0.045	0.07	4.231	A
C-D	4.32	4.32	0.00	-	-	-	-	-
C-A	560.47	560.47	0.00	-	-	-	-	-

(Default Analysis Set) - Scenario 1, 2020 AM + 320 Dwells

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	N/A			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 1, 2020 AM + 320 Dwells	Scenario 1	2020 AM + 320 Dwells		ONE HOUR	08:00	09:30	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Major Road Direction	Arm Order	Junction Delay (s)	Junction LOS
1	(untitled)	Crossroads	Two-way	A,B,C,D	35.60	E

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description	Arm Type
A	A	A96 NB		Major
B	B	Manse Road		Minor
C	C	A96 SB		Major
D	D	Waverly Road		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
A	7.88		0.00		2.20	84.00	✓	0.00
C	7.88		0.00		2.20	128.00	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
B	One lane	2.35										30	46
D	One lane	2.40										18	32

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B	Slope for D-C
1	A-D	622.609	-	-	-	-	-	-	0.222	0.316	0.222	-	-	-
1	B-A	476.737	0.080	0.202	0.202	-	-	-	0.127	0.288	-	0.202	0.202	0.101
1	B-C	610.407	0.086	0.217	-	-	-	-	-	-	-	-	-	-
1	B-D, nearside lane	476.737	0.080	0.202	0.202	-	-	-	0.127	0.288	0.127	-	-	-
1	B-D, offside lane	476.737	0.080	0.202	0.202	-	-	-	0.127	0.288	0.127	-	-	-
1	C-B	648.089	0.231	0.231	0.329	-	-	-	-	-	-	-	-	-
1	D-A	605.391	-	-	-	-	-	-	0.215	-	0.085	-	-	-
1	D-B, nearside lane	469.151	0.125	0.125	0.283	-	-	-	0.198	0.198	0.078	-	-	-
1	D-B, offside lane	469.151	0.125	0.125	0.283	-	-	-	0.198	0.198	0.078	-	-	-
1	D-C	469.151	-	0.125	0.283	0.099	0.198	0.198	0.198	0.198	0.078	-	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	729.00	100.000
B	ONE HOUR	✓	34.00	100.000
C	ONE HOUR	✓	627.00	100.000
D	ONE HOUR	✓	355.00	100.000

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.000	10.000	631.000	88.000
	B	10.000	0.000	11.000	13.000
	C	614.000	10.000	0.000	3.000
	D	342.000	9.000	4.000	0.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.00	0.01	0.87	0.12
	B	0.29	0.00	0.32	0.38
	C	0.98	0.02	0.00	0.00
	D	0.96	0.03	0.01	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	1.000	1.000	1.000	1.000
	B	1.000	1.000	1.000	1.000
	C	1.000	1.000	1.000	1.000
	D	1.000	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.0	0.0	0.0	0.0
	B	0.0	0.0	0.0	0.0
	C	0.0	0.0	0.0	0.0
	D	0.0	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.17	19.17	0.20	C
A-BCD	0.34	5.55	1.16	A
A-B	-	-	-	-
A-C	-	-	-	-
D-ABC	0.89	60.73	6.11	F
C-ABD	0.03	4.42	0.05	A
C-D	-	-	-	-
C-A	-	-	-	-

Main Results for each time segment

Main results: (08:00-08:15)

Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	25.60	25.26	0.00	327.66	0.078	0.08	11.891	B
A-BCD	146.95	145.30	0.00	856.34	0.172	0.41	5.064	A
A-B	6.27	6.27	0.00	-	-	-	-	-
A-C	395.61	395.61	0.00	-	-	-	-	-
D-ABC	267.26	262.70	0.00	492.84	0.542	1.14	15.359	C
C-ABD	15.26	15.18	0.00	829.94	0.018	0.02	4.418	A
C-D	2.22	2.22	0.00	-	-	-	-	-
C-A	454.55	454.55	0.00	-	-	-	-	-

Main results: (08:15-08:30)

Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	30.57	30.43	0.00	287.14	0.106	0.12	14.016	B
A-BCD	212.44	211.54	0.00	911.70	0.233	0.64	5.154	A
A-B	6.91	6.91	0.00	-	-	-	-	-
A-C	436.01	436.01	0.00	-	-	-	-	-
D-ABC	319.14	315.89	0.00	471.46	0.677	1.95	22.652	C
C-ABD	20.88	20.85	0.00	865.47	0.024	0.03	4.262	A
C-D	2.64	2.64	0.00	-	-	-	-	-
C-A	540.14	540.14	0.00	-	-	-	-	-

Main results: (08:30-08:45)

Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	37.43	37.13	0.00	227.55	0.165	0.19	18.876	C
A-BCD	335.42	333.37	0.00	988.83	0.339	1.15	5.517	A
A-B	7.29	7.29	0.00	-	-	-	-	-
A-C	459.94	459.94	0.00	-	-	-	-	-
D-ABC	390.86	377.45	0.00	441.14	0.886	5.31	48.514	E
C-ABD	30.69	30.63	0.00	913.61	0.034	0.04	4.077	A
C-D	3.21	3.21	0.00	-	-	-	-	-
C-A	656.44	656.44	0.00	-	-	-	-	-

Main results: (08:45-09:00)

Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	37.43	37.42	0.00	225.15	0.166	0.20	19.173	C
A-BCD	336.66	336.59	0.00	990.01	0.340	1.16	5.553	A
A-B	7.27	7.27	0.00	-	-	-	-	-
A-C	458.71	458.71	0.00	-	-	-	-	-
D-ABC	390.86	387.63	0.00	441.08	0.886	6.11	60.726	F
C-ABD	30.74	30.74	0.00	913.30	0.034	0.05	4.079	A
C-D	3.21	3.21	0.00	-	-	-	-	-
C-A	656.39	656.39	0.00	-	-	-	-	-

Main results: (09:00-09:15)

Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	30.57	30.86	0.00	284.21	0.108	0.12	14.227	B
A-BCD	213.66	215.66	0.00	913.37	0.234	0.67	5.196	A
A-B	6.89	6.89	0.00	-	-	-	-	-
A-C	434.80	434.80	0.00	-	-	-	-	-
D-ABC	319.14	334.56	0.00	471.39	0.677	2.26	28.706	D
C-ABD	20.93	20.99	0.00	864.98	0.024	0.03	4.267	A
C-D	2.64	2.64	0.00	-	-	-	-	-
C-A	540.09	540.09	0.00	-	-	-	-	-

Main results: (09:15-09:30)

Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	25.60	25.74	0.00	326.19	0.078	0.09	11.989	B
A-BCD	148.23	149.17	0.00	857.45	0.173	0.43	5.103	A
A-B	6.25	6.25	0.00	-	-	-	-	-
A-C	394.35	394.35	0.00	-	-	-	-	-
D-ABC	267.26	271.39	0.00	492.77	0.542	1.23	16.549	C
C-ABD	15.33	15.36	0.00	829.44	0.018	0.02	4.423	A
C-D	2.22	2.22	0.00	-	-	-	-	-
C-A	454.49	454.49	0.00	-	-	-	-	-

(Default Analysis Set) - Scenario 2, 2020 PM + 320 Dwells

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	N/A			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Scenario 2, 2020 PM + 320 Dwells	Scenario 2	2020 PM + 320 Dwells		ONE HOUR	17:00	18:30	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Major Road Direction	Arm Order	Junction Delay (s)	Junction LOS
1	(untitled)	Crossroads	Two-way	A,B,C,D	7.16	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description	Arm Type
A	A	A96 NB		Major
B	B	Manse Road		Minor
C	C	A96 SB		Major
D	D	Waverly Road		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
A	7.88		0.00		2.20	84.00	✓	0.00
C	7.88		0.00		2.20	128.00	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
B	One lane	2.35										30	46
D	One lane	2.40										18	32

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B	Slope for D-C
1	A-D	622.609	-	-	-	-	-	-	0.222	0.316	0.222	-	-	-
1	B-A	476.737	0.080	0.202	0.202	-	-	-	0.127	0.288	-	0.202	0.202	0.101
1	B-C	610.407	0.086	0.217	-	-	-	-	-	-	-	-	-	-
1	B-D, nearside lane	476.737	0.080	0.202	0.202	-	-	-	0.127	0.288	0.127	-	-	-
1	B-D, offside lane	476.737	0.080	0.202	0.202	-	-	-	0.127	0.288	0.127	-	-	-
1	C-B	648.089	0.231	0.231	0.329	-	-	-	-	-	-	-	-	-
1	D-A	605.391	-	-	-	-	-	-	0.215	-	0.085	-	-	-
1	D-B, nearside lane	469.151	0.125	0.125	0.283	-	-	-	0.198	0.198	0.078	-	-	-
1	D-B, offside lane	469.151	0.125	0.125	0.283	-	-	-	0.198	0.198	0.078	-	-	-
1	D-C	469.151	-	0.125	0.283	0.099	0.198	0.198	0.198	0.198	0.078	-	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	887.00	100.000
B	ONE HOUR	✓	23.00	100.000
C	ONE HOUR	✓	770.00	100.000
D	ONE HOUR	✓	88.00	100.000

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.000	19.000	783.000	85.000
	B	6.000	0.000	12.000	5.000
	C	748.000	18.000	0.000	4.000
	D	84.000	3.000	1.000	0.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.00	0.02	0.88	0.10
	B	0.26	0.00	0.52	0.22
	C	0.97	0.02	0.00	0.01
	D	0.95	0.03	0.01	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	1.000	1.000	1.000	1.000
	B	1.000	1.000	1.000	1.000
	C	1.000	1.000	1.000	1.000
	D	1.000	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.0	0.0	0.0	0.0
	B	0.0	0.0	0.0	0.0
	C	0.0	0.0	0.0	0.0
	D	0.0	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.11	17.12	0.12	C
A-BCD	0.42	5.75	1.91	A
A-B	-	-	-	-
A-C	-	-	-	-
D-ABC	0.24	11.95	0.32	B
C-ABD	0.09	4.29	0.16	A
C-D	-	-	-	-
C-A	-	-	-	-

Main Results for each time segment

Main results: (17:00-17:15)

Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	17.32	17.11	0.00	342.88	0.051	0.05	11.044	B
A-BCD	178.93	176.77	0.00	927.66	0.193	0.54	4.796	A
A-B	11.58	11.58	0.00	-	-	-	-	-
A-C	477.27	477.27	0.00	-	-	-	-	-
D-ABC	66.25	65.60	0.00	465.74	0.142	0.16	8.982	A
C-ABD	31.83	31.63	0.00	871.63	0.037	0.05	4.286	A
C-D	2.91	2.91	0.00	-	-	-	-	-
C-A	544.95	544.95	0.00	-	-	-	-	-

Main results: (17:15-17:30)

Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	20.68	20.59	0.00	300.02	0.069	0.07	12.879	B
A-BCD	271.38	269.97	0.00	999.02	0.272	0.89	4.957	A
A-B	12.46	12.46	0.00	-	-	-	-	-
A-C	513.55	513.55	0.00	-	-	-	-	-
D-ABC	79.11	78.90	0.00	438.45	0.180	0.22	10.006	B
C-ABD	50.97	50.83	0.00	943.88	0.054	0.08	4.031	A
C-D	3.41	3.41	0.00	-	-	-	-	-
C-A	637.84	637.84	0.00	-	-	-	-	-

Main results: (17:30-17:45)

Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	25.32	25.15	0.00	236.57	0.107	0.12	17.013	C
A-BCD	464.64	460.76	0.00	1100.60	0.422	1.86	5.671	A
A-B	12.13	12.13	0.00	-	-	-	-	-
A-C	499.83	499.83	0.00	-	-	-	-	-
D-ABC	96.89	96.50	0.00	398.41	0.243	0.32	11.908	B
C-ABD	88.29	87.98	0.00	1035.27	0.085	0.16	3.800	A
C-D	4.04	4.04	0.00	-	-	-	-	-
C-A	755.45	755.45	0.00	-	-	-	-	-

Main results: (17:45-18:00)

Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	25.32	25.32	0.00	235.54	0.108	0.12	17.123	C
A-BCD	467.86	467.69	0.00	1103.02	0.424	1.91	5.747	A
A-B	12.05	12.05	0.00	-	-	-	-	-
A-C	496.70	496.70	0.00	-	-	-	-	-
D-ABC	96.89	96.88	0.00	398.19	0.243	0.32	11.947	B
C-ABD	88.60	88.59	0.00	1034.94	0.086	0.16	3.808	A
C-D	4.04	4.04	0.00	-	-	-	-	-
C-A	755.15	755.15	0.00	-	-	-	-	-

Main results: (18:00-18:15)

Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	20.68	20.85	0.00	298.68	0.069	0.08	12.964	B
A-BCD	274.08	277.93	0.00	1002.33	0.273	0.94	5.026	A
A-B	12.40	12.40	0.00	-	-	-	-	-
A-C	510.92	510.92	0.00	-	-	-	-	-
D-ABC	79.11	79.49	0.00	438.22	0.181	0.22	10.045	B
C-ABD	51.21	51.52	0.00	943.29	0.054	0.09	4.040	A
C-D	3.41	3.41	0.00	-	-	-	-	-
C-A	637.59	637.59	0.00	-	-	-	-	-

Main results: (18:15-18:30)

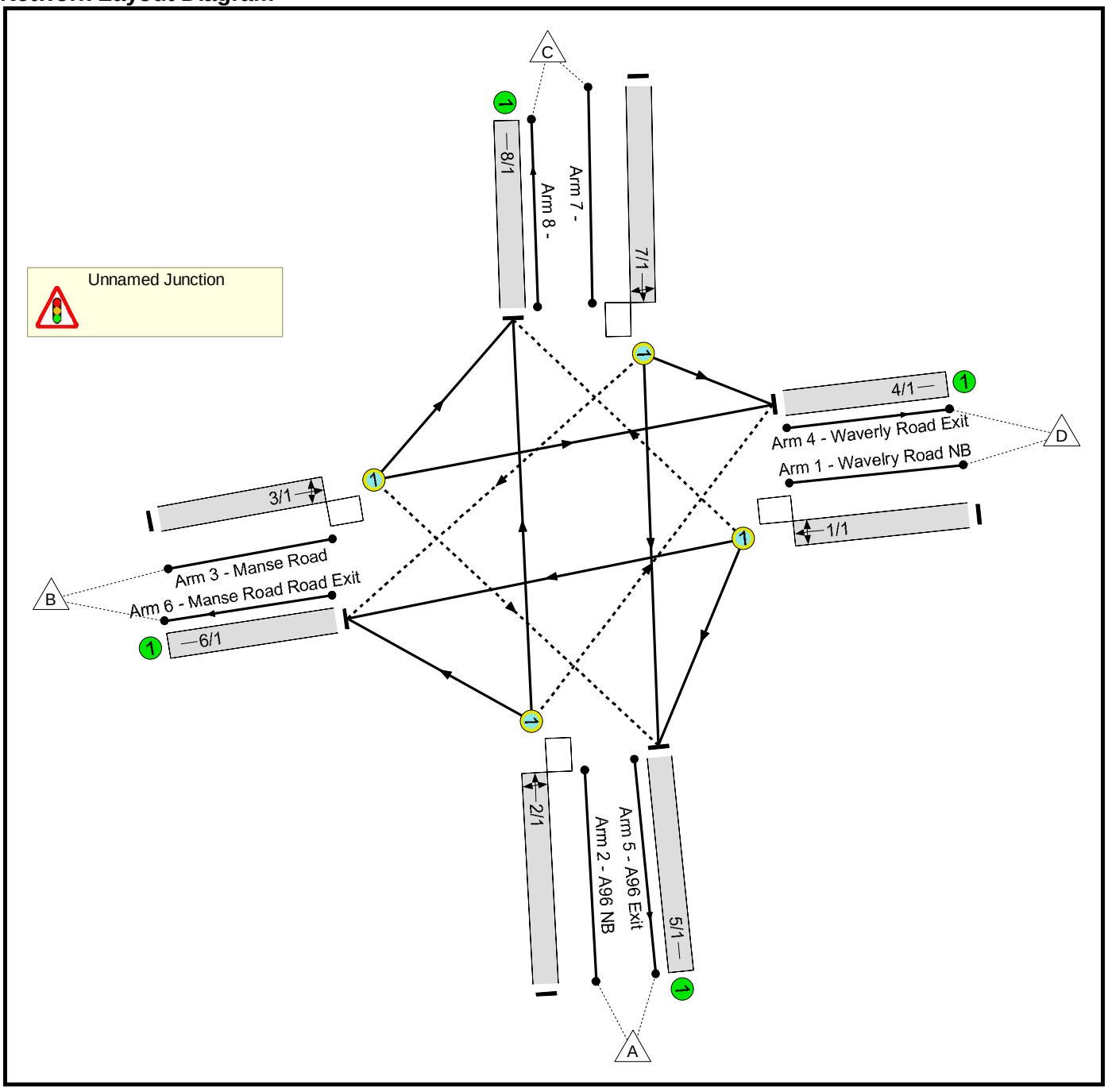
Stream	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
B-ACD	17.32	17.40	0.00	341.97	0.051	0.05	11.096	B
A-BCD	181.05	182.56	0.00	929.50	0.195	0.57	4.845	A
A-B	11.53	11.53	0.00	-	-	-	-	-
A-C	475.19	475.19	0.00	-	-	-	-	-
D-ABC	66.25	66.47	0.00	465.59	0.142	0.17	9.026	A
C-ABD	32.02	32.16	0.00	871.08	0.037	0.05	4.292	A
C-D	2.91	2.91	0.00	-	-	-	-	-
C-A	544.77	544.77	0.00	-	-	-	-	-

Full Input Data And Results

User and Project Details

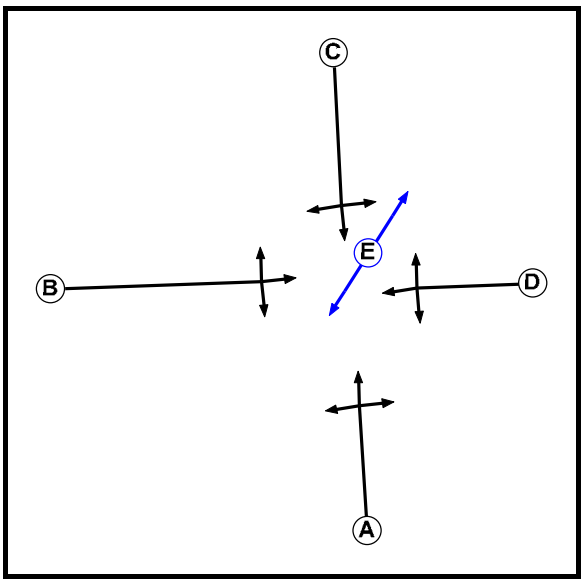
Project:	**Nairn South Masterplan**
Title:	**Improvement Option for A96/ Waverly Road/ Manse Road**
File name:	A96_Waverly Road_Manse Road Improvement Option.lsg3x
Company:	AECOM

Network Layout Diagram



Full Input Data And Results

Phase Diagram



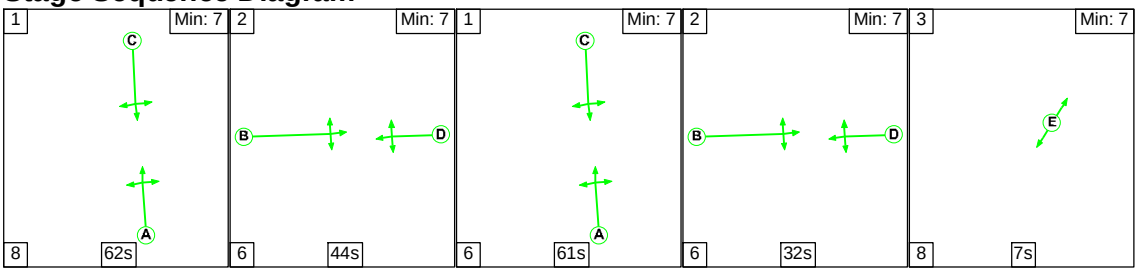
Full Input Data And Results

Phase Intergreens Matrix

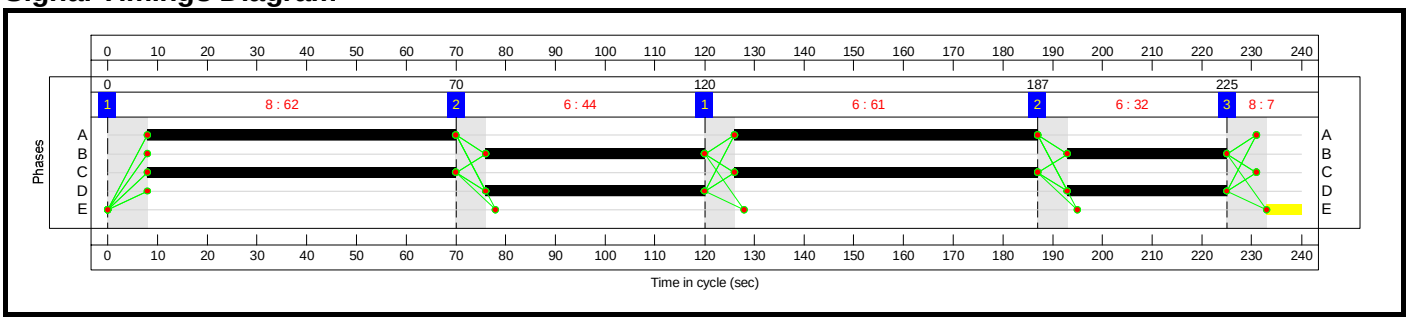
		Starting Phase				
		A	B	C	D	E
Terminating Phase	A		6	-	6	8
	B	6		6	-	8
	C	-	6		6	8
	D	6	-	6		8
	E	8	8	8	8	

Scenario 1: '2022 AM + Full Dev ' (FG1: '2022 AM + Full Dev', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram



