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## **Executive Summary**

- i. This report provides a progress update on the Carlisle Local Plan Transport Study. The aim of the study is to assess the traffic impacts of Carlisle City Council's Local Plan proposals. The results of the study will be used to help identify potential measures to mitigate the impact of the proposals.
- ii. The transport study uses the council's Carlisle traffic model to forecast congestion levels on the highway network with the Local Plan proposals. The proposals are included in the model by estimating the traffic generation of each development and distributing this traffic across the model. Traffic growth is also considered in line with best practice guidance.
- iii. Four scenarios are considered as part of the study so far. The scenarios consider the following development proposals:
  - 1. 2025 Base: includes developments which have planning permission and live applications with the potential to gain permission soon
  - 2. 2025 Local Plan: includes the Local Plan proposals for housing, employment, retail and leisure
  - 3. 2030 Local Plan: includes proposals for a major urban extension to Carlisle South to the end of the plan period
  - 4. Carlisle South: includes proposals for a major urban extension to Carlisle South to 2040
- iv. The results of the study identify a number of locations on the highway network which are forecast to operate with increased congestion without mitigation.
- v. It is proposed that the scenarios are reassessed once the Local Plan proposals are confirmed after the consultation period and details of the masterplan for Carlisle South are available. This will allow the study to be concluded.
- vi. Following the conclusion of the transport study, a further study is recommended to identify a package of mitigation measures to support the delivery of the Local Plan. The measures could included new or improved infrastructure, changes to traffic management or measures to promote sustainable transport and encourage mode shift.



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## 1 Introduction

#### 1.1 Study objectives

- 1.1.1 The aim of the Carlisle Local Plan Transport Study is to assess the traffic impacts of Carlisle City Council's Local Plan proposals. The Local Plan details the sites which will deliver the necessary housing, employment, retail and leisure development in the Carlisle district for the period from 2015 to 2030. The Carlisle Local Plan is currently in preferred options consultation period.
- 1.1.2 The objective of the study is to identify locations on the highway network where there would be significant increases in congestion without mitigation. The study uses Cumbria County Council's Carlisle traffic model to achieve this objective.
- 1.1.3 The traffic model uses details of the highway network and traffic demand data to assign traffic to routes based on journey times and distances. The model outputs include average delay, the ratio of flow to capacity and queue lengths.
- 1.1.4 The study estimates traffic demand in the future by considering the traffic generation of existing and proposed developments alongside other potential changes in traffic growth.
- 1.1.5 The results of the study will be used to help identify potential measures to mitigate the impact of the Local Plan proposals.

#### **1.2 Carlisle traffic model**

- 1.2.1 The Carlisle traffic model was built using the SATURN software. The model includes car, light goods vehicle and heavy goods vehicle trips, and car trips are disaggregated by trip purpose. The model considers the morning and evening weekday peak hourly periods of 8–9am and 5–6pm. The model was validated against independent data to a base year of 2008.
- 1.2.2 Further information on the Carlisle traffic model can be found in the Traffic Data and Local Model Validation Report produced by Capita Symonds in December 2009



## 2 Methodology

#### 2.1 Overview

- 2.1.1 The transport study assesses the traffic impacts of development proposals in Carlisle. As part of this study a number of different factors need to be considered as part of the forecast scenarios.
- 2.1.2 Initially, the traffic model needs to be updated to a current year. This update will include both changes to the highway network and changes to travel demand since 2008.
- 2.1.3 Developments which have obtained planning permission need to be considered. These committed developments are included in future year assessments unless it is believed that the proposals will not be commenced within the plan period. In addition to these committed developments, current planning applications which are likely to be approved and open before the end of the plan period are also included in the forecast scenarios.
- 2.1.4 In addition to these developments, the proposals contained within the Carlisle Local Plan are considered. The Local Plan proposals allocate potential sites for housing, employment, retail and leisure uses. The proposals also identify a broad location for growth in Carlisle South. This would comprise a major mixed-use urban extension to be delivered from 2025 onwards to ensure the housing need is met.
- 2.1.5 To assess the impact of these developments, it is necessary to estimate the level of traffic and the distribution of these trips travelling to and from the development. An estimate of the trip generation of developments is typically made by analysing traffic surveys of existing similar sites. Similar sites are chosen based on factors such as their size, location and public transport accessibility. Cumbria County Council generally uses the TRICS software to estimate trip generation. The TRICS software calculates estimated traffic flows for different use classes using a database of traffic surveys for a large number of different developments.
- 2.1.6 For certain development types, such as retail, not all of the trips generated by the development would be new to the highway network. A proportion of these trips may be travelling nearby already and would divert into the development. Other trips would already be visiting existing nearby uses and would combine visits to multiple developments into one trip. These trips are referred to as pass-by and linked trips respectively. It is necessary to account for pass-by and linked trips to avoid overestimating the wider impact of a development.
- 2.1.7 An estimate of the distribution of trips to and from developments can be made using existing known data, such as journey to work data from the census, or from mathematical models derived from research such as a gravity model. A gravity model assumes the distribution of trips is related to both the cost of travel and the trip generation of the origin and destination of travel.



