Bexhill Hastings Link Road

Updated Model

Traffic Forecasting Report

East Sussex County Council
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Bexhill Hastings Link Road

Updated Model

Traffic Forecasting Report

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A	January 2007	N Walker	I Johnston	I Johnston	First Issue
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1 Introduction

1.1.1 This Forecasting Report covers the preparation of the future year matrices and network options for the traffic model covering Hastings and Bexhill. The assessment has been undertaken in line with guidance contained on WebTAG.

1.1.2 In this report the forecasts are presented for the proposed Scheme and a sensitivity test. The models cover the am peak hour, average inter-peak hour and the pm peak hour to ensure the traffic characteristics associated with the urban centre of Hastings and Bexhill are modelled accurately. The Bexhill Hastings Link Road Model Updated Local Model Validation Report covers the model building and validation process for the three time periods.

1.1.3 This report includes a description of the forecast networks, a description of the methods and assumptions used in forecasting future traffic demand and the results of the traffic forecasting for the Scheme. Assessments have been undertaken for an opening year of 2010 and a design year of 2025.

1.1.4 In addition to a Most Likely level of forecast traffic, a sensitivity test has been run with increased DIADEM parameters as required by WebTAG unit 3.10. Increasing the DIADEM parameters tests the robustness of the economic benefit of the scheme against increased demand. If the scheme remains well justified against these higher values then a conclusion that the scheme is beneficial will be robust against the effects of induced traffic.

2 Future Year Network

2.1 Highway Most Likely Do Minimum Network

2.1.1 There are no major committed highway schemes planned between 2004 and 2010. However the do-minimum network does include two local schemes. The first is the widening of the westbound approach into Glyne Gap roundabout to provide a short third lane flare for traffic turning into the Industrial Park. This scheme was implemented in December 2004. The second scheme is the introduction of traffic signals at the junction of Gillsmans Hill/Sedlescombe Road/Springfield Road together with making the section of Gillsmans Hill between Hollington Park Road and Sedlescombe Road one way eastbound and closing the junction of Avondale Road with Hollington Park Road

2.2 Highway Most Likely Do Something Network

2.2.1 The preferred alignment of the Scheme is shown in Figure 2.1. The Scheme will start on the A259 trunk road at the Belle Hill junction with a new traffic signal controlled junction. A further traffic signal controlled junction just north of the A259 will facilitate access to and from the A269 London Road to North Bexhill. A further signal junction is included north east of Bexhill to allow access to the proposed North East Bexhill developments. Finally the Scheme meets the B2092 Queensway in Hastings at another signal junction. All future signalised junctions have been designed using junction design software LINSIG to accommodate forecast traffic flows from the SATURN models.

2.2.2 The proposed Link Road will be 5.58km long in total. The first 1.4km section of the road (the Bexhill Connection) will be located along the bed of an abandoned railway line cutting to pass through the built up area of Bexhill and constructed to a standard single two lane carriageway standard. The remainder of the road will be constructed to wide two lane single carriageway standard. The Scheme has been designed to accommodate bus priority measures including public transport access to the proposed North East Bexhill developments.

2.2.3 In addition to the Scheme the network also includes a connection from the development access junction south to a new signal junction on Wrestwood Road. This connection is associated with the North East Bexhill development and will be provided by the developers.

2.2.4 The network also includes a number of complementary measures designed to ensure traffic reductions resulting from the Link Road remain in future years and ameliorate any adverse impacts. The complementary measures included in the network are:

- Signalise junction of B2093 The Ridge/B2092 Queensway, Hastings
- A259 westbound bus lane on approach to Glyne Gap roundabout

- A259 eastbound bus lane on approach to Harleyshute Road
- A259 westbound bus lane between Filsham Road and Harleyshute Road
- Signalise junctions of B2182 Holliers Hill/A2036 Wrestwood Road and B2182 Holliers Hill/A269 London Road
- Traffic calming measures along Woodsgate Park Road in Bexhill

2.2.5 Further complementary measures are also proposed as part of the Scheme on Harleyshute Road and Gillsmans Hill but as these do not affect highway capacity, they have not been included in the traffic model network. The location of the Complementary Measures and development connection are also shown in Figure 2.1.