Signal Timings Diagram



Full Input Data And Results

Network Results

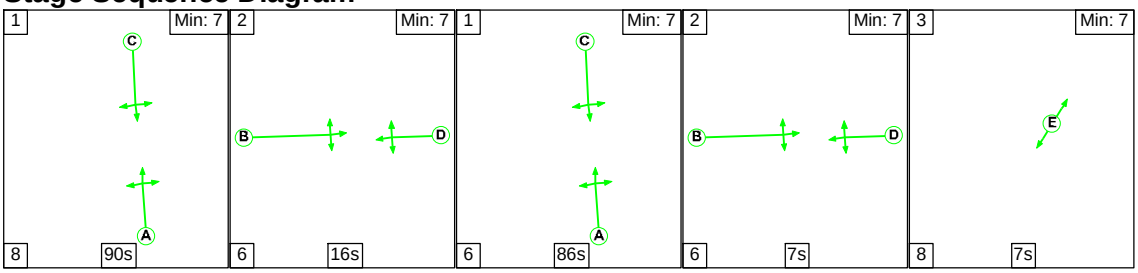
Item	Lane Description	Lane Type	Controller Stream	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Arriving (pcu)	Leaving (pcu)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	**N/A**	-	-	-	**82.7%**	-	-	-	-
Unnamed Junction	-	-	**N/A**	-	-	-	**82.7%**	-	-	-	-
1/1	Wavelry Road NB Left Ahead Right	O	N/A	444	1651	537	82.7%	444	444	56.4	17.5
2/1	A96 NB Right Left Ahead	O	N/A	770	1993	939	82.0%	770	770	36.3	25.5
3/1	Manse Road Ahead Right Left	O	N/A	37	1881	308	12.0%	37	37	41.4	1.0
4/1	Waverly Road Exit	U	N/A	130	1915	1915	6.8%	130	130	1.0	0.0
5/1	A96 Exit	U	N/A	1071	Inf	Inf	0.0%	1071	1071	0.0	0.0
6/1	Manse Road Road Exit	U	N/A	32	1915	1915	1.7%	32	32	1.0	0.0
7/1	Left Ahead Right	O	N/A	647	2009	1046	61.8%	647	647	25.0	16.6
8/1		U	N/A	665	Inf	Inf	0.0%	665	665	0.0	0.0

C1 PRC for Signalled Lanes (%): 8.8 Total Delay for Signalled Lanes (pcuHr): 19.63 Cycle Time (s): 240
PRC Over All Lanes (%): 8.8 Total Delay Over All Lanes(pcuHr): 19.68

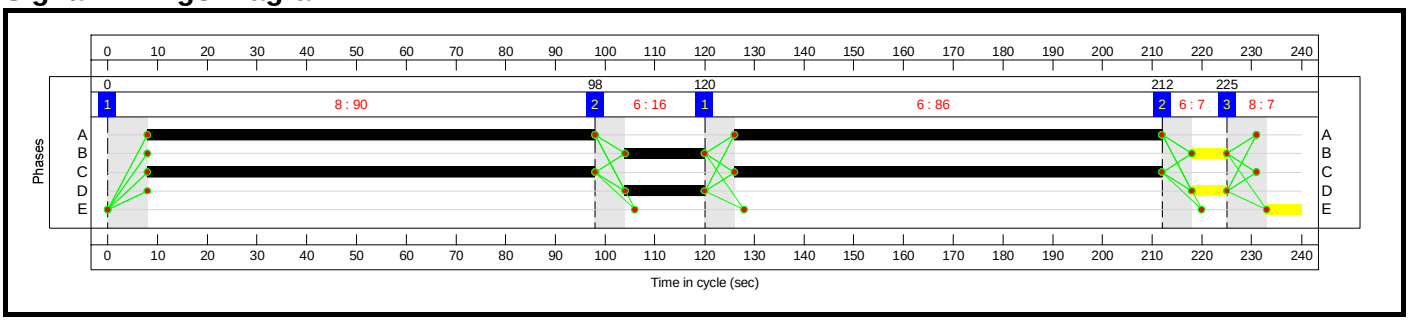
Full Input Data And Results

Scenario 2: '2022 PM + Full Dev ' (FG2: '2022 PM + Full Dev', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram



Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Arriving (pcu)	Leaving (pcu)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	**N/A**	-	-	-	**78.5%**	-	-	-	-
Unnamed Junction	-	-	**N/A**	-	-	-	**78.5%**	-	-	-	-
1/1	Wavelry Road NB Left Ahead Right	O	N/A	135	1652	172	78.5%	135	135	101.3	6.8
2/1	A96 NB Right Left Ahead	O	N/A	984	1989	1420	69.3%	984	984	14.0	22.4
3/1	Manse Road Ahead Right Left	O	N/A	35	1884	191	18.3%	35	35	62.8	1.3
4/1	Waverly Road Exit	U	N/A	182	1915	1915	9.5%	182	182	1.0	0.1
5/1	A96 Exit	U	N/A	914	Inf	Inf	0.0%	914	914	0.0	0.0
6/1	Manse Road Road Exit	U	N/A	43	1915	1915	2.2%	43	43	1.0	0.0
7/1	Left Ahead Right	O	N/A	803	2006	1488	54.0%	803	803	9.5	13.5
8/1		U	N/A	818	Inf	Inf	0.0%	818	818	0.0	0.0

C1 PRC for Signalled Lanes (%): 14.7 Total Delay for Signalled Lanes (pcuHr): 10.37 Cycle Time (s): 240
PRC Over All Lanes (%): 14.7 Total Delay Over All Lanes(pcuHr): 10.43

Appendix E – Drawings

ISO A1 594mm x 841mm

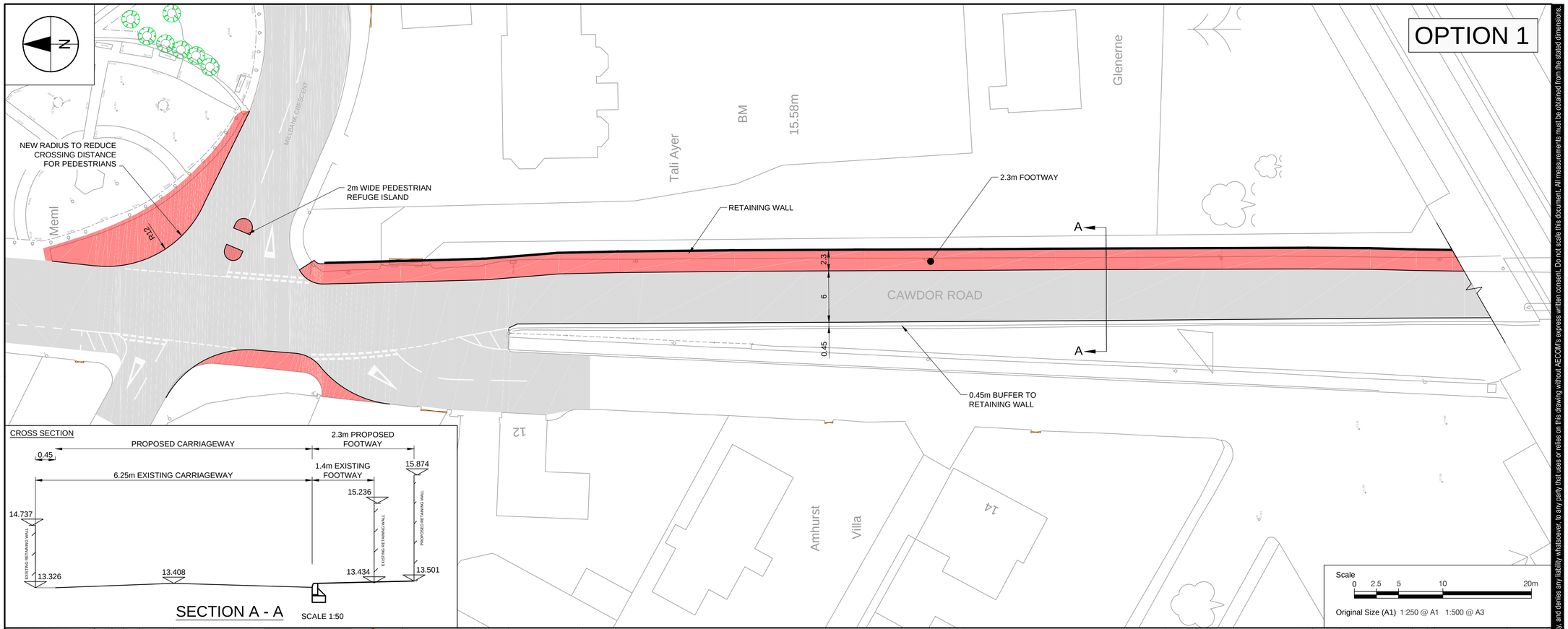
Approved: DC

Checked: JF

Designer: JN

Project Management Initials:

OPTION 1



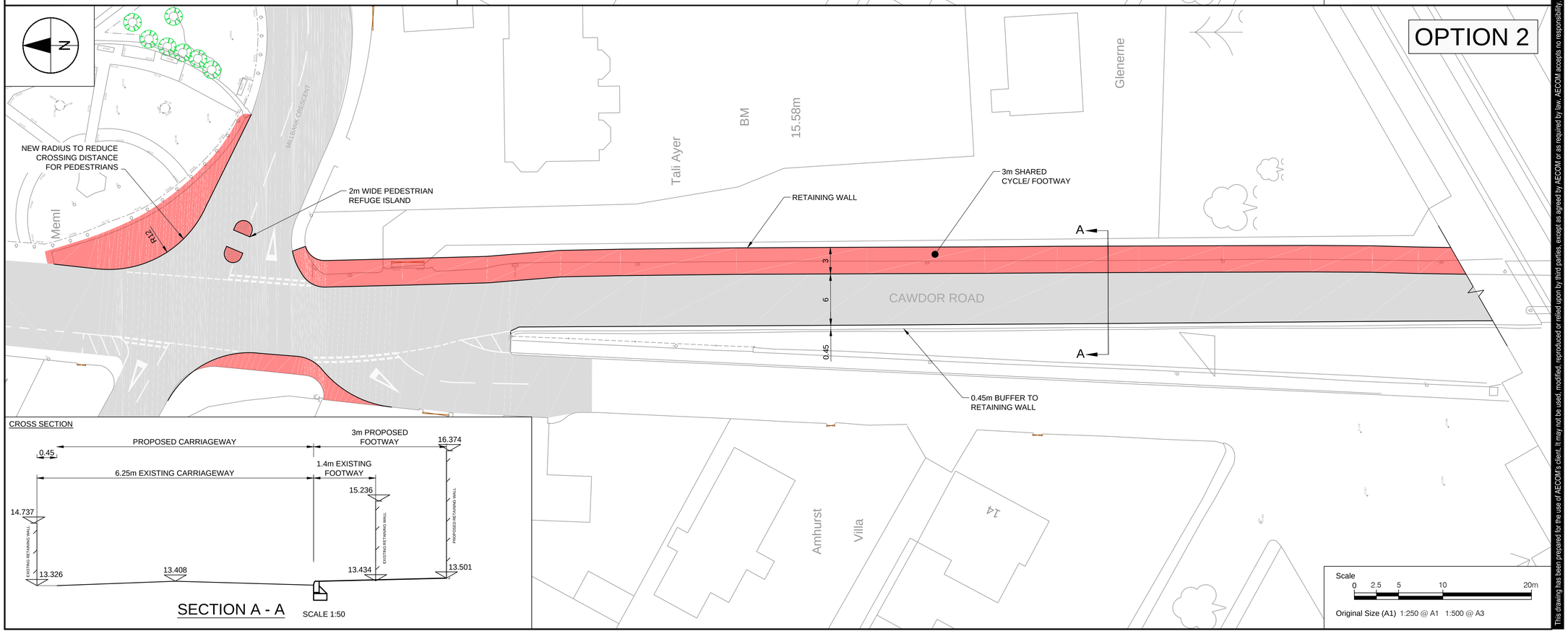
SECTION A - A

SCALE 1:50

Scale 0 2.5 5 10 20m

Original Size (A1) 1:250 @ A1 1:500 @ A3

OPTION 2



SECTION A - A

SCALE 1:50

Scale 0 2.5 5 10 20m

Original Size (A1) 1:250 @ A1 1:500 @ A3

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NAIRN SOUTH STRATEGIC DEVELOPMENT PLAN

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KEY

- EXISTING CARRIAGEWAY
- PROPOSED CARRIAGEWAY
- PROPOSED FOOTWAY
- NEW KERBLINE
- RETAINING WALL

ISSUE/REVISION

I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

60446943

SHEET TITLE

PRELIMINARY DESIGN 6m
CAWDOR RD - NORTH OF RAILWAY BR
OPTIONS 1 & 2

SHEET NUMBER

60446943-SKE-C-0001

Filename: F:\PROJECTS\WSET UP NEW PROJECTS\DEVELOPMENT - NAIRN SOUTH STRATEGIC DEVELOPMENT PLAN TRANSPORT APPRAISAL\03 EXECUTION\7 - CAD\20-SHEETS\60446943-SKE-C-0001-0012 - 6M CARRIAGEWAY.DWG
Last saved by: SWANSONAJ Last Plotted: 2016-02-05

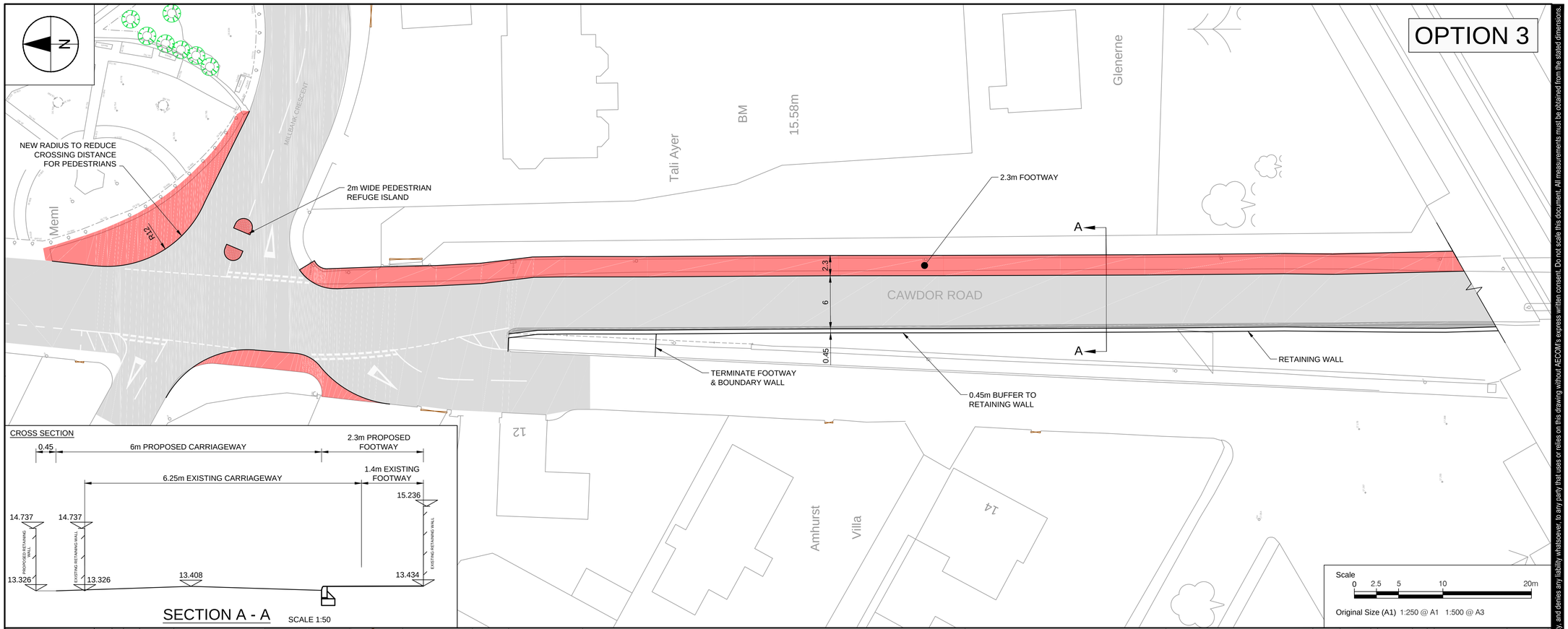
ISO A1 594mm x 841mm

Approved: DC

Checked: JF

Designer: JN

Project Management Initials:

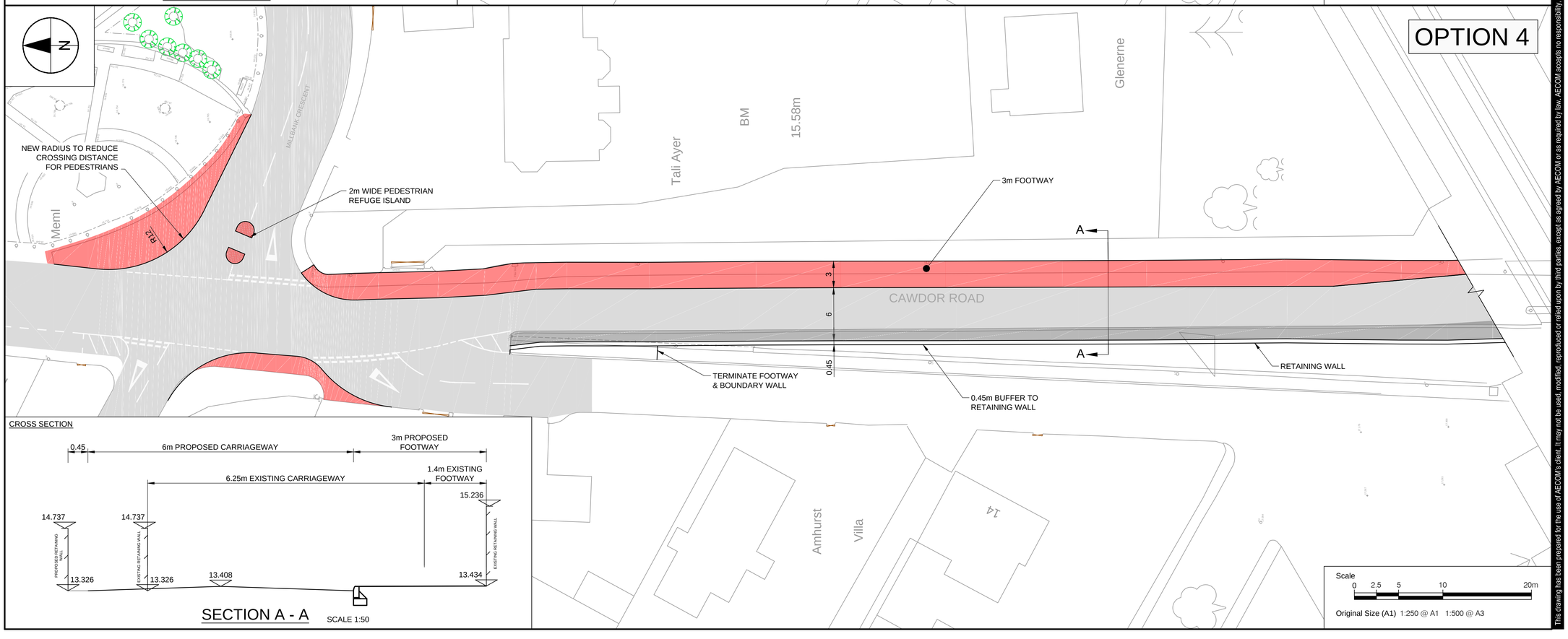


SECTION A - A

SCALE 1:50

Scale 0 2.5 5 10 20m

Original Size (A1) 1:250 @ A1 1:500 @ A3



SECTION A - A

SCALE 1:50

Scale 0 2.5 5 10 20m

Original Size (A1) 1:250 @ A1 1:500 @ A3

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Last saved by: SWANSONAJ Last Plotted: 2016-02-05