2.1.8 Other growth in travel demand by car, or traffic growth, also needs to be considered in addition to the traffic impact of new developments. Traffic growth is due to various factors, including forecast changes in population, employment and car ownership, as well as changes in trip frequency due to economic or other factors. Traffic growth is calculated in line with Department for Transport (DfT) guidelines<sup>1</sup>. The guidelines detail how to calculate growth factors for different vehicle types using the TEMPRO software, based on data from the National Trip End Model (NTEM).

#### 2.2 2013 update

- 2.2.1 The Carlisle traffic model was validated to a base year of 2008 so it required updating to a current year prior to commencement of the study. A new base year of 2013 was chosen due to the availability of traffic data. The update involved revising both the highway network and the traffic demand.
- 2.2.2 The network update involved updating the model to include all major changes to the highway network since 2008. The most significant change was the opening of the Carlisle Northern Development Route in 2012. Other changes included revised lane allocations, junction widening and traffic signal staging amendments throughout the city.
- 2.2.3 The network was also updated to include new site accesses and travel demand as a result of developments which had opened since 2008. The trip generation and distribution for these developments were taken from the transport assessment produced as part of the relevant planning application.
- 2.2.4 Traffic growth from 2008 to 2013 was calculated using a fixed demand matrix approach in line with DfT guidance. Growth factors were obtained from TEMPRO and adjusted using fuel and income factors. The 2013 traffic demand totals were constrained to the forecast NTEM totals to ensure development trips were not double counted.

#### 2.3 Forecast scenarios

- 2.3.1 Four scenarios are considered as part of the study so far. The scenarios consider the following development proposals:
  - 1. 2025 Base: includes developments which have planning permission and live applications with the potential to gain permission soon
  - 2. 2025 Local Plan: includes the Local Plan proposals for housing, employment, retail and leisure
  - 3. 2030 Local Plan: includes proposals for a major urban extension to Carlisle South to the end of the plan period
  - 4. Carlisle South: includes proposals for a major urban extension to Carlisle South to 2040

<sup>&</sup>lt;sup>1</sup> TAG Unit M4 *Forecasting and uncertainty*, Department for Transport www.gov.uk/transport-analysis-guidance-webtag



### 3 Forecast scenarios

#### 3.1 Introduction

3.1.1 Four future year scenarios have been assessed so far as part of the study. The scenarios are outlined below and further details are provided in the appendix.

#### 3.2 Scenario 1: 2025 Base

- 3.2.1 Scenario 1 considers a future year of 2025 and assumes the full development of all sites with planning approval. This scenario also assumes some key current planning applications will have received approval and will be operational by 2025.
- 3.2.2 The location of the developments is detailed on a plan in the appendix.
- 3.2.3 The trip generation of the developments has been taken directly from the transport assessment submitted as part of the planning application. Where this information is not available, the trip generation was estimated using the TRICS software. Assumptions on the level of pass-by and linked trips for developments were taken directly from the relevant transport assessment.
- 3.2.4 The distribution of trips in the model was taken from data in the transport assessment, where available and appropriate. If this information was not available, the trips were distributed using a gravity model.
- 3.2.5 Traffic growth from 2013 to 2025 was calculated using a fixed demand matrix approach in line with DfT guidance. The alternative assumptions facility in TEMPRO was used to revise the future year housing and employment assumptions to match the forecast need for Carlisle district. Growth factors were obtained from TEMPRO and adjusted using fuel and income factors. The 2025 traffic demand totals were constrained to the forecast NTEM totals to ensure retail and leisure development trips were not double counted.

#### 3.3 Scenario 2: 2025 Local Plan

- 3.3.1 This scenario builds on Scenario 1 and also considers the Local Plan proposals to 2025. This includes the preferred housing and employment sites, the development of Carlisle Station Hub, and the Caldew Riverside, Lowther Street and Rickergate retail/leisure developments in line with regeneration proposals for the city centre.
- 3.3.2 The location of the developments is detailed on a plan in the appendix.
- 3.3.3 Trip generation for these developments was estimated using the TRICS software. For the Caldew Riverside development, it was assumed that 20 per cent of the trips were linked trips between the retail and leisure uses. For the Rickergate retail developments, it was assumed 20 per cent of trips were pass-by trips and 20 per cent were linked trips with other city centre uses.



- 3.3.4 The land at Harker north of the M6 J44 is allocated for employment development that requires a major electricity supply. No similar sites could be identified in the TRICS software so it was assumed that the trip generation for this site would be equivalent to B8 storage and distribution.
- 3.3.5 The rural residential developments are located in settlements on the periphery of the model, and are not considered in detail. It is therefore assumed that for all rural developments (excluding Harker) a proportion of the trips generated by these developments would stay within that settlement. This assumption has been applied to the model by reducing the trip rates for these developments by 15 per cent. This is in line with data from the National Travel Survey 2012<sup>2</sup> which shows 14 per cent of car driver trips are less than five miles in length.
- 3.3.6 The trips for all developments were distributed using a gravity model.
- 3.3.7 Traffic growth from 2013 to 2025 was calculated using a fixed demand matrix approach as detailed in Section 3.2.