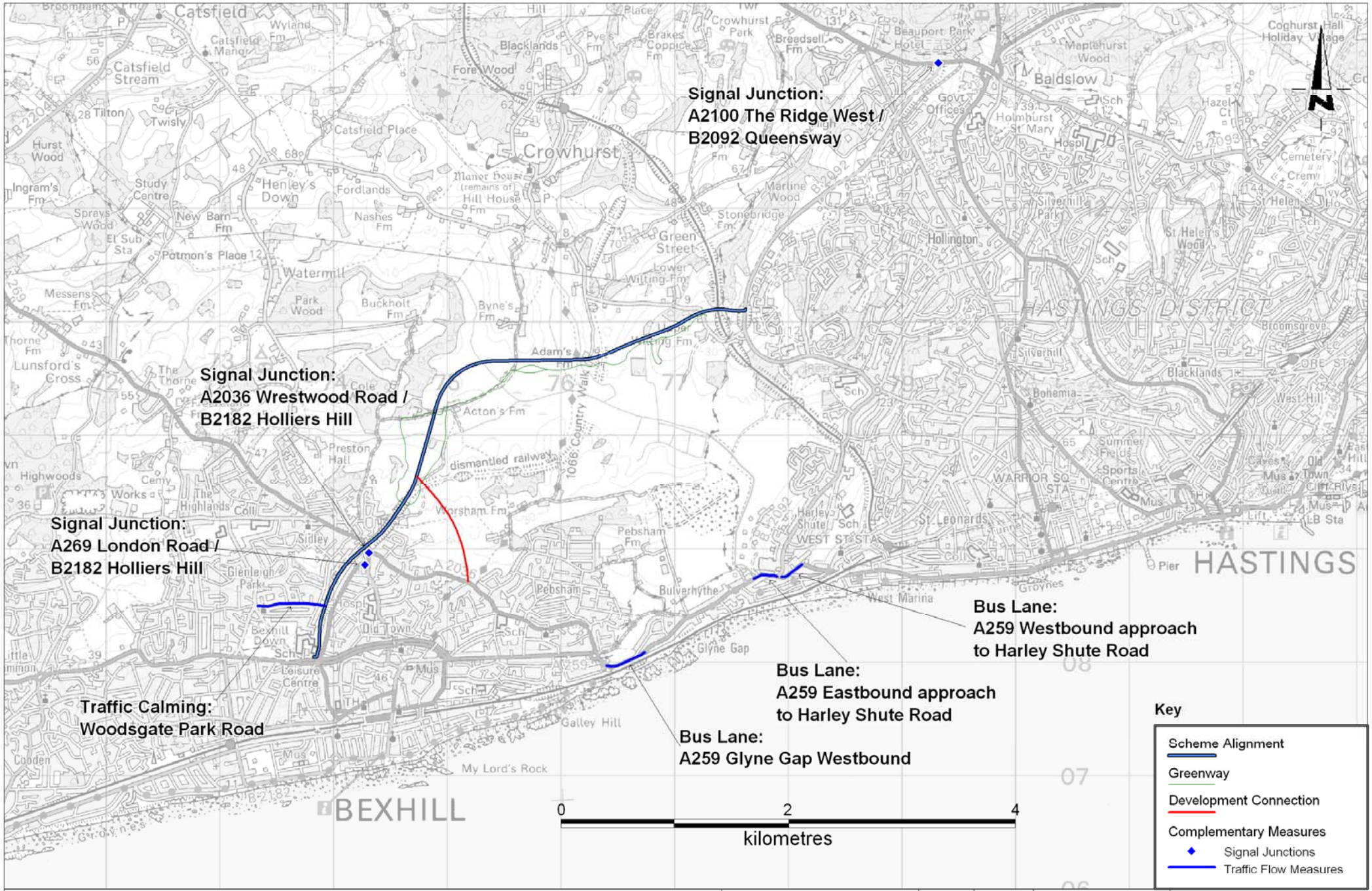
2.3 Public Transport Do Minimum Network

2.3.1 There are no committed public transport improvements in the Bexhill and Hastings area so the Do Minimum public transport networks and services for bus and rail remain the same as the validation assignments.