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KEY

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- PROPOSED FOOTWAY
- NEW KERBLINE
- RETAINING WALL

ISSUE/REVISION

I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

60446943

SHEET TITLE

PRELIMINARY DESIGN 6m CAWDOR RD - NORTH OF RAILWAY BR OPTIONS 3 & 4

SHEET NUMBER

60446943-SKE-C-0002

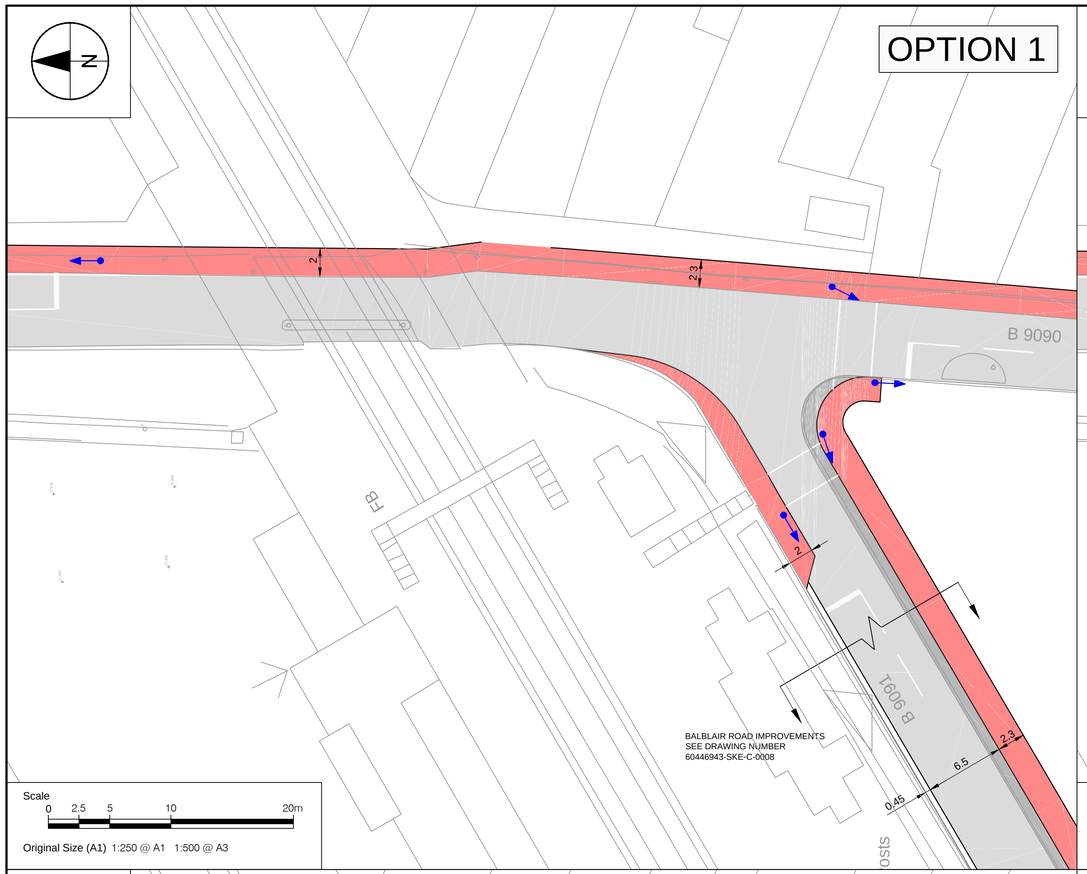
ISO A1 594mm x 841mm

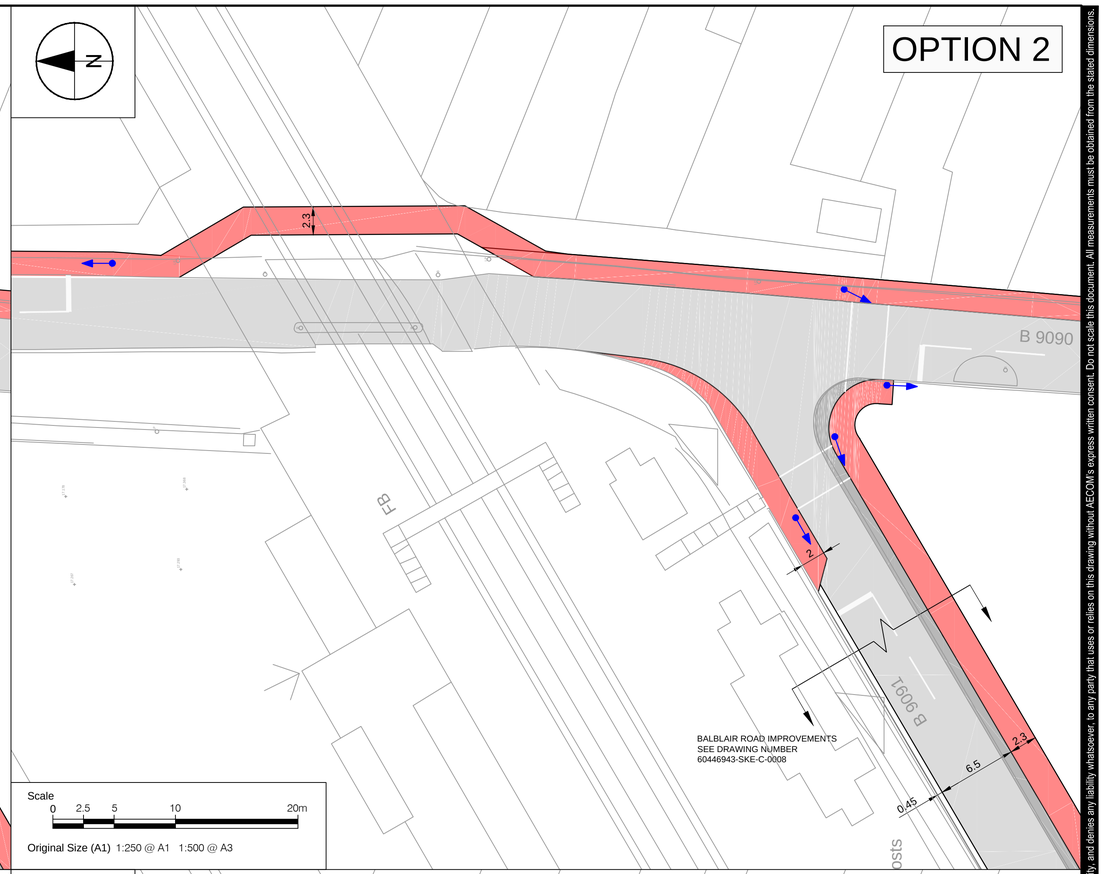
Approved: DC

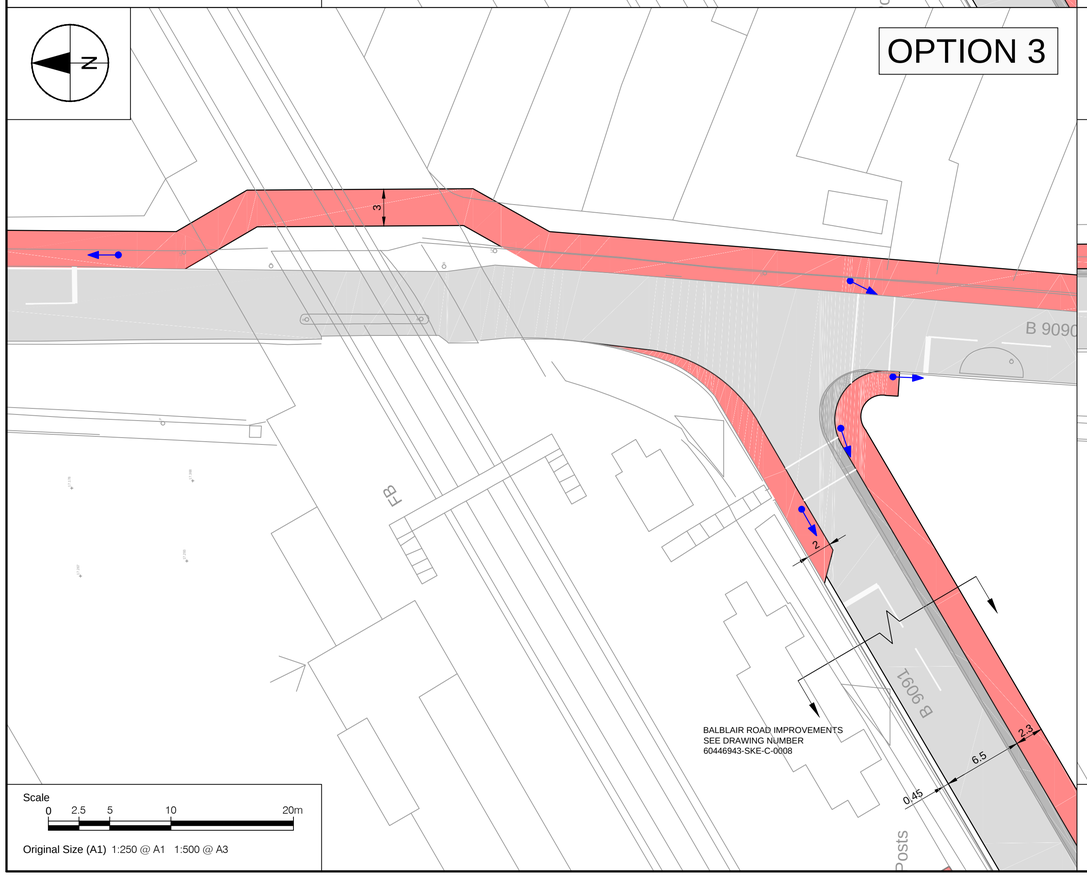
Checked: JF

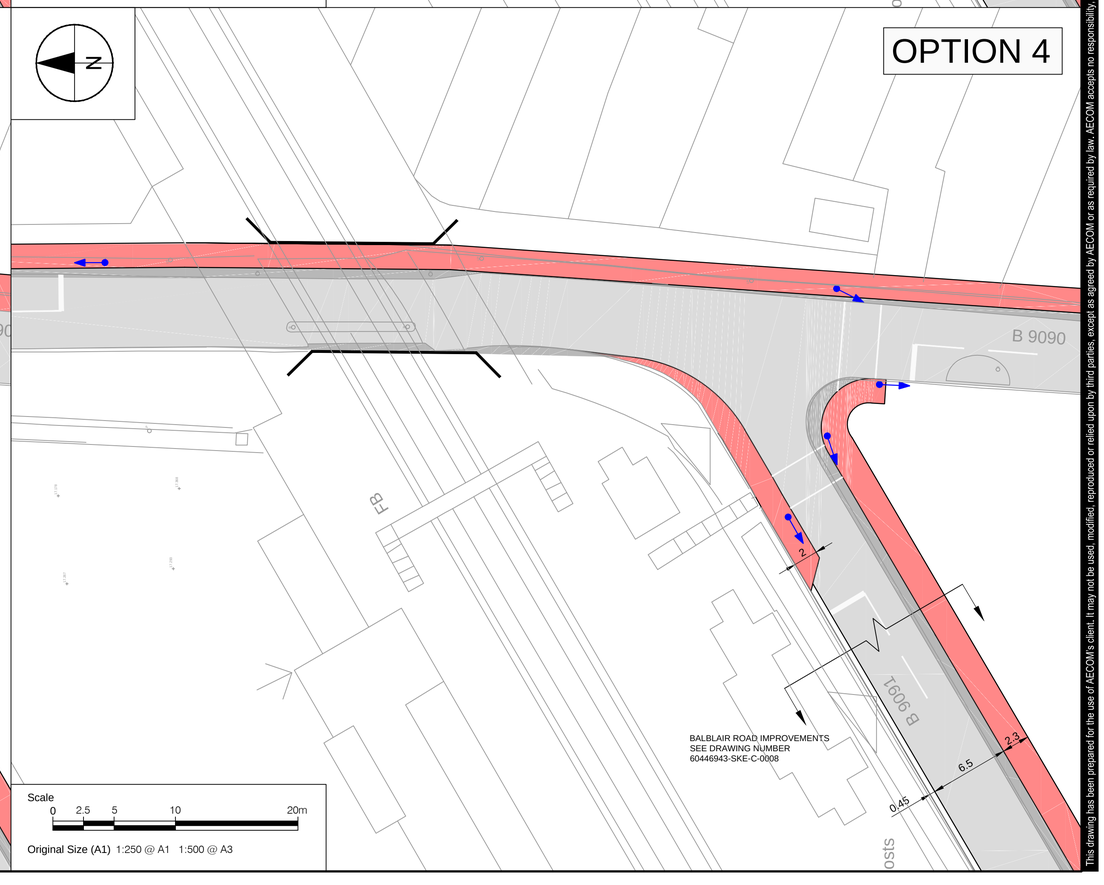
Designer: JN

Project Management Initials:









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KEY

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- PROPOSED CARRIAGEWAY
- PROPOSED FOOTWAY
- NEW KERBLINE
- RETAINING WALL

ISSUE/REVISION

I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

60446943

SHEET TITLE

PRELIMINARY DESIGN 6m
NAIRN STATION RAILWAY BRIDGE
OPTIONS 1, 2, 3 & 4

SHEET NUMBER

60446943-SKE-C-0003

Filename: F:\PROJECTS\WSET UP\ NEW PROJECTS\DEVELOPMENT - NAIRN SOUTH STRATEGIC DEVELOPMENT PLAN TRANSPORT APPRAISAL\03 EXECUTION\7 - CAD\20-SHEETS\60446943-SKE-C-0001-0012 - 6M CARRIAGEWAY.DWG
Last saved by: SWANSONAJ Last Plotted: 2016-02-05

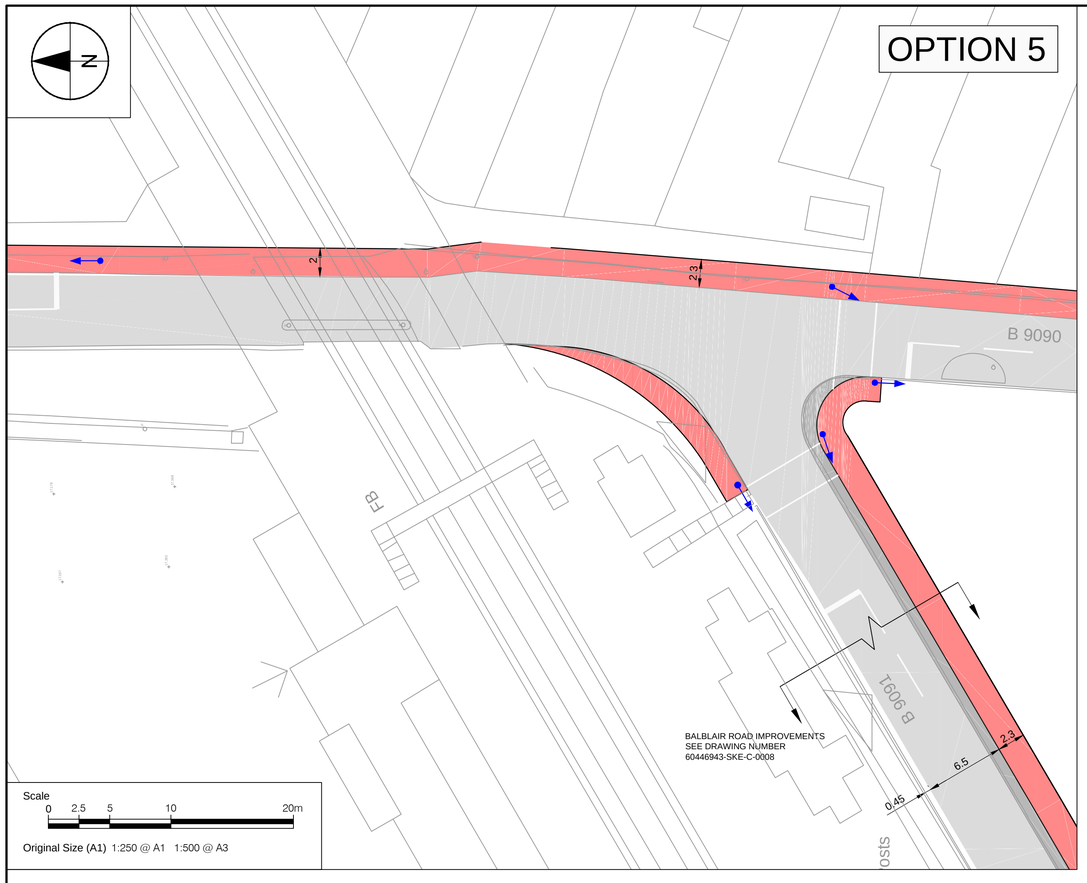
ISO A1 594mm x 841mm

Approved: DC

Checked: JF

Designer: JN

Project Management Initials:



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KEY

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- PROPOSED CARRIAGEWAY
- PROPOSED FOOTWAY
- NEW KERBLINE
- RETAINING WALL

ISSUE/REVISION

I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

60446943

SHEET TITLE

PRELIMINARY DESIGN 6m
NAIRN STATION RAILWAY BRIDGE
OPTION 5

SHEET NUMBER

60446943-SKE-C-0004

Filename: F:\PROJECTS\#SET UP NEW PROJECTS\DEVELOPMENT - NAIRN SOUTH STRATEGIC DEVELOPMENT PLAN TRANSPORT APPRAISAL\03 EXECUTION\7 - CAD\20-SHEETS\60446943-SKE-C-0001-0012 - 6M CARRIAGEWAY.DWG
Last saved by: SWANSONAJ Last Plotted: 2016-02-05

ISO A1 594mm x 841mm

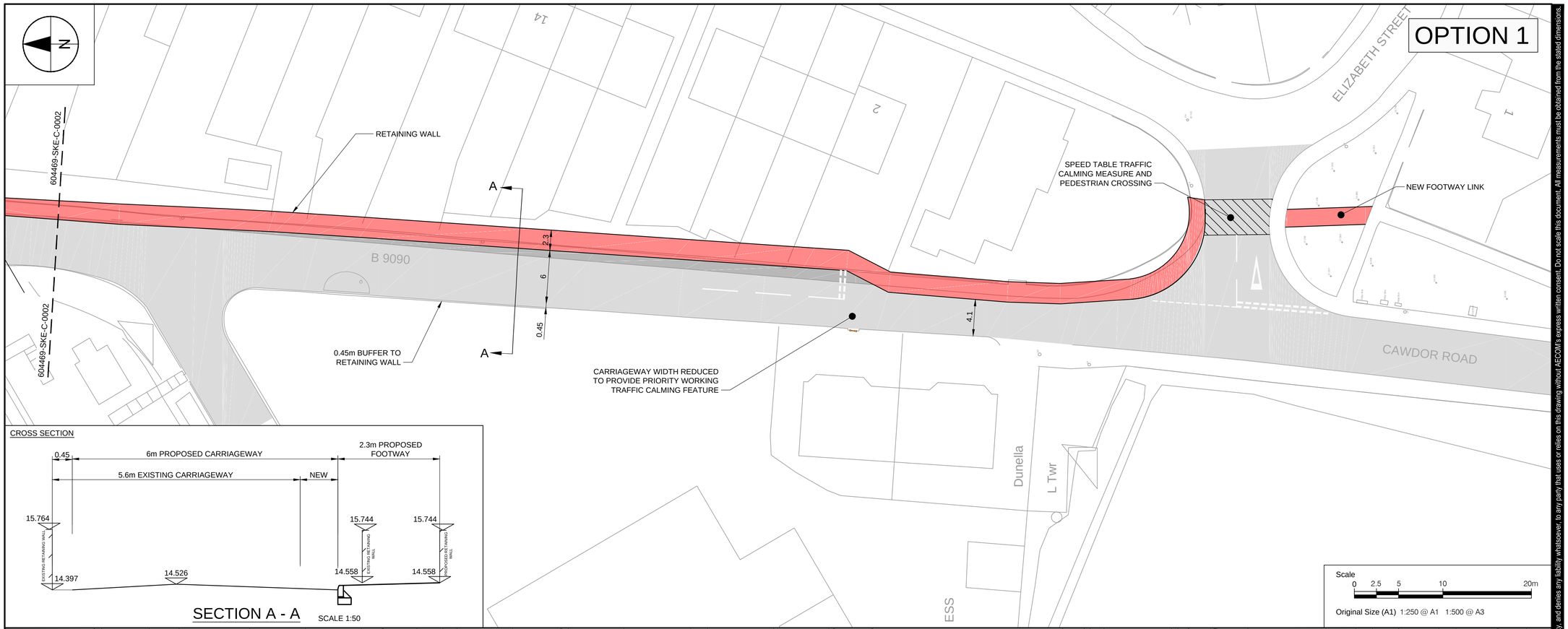
Approved: DC

Checked: JF

Designer: JN

Project Management Initials:

OPTION 1



CROSS SECTION

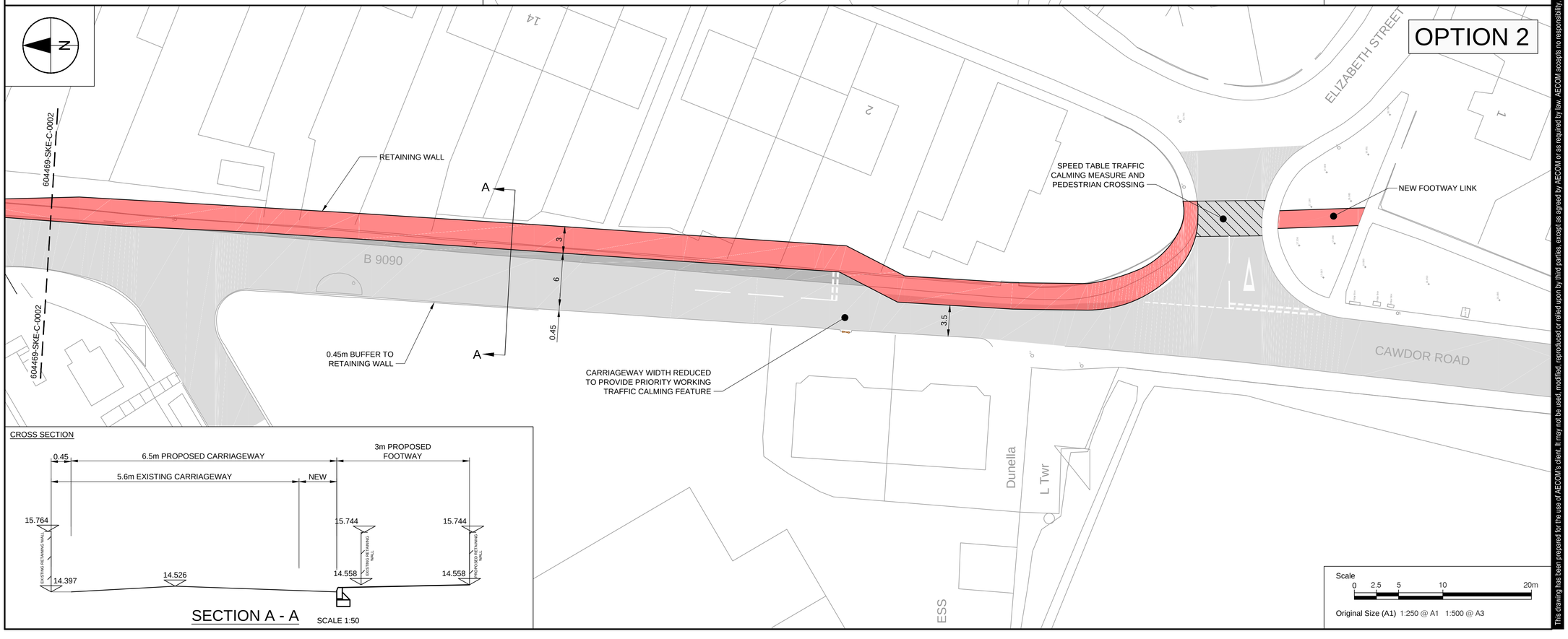
SECTION A - A

SCALE 1:50

Scale 0 2.5 5 10 20m

Original Size (A1) 1:250 @ A1 1:500 @ A3

OPTION 2



CROSS SECTION

SECTION A - A

SCALE 1:50

Scale 0 2.5 5 10 20m

Original Size (A1) 1:250 @ A1 1:500 @ A3

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KEY

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- PROPOSED CARRIAGEWAY
- PROPOSED FOOTWAY
- NEW KERBLINE
- RETAINING WALL