#### 3.4 Scenario 3: 2030 Local Plan

- 3.4.1 Scenario 3 builds on Scenario 2 and additionally considers the Local Plan proposals to 2030, which involve the urban extension to the south of Carlisle.
- 3.4.2 Full details on the phasing and potential layout of sites in Carlisle South are not currently available. It has been assumed that the housing development is split into three broad residential locations accessed from Durdar Road, Scalegate Road and Briscoe Road respectively.
- 3.4.3 It is assumed that the employment land is located in one broad location accessed from Newbiggin Road. It is also assumed the employment land is split equally between the B1 business, B2 general industry and B8 storage and distribution use classes.
- 3.4.4 The trip generation of the housing and employment allocations in Carlisle South was estimated using the TRICS software. The trips were distributed onto the network using a gravity model.
- 3.4.5 This scenario does not include assumptions regarding the location of additional development such as schools, retail and leisure facilities in Carlisle South. A proportion of trips generated by the housing or employment will travel to these other developments. It is therefore assumed that 15 per cent of the trips generated by the housing and employment will stay wholly within the Carlisle South area. This assumption will be revised as more details on the potential location of new schools or retail facilities become available.
- 3.4.6 Traffic growth from 2013 to 2030 was calculated using a fixed demand matrix approach as detailed in Section 3.2.

<sup>&</sup>lt;sup>2</sup> Table NTS0309, *National Travel Survey 2012*, Department for Transport www.gov.uk/government/publications/national-travel-survey-2012



#### 3.5 Scenario 4: Carlisle South

- 3.5.1 Scenario 4 builds on the above scenarios and additionally considers further development of Carlisle South in line with the forecast housing and employment need to 2040. This scenario relies on the same assumptions made for Scenario 3 regarding site layout, employment split and reduction in trip rates.
- 3.5.2 For simplicity, and due to the length of the forecast period and the uncertainty regarding the phasing and layout of development, this scenario does not include increases in trips as a result of traffic growth.



## 4 Results

#### 4.1 Identified junctions

- 4.1.1 Analysis of the model results identified locations that may require further assessment. The junctions were identified if they were forecast to be operating over capacity or approaching capacity in the future year scenarios.
- 4.1.2 The study defines a junction as operating over capacity if the Ratio of Flow to Capacity (RFC) of the junction is greater than one for any movement. A junction is defined as approaching capacity if the RFC is between 0.9 and 1.0. For example, a junction with a capacity of 1,000 vehicles per hour and a traffic demand of 900 vehicles per hour would have an RFC of 0.9 and would be classified as approaching capacity.
- 4.1.3 The location of the identified junctions is shown on the Forecast Junction Performance plan in the appendix. The plan shows the worst-case performance of the junction from both the morning and evening peak periods.
- 4.1.4 The Scenario 1 results forecast congested junctions along all radial routes, and in particular the following junctions:
  - Junctions on the Wigton Road radial route, including
    - o Bridge Street/Shaddongate/Church Street/Sainsbury's access
    - o Wigton Road/Church Street/Caldcotes
    - o Wigton Road/Orton Road/Dunmail Drive
  - Junctions on the Scotland Road radial route, including
    - o Scotland Road/Brampton Road
    - o Scotland Road/Etterby Street
    - Kingstown Road/Kingstown Broadway
  - Junctions on the London Road radial route, including
    - o Botchergate/Crown Street/Tait Street
    - o London Road/Brook Street/St Nicholas Retail Park access
    - London Road/Eastern Way
    - o London Road/Petteril Bank Road
  - Junctions on the Warwick Road radial route, including
    - Warwick Road/Victoria Place
    - Warwick Road/Greystone Road
    - Warwick Road/Eastern Way
    - Warwick Road/Montgomery Way/Tesco access
  - Junctions on the Dalston Road radial route, including
    - o Dalston Road/Shaddongate/Junction Street
    - o Dalston Road/Stanhope Road



- o Dalston Road/Nelson Street
- Other key junctions, including
  - Hardwicke Circus
  - James Street/Victoria Viaduct/Nelson Bridge and Denton Street/ Nelson Bridge
  - o Georgian Way/Victoria Place
  - CNDR/Kingmoor Hub
- 4.1.5 The Scenario 1 results also show that congestion is forecast at the Highways Agency maintained M6 Junction 43 and M6 Junction 44.
- 4.1.6 The Scenario 2 results generally show increases in congestion at the previously identified junctions. However, increases in congestion are also forecast at the following junctions:
  - Eastern Way/Arnside Road
  - Kingstown Road/Windsor Way
- 4.1.7 The results do not show significant increases in congestion at junctions near the city centre retail developments. However, there may be suppressed demand for traffic wishing to use Lowther Street due to congestion at locations on the edge of the city centre. Mitigation measures that increase capacity at junctions close to the city centre need to be carefully considered so subsequent increases in traffic downstream are taken into account.
- 4.1.8 In addition, due to the capacity issues at the James Street/Victoria Viaduct/Nelson Bridge junction, the development at Caldew Riverside is forecast to significantly increase traffic flows along English Damside.
- 4.1.9 The Scenario 3 results identify additional junctions to the south of the city where increases in congestion are forecast, and in particular the following junctions:
  - Botchergate/St Nicholas Street
  - Currock Road/Crown Street
  - Upperby Road/Petteril Bank Road/Lamb Street
  - CNDR/Wigton Road/Peter Lane
- 4.1.10 The Scenario 3 results also show that development at Carlisle South would have a significant impact on the operation of the Highways Agency maintained M6 Junction 42.
- 4.1.11 The Scenario 4 results show dramatic increases in traffic throughout the city due to the urban extension, but particularly in the south of the city along London Road, Currock Road, Blackwell Road, Dalston Road and through Dalston. The development would also significantly worsen congestion at the M6 Junction 42.