2.4 Public Transport Do Something Network

2.4.1 With the provision of the Scheme it is likely that a new bus service linking Bexhill and Hastings town centres will be provided along the Link Road. Figure 2.2 shows the proposed route included in the Do Something public transport assessments. A 15 minute frequency has been assumed with every other bus travelling along the alternative green and red route sections within Hastings.

2.4.2 No rail network or service changes have been modelled.



BEXHILL TO HASTINGS LINK ROAD

Figure : 2.1	Scale	NTS	Carolyn Dwyer BEng (Hons), DipTrans, DMS, MIHT, MILT Assistant Director, Transport & Waste County Hall, St. Anne's Cresent Lewes, East Sussex BN7 1UE Telephone: 01273 481000
Scheme Alignment and Complimentary Measures	Sheet	1 of 1	
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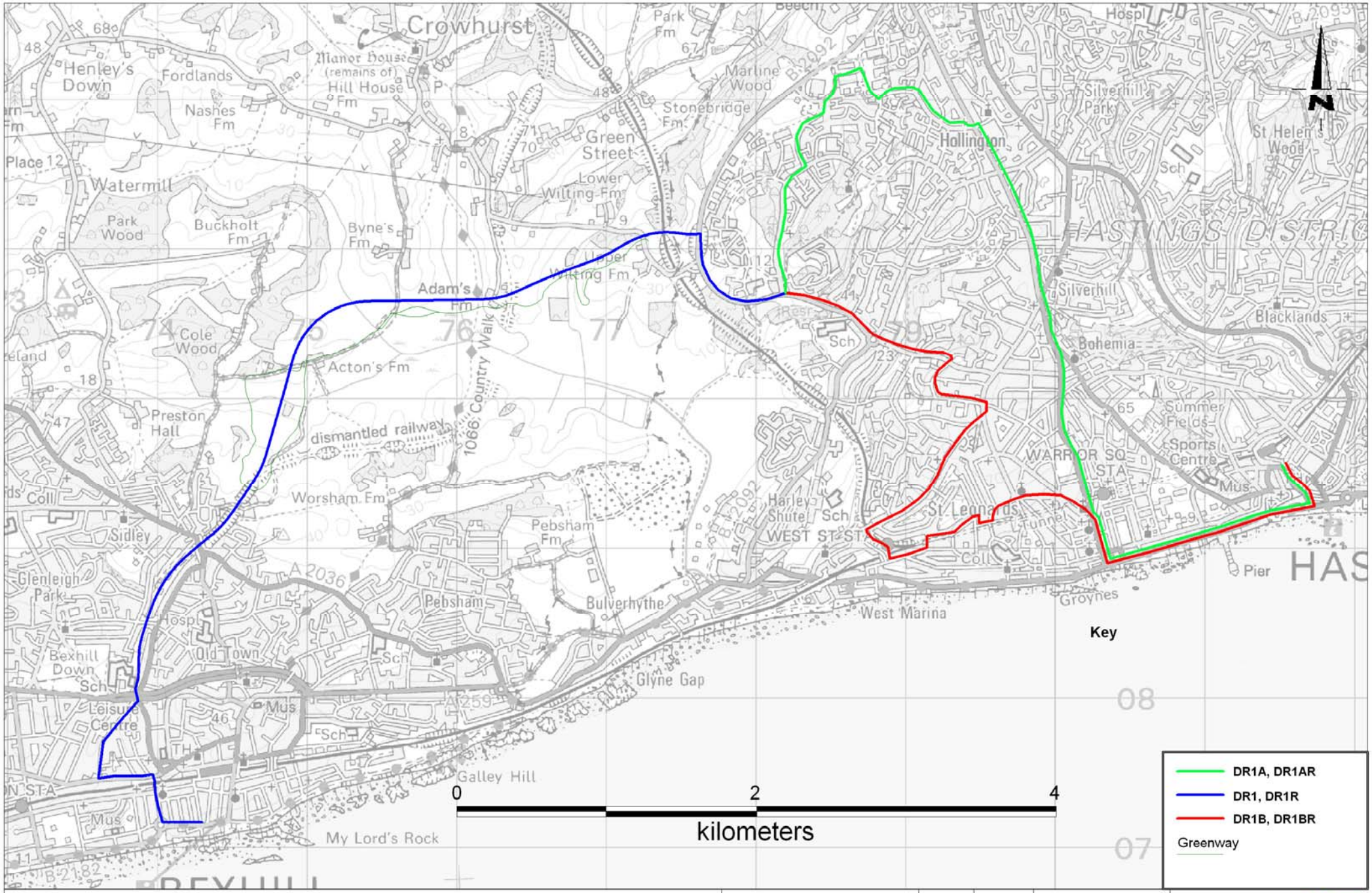