ISSUE/REVISION

I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

60446943

SHEET TITLE

PRELIMINARY DESIGN 6m CAWDOR RD SOUTH OF RAILWAY BR OPTION 1 & 2

SHEET NUMBER

60446943-SKE-C-0005

Filename: F:\PROJECTS\WSET UP NEW PROJECTS\DEVELOPMENT - NAIRN SOUTH STRATEGIC DEVELOPMENT PLAN TRANSPORT APPRAISAL\03 EXECUTION\7 - CAD\20-SHEETS\60446943-SKE-C-0001-0012 - 6M CARRIAGEWAY.DWG
Last saved by: SWANSONAJ Last Plotted: 2016-02-05

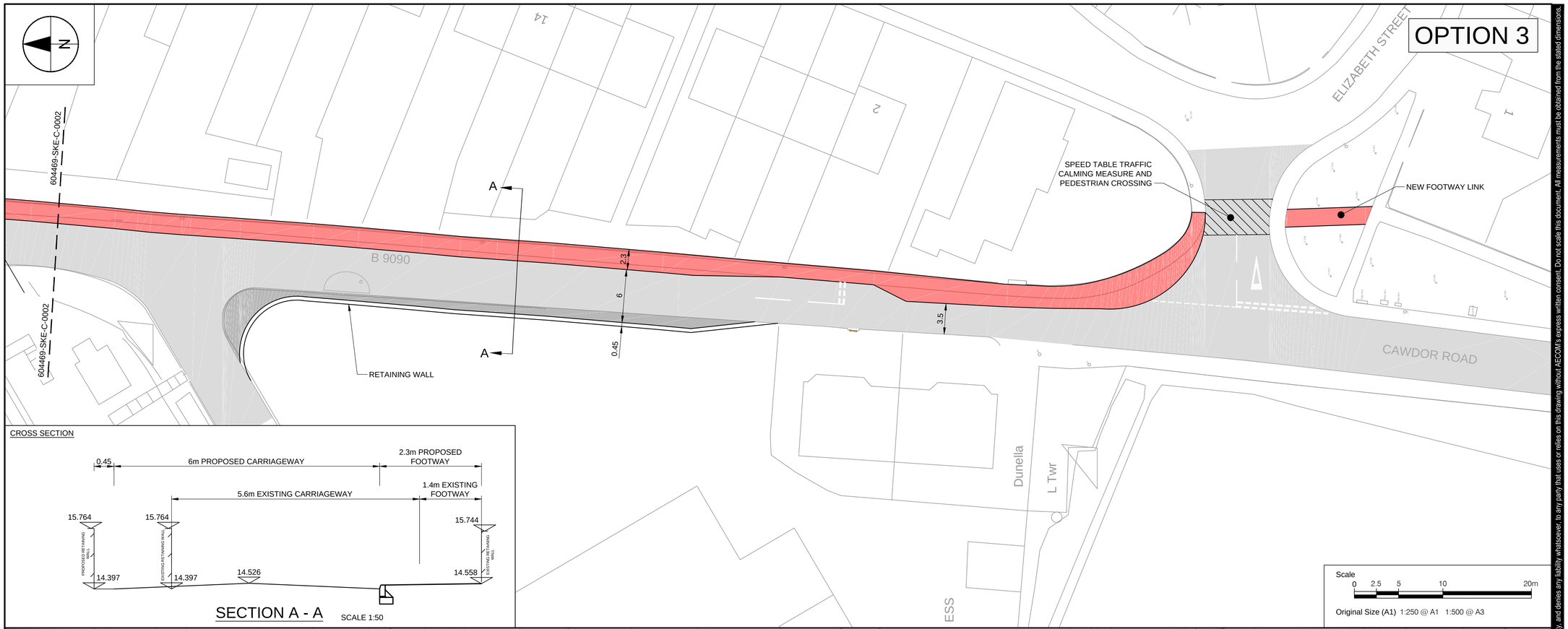
ISO A1 594mm x 841mm

Approved: DC

Checked: JF

Designer: JN

Project Management Initials:



CROSS SECTION

SECTION A - A SCALE 1:50

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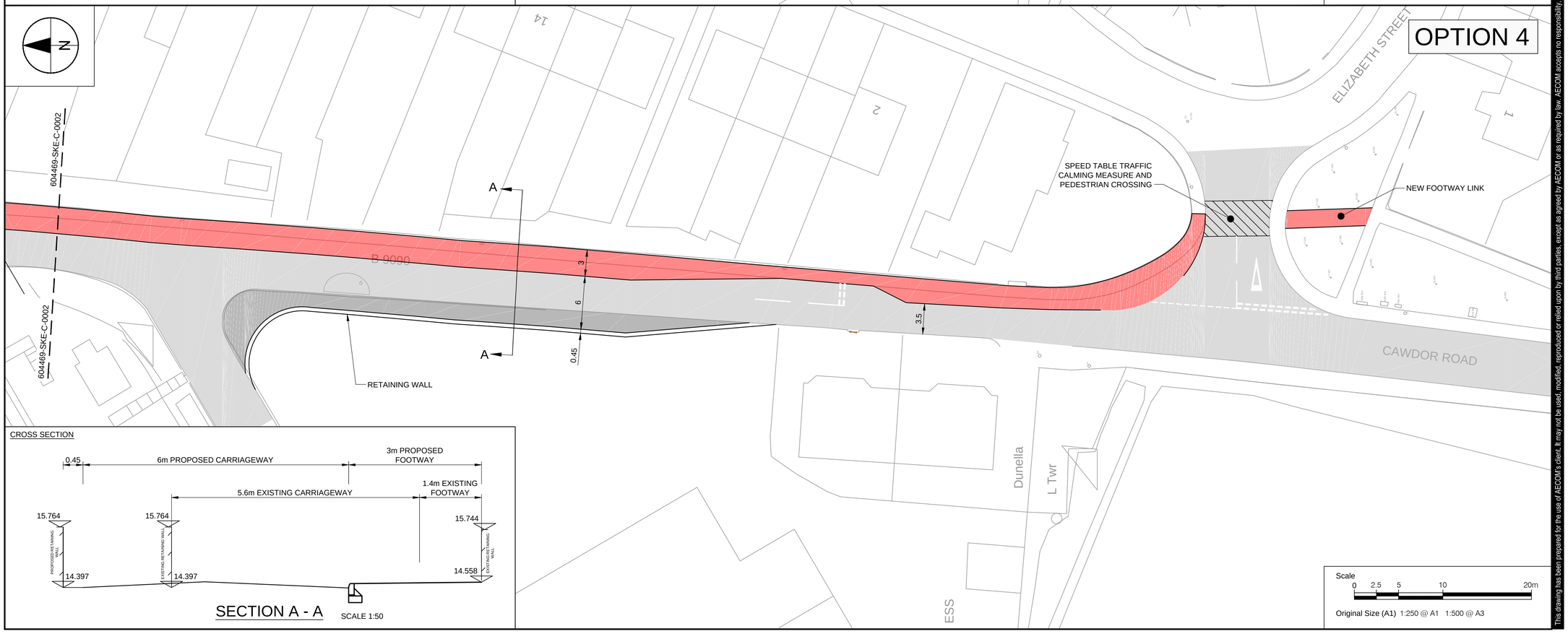
Original Size (A1) 1:250 @ A1 1:500 @ A3



CROSS SECTION

SECTION A - A SCALE 1:50

Scale 0 2.5 5 10 20m

Original Size (A1) 1:250 @ A1 1:500 @ A3

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KEY

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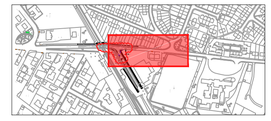
- PROPOSED CARRIAGEWAY
- PROPOSED FOOTWAY
- NEW KERBLINE
- RETAINING WALL

ISSUE/REVISION

I/R	DATE	DESCRIPTION

KEY PLAN



PROJECT NUMBER

60446943

SHEET TITLE

PRELIMINARY DESIGN 6m CAWDOR RD SOUTH OF RAILWAY BR OPTION 3 & 4

SHEET NUMBER

60446943-SKE-C-0006

Filename: F:\PROJECTS\WSET UP NEW PROJECTS\DEVELOPMENT - NAIRN SOUTH STRATEGIC DEVELOPMENT PLAN TRANSPORT APPRAISAL\03 EXECUTION\7 - CAD\20-SHEETS\60446943-SKE-C-0001-0012 - 6M CARRIAGEWAY.DWG
Last saved by: SWANSONAJ Last Plotted: 2016-02-05

ISO A1 594mm x 841mm

Project Management Initials: Designer: JN Checked: JF Approved: DC

Filename: F:\PROJECTS\WSET UP NEW PROJECTS\DEVELOPMENT - NAIRN SOUTH STRATEGIC DEVELOPMENT PLAN TRANSPORT APPRAISAL\03 EXECUTION\7 - CAD\20-SHEETS\60446943-SKE-C-0001-0012 - BM CARRIAGEWAY.DWG
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KEY

⊠ PROPOSED SPEED CUSHIONS

RAISED SPEED TABLE

ISSUE/REVISION

I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

60446943

SHEET TITLE

PRELIMINARY DESIGN 6m
ELIZABETH STREET
TRAFFIC CALMING

SHEET NUMBER

60446943-SKE-C-0007

BALBLAIR ROAD
WIDENING OF CARRIAGEWAY AND PROVISION OF FOOTWAY AND TRAFFIC CALMING MEASURES

FOR JUNCTION DESIGN OPTIONS
SEE DRAWING No. 60446943-SKE-C-0003 & 004

Give way to oncoming vehicles

PROPOSED PRIORITY TRAFFIC WORKING

Priority over oncoming vehicles

WIDEN CARRIAGEWAY
TO WEST SIDE TO 6.5m
WITH 2.3m OR 3m FOOTWAY

PROPOSED MINI ROUNDABOUT
AT SAWMILL ACCESS

SPEED CUSHIONS

Priority over oncoming vehicles

PROPOSED PRIORITY TRAFFIC WORKING

Give way to oncoming vehicles

SCALE 1:500

Scale
0 10 20 40 80m
Original Size (A1) 1:1000 @ A1 1:2000 @ A3

ISO A1 594mm x 841mm
Approved: DC
Checked: JF
Designer: JN
Project Management Initials:

Filename: F:\PROJECTS\#SET UP NEW PROJECTS\DEVELOPMENT - NAIRN SOUTH STRATEGIC DEVELOPMENT PLAN TRANSPORT APPRAISAL\03 EXECUTION\7 - CAD\20-SHEETS\60446943-SKE-C-0001-0012 - 6M CARRIAGEWAY.DWG
Last saved by: SWANSONAJ Last Plotted: 2016-02-05

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+44 (0) 131 301 8699 fax
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KEY

- EXISTING CARRIAGEWAY
- PROPOSED CARRIAGEWAY
- PROPOSED FOOTWAY
- NEW KERBLINE
- SPEED CUSHIONS
- PEDESTRIAN/ CYCLE ROUTE
- PEDESTRIAN/ CYCLE BRIDGE WITH RAMPED ACCESS

ISSUE/REVISION

I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

60446943

SHEET TITLE

PRELIMINARY DESIGN 6m
BALBLAIR ROAD
OPTION 1

SHEET NUMBER

60446943-SKE-C-0008

ISO A1 594mm x 841mm

Approved: DC

Checked: JF

Designer: JN

Project Management Initials:

BALBLAIR ROAD
WIDENING OF CARRIAGEWAY AND PROVISION OF FOOTWAY AND TRAFFIC CALMING MEASURES

FOR JUNCTION DESIGN OPTIONS
SEE DRAWING No. 60446943-SKE-C-0003 & 004

Local access only

2.3

PROPOSED TURNING HEAD
FOR REFUSE VEHICLE

ROAD STOPPED UP USING
CONCRETE BOLLARDS OR
SIMILAR

PROPOSED TURNING HEAD
FOR REFUSE VEHICLE

5.5

Sawmill and
local access only

EXACT LOCATION TO
BE DETERMINED

SCALE 1:500

Scale
0 10 20 40 80m

Original Size (A1) 1:1000 @ A1 1:2000 @ A3

Filename: F:\PROJECTS\HSET UP NEW PROJECTS\DEVELOPMENT - NAIRN SOUTH STRATEGIC DEVELOPMENT PLAN TRANSPORT APPRAISAL\03 EXECUTION\7 - CAD\20-SHEETS\60446943-SKE-C-0001-0012 - 6M CARRIAGEWAY.DWG
Last saved by: SWANSONAJ Last Plotted: 2016-02-05

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KEY

- EXISTING CARRIAGEWAY
- PROPOSED CARRIAGEWAY
- PROPOSED FOOTWAY
- NEW KERBLINE

ISSUE/REVISION

I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

60446943

SHEET TITLE

PRELIMINARY DESIGN 6m
BALBLAIR ROAD
OPTION 2

SHEET NUMBER

60446943-SKE-C-0009

Project Management Initials: Designer: JN Checked: JF Approved: DC ISO A1 594mm x 841mm

BALBLAIR ROAD
WIDENING OF CARRIAGEWAY AND PROVISION OF FOOTWAY AND TRAFFIC CALMING MEASURES

ROAD STOPPED UP USING CONCRETE BOLLARDS OR SIMILAR

2.3

PROPOSED MINI ROUNDABOUT AT SAWMILL ACCESS

5.5

EXACT LOCATION TO BE DETERMINED

Sawmill and local access only

SCALE 1:500

Scale
0 10 20 40 80m

Original Size (A1) 1:1000 @ A1 1:2000 @ A3

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KEY

- EXISTING CARRIAGEWAY
- PROPOSED CARRIAGEWAY
- PROPOSED FOOTWAY
- NEW KERBLINE

ISSUE/REVISION

I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

60446943

SHEET TITLE

PRELIMINARY DESIGN 6m
BALBLAIR ROAD
OPTION 3

SHEET NUMBER

60446943-SKE-C-0010

Filename: F:\PROJECTS\#SET UP NEW PROJECTS\DEVELOPMENT - NAIRN SOUTH STRATEGIC DEVELOPMENT PLAN TRANSPORT APPRAISAL\03 EXECUTION\7 - CAD\20-SHEETS\60446943-SKE-C-0001-0012 - 6M CARRIAGEWAY.DWG
Last saved by: SWANSONAJ Last Plotted: 2016-02-05

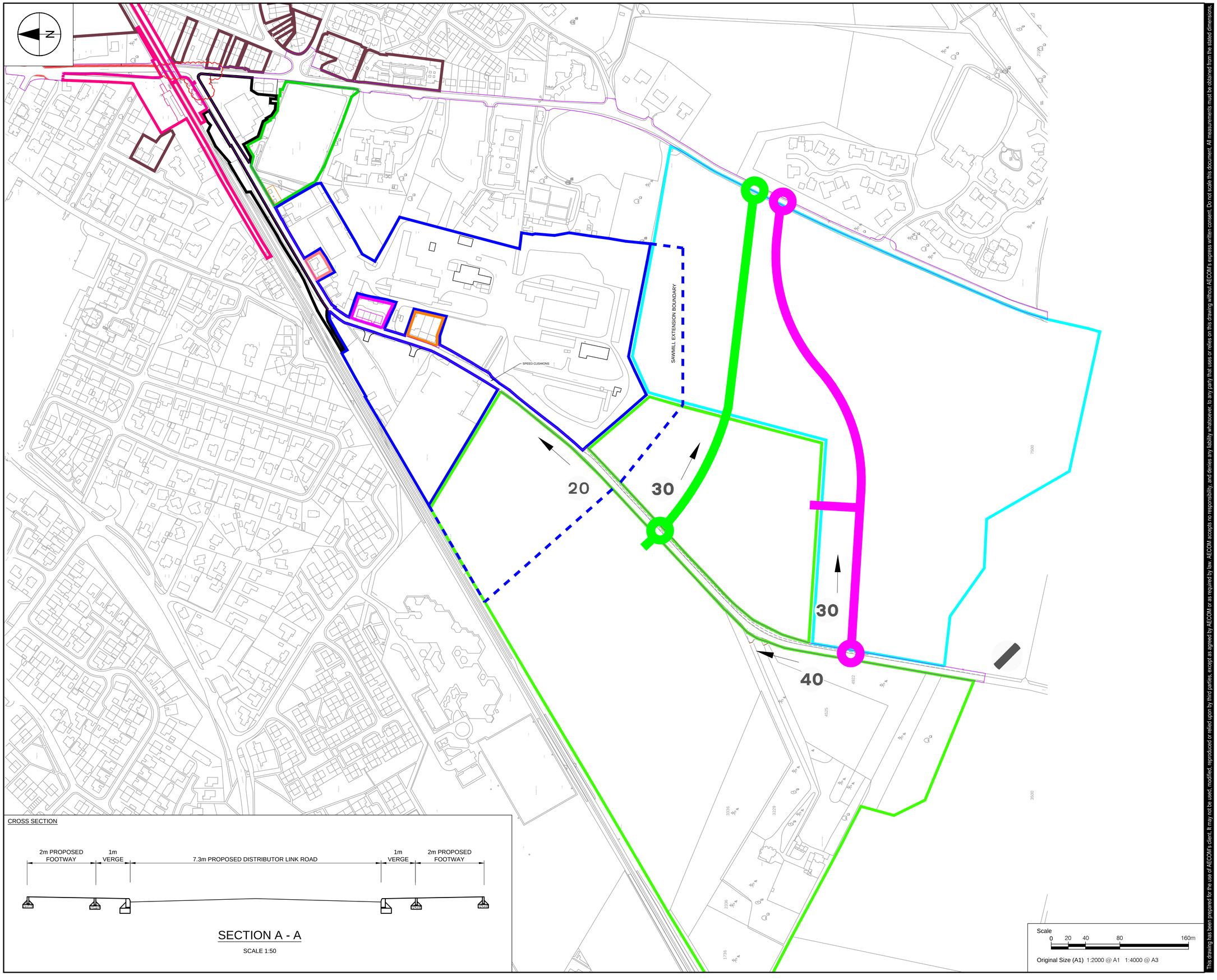
ISO A1 594mm x 841mm

Approved: DC

Checked: JF

Designer: JN

Project Management Initials:



CROSS SECTION

SECTION A - A

SCALE 1:50

Scale
0 20 40 80 160m

Original Size (A1) 1:2000 @ A1 1:4000 @ A3

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PROJECT

NAIRN SOUTH STRATEGIC DEVELOPMENT PLAN

CLIENT

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KEY

- OPTION 1 - DISTRIBUTOR LINK ROAD
- OPTION 2 - DISTRIBUTOR LINK ROAD

LAND OWNERSHIP KEY:

- ALLENBY
- BALBLAIR TERRACE PROPERTIES
- HC ENVIRNOMENTAL SERVICES
- FORBES (CONSORTIUM)
- GRANITE COTTAGES
- HOWDENS COTTAGE PROPERTIES
- NAIRN COUNTY FC
- J GORDON & SON
- SCOTRAIL
- VARIOUS COUNCIL PROPERTY TITLES

ISSUE/REVISION

I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

60446943

SHEET TITLE

PRELIMINARY DESIGN 6m DISTRIBUTOR ROAD OPTION 1 & 2

SHEET NUMBER

60446943-SKE-C-0011

Filename: F:\PROJECTS\#SET UP NEW PROJECTS\DEVELOPMENT - NAIRN SOUTH STRATEGIC DEVELOPMENT PLAN TRANSPORT APPRAISAL\03 EXECUTION\7 - CAD\2D-SHEETS\60446943-SKE-C-0001-0012 - 6M CARRIAGEWAY.DWG
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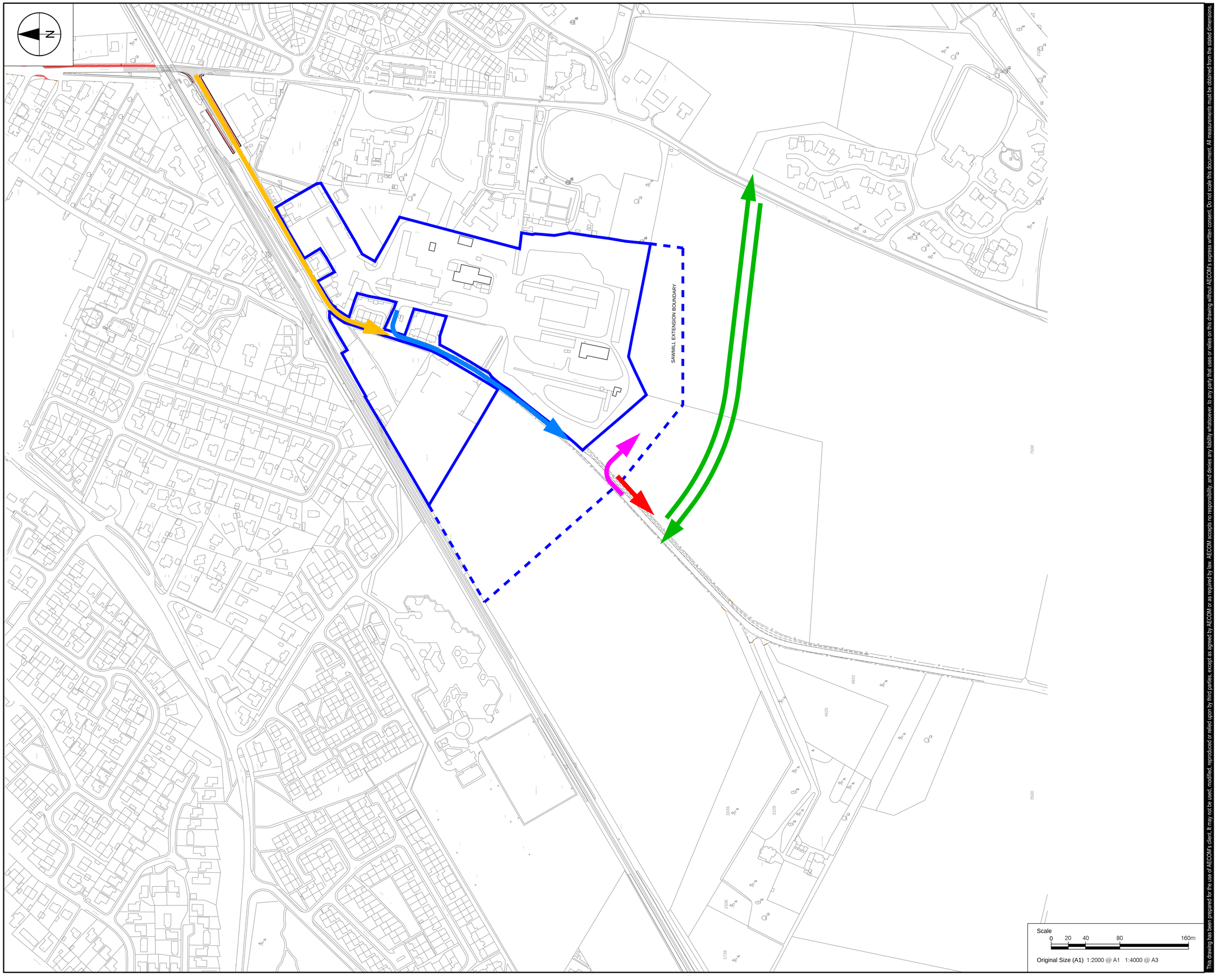
ISO A1 594mm x 841mm