#### 4.2 Next steps

- 4.2.1 The study has so far identified locations on the highway network where junctions are forecast to operate over capacity without mitigation measures.
- 4.2.2 It is proposed that the scenarios considered in this progress report should be reassessed once the Local Plan proposals are confirmed by Carlisle City Council following the end of the preferred options consultation.
- 4.2.3 It is also proposed that further assessment of Carlisle South should be undertaken once further detail on the masterplan for this area is available.
- 4.2.4 Once the scenarios have been reassessed the transport study can be concluded. It is anticipated that the study could be concluded around two months after confirmation of the Local Plan proposals.
- 4.2.5 Following the conclusion of the transport study, a further study should be undertaken to identify a package of mitigation measures to support the delivery of the Local Plan. The mitigation study would ideally include an assessment of the effectiveness of the measures, outline designs and indicative costs. It is anticipated this study could be completed in around four months after the conclusion of the transport study.
- 4.2.6 The package of measures should aim to reduce vehicle delay by increasing capacity or reducing traffic demand at these locations. Potential mitigation measures could include new or improved infrastructure, traffic management measures or measures to promote sustainable transport and encourage mode shift.



# Appendix

# **Development scenarios**

Scenario	1:	2025	Base
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						Vehicle trips				
Committe	ed residential developments					AM	AM	PM	PM	
Ref	Name	Access	Size	Notes		In	Out	In	Out	
09/0216	Land adjacent Blackwell House	Blackwell Road	42			8	16	17	9	
09/0413	South Morton	Wigton Road/ Peter Lane/ Dalston Road	825	also see South Morton employm	ient	150	394	428	252	
09/0617	Crindledyke	Crindledyke Lane	850			200	430	441	220	
09/0815	Denton Business Park	Blencowe Street	205	student accommodation also 40 workshop units convenience store café, laundrette		16	7	6	16	
10/0792	Land adjacent Alexandra Drive	Durranhill Road	15	34 already constructed		12	25	25	13	
10/1026	Brackenleigh	Wigton Road	253			46	120	130	77	
11/0120	Penguin Factory	Westmorland Street	37			8	24	23	12	
11/0308	Land adjacent Peter Lane	Peter Lane	160			29	77	83	49	
11/0814	UU Depot	Nelson Street	103			20	49	45	26	
11/0863	Land at Norfolk Street	Norfolk Street/ Richardson Street	492	student accommodation		4	28	28	15	
12/0610	Land at Hadrian's Camp, Houghton	Houghton Rd	96	HOUG1 / subject to s106		27	87	84	34	
12/0710	Land to the rear of Scotby Steading, Scotby	Scotby	45			9	23	23	9	
12/0790	Land at Broomfallen Road, Scotby	Scotby	28	SCOT1 / subject to s106		5	11	11	6	
12/0793	Land bounded by Hammonds Pond, Oaklands Drive and Durdar Road	Durdar Rd/Scalegate Rd	318	CARL22 / subject to s106		47	121	117	71	
12/0878	Land between Station Road/ Townhead Road, Dalston	Station Rd	121	DALS1 / subject to s106		21	55	52	31	
13/0564	Raffles Ave/Dalton Ave	Raffles Ave	37			7	14	15	8	
13/0655	Former Dairy site, Holywell Crescent, Botcherby	Holywell Cresc	66	CARL21 / subject to s106		12	25	27	15	
		TOTAL	3,693 dwellings			621	1,505	1,556	863	
				тс	DTAL	2,1	26	2,4	20	

## Scenario 1: 2025 Base (continued)

						Vehic	e trips	
Committe	ed employment developmen	its			AM	AM	PM	PM
Ref	Name	Access	Size	Notes	In	Out	In	Out
09/0170	Kingmoor Brunthill	A689 CNDR	16,200 sqm B1 96,400 sqm		853	266	243	847
09/0413	South Morton	Wigton Road/Peter Lane/ Dalston Road	40,000 sqm B1	also see South Morton residential	385	16	31	360
		TOTAL	56,200 sqm B1 96,400 sqm B2		1,238	282	273	1,207
			•	TOTAL	1,5	521	1,4	480

<b>Ref</b> 04/1653 07/0857	d mixed/other developments Name Tesco Viaduct Estate	Access	Size		AM	AM	PM	PM
04/1653 07/0857	Tesco Viaduct Estate		Size	<b></b>			1	
07/0857				Notes	In	Out	In	Out
00/0070		Viaduct Estate Road	3,175 sqm food retail	includes pass-by trips	103	67	164	182
09/09/8	St Nicholas Retail Park non food retail	London Road	2,284 sqm non- food retail	expansion of existing retail park	38	28	75	77
10/0504	Asda, St Nicholas Retail Park	London Road	4,225 sqm food retail	opened 2013 after traffic surveys includes pass-by trips	115	56	208	232
10/0815	Kingmoor Hub	A689 CNDR	130 bed hotel	also ancillary conference centre health and fitness centre restaurants and bar includes pass-by trips	33	27	33	27
10/0917	Morton District Centre	Wigton Rd / link to South Morton	8,175 sqm food retail	also 1,025 non-food retail, PFS, restaurant/café, hot food takeaway, creche includes pass-by trips	368	221	612	623
11/0475	Kingmoor Hub	A689 CNDR	720 sqm pub/ restaurant	includes pass-by trips	0	0	67	43
11/0484	Kingmoor Hub	A689 CNDR	14,392 sqm B1	also 325 sqm restaurant 1,114 sqm A1/A3/A5 unit 371 sqm creche, petrol filling station includes pass-by trips	422	164	229	425
11/0720	Stanwix Health Centre	Waverley Rd	1,500 sqm primary care centre	includes pharmacy	74	32	36	56
12/1011	Former Post Office	Warwick Rd	24 bed hotel	also A1/A3/A4	24	22	68	58
		TOTAL	15,575 sqm food 3,309 sqm non-fo 156 bed hotel	retail	1,177	618	1,491	1,723
			1,045 restaurant 1,500 sqm primar misc dev (creche,	y care centre petrol filling station, food takeaway) <b>TOTAL</b>		795		214