BEXHILL TO HASTINGS LINK ROAD

Figure : 2.2	Scale	NTS	Carolyn Dwyer BEng (Hons), DipTrans, DMS, MIHT, MILT Assistant Director, Transport & Waste County Hall, St. Anne's Crescent Lewes, East Sussex BN7 1UE Telephone: 01273 481000
Proposed New Bus Services	Sheet	1 of 1	
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3 Future Year Trip Matrices

3.1 Background

3.1.1 This chapter describes how the trip matrices in the opening year (2010) and design year (2025) have been created, for the am, inter-peak and pm peak periods. The Most Likely scenario uses traffic growth based on housing and business development information supplied by East Sussex County Council (ESCC). For each time period and forecast year, the base year matrix (2004) is used to build the future year matrices.

3.2 Planning Data comparison

3.2.1 The trip matrices for 2010 and 2025 are based on information from the following sources:

- TEMPRO V5.3, along with the Guidance Note;
- South East Plan consultation and submission in autumn 2005;

3.2.2 The forecast projections of households and jobs provided by East Sussex, from their work on the South East Plan, have been compared with the planning data used by TEMPRO to forecast traffic growth. Table 3.1 below shows the comparison of households and jobs by East Sussex district in 2004, and Table 3.2 shows the comparison for 2010 and 2025 data.

3.2.3 The tables show that the ESCC figures of households is similar to those used in TEMPRO but that the number of jobs in 2004 are lower than those used by TEMPRO. The TEMPRO forecast housing growth across East Sussex is 56% higher than the ESCC forecast housing growth from 2004 to 2010. The pattern is repeated from 2010 to 2025 with TEMPRO projections 40% higher than East Sussex. The TEMPRO forecast job growth across East Sussex is 41% higher than the ESCC forecast housing growth from 2004 to 2010. However from 2010 to 2025 TEMPRO job projections are only 70% of those projected by East Sussex.

3.2.4 As there is a significant difference between the East Sussex planning data and TEMPRO planning data, future year matrix totals have not been controlled to the significantly higher TEMPRO growth and the East Sussex planning data has been used to calculate external zones growth factors.

Table 3-1: 2004 Planning Data comparison

	ESCC data		TEMPRO data	
	Households	**Jobs**	**Households**	**Jobs**
Hastings	38,474	28,585	38,825	31,378
Rother	38,673	23,373	39,236	28,820
Eastbourne	42,520	35,794	42,764	35,779
Lewes	40,380	32,098	40,799	37,695
Wealden	58,918	42,666	59,975	50,975
East Sussex (total)	218,965	162,516	221,599	184,647

Table 3-2: Forecast Planning Data comparison

	2010 ESCC data		2010 TEMPRO data		2025 ESCC data		2025 TEMPRO data	
	House holds	**Jobs**	**House holds**	**Jobs**	**House holds**	**Jobs**	**House holds**	**Jobs**
Hastings	39,737	28,892	40,868	32,303	42,731	31,689	46,375	34,526
Rother	40,063	24,368	40,994	29,044	43,978	27,730	44,429	30,849
Eastbourne	44,464	36,856	46,323	36,895	47,916	39,430	54,243	39,743
Lewes	41,659	32,118	42,593	38,746	44,855	35,364	46,094	41,111
Wealden	60,836	44,318	63,010	52,470	66,611	50,272	69,860	55,850
East Sussex (total)	226,759	166,552	233,788	189,458	246,091	184,484	261,001	202,119