Approved: DC

Checked: JF

Designer: JN

Project Management Initials:



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Original Size (A1) 1:2000 @ A1 1:4000 @ A3

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PROJECT

NAIRN SOUTH STRATEGIC DEVELOPMENT PLAN

CLIENT

CONSULTANT

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www.aecom.com

KEY

- OUT ONLY - SAWMILL
- NEW JUNCTION - IN ONLY TO SAWMILL
- BALBLAIR ROAD 1-WAY ONLY SOUTHBOUND
- BALBLAIR ROAD 2-WAY SOUTH OF NEW SAWMILL ACCESS
- DISTRIBUTOR ROAD REQUIRED TO LINK BALBLAIR RD TO CAWDOR RD

LAND OWNERSHIP KEY:

- J GORDON & SON

ISSUE/REVISION

I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

60446943

SHEET TITLE

PRELIMINARY DESIGN 6m
BALBLAIR ROAD
OPTION 1

SHEET NUMBER

60446943-SKE-C-0012

Filename: F:\PROJECTS\WSET UP NEW PROJECTS\DEVELOPMENT - NAIRN SOUTH STRATEGIC DEVELOPMENT PLAN TRANSPORT APPRAISAL\03 EXECUTION\7 - CAD\20-SHEETS\60446943-SKE-C-0001-0012 - 6M CARRIAGEWAY.DWG
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KEY

- NAIRN BYPASS
- BYPASS LINK ROAD
- POTENTIAL HALF DIAMOND

ISSUE/REVISION

I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

60446943

SHEET TITLE

A96 INVERNESS - ABERDEEN
NAIRN BYPASS

SHEET NUMBER

60446943-SKE-C-0013

ISO A0 841mm x 1189mm
Last saved by: SWANSONAJ Last Plotted: 2016-02-24

N

Oncoming vehicles in middle of road

PASSING PLACE

EXISTING PASSING PLACE

EXISTING WIDENING AT JUNCTION

EXISTING PASSING PLACE WIDENING REQUIRED

EXISTING WIDENING ON BENDS

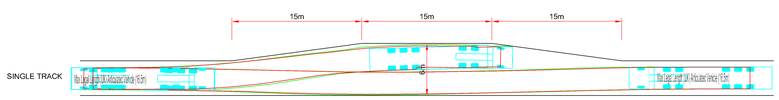
POTENTIAL JUNCTION IMPROVEMENTS

NEW PASSING PLACE

EXISTING WIDENING AT JUNCTION

NAIRN

TYPICAL PASSING PLACE DETAIL



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NAIRN SOUTH STRATEGIC DEVELOPMENT PLAN

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KEY

- EXISTING PASSING PLACE
- EXISTING PASSING PLACE REQUIRING WIDENING
- NEW PASSING PLACE
- NEW SIGN

ISSUE/REVISION

I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

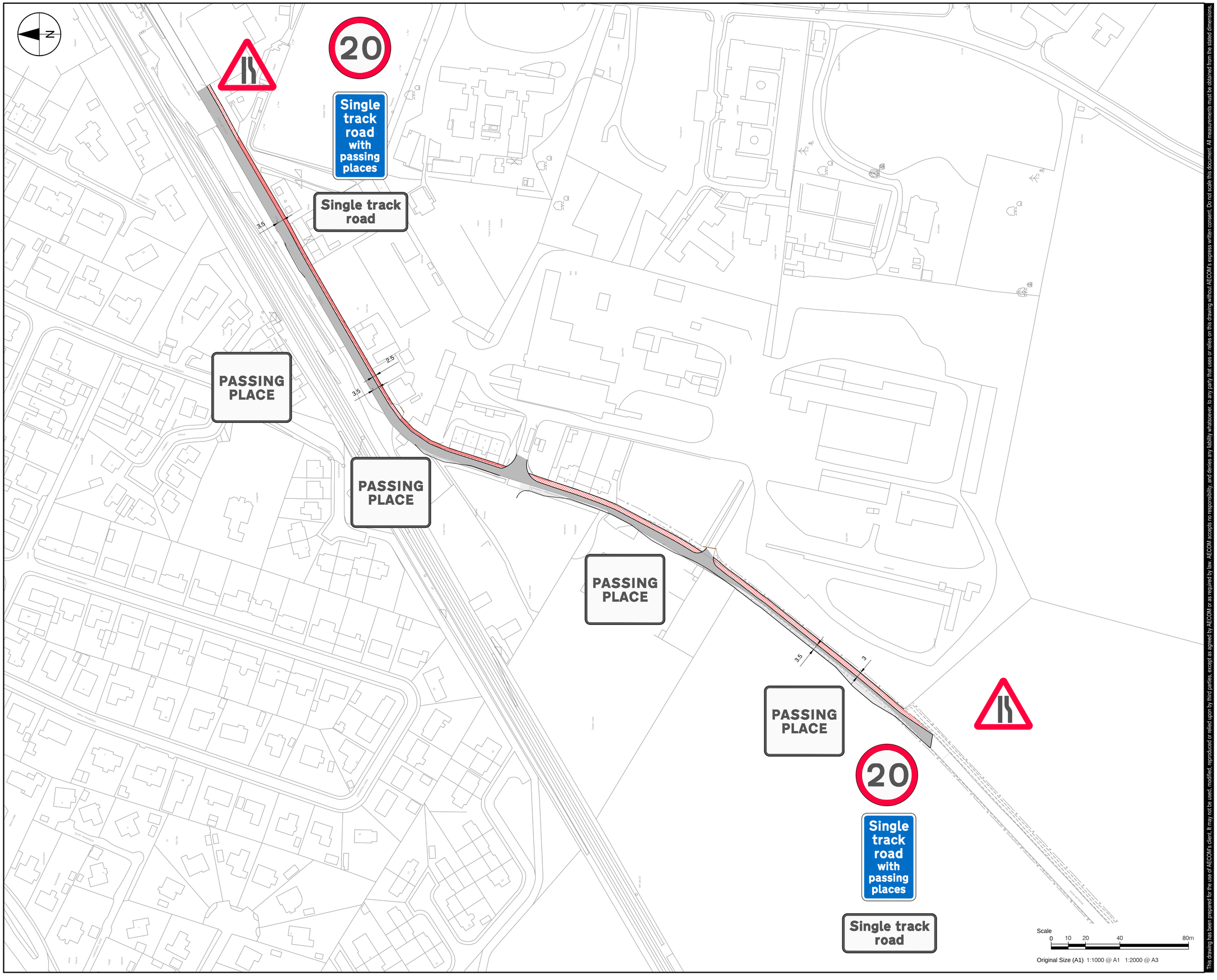
60446943

SHEET TITLE

NAIRN - DELNIES JUNCTION IMPROVEMENT OPTIONS

SHEET NUMBER

60446943-SKE-C-0014



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Last saved by: SWANSONAJ Last Plotted: 2016-04-01

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PROJECT

NAIRN SOUTH STRATEGIC DEVELOPMENT PLAN

CLIENT

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KEY

- EXISTING CARRIAGEWAY
- PROPOSED CARRIAGEWAY
- EXISTING FOOTWAY
- PROPOSED FOOTWAY
- NEW KERBLINE

ISSUE/REVISION

I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

60446943

SHEET TITLE

PRELIMINARY DESIGN
BALBLAIR ROAD
OPTION 4 - PASSING PLACES

SHEET NUMBER

60446943-SKE-C-0018

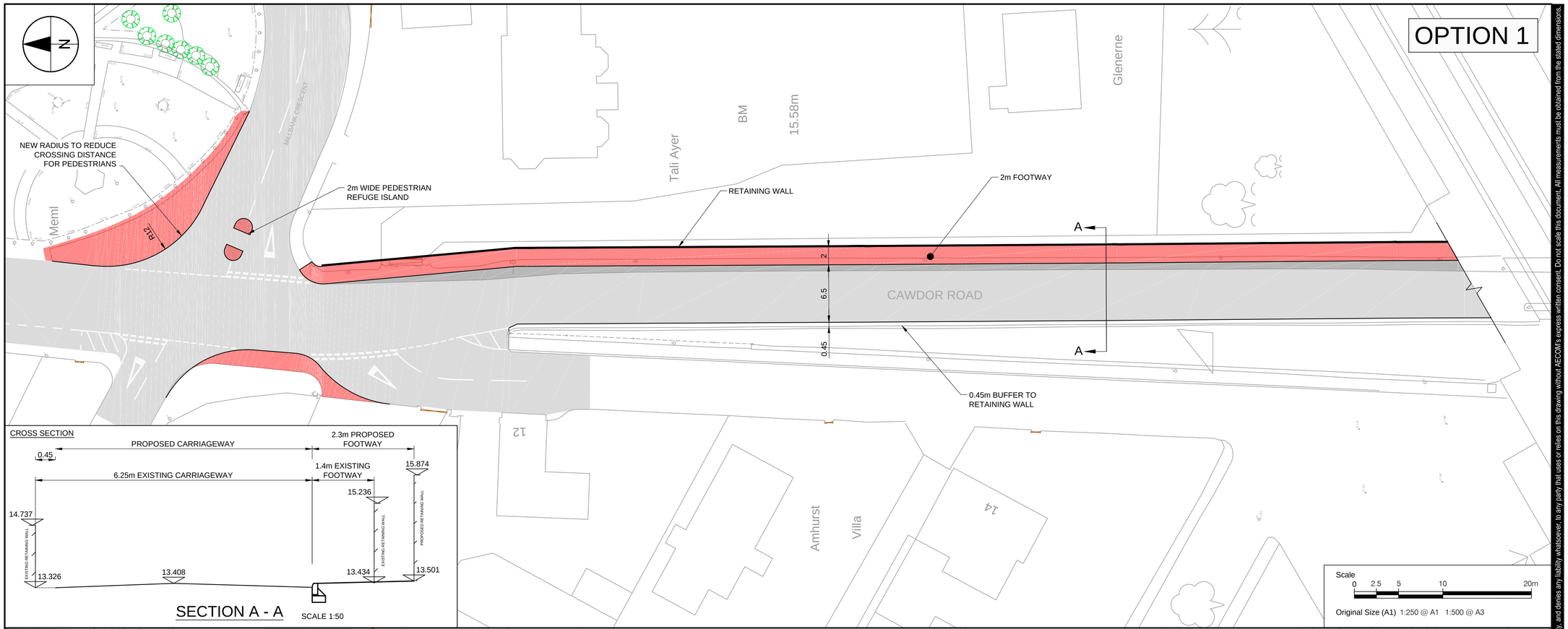
ISO A1 594mm x 841mm

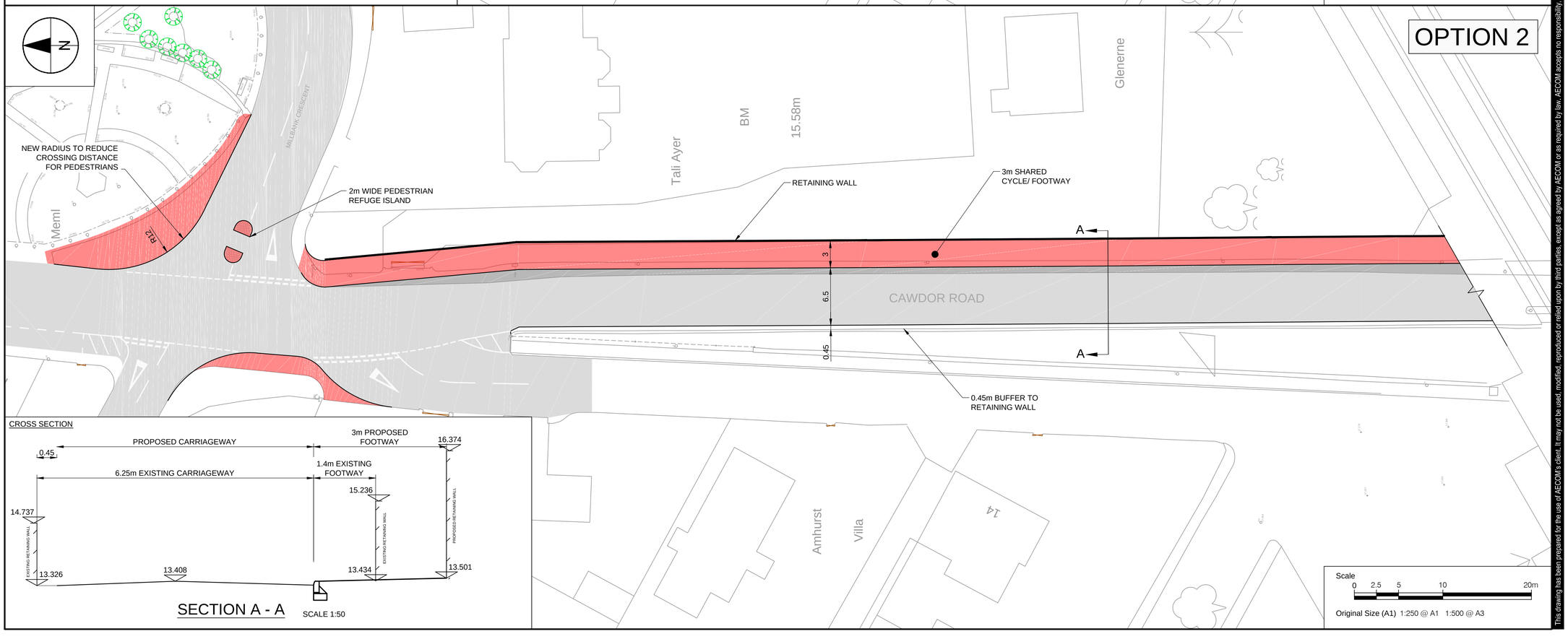
Approved: DC

Checked: JF

Designer: JN

Project Management Initials:





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Last saved by: SWANSONAJ Last Plotted: 2016-02-04

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PROJECT

NAIRN SOUTH STRATEGIC DEVELOPMENT PLAN

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KEY

- EXISTING CARRIAGEWAY
- PROPOSED CARRIAGEWAY
- PROPOSED FOOTWAY
- NEW KERBLINE
- RETAINING WALL

ISSUE/REVISION

I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

60446943

SHEET TITLE

PRELIMINARY DESIGN 6.5m CAWDOR RD - NORTH OF RAILWAY BR OPTIONS 1 & 2

SHEET NUMBER

60446943-SKE-C-0020

ISO A1 594mm x 841mm

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Checked: JF

Designer: JN

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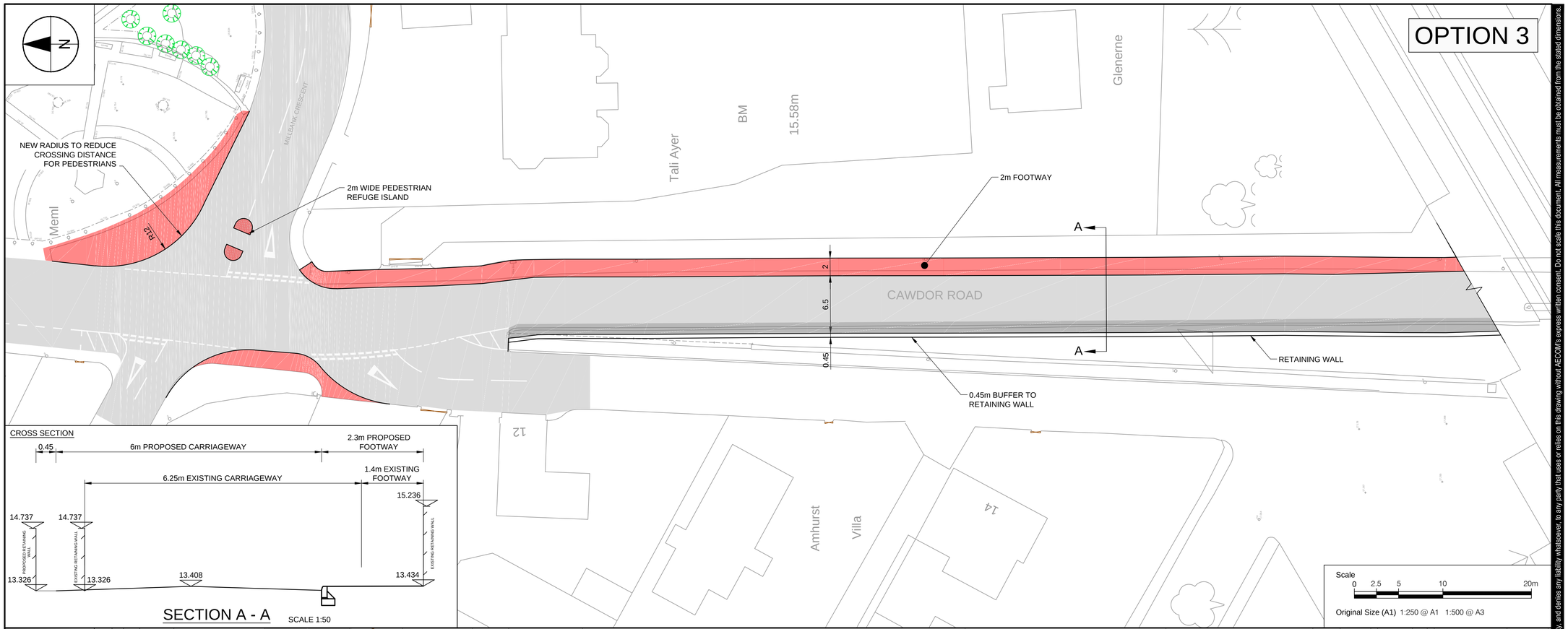

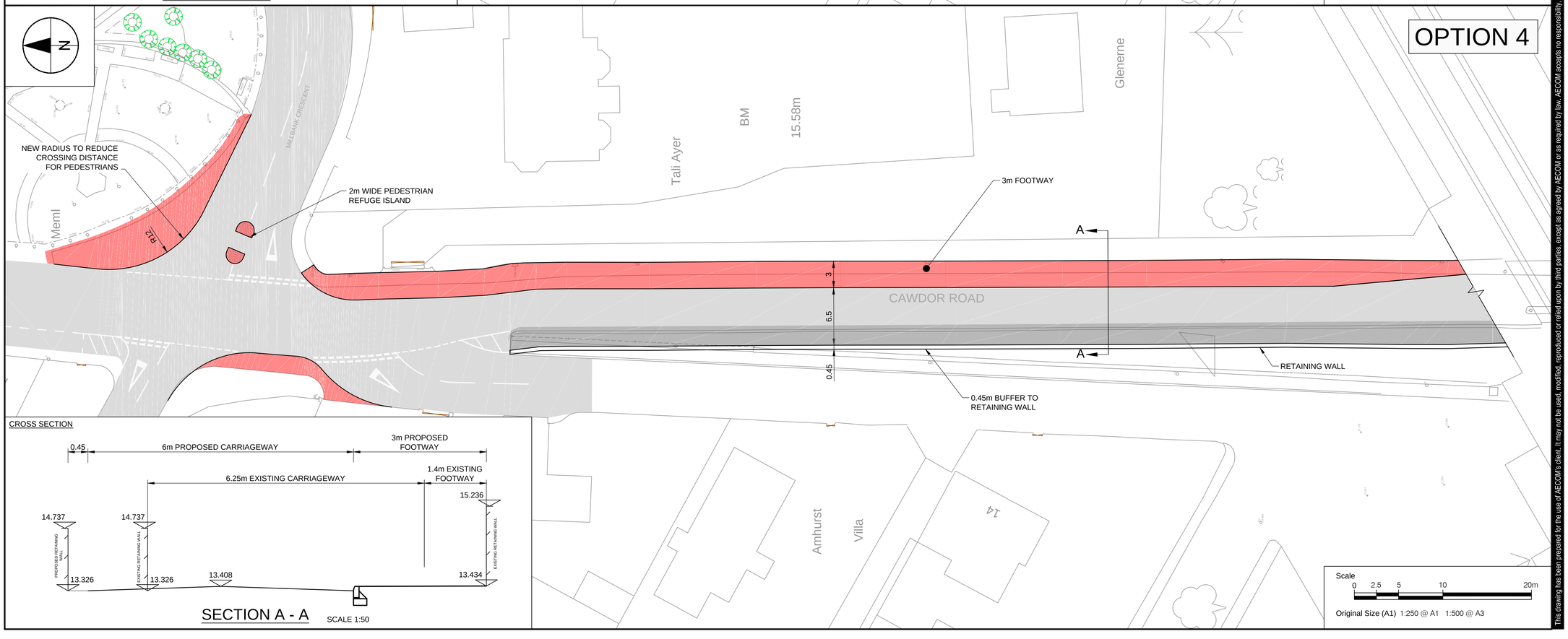

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Last saved by: SWANSONAJ Last Plotted: 2016-02-04

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NAIRN SOUTH STRATEGIC DEVELOPMENT PLAN