## Scenario 1: 2025 Base (continued)

						Vehicl	e trips	
Awaited re	esidential developments				AM	AM	PM	PM
Ref	Name	Access	Size	Notes	In	Out	In	Out
10/0656	Currock Yard	South Western Terrace	99		24	51	52	26
				TOTAL	7	5	7	'8

						Vehicl	e trips	
Awaited e	employment developments				AM	AM	PM	PM
Ref	Name	Access	Size	Notes	In	Out	In	Out
10/1116	Carlisle Airport	A689	37,000 sqm B8	also passenger air services	92	2	2	73
13/0515	Former Baxter site, Kingmoor		6,012 sqm increase B8		55	15	9	50
14/0105	Land adj Durranhill Sidings	Eastern Way	9,144 sqm B2		41	20	19	40
		TOTAL	9,144 sqm B2 43,012 sqm B8		188	37	30	163
				TOTAL	2	25	19	94

						Vehicle trips				
Awaited mixed/other developments Ref Name Access Size Notes						AM	AM	PM	PM	
Ref	Name	Access	Size	Notes		In	Out	In	Out	
13/0778	Laings site, Dalston Road	Dalston Rd	1,532 sqm food retail	includes pass-by trips		20	6	52	71	
	-				TOTAL	2	26	1:	23	

#### Scenario 2: 2025 Local Plan

						Vehicl	e trips	
Preferred	residential developments				AM	AM	PM	PM
Ref	Name		Size	Notes	In	Out	In	Out
CARL1	Land to the south east of junction 44	Kingstown Rd	217		30	88	85	46
CARL2	Land north of California Road, east of CARL1	Kingstown Rd	200	access from existing signals	28	81	78	43
CARL3	Site of Pennine Way Primary School	Pennine Way/Edgehill Rd	112		16	46	44	24
CARL4	Land north of Moorside Drive/Valley Drive	Moorside Dr/Valley Dr	140		20	57	55	30
CARL5	Land between Carlton Road and Cumwhinton Road	Sewell's Lonning	204		29	83	80	44
CARL6	Land at Garden Village, West of Wigton Road	Wigton Rd	169		24	69	66	36
CARL7	Land at Newhouse Farm, South-West of Orton Road	Orton Rd	509		71	207	199	109
CARL8	Land north of Burgh Road	Burgh Rd	66		9	27	26	14
CARL9	Site of former Morton Park Primary School, Burnrigg	Burnrigg	54		8	22	21	12
CARL10	Land off Windsor Way	Windsor Way	300		42	122	117	64
CARL11	Land east of Lansdowne Close/Lansdowne Court	Windsor Way	75		11	31	29	16
CARL13	Former Printworks, Newtown Industrial Estate	Caxton Rd	40		6	16	16	9
CARL14	Land east of Beverley Rise	Beverley Rise	30		4	12	12	6
CARL15	Land off Tree Road, south of Chertsey Mount	Tyne St	20		3	8	8	4
CARL16	Land north of Carleton Clinic, east of Cumwhinton Drive	Cumwhinton Dr	150		21	61	59	32
CARL17	Land at Carleton Clinic	Cumwhinton Dr	100		14	41	39	21
CARL18	Land to rear of Hilltop Hotel, London Road/Tree Road	Hilltop access	40		6	16	16	9
CARL19	Durranhill Road	Durranhill Rd	65		9	26	25	14
CARL20	Laings site, Dalston Road	Dalston Rd	60		8	24	23	13
		TOTAL	2,551 dwelli		357	1,038	995	546
				TOTAL	1,	395	1,5	541

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## Scenario 2: 2025 Local Plan (continued)

						Vehic	e trips	
Preferred	rural residential developme	ents			AM	AM	PM	PM
Ref	Name	Access	Size	Notes	In	Out	In	Out
BRAM1,								
BRAM2,	Bromoton		440		53	150	147	01
BRAM3,	Brampton		443		53	155	147	81
BRAM4								
LONG1	Longtown		106	settlements not included in detail in	13	37	35	19
CUMW1,	Curruchinten		45		F	10	15	0
CUMW2	Cumwhinton		45	model but need to consider trips into	5	Out         Ir           153         14           37         33           16         19           122         11           15         19           23         22           35         35	15	8
HARK1	Harker		300	and out of Carlisle from these dwellings	42	122	117	64
SCOT1	Scotby		44		5	15	15	8
WARW1	Warwick Bridge		66		8	23	22	12
WETH1,			100		10	05	00	10
WETH2	Wetheral		100		12	35	33	18
		·	TOTAL 1,104 dwelli	ngs	138	400	384	210
				TOTAL	5	38	59	94