3.3 Reference Most Likely highway matrices

Car trip matrix building process

3.3.1 Actual housing completions from 2004 to 2006 have been supplied by East Sussex together with housing completion predictions for 2006 to 2010 and 2010 to 2025. Total increases in housing numbers from 2004 to 2010 and from 2010 to 2025 are therefore set out in Table 3.3. The estimates are based on the South East Plan consultation and submission in Autumn 2005. The plan covers the period up to 2026 and hence the housing totals have been adjusted to provide the two periods of growth required for the matrix building process. The 2025 housing provision estimates are divided into two levels, namely

- Do Minimum without the Scheme level of development and,
- Do Something with the Scheme level of development.

3.3.2 In 2010 it has been assumed that the same level of development will occur whether the Scheme proceeds or not.

Table 3-3: Estimation of Future Housing Completion

	2004 - 2010	2010 - 2025	
	With and Without Link Road	Without Link Road	With Link Road
Bexhill			
Central	92	229	229
Collington	94	94	94
Kewhurst	0	0	0
Old Town	85	169	1,205
Sackville	28	67	67
Sidley	145	164	164
St Marks	40	48	48
St Michaels	50	97	97
St Stephens	23	74	74
Bexhill Total	**557**	**942**	**1,978**
Battle	**129**	**411**	**411**
Hastings			
Ashdown	266	280	280
Baird	81	248	248
Braybrooke	51	101	101
Castle	143	246	246
Central St Leonards	108	115	115
Conquest	62	183	183
Gensing	95	85	85
Hollington	105	205	205
Maze Hill	68	133	133
Old Hastings	40	88	88
Ore	24	57	57
St Helens	33	90	90
Silverhill	65	119	119
Tressell	88	260	260
West St Leonards	70	168	684
Wishing Tree	70	181	181
Hastings Total	**1,369**	**2,559**	**3,075**

3.3.3 1036 houses and the Worsham Farm business development in the North East Bexhill development area, are dependant on the Scheme. The housing numbers are shown above in the Bexhill Old Town ward total. As no trips are currently generated from these zones, the distribution was taken from a nearby zone.

3.3.4 The proposed main business developments as supplied by ESCC, in Bexhill and Hastings are summarised in Table 3.4.

Table 3-4: Proposed Main Business Developments in Bexhill and Hastings

Development Ward	Site Location	Development Type	2004 – 2010 GFA	2010 – 2025 GFA	
				Without Link Road	With Link Road
Bexhill Old Town	Worsham Farm west of the proposed Link	50% B1, 30% B2, 20% B8			22,000
Bexhill Sidley	Worsham Farm east of the proposed Link	50% B1, 30% B2, 20% B8			26,000
Bexhill Sidley	South of A269, north of Turkey Road	50% B1, 30% B2, 20% B8			
Hastings Ashdown	Northwest of Queensway, north	70 B1, 30% B2	13,006		
Hastings Ashdown	Northwest of Queensway, south	70 B1, 30% B2	14,864		
Hastings Baird	Ivyhouse Lane, north of The Ridge	50% B2, 50% B8		22,250	22,250
Hastings Ashdown	Baldslow	50% B1, 30% B2, 20% B8		11,148	11,148
Hastings Castle	University Centre phase 1		3,500		
Hastings Castle	Gap Site	B1	8,100		
Hastings Castle	Gap Site	Retail	1,100		
Hastings Castle	Priory Quarter	B1		26,900	26,900
Hastings Castle	Priory Quarter - University Centre phase 2			14,500	14,500
Hastings Castle	Priory Quarter	Retail		4,500	4,500
Hastings Castle	Priory Quarter	Leisure (cinema)		1,700	1,700
Hastings Castle	Pelham	B1		3,800	3,800
Hastings Castle	Pelham	Retail		2,300	2,300
Hastings Castle	Pelham	Leisure		1,000	1,000

3.3.5 The TRICS (2006a) database has been used to determine appropriate car trip rates for housing and business developments as shown below in Table 3.5. These rates have been used to calculate car trip numbers for these specific developments and the total trips allocated to the appropriate model zones.