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KEY

- EXISTING CARRIAGEWAY
- PROPOSED CARRIAGEWAY
- PROPOSED FOOTWAY
- NEW KERBLINE
- RETAINING WALL

ISSUE/REVISION

I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

60446943

SHEET TITLE

PRELIMINARY DESIGN 6.5m CAWDOR RD - NORTH OF RAILWAY BR OPTIONS 3 & 4

SHEET NUMBER

60446943-SKE-C-0021

ISO A1 594mm x 841mm

Approved: DC

Checked: JF

Designer: JN

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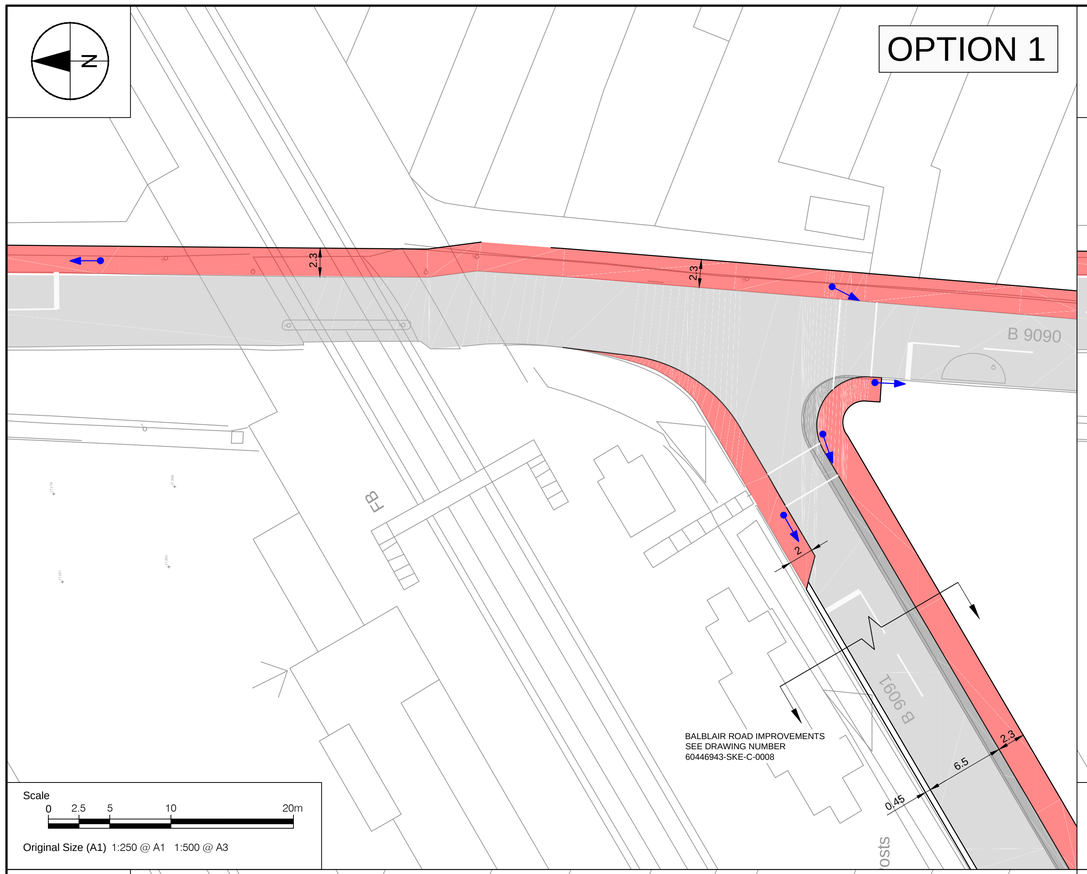

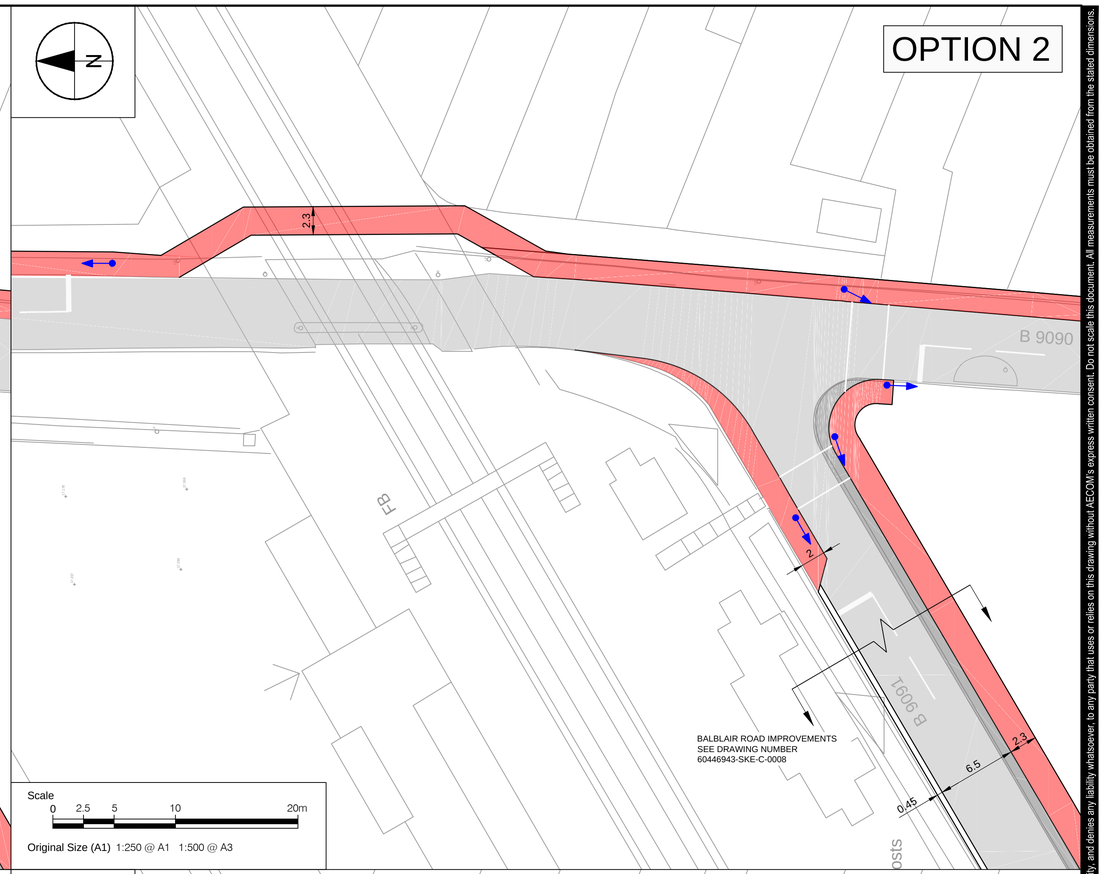

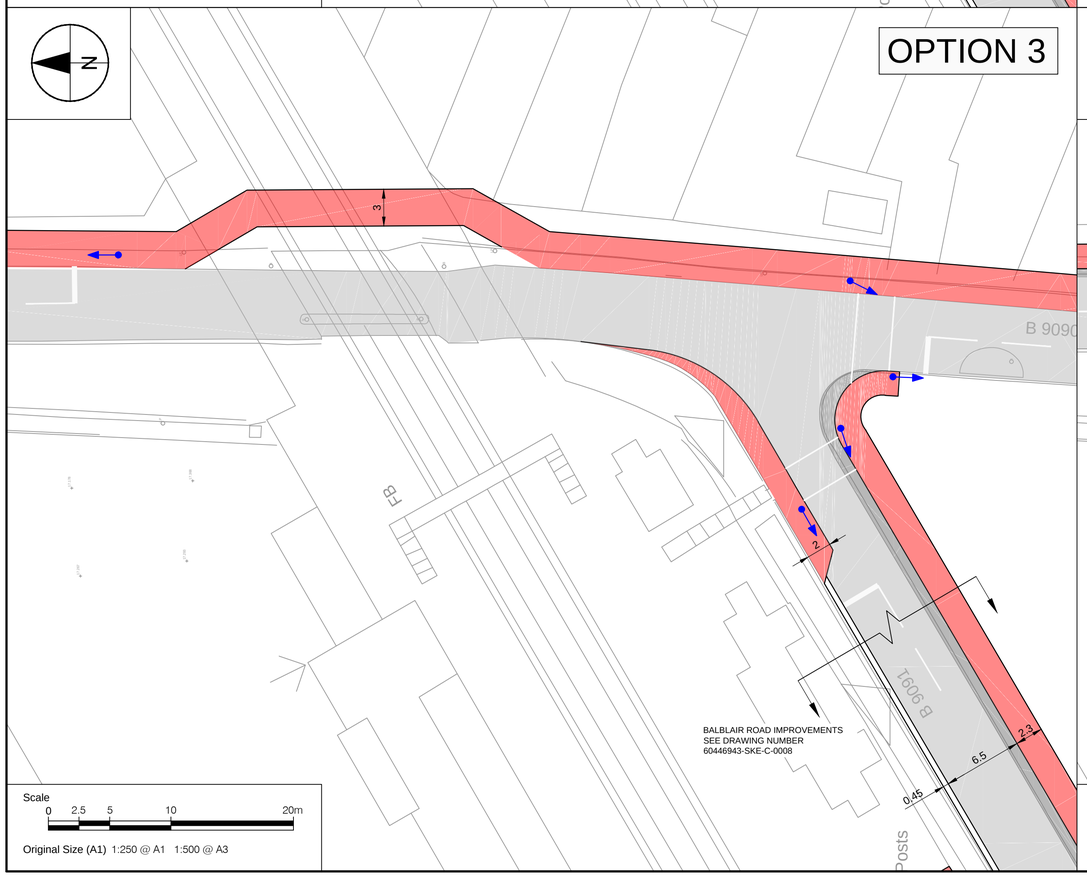

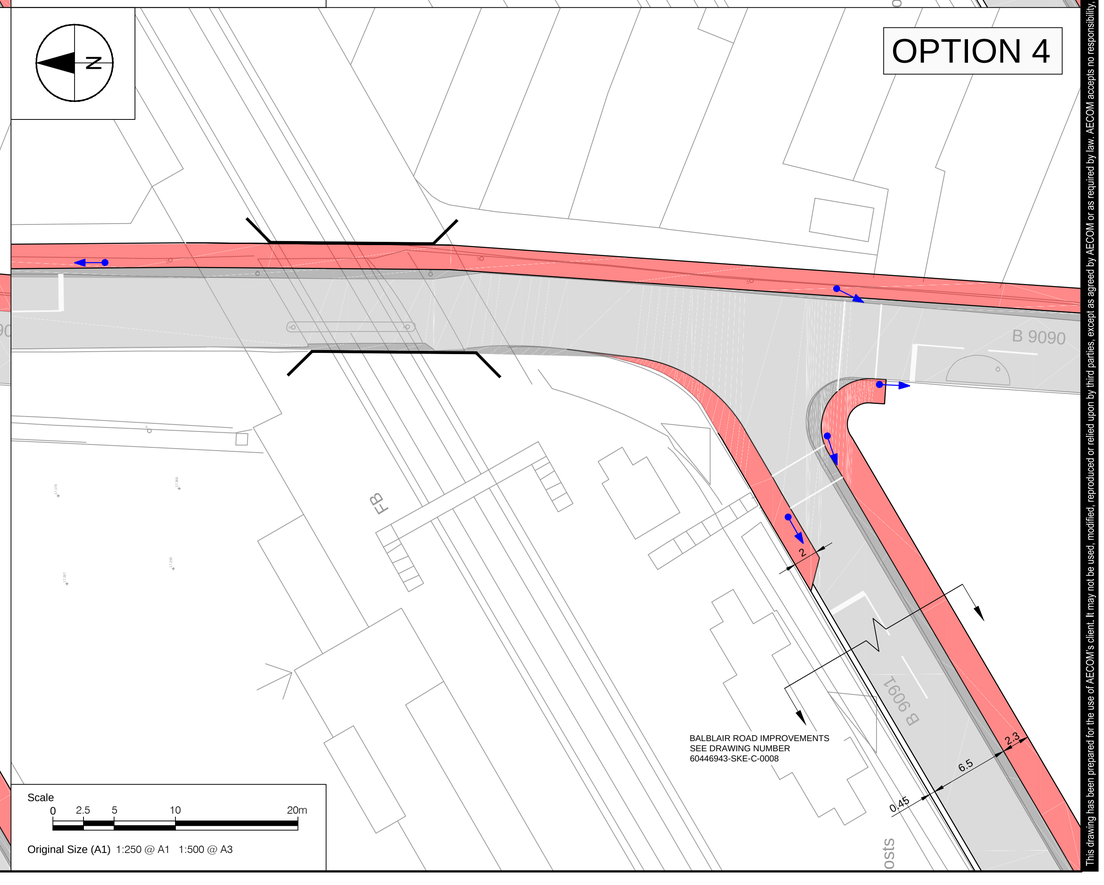

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Last saved by: SWANSONAJ Last Plotted: 2016-02-04

AECOM

PROJECT

NAIRN SOUTH STRATEGIC DEVELOPMENT PLAN

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KEY

- EXISTING CARRIAGEWAY
- PROPOSED CARRIAGEWAY
- PROPOSED FOOTWAY
- NEW KERBLINE
- RETAINING WALL

ISSUE/REVISION

I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

60446943

SHEET TITLE

PRELIMINARY DESIGN 6.5m
NAIRN STATION RAILWAY BRIDGE
OPTIONS 1, 2, 3 & 4

SHEET NUMBER

60446943-SKE-C-0022

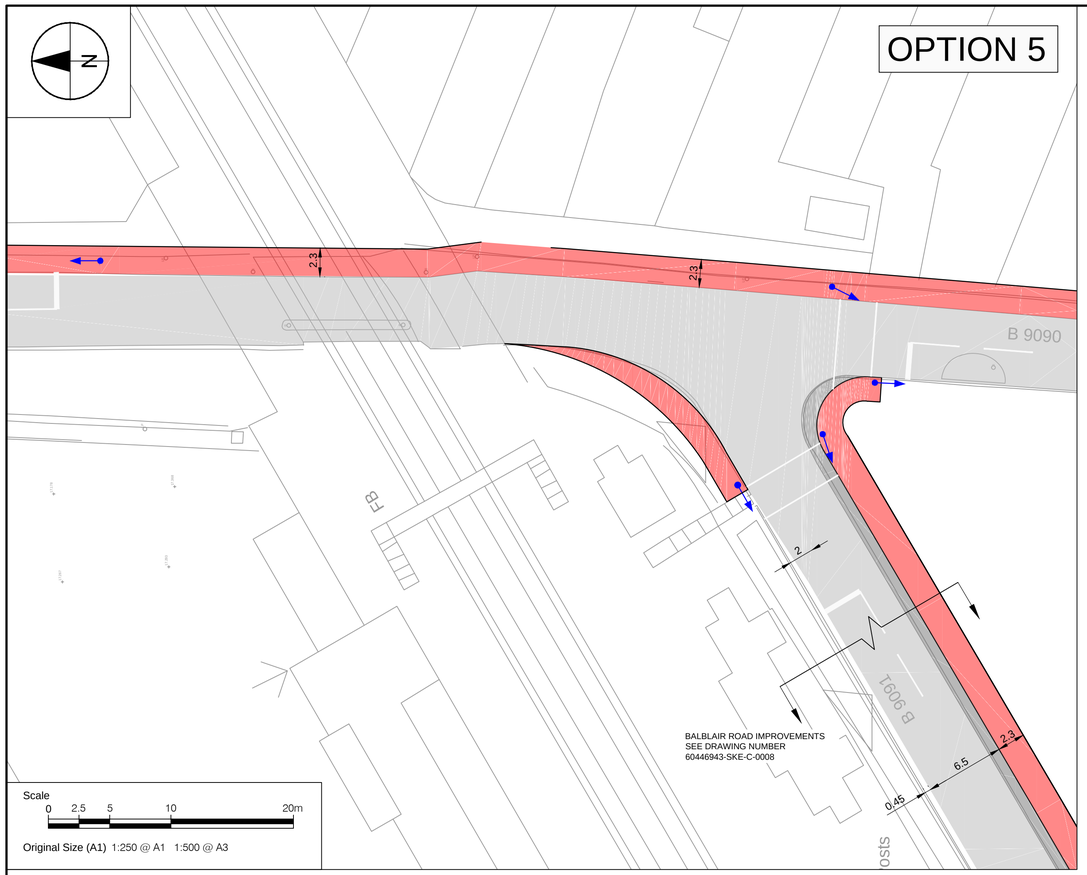
ISO A1 594mm x 841mm

Approved: DC

Checked: JF

Designer: JN

Project Management Initials:



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PROJECT

NAIRN SOUTH STRATEGIC DEVELOPMENT PLAN

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KEY

- EXISTING CARRIAGEWAY
- PROPOSED CARRIAGEWAY
- PROPOSED FOOTWAY
- NEW KERBLINE
- RETAINING WALL

ISSUE/REVISION

I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

60446943

SHEET TITLE

PRELIMINARY DESIGN 6.5m
NAIRN STATION RAILWAY BRIDGE
OPTION 5

SHEET NUMBER

60446943-SKE-C-0023

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Last saved by: SWANSONAJ Last Plotted: 2016-02-04

ISO A1 594mm x 841mm

Approved: DC

Checked: JF

Designer: JN

Project Management Initials:

Filename: F:\PROJECTS\WSET UP NEW PROJECTS\DEVELOPMENT - NAIRN SOUTH STRATEGIC DEVELOPMENT PLAN TRANSPORT APPRAISAL\03 EXECUTION\7 - CAD\20-SHEETS\60446943-SKE-C-0020-0030 - 6.5M CARRIAGEWAY.DWG
Last saved by: SWANSONAJ Last Plotted: 2016-02-04

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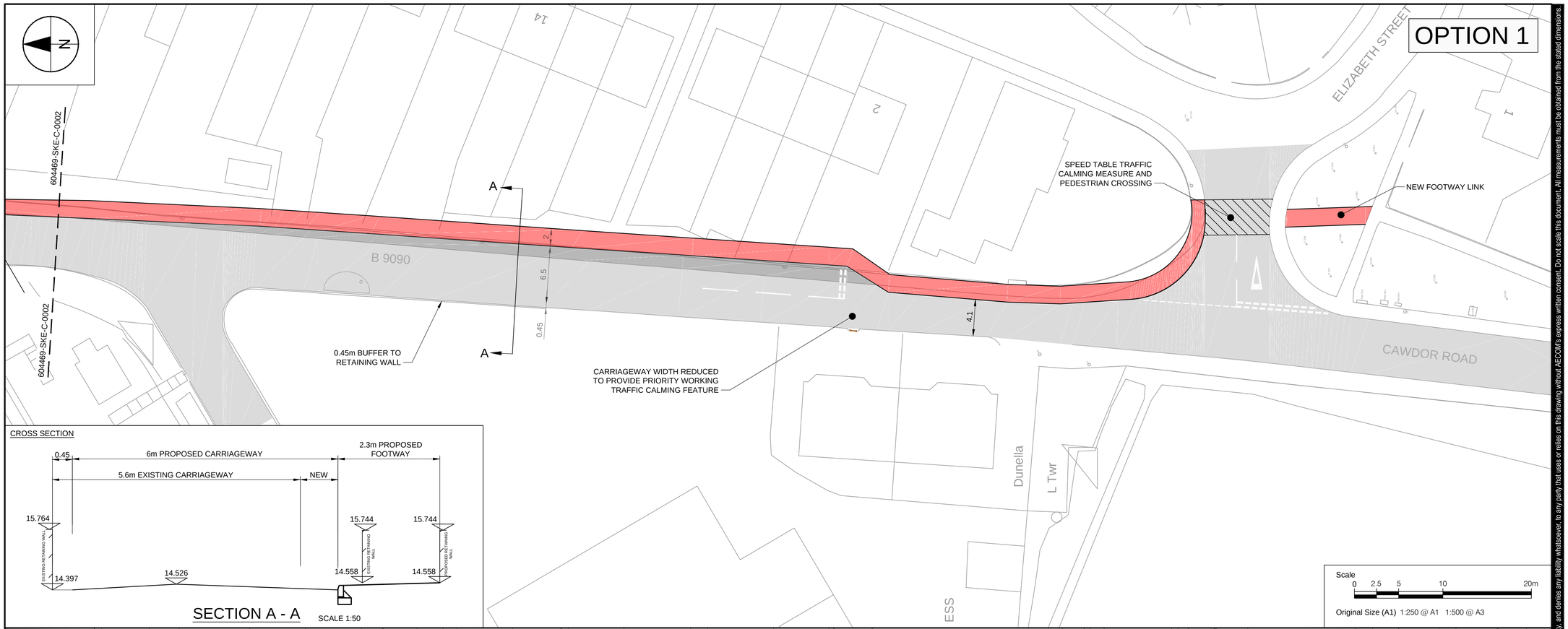