						Vehicl	e trips	
Preferr	ed employment developments				AM	AM	PM	PM
Ref	Name	Access	Size	Notes	In	Out	In	Out
				total site area 25ha, assume 40%				
A1	Land at Harker North of J44 of the M6	A7	100.000.000	building footprint	80	43	28	79
AI	Land at Harker North of 544 of the Mo	A7		assume use class B8 for trip generation	80	43	20	79
				purposes				
				assume employment on 1.96 ha land				
A2	South Morton expansion (P&R site)	South Morton	6,900 sqm B1	previously reserved for P&R	129	18	11	98
				assume 35% bulding footprint				
		ΤΟΤΑΙ	100,000 sqm (	data centre	209	61	39	177
		IOTAL	6,900 sqm B1		209	01	55	177
				TOTAL	27	70	2	16

## Scenario 2: 2025 Local Plan (continued)

						Vehic	e trips	
City cer	Caldew Riverside non-food retail and leisureViaduct Estate Road6,800 sqm A1 6,800 sqm D2building footprint assume A1 is non-food ret generation purposes assume D2 is leisure centr centre for trip generation p assume 20% linked tripsLowther St non-food retail Rickergate non-food retailLowther St (Iceland car park) Rickergate (Civic centre car park)5,930 sqm 5,470 sqmalso car parks on site assume pass-by (20% Cas linked trips (20%) with othe usesCarlisle Station HubWater StreetMove station car park				AM	AM	PM	PM
Ref	Name	Access	Size	Notes	In	Out	In	Out
A3		Viaduct Estate Road	6,800 sqm A1 6,800 sqm D2	assume A1 is non-food retail for trip generation purposes assume D2 is leisure centre/exhibition centre for trip generation purposes	56	30	156	188
A4		park) Rickergate (Civic centre		assume pass-by (20% Castle Way) and linked trips (20%) with other town centre	28	11	73	112
A5	Carlisle Station Hub			Move station car park	0	0	0	0
		TOTAL	18,200 sqm A 6,800 sqm D2		84	41	229	300
			•	TOTAL	12	25	52	29

#### Scenario 3: 2030 Local Plan

					Vehicle trips			
Preferred residential developments						AM	PM	PM
Ref	Name	Access	Size	Notes	In	Out	In	Out
	South Carlisle	Durdar Road Scalegate Road Briscoe Road	3,325	assume 1/3 of total development access from each road	409	1,189	1,143	619
	TOTAL						2,951	

						Vehicle trips			
Preferred employment developments						AM	AM	PM	PM
Ref	Name	Access	Size	Notes		In	Out	In	Out
	South Carlisle	Newbiggin Road	40,000 sqm	10 ha, assume 40% footprint		275	73	63	226
			•	assume equal split B1, B2, B8					
					TOTAL	34	49	30	62

#### Scenario 4: South Carlisle

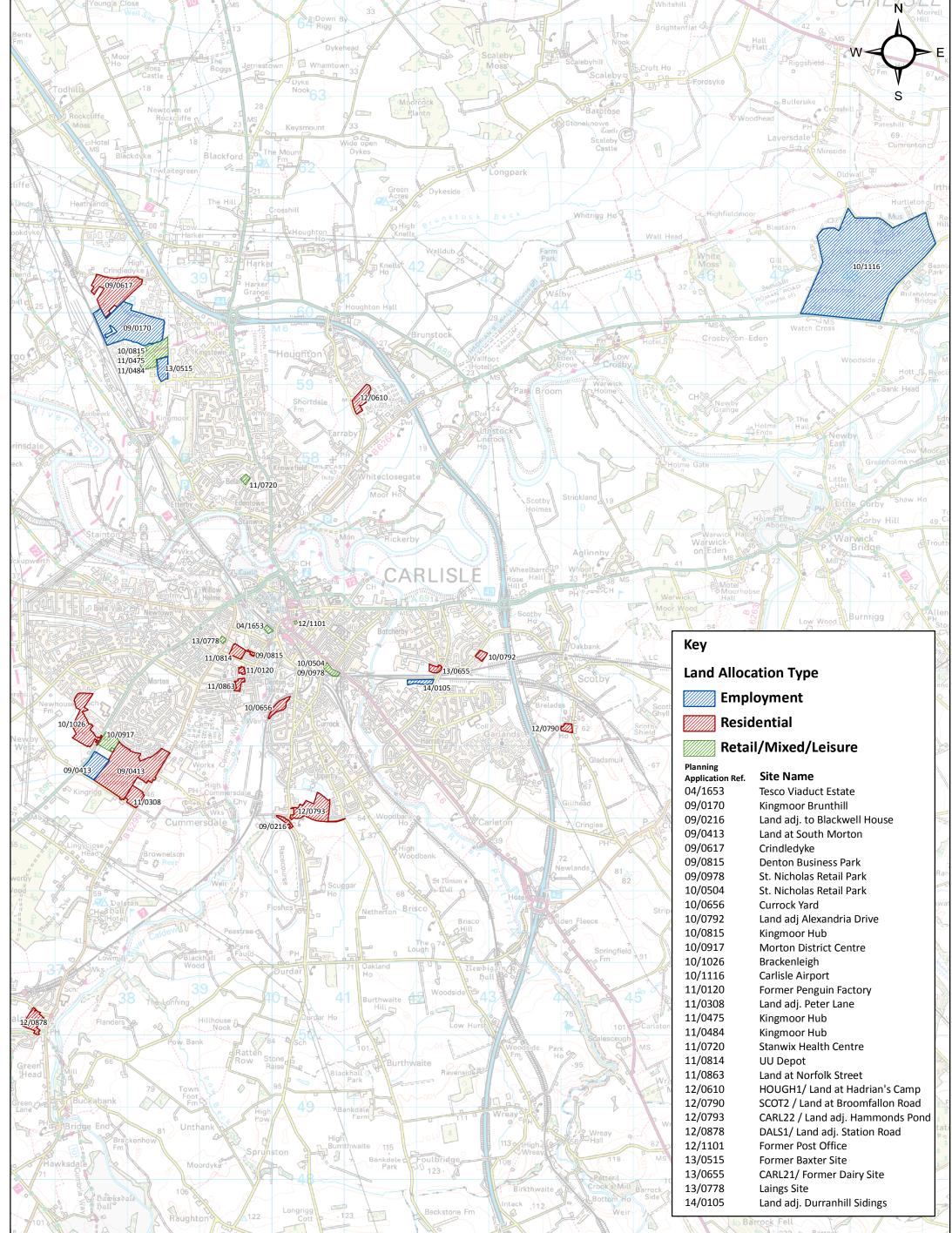
					Vehicle trips			
Preferred residential developments						AM	PM	PM
Ref	Name	Access	Size	Notes	In	Out	In	Out
		Durdar Road		assume 1/3 of total development				
	South Carlisle	Scalegate Road	9,975	access from each road	818	2,378	2,286	1,238
		Briscoe Road		total in addition to Scenario 3				
	TOTAL						5,902	