Table 3-5: TRICS Trip Generation Rates

TRICS Land Use Category	Rate	AM Peak		Inter Peak		PM Peak	
		IN	OUT	IN	OUT	IN	OUT
Mixed Private Housing	per dwelling	0.12	0.44	0.14	0.14	0.37	0.18
Business Parks (B1)	per 100sqm	1.4	0.11	0.22	0.2	0.12	1.09
Industrial Estates (B2)	per 100sqm	1.11	0.28	0.49	0.45	0.25	1.15
Commercial Warehousing (B8)	per 100sqm	0.12	0.06	0.11	0.07	0.07	0.13
Retail	per 100sqm	1.30	0.67	2.69	2.70	1.63	2.20
University	per 100sqm	1.31	0.32	0.33	0.31	0.41	0.80
Cinema	per 100sqm	0.00	0.00	0.87	0.76	2.19	2.02
Mixed Leisure	per 100sqm	0.00	0.00	0.59	0.20	0.08	0.39

3.3.6 The total car trips calculated have then been split into the three user classes, commuting, employers business and other trips using the matrix proportions from the 2004 validated assignments. To ensure trips between new houses and new business developments were not double counted, the furnessing of the am peak commuting matrices used the trips generated by the housing as the origin constraints and the trips attracted by the business as the destination constraints. In the pm peak, the furnessing of the commuting matrices used the trips generated by the business as the origin constraints and the trips attracted by the housing as the destination constraints.

3.3.7 TEMPRO v5.3 program has been used to calculate traffic growth through potential growth in population and employment in zones outside of Bexhill and Hastings. ESCC has reviewed the population and employment planning data within the TEMPRO program for the East Sussex districts, and have provided revised projections for these areas as shown in Tables 3.1 and 3.2.

3.3.8 Separate growth factors have been used by time period, user class and location. For those zones within East Sussex districts, the appropriate growth rate for that district has been used. For those zones outside of East Sussex, an East Sussex growth rate has been used as trips from these zones have either an origin or destination within East Sussex.

LGV and HGV traffic growth

3.3.9 Table 3.7 show the growth rate for LGV and HGV based on central NRTF1997 growth. The split of articulated and rigid HGVs has been taken from the classified count at Glyne Gap roundabout and used to calculate an overall HGV growth factor.

Table 3-6: Central Growth Rate for LGV and HGV

	LGV	HGV
2004-2010	1.14	1.06
2004-2025	1.57	1.28

3.4 Reference Most Likely Highway Matrix Totals

3.4.1 Tables 3.7 to 3.9 below shows the matrix totals by user class for 2004, 2010 and 2025 with the overall growth factors.

Table 3-7: AM Peak Most Likely Matrix Totals

	2004	2010	2025 DM	2025 DS	2010 /2004	2025 DM /2004	2025 DS /2004
Cars - commuting	15,599	16,172	17,327	18,086	1.04	1.11	1.16
Cars – employers business	2,718	2,827	3,041	3,216	1.04	1.12	1.18
Cars – other	7,892	8,262	8,919	9,382	1.05	1.13	1.19
LGV	3,381	3,854	5,308	5,308	1.14	1.57	1.57
HGV	2,091	2,217	2,677	2,677	1.06	1.28	1.28

Table 3-8: Interpeak Most Likely Matrix Totals

	2004	2010	2025 DM	2025 DS	2010 /2004	2025 DM /2004	2025 DS /2004
Cars - commuting	3,161	3,229	3,369	3,493	1.07	1.11	1.12
Cars – employers business	3,140	3,208	3,347	3,468	1.07	1.10	1.10
Cars - other	14,999	15,429	16,146	16,744	1.08	1.12	1.13
LGV	3,459	3,943	5,430	5,430	1.14	1.57	1.57
HGV	1,716	1,819	2,196	2,196	1.06	1.28	1.28