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SECTION A - A

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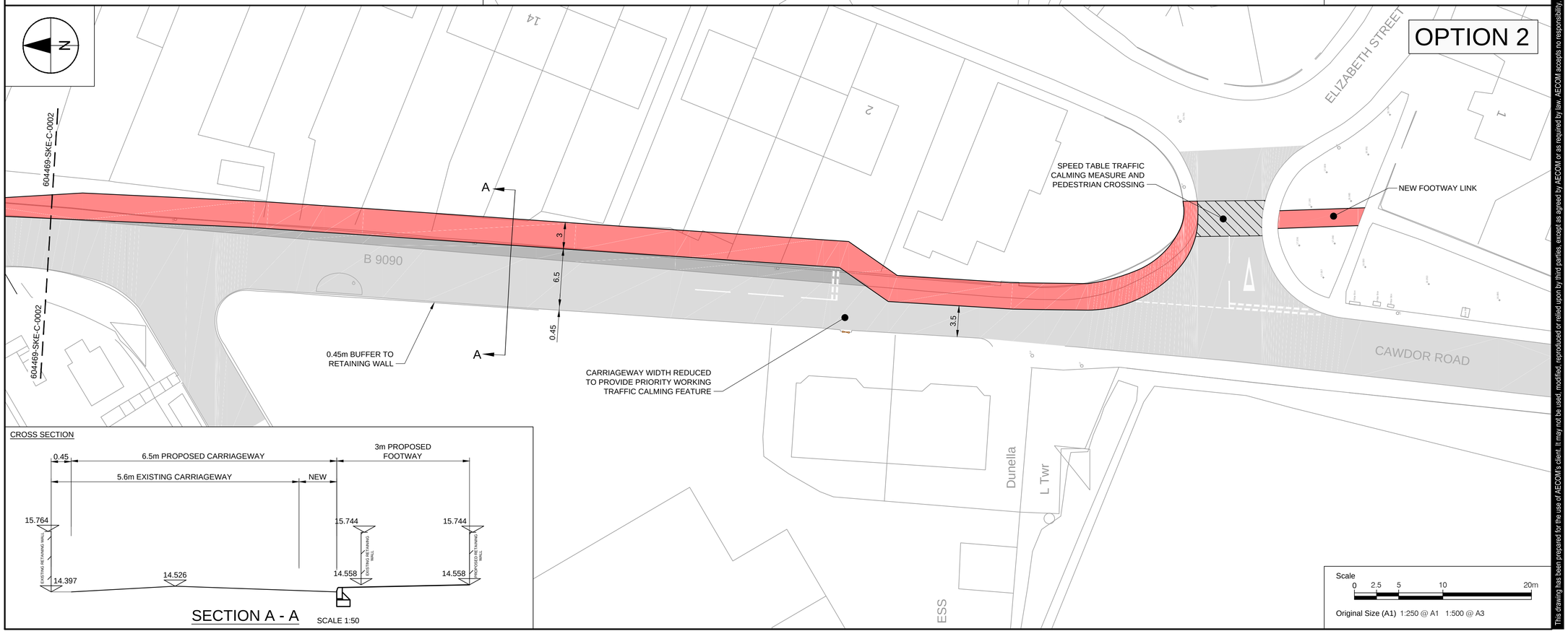

CROSS SECTION

SECTION A - A

SCALE 1:50

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AECOM

PROJECT

NAIRN SOUTH STRATEGIC DEVELOPMENT PLAN

CLIENT

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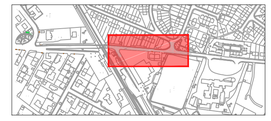
KEY

- EXISTING CARRIAGEWAY
- PROPOSED CARRIAGEWAY
- PROPOSED FOOTWAY
- NEW KERBLINE
- RETAINING WALL

ISSUE/REVISION

I/R	DATE	DESCRIPTION

KEY PLAN



PROJECT NUMBER

60446943

SHEET TITLE

PRELIMINARY DESIGN 6.5m CAWDOR RD SOUTH OF RAILWAY BR OPTION 1 & 2

SHEET NUMBER

60446943-SKE-C-0024

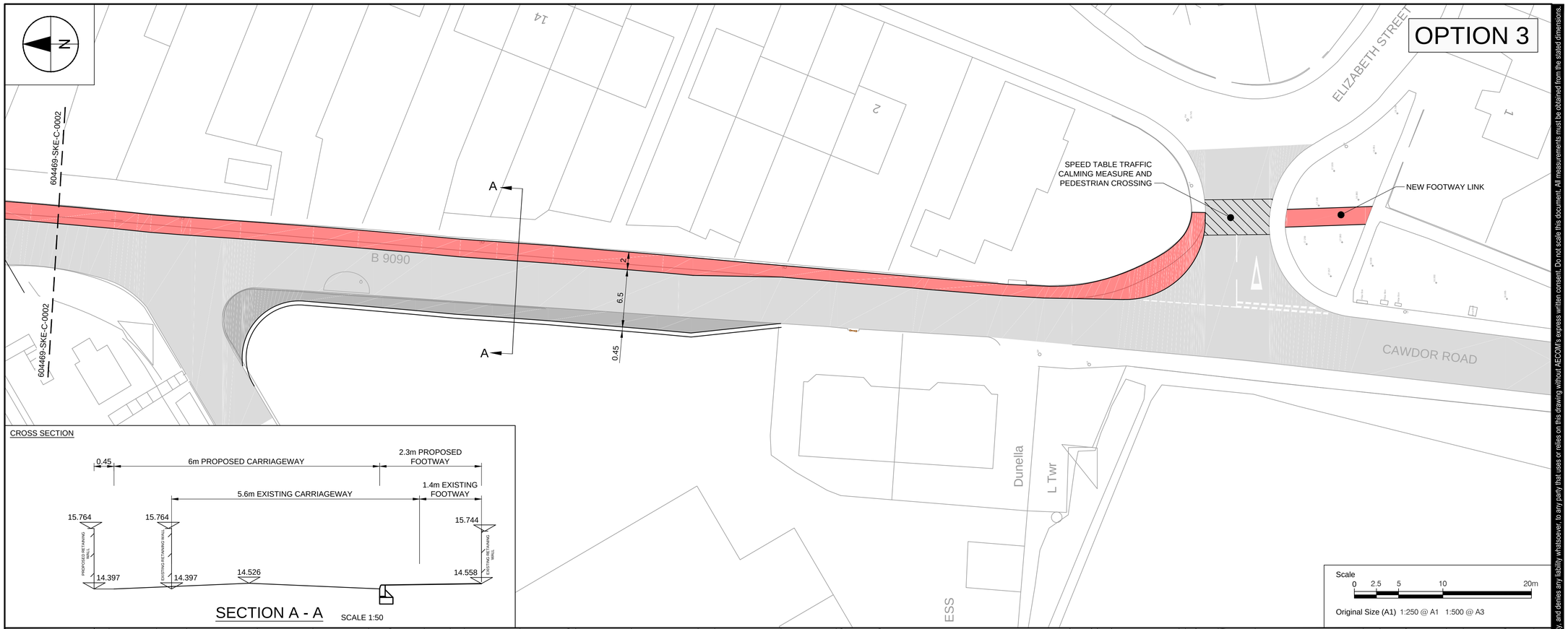
ISO A1 594mm x 841mm

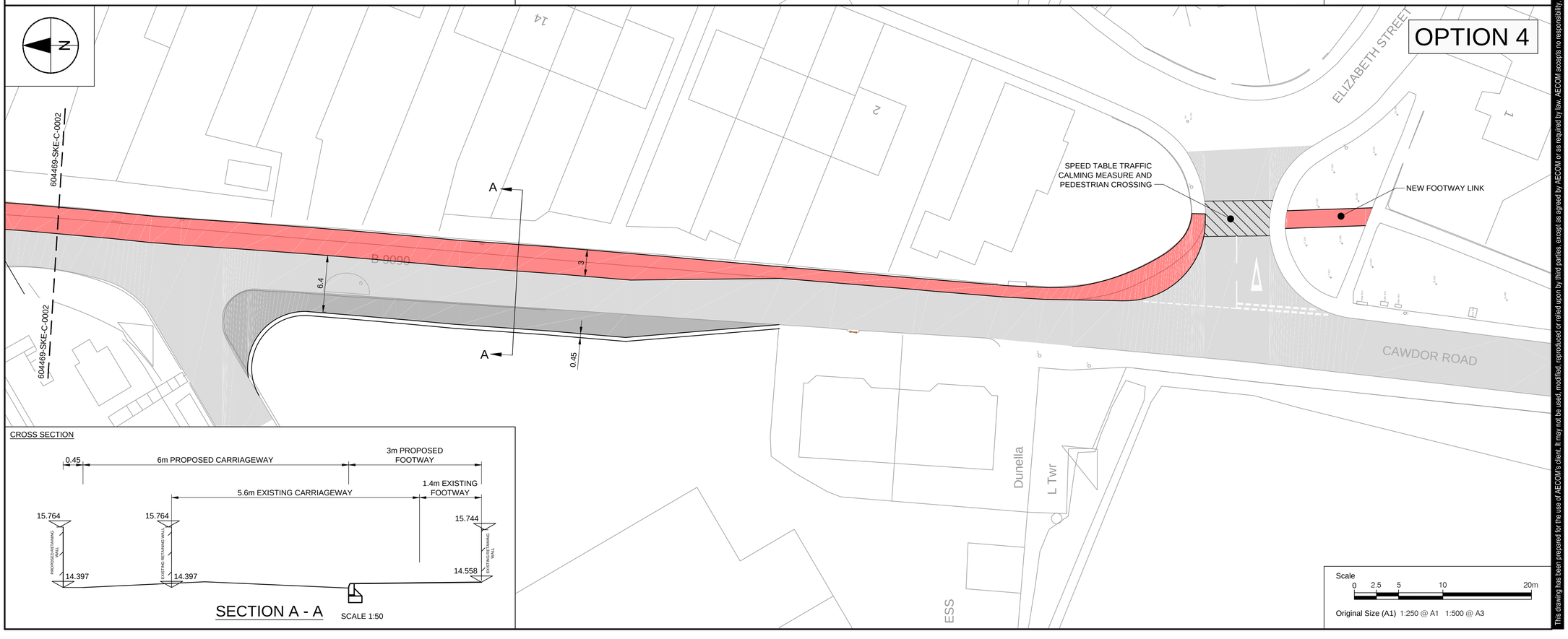
Approved: DC

Checked: JF

Designer: JN

Project Management Initials:





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PROJECT

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KEY

- EXISTING CARRIAGEWAY
- PROPOSED CARRIAGEWAY
- PROPOSED FOOTWAY
- NEW KERBLINE
- RETAINING WALL

ISSUE/REVISION

I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

60446943

SHEET TITLE

PRELIMINARY DESIGN 6.5m CAWDOR RD SOUTH OF RAILWAY BR OPTION 3 & 4

SHEET NUMBER

60446943-SKE-C-0025

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Last saved by: SWANSONAJ Last Plotted: 2016-02-04

ISO A1 594mm x 841mm

Approved: DC

Checked: JF

Designer: JN

Project Management Initials:

BALBLAIR ROAD
WIDENING OF CARRIAGEWAY AND PROVISION OF FOOTWAY AND TRAFFIC CALMING MEASURES

FOR JUNCTION DESIGN OPTIONS
SEE DRAWING No. 60446943-SKE-C-0003 & 004

Give way to oncoming vehicles

PROPOSED PRIORITY TRAFFIC WORKING

Priority over oncoming vehicles

WIDEN CARRIAGEWAY TO WEST SIDE TO 6.5m WITH 2.3m OR 3m FOOTWAY

PROPOSED MINI ROUNDABOUT AT SAWMILL ACCESS

SPEED CUSHIONS

Priority over oncoming vehicles

PROPOSED PRIORITY TRAFFIC WORKING

Give way to oncoming vehicles

SCALE 1:500

Scale
0 10 20 40 80m

Original Size (A1) 1:1000 @ A1 1:2000 @ A3

AECOM

PROJECT

NAIRN SOUTH STRATEGIC DEVELOPMENT PLAN

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KEY

- EXISTING CARRIAGEWAY
- PROPOSED CARRIAGEWAY
- PROPOSED FOOTWAY
- NEW KERBLINE
- SPEED CUSHIONS
- PEDESTRIAN/ CYCLE ROUTE
- PEDESTRIAN/ CYCLE BRIDGE WITH RAMPED ACCESS

ISSUE/REVISION

I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

60446943

SHEET TITLE

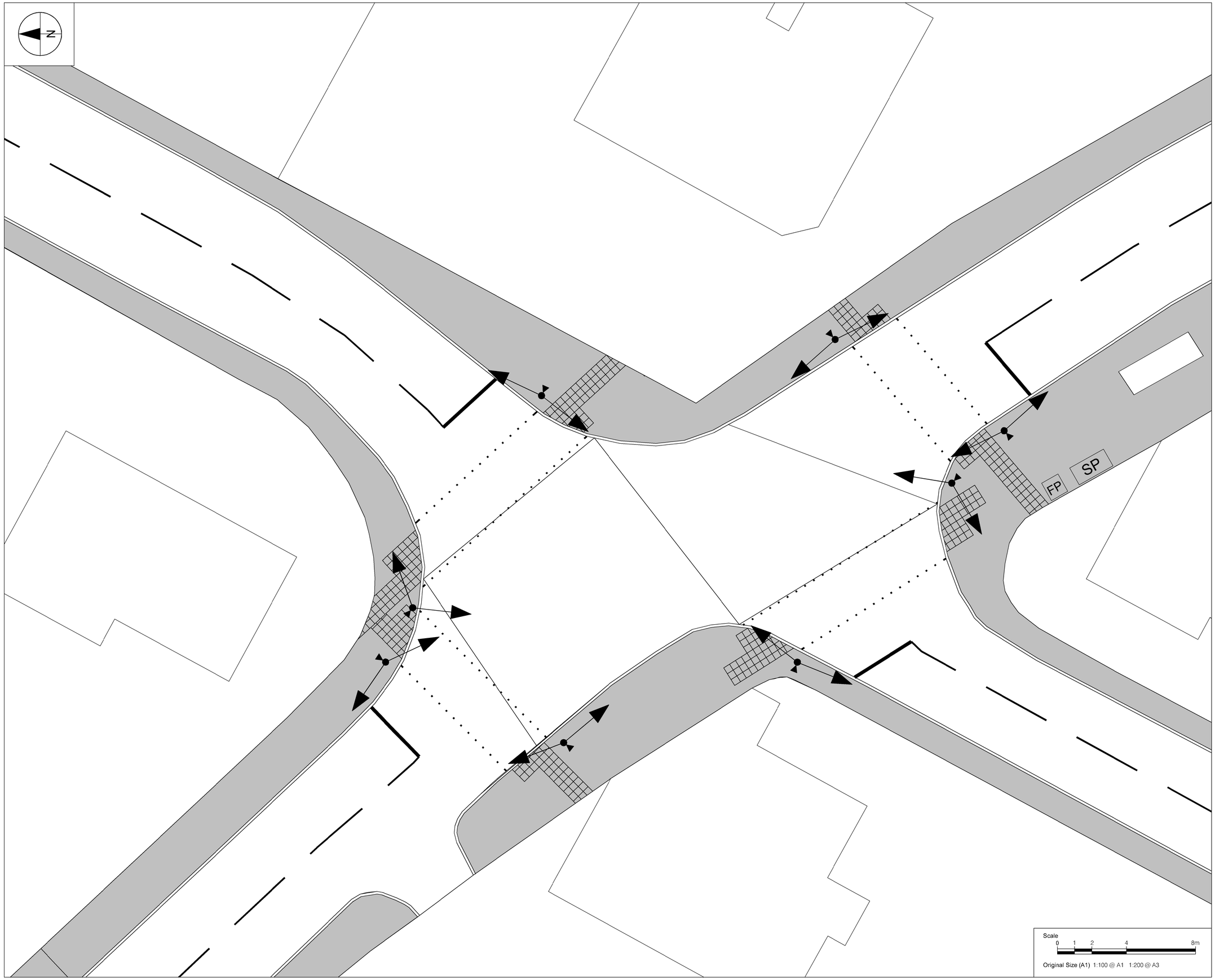
PRELIMINARY DESIGN 6.5m
BALBLAIR ROAD
OPTION 1

SHEET NUMBER

60446943-SKE-C-0027

Filename: F:\PROJECTS\#SET UP NEW PROJECTS\DEVELOPMENT - NAIRN SOUTH STRATEGIC DEVELOPMENT PLAN TRANSPORT APPRAISAL\03 EXECUTION\7 - CAD\20-SHEETS\60446943-SKE-C-0020-0030 - 6.5M CARRIAGEWAY.DWG
Last saved by: SWANSONAJ Last Plotted: 2016-02-04

Project Management Initials: Designer: JN Checked: JF Approved: DC



KEY

- SIGNAL POLE (4m STANDARD)
- PRIMARY 3-ASPECT TRAFFIC SIGNAL HEAD
- PEDESTRIAN PUSH BUTTON
- TACTILE PAVING
- FP FEEDER PILLAR
- SP STREET LIGHTING SUPPLY PILLAR
- ROAD STUDS

Scale
0 1 2 4 8m
Original Size (A1) 1:100 @ A1 1:200 @ A3

ISSUE/REVISION

I/R	DATE	DESCRIPTION

SHEET TITLE

PRELIMINARY DESIGN
A96 INVERNESS ROAD/
WAVERLY ROAD SIGNALISATION

SHEET NUMBER

60446943-SKE-C-0030

Filename: P:\UKEDI4-TP\PROJECTS\#SET UP NEW PROJECTS\DEVELOPMENT - NAIRN SOUTH STRATEGIC DEVELOPMENT PLAN TRANSPORT APPRAISAL\03 EXECUTION\7 - CAD\20-SHEETS\60446943-SKE-C-0030 - A96_WAVERLY ROAD.DWG
Last saved by: SWANSONAJ Last Plotted: 2016-02-05

Xref F:\projects\#Set up new projects\Development - Nairn South Strategic Development Plan Trarsport Appraisal\03 EXECUTION\7 - CAD\99-Support\Project_Title_Blocks_ACM-G-TTD_ISO_A1.dwg

Appendix F – Infrastructure Improvement Recommendation

Capabilities on project:
Transportation

Preferred Infrastructure Improvements

Introduction
Further analysis of the local road network has helped to identify, from the refined infrastructure options list summarised in **Section 4** a list of preferred improvement options for the local road network around the masterplan site. The following chapter details the extent of these improvement measures and provides indicative capital costs derived from a high-level cost estimation exercise for the various elements described.

Road Network Improvements
Cawdor Road/Millbank Crescent/Cawdor Street/Waverley Road Junction

Estimated Cost: £10,000.

As indicated in **Section 4.1**, it is recommended that the pedestrian footways on the Millbank Crescent arm of the junction are widened to create an improved walking environment in proximity to Millbank Primary School. This would allow for a shorter crossing distance and, as shown in the traffic model prepared for the junction, would not cause any capacity issues for vehicular traffic at the junction.

B9090 Cawdor Road – Millbank to Nairn Station Bridge

Estimated Cost: £550,000

It is recommended that the road cross-section is widened to 6.0m wide with the inclusion of a 2.3m wide pedestrian footway and a 0.45m buffer from the existing retaining wall on the western carriageway. This would represent an improvement in road space/ link capacity and also in terms of pedestrian provision. Although it was concluded that there would not be sufficient space to allow for a 3.0m pedestrian and cycle path adjacent to the eastern carriageway, cycle provision is improved by the widened road space which would allow vehicles sufficient space to pass cyclists safely.

B9091 Balblair Road

Estimated Cost: £850,000 – £900,000

Depending on the progression of the planning proposals of the plots which make up the Nairn South site, there are two feasible options for the improvement of the B9091 Balblair Road. If the land to the west is progressed first, the option to stop off the B9091 Balblair Road would not be feasible due to access issues. Instead it is recommended that the developer would be required to provide improved pedestrian and cycle facilities on the B9091 Balblair Road, whilst still maintaining a two-way carriageway.

Should the land to the east of the B9091 Balblair Road be progressed at an earlier date, it is expected that these proposals should include the construction of the new distributor road through the site. This would allow the B9091 Balblair Road to be stopped off, with 100% of traffic associated with the masterplan site using the B9090 Cawdor Road for access.

B9090 Cawdor Road / B9091 Balblair Road Junction

Estimated Cost: £85,000

It is recommended that traffic signals are incorporated into the junction in conjunction with the preferred infrastructure improvements on Cawdor Road (north and south of the Nairn Station Bridge) and Balblair Road. As

Capabilities on project:
Transportation

part of this option localised widening of the footway beneath the railway bridge is recommended. This option enables the improvement of infrastructure for pedestrians, and negates the need for the replacement.

B9090 Cawdor Road – Nairn Station Bridge to Elizabeth Street

Estimated Cost: £350,000 to £700,000

Similarly to the other recommendations for B9090 Cawdor Road it is recommended that this section is widened to 6.0m, with a 2.3m wide footway over the majority of its length, and a 0.45m buffer from the retaining wall.

A96 Inverness Road/ Waverley Road/ Manse Street

Estimated Cost: £85,000

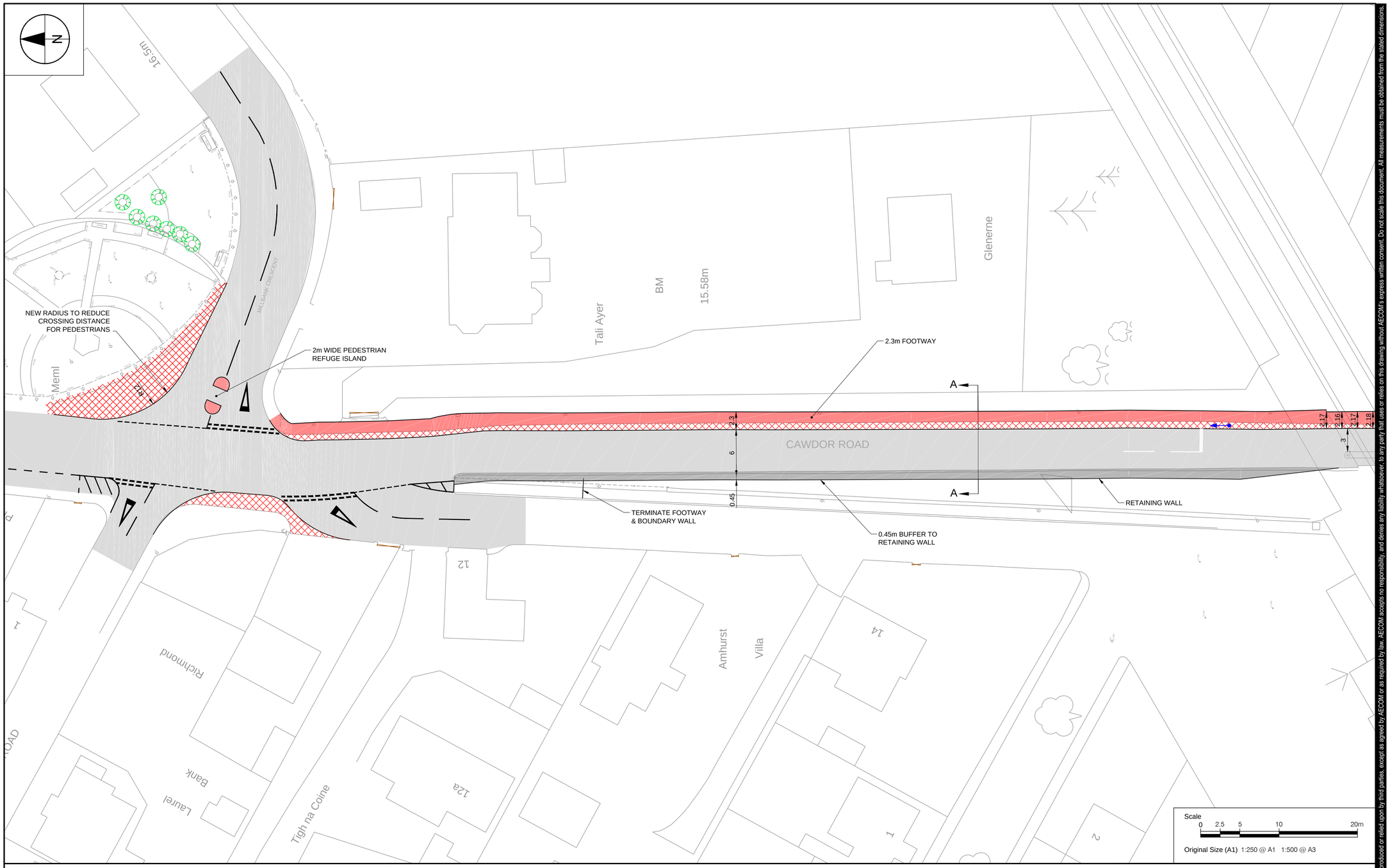
Following the junction analysis exercise, it is recommended that traffic signals introduced at this junction. Through a second assessment of the junction which takes the improvement measures in to account, it has been shown that this would ease queueing on the A96 Inverness Road during peak periods associated with masterplan site traffic and allow it to operate within capacity.