						Vehicle trips			-
Preferred employment developments						AM	AM	PM	PM
Ref	Name	Access	Size	Notes		In	Out	In	Out
				30 ha, assume 40% footprint					
	South Carlisle	Newbiggin Road	80,000 sqm	assume equal split B1, B2, B8		551	146	125	452
				total in addition to Scenario 3					
	+	+	*	•	TOTAL	69	97	724	



# Appendix

# **Development plans**

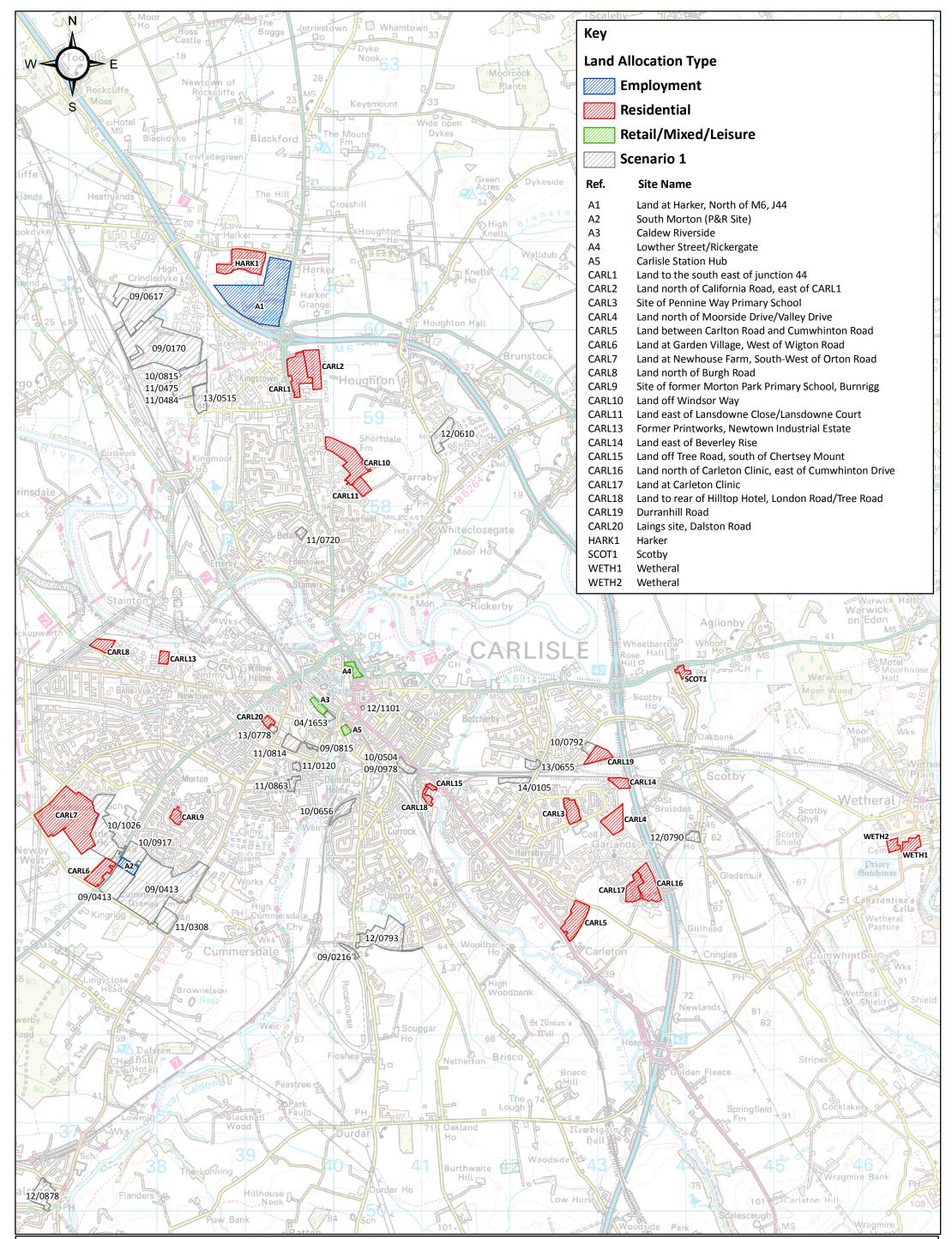


**Cumbria Highways Cumbria County Council** Parkhouse Building **Kingmoor Business Park** Carlisle CA6 4SJ

# **Carlisle