Table 3-9: PM Peak Most Likely Matrix Totals

	2004	2010	2025 DM	2025 DS	2010 /2004	2025 DM /2004	2025 DS /2004
Cars - commuting	12,438	12,665	13,064	13,675	1.02	1.05	1.10
Cars – employers business	1,852	1,904	2,025	2,141	1.03	1.09	1.16
Cars - other	12,297	12,776	13,531	14,309	1.04	1.10	1.16
LGV	4,407	5,025	6,920	6,920	1.14	1.57	1.57
HGV	1,427	1,513	1,827	1,827	1.06	1.28	1.28

3.5 Reference Most Likely public transport matrices

3.5.1 The public transport trip matrices have been built in a similar manner to the car matrices using the specific development information and TEMPRO growth rates. TRICS provides total public transport trip rates only without division by public transport submode. The split between bus and rail was therefore taken from the existing split of bus and rail trips in the 2004 validation matrices.

3.5.2 TEMPRO growth rates for the external zones in the bus and rail matrices also used the housing and jobs information provided by East Sussex to calculate appropriate rates. In addition to rates being calculated by East Sussex district, separate growth rates were calculated for car available and car non-available trips.

3.5.3 Tables 3.12 to 3.14 show the reference matrix totals for bus and rail separately by car availability for 2004, 2010 and 2025. The tables also include growth factors.

3.5.4 The bus trips increase over time for both car available and car non-available trips in all time periods.

3.5.5 The rail car available matrix totals increase over time, but the car non-available rail matrix totals generally reduce from 2004 to 2010 and 2025DM, with 2025DS matrix totals higher than 2025DM. This is because the majority of the rail trips are travelling to or from the external zones in the model which use TEMPRO based growth. The TEMPRO factors for car available rail trips are greater than 1.0 but less than 1.0 for non car-available trips.

Table 3-10: AM Peak Public Transport Most Likely Reference Matrix Totals

	2004	2010	2025 DM	2025 DS	2010/2004	2025 DM /2004	2025 DS /2004
Bus – car available	146	160	178	204	1.10	1.23	1.40
Bus – car not available	125	137	151	173	1.09	1.20	1.38
Rail – car available	1938	2015	2225	2305	1.04	1.15	1.19
Rail – car not available	461	450	426	444	0.98	0.92	0.96

Table 3-11: Interpeak Public Transport Most Likely Reference Matrix Totals

	2004	2010	2025 DM	2025 DS	2010/2004	2025 DM /2004	2025 DS /2004
Bus – car available	155	160	169	183	1.03	1.09	1.18
Bus – car not available	146	149	155	168	1.02	1.06	1.15
Rail – car available	883	923	1008	1034	1.05	1.14	1.17
Rail – car not available	347	350	319	332	1.01	0.92	0.96

Table 3-12: PM Peak Public Transport Most Likely Reference Matrix Totals

	2004	2010	2025 DM	2025 DS	2010/2004	2025 DM /2004	2025 DS /2004
Bus – car available	110	112	122	128	1.02	1.11	1.16
Bus – car not available	92	93	99	105	1.01	1.07	1.13
Rail – car available	3022	3088	3303	3334	1.02	1.09	1.10
Rail – car not available	873	829	719	729	0.95	0.82	0.83

4 Forecast Assignments

4.1 Assignment

4.1.1 The forecasting procedure has been undertaken using DIADEM software. DIADEM allows variable demand modelling in line with the latest draft DfT guidance (VaDMA). DIADEM does not include an assignment module; instead it relies on other software packages to carry out assignments, i.e. SATURN for the highway network and VISUM for the public transport network. The public transport and highway assignment models are external to DIADEM but the software packages exchange trip matrices and cost matrices.

4.1.2 Separate DIADEM runs have been carried out for each option and forecast year. Variable demand has been assessed for cars, with mode split choices between car and public transport for those with a car available. Public transport users without a car available are assumed captive to public transport. LGVs and HGVs have been assumed to have fixed demand.