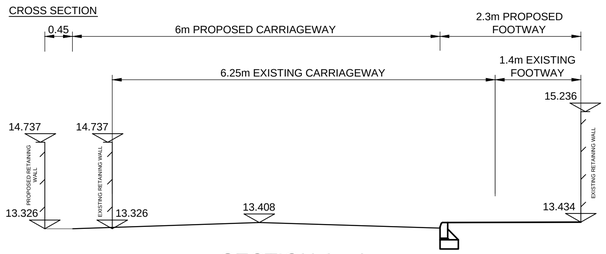
Additional Improvements

A series of possible additional improvements have been identified during the options appraisal process. These include:

- Traffic Calming measures on Elizabeth Street;
- The Distributor link road through the masterplan site permitting access to all the land holdings; and
- The introduction of passing places on narrowed sections of the B9091 Balblair Road to the south.

It is considered that these options would be ideally suited for inclusion following partial build out of the residential allocation and a review period of the improvement measures detailed above.





SECTION A - A

SCALE 1:50

KEY

- EXISTING CARRIAGEWAY
- NEW CARRIAGEWAY
- EXISTING FOOTWAY
- NEW FOOTWAY
- NEW KERBLINE
- RETAINING WALL

PROJECT

NAIRN SOUTH STRATEGIC DEVELOPMENT PLAN

CLIENT

CONSULTANT

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www.aecom.com

ISSUE/REVISION

I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

60446943

SHEET TITLE

RECOMMENDED INFRASTRUCTURE CAWDOR RD - NORTH OF RAILWAY BR

SHEET NUMBER

60446943-SKE-C-0101

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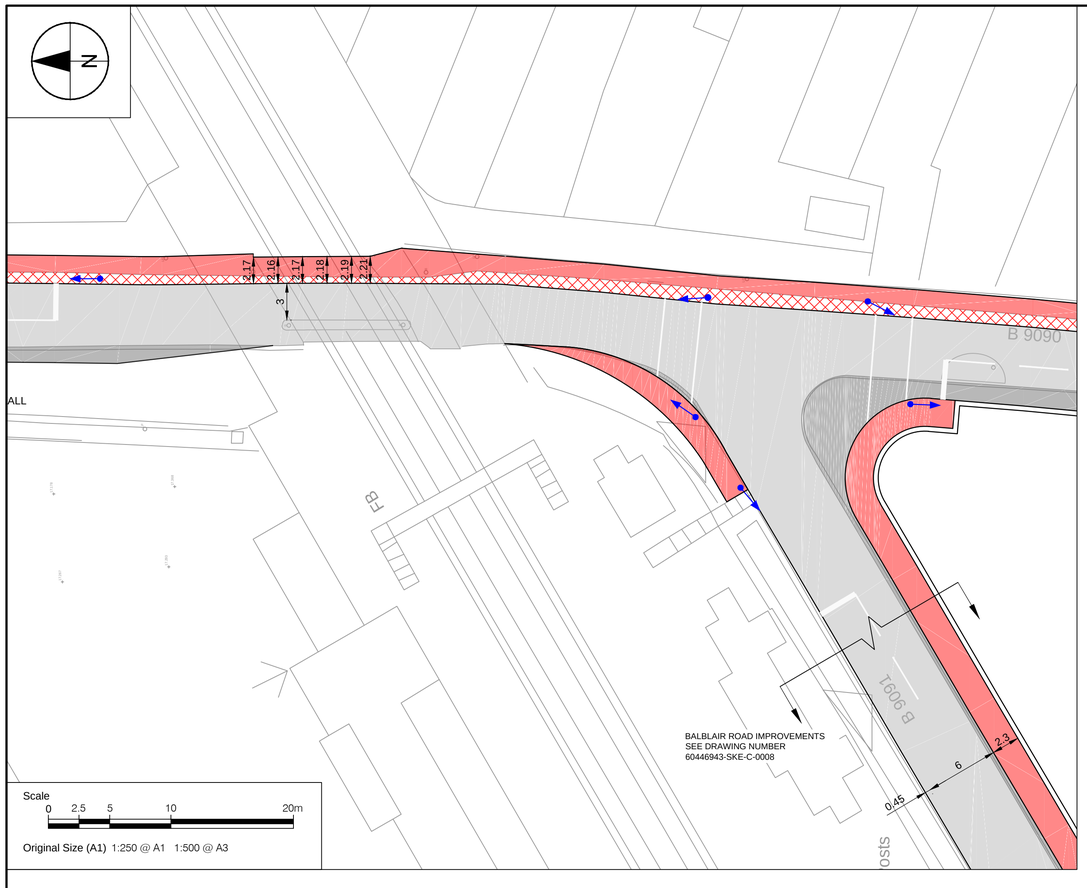

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Approved: DC

Checked: JF

Designer: JN

Project Management Initials:

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Last saved by: HASSELJ Last Plotted: 2016-04-01

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KEY

- EXISTING CARRIAGEWAY
- NEW CARRIAGEWAY
- EXISTING FOOTWAY
- NEW FOOTWAY
- NEW KERBLINE
- RETAINING WALL

ISSUE/REVISION

I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

60446943

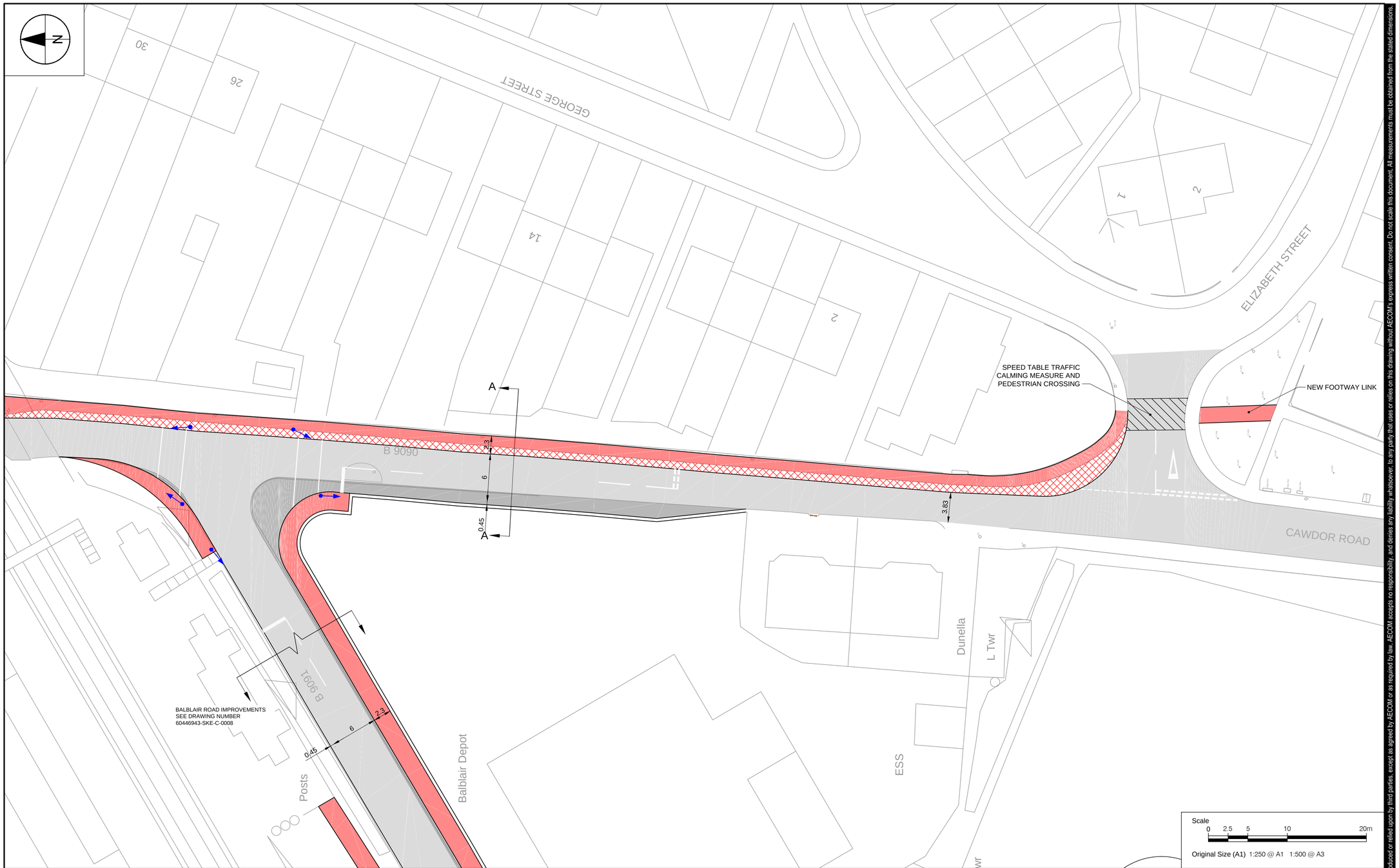
SHEET TITLE

RECOMMENDED INFRASTRUCTURE CAWDOR ROAD / BALBLAIR ROAD JUNCTION

SHEET NUMBER

60446943-SKE-C-0102

Project Management Initials: Designer: JN Checked: JF Approved: DC ISO A1 594mm x 841mm



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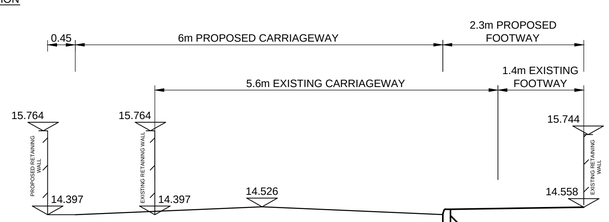

SECTION A - A

SCALE 1:50

Scale 0 2.5 5 10 20m

Original Size (A1) 1:250 @ A1 1:500 @ A3

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PROJECT

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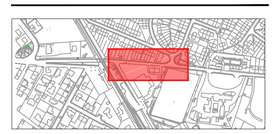
KEY

- EXISTING CARRIAGEWAY
- NEW CARRIAGEWAY
- EXISTING FOOTWAY
- NEW FOOTWAY
- NEW KERBLINE
- RETAINING WALL

ISSUE/REVISION

I/R	DATE	DESCRIPTION

KEY PLAN



PROJECT NUMBER

60446943

SHEET TITLE

RECOMMENDED INFRASTRUCTURE CAWDOR RD SOUTH OF RAILWAY BR

SHEET NUMBER

60446943-SKE-C-0103

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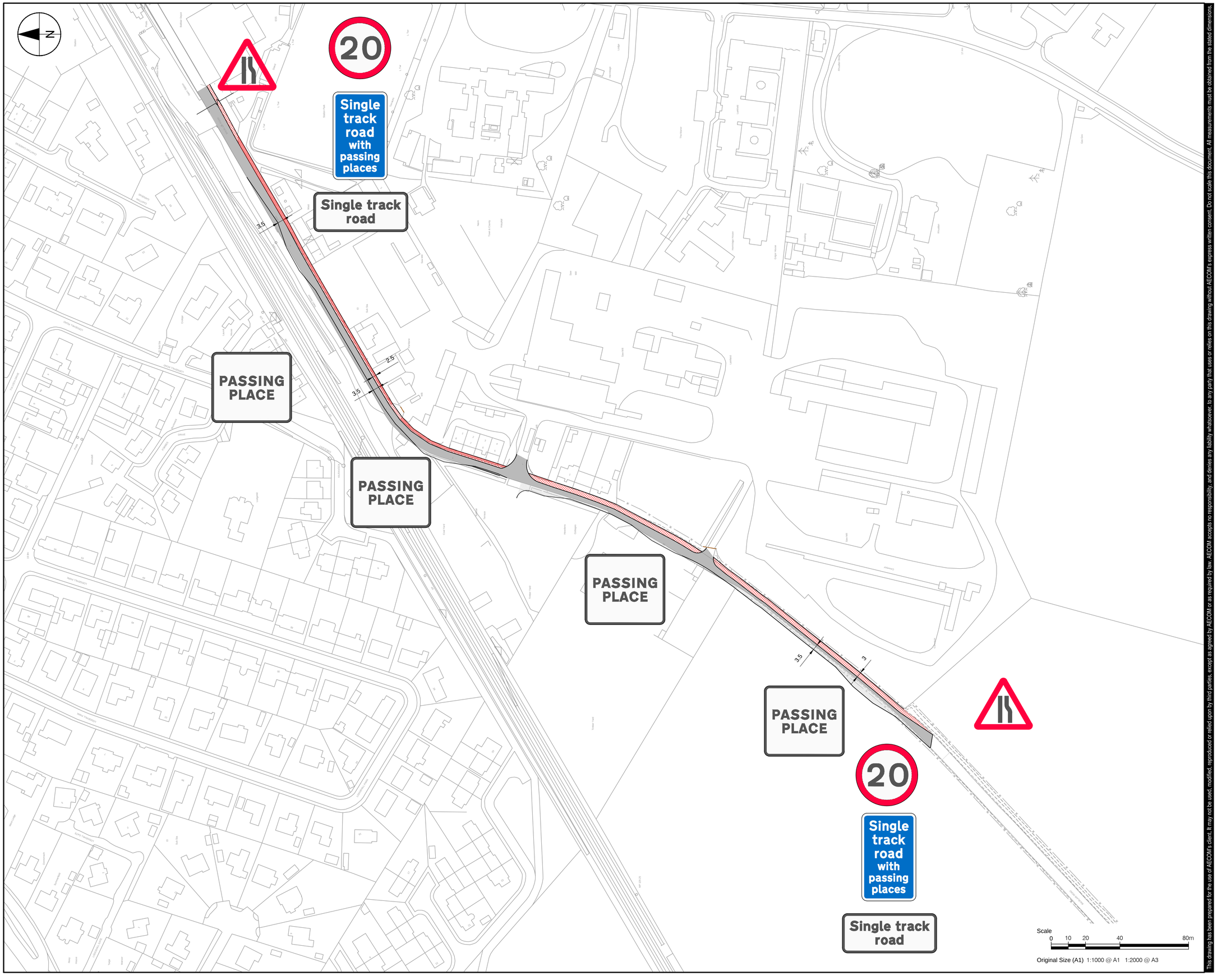
Project Management Initials: Designer: JN Checked: JF Approved: DC ISO A1 594mm x 841mm



Original Size (A1) 1:1000 @ A1 1:2000 @ A3

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PROJECT

NAIRN SOUTH STRATEGIC DEVELOPMENT PLAN

CLIENT

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KEY

- EXISTING CARRIAGEWAY
- PROPOSED CARRIAGEWAY
- EXISTING FOOTWAY
- PROPOSED FOOTWAY
- NEW KERBLINE

ISSUE/REVISION

I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

60446943

SHEET TITLE

RECOMMENDED INFRASTRUCTURE
BALBLAIR ROAD
TRAFFIC CALMING

SHEET NUMBER

60446943-SKE-C-0104

Filename: F:\PROJECTS\#SET UP NEW PROJECTS\DEVELOPMENT - NAIRN SOUTH STRATEGIC DEVELOPMENT PLAN TRANSPORT APPRAISAL\03 EXECUTION\7 - CAD\20-SHEETS\60446943-SKE-C-0018 & 104 - BALBLAIR RD.DWG
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ISO A1 594mm x 841mm

Approved: DC

Checked: JF

Designer: JN

Project Management Initials:

Filename: F:\PROJECTS\#SET UP NEW PROJECTS\DEVELOPMENT - NAIRN SOUTH STRATEGIC DEVELOPMENT PLAN TRANSPORT APPRAISAL\03 EXECUTION\7 - CAD\20-SHEETS\60446943-SKE-C-0105 - 6M CARRIAGEWAY.DWG
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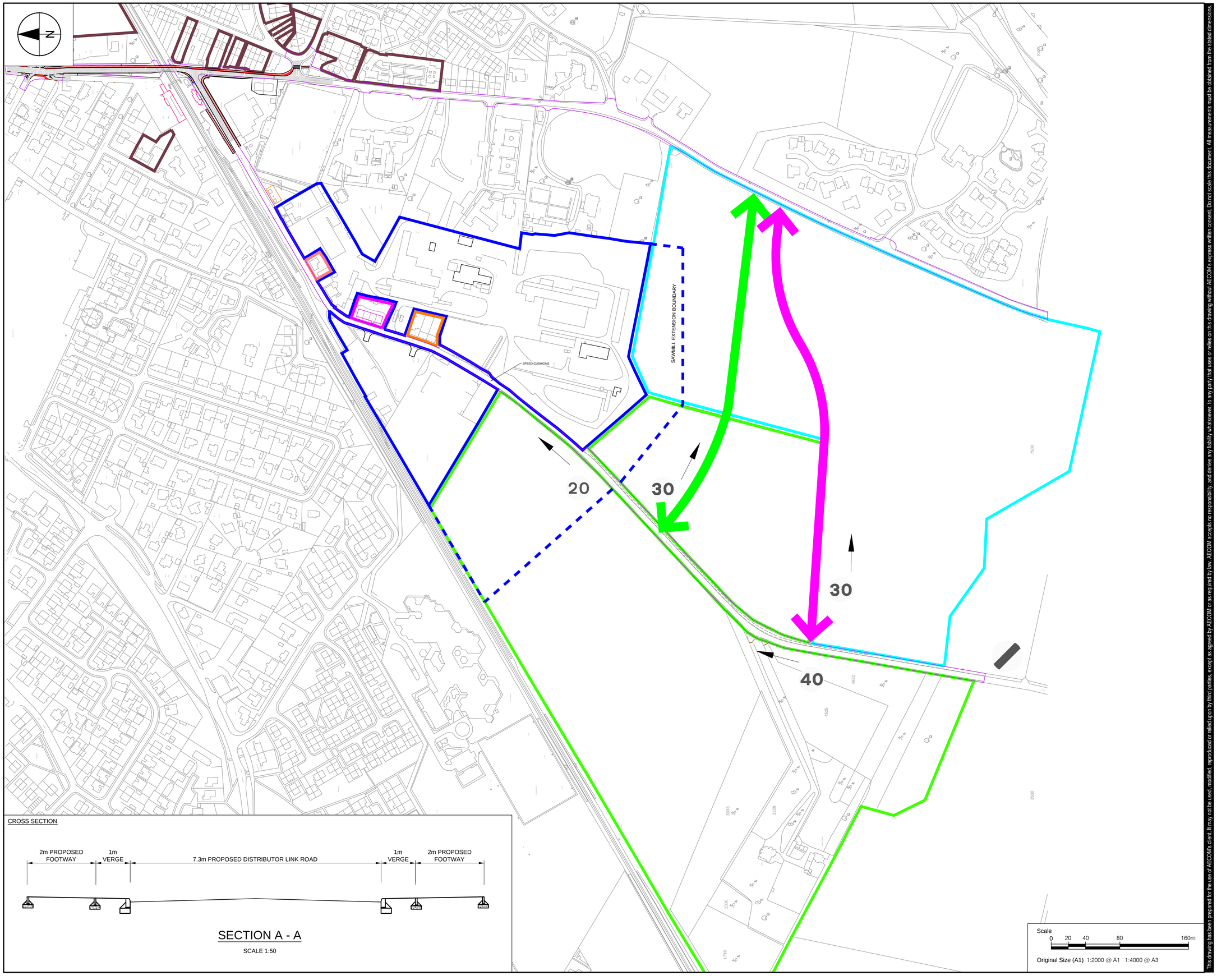

CROSS SECTION

SECTION A - A

SCALE 1:50

Scale 0 20 40 80 160m

Original Size (A1) 1:2000 @ A1 1:4000 @ A3

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KEY

- OPTION 1 - DISTRIBUTOR LINK ROAD
- OPTION 2 - DISTRIBUTOR LINK ROAD

LAND OWNERSHIP KEY:

- ALLENBY
- BALBLAIR TERRACE PROPERTIES
- FORBES (CONSORTIUM)
- GRANITE COTTAGES
- HOWDENS COTTAGE PROPERTIES
- J GORDON & SON
- VARIOUS COUNCIL PROPERTY TITLES
- ADOPTED HIGHWAY

ISSUE/REVISION

I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

60446943

SHEET TITLE

RECOMMENDED INFRASTRUCTURE
DISTRIBUTOR ROAD
OPTION 1 & 2

SHEET NUMBER

60446943-SKE-C-0105