Local Plan Transport Study** Scenario 1: 2025 Base

**Development Sites** 





Cumbria Highways Cumbria County Council Parkhouse Building Kingmoor Business Park Carlisle CA6 4SJ

Carlisle Local Plan Transport Study Scenario 2: 2025 Local Plan

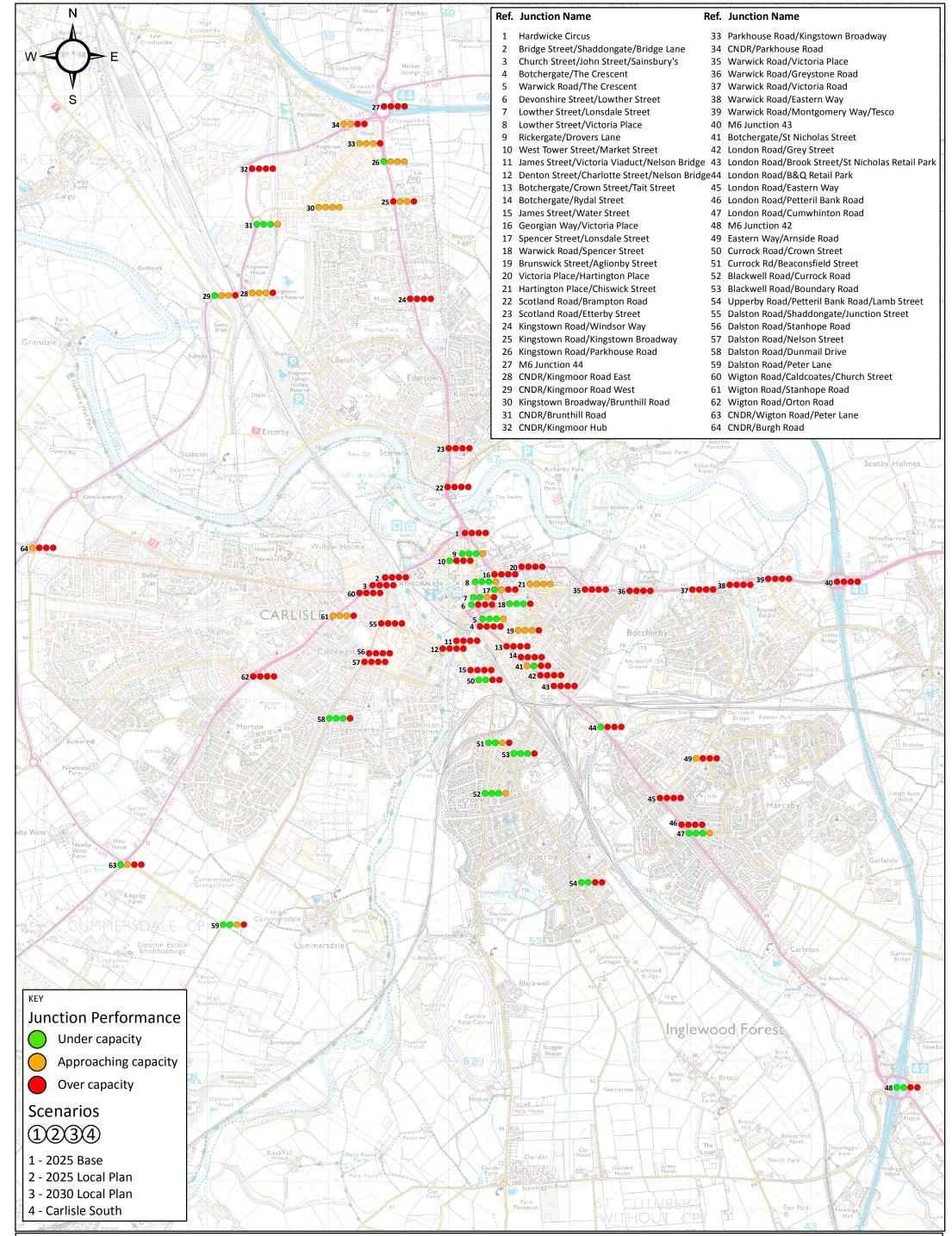
**Development Sites** 





# Appendix

# Junction plan



Cumbria Highways Cumbria County Council Parkhouse Building Kingmoor Business Park Carlisle CA6 4SJ

Carlisle Local Plan Transport Study Forecast Junction Performance