4.1.3 The SATURN assignment uses Wardrop equilibrium assignment. The highway trip costs are made up of time and distance impacts. The value of time (VOT) and vehicle operating cost (VOC) vary by journey purpose and also vary by forecast year to represent changes in fuel costs and income. Table 4.1 below details the generalised cost coefficients used.

Table 4-1: Generalised Cost Coefficients

Year	Time Period	Commuting		Employers Business		Other	
		VOT (£ per hr/car driver)	VOC (p/km)	VOT (£ per hr/car driver)	VOC (p/km)	VOT (£ per hr/car driver)	VOC (p/km)
2010	AM	1.00	0.61	1.00	0.19	1.00	0.48
	Interpeak	1.00	0.61	1.00	0.19	1.00	0.48
	PM	1.00	0.63	1.00	0.19	1.00	0.44
2025	AM	1.00	0.47	1.00	0.14	1.00	0.34
	Interpeak	1.00	0.47	1.00	0.14	1.00	0.34
	PM	1.00	0.47	1.00	0.14	1.00	0.34

4.1.4 VISUM was used for the public transport assignment with journey costs output. The VISUM models assigned bus and rail trips to the lowest cost routes where the trip cost was equal to the perceived journey time. The perceived journey time was calculated as:

4.1.4 PJT = In-vehicle time + 2*(Access Time + Egress Time + Walking Time)+ 2.5* (Origin Wait Time + Transfer Wait Time) + 10min *No of Transfers

4.1.5 Vehicle occupancy factors for the highway trips have been calculated for each journey purpose using the Roadside Interview data from the site on the A259 at Glyne Gap to convert highway vehicle trips to person trips to be compatible with the public transport matrices. The factors calculated were 1.3 for car commuting trips, 1.5 for cars on employers business and 1.3 for other car trips.

4.2 Variable Demand Responses

4.2.1 The DIADEM assessments have been set up to model the following demand responses:

- Frequency
- Modal split
- Re-distribution

4.2.2 Trip frequency considers how the number of trips generated varies dependant on travel cost changes, modal split considers the switching of trips between highway and public transport dependant on travel cost changes and re-distribution considers how the number of trips between origin-destination pairs varies dependant on travel cost. Doubly constrained re-distribution has been used for commuting trips, and singly constrained re-distribution for employers business and other trips.

4.2.3 Future year highway networks and vehicle matrices were input to DIADEM along with VISUM output public transport costs and passenger matrices. DIADEM skims the reference highway cost from the base validated year assignments and composite public transport costs over both bus and rail have been calculated after running initial public transport assignments with VISUM. DIADEM starts by comparing the initial highway and public transport costs and then uses the demand response parameters to cerate new highway and public transport matrices. The highway matrices are reassigned within SATURN and recalculating new highway costs calculated. This continues until specified convergence criteria are met.

4.2.4 The demand response parameters for each journey purpose (i.e. commuting, employers business, other) are shown in the following table. These are based on the guidance in VADMA (WebTAG unit 3.10.3), but with adjustments made following the realism testing explained in the LMVR.

Table 4-2: DIADEM parameters

Journey Purpose	Variable Demand Response Parameter			
	HWY Redistribution	PT Redistribution	Mode Choice	Trip Frequency
Cars - commuting	- 0.059	-0.030	0.61	0.09
Cars -employers business	-0.047	-0.025	0.32	0.07
Cars – other	-0.02	-0.009	0.13	0.03

4.3 DIADEM Convergence parameters

4.3.1 The following settings have been used. These have been set following discussion with DIADEM technical support.

- Initial step length: 0.75
- Maximum iterations: 20
- Maximum flow change: 0.001

4.4 Bus/rail mode split

4.4.1 DIADEM deals only with the split of trips between car and public transport for people with a car available to them. A spreadsheet has therefore been used to split the public transport trips between bus and rail and to model the bus/rail choice for car non-available travellers. The spreadsheet calculates forecast mode shares for bus and rail based on the changes in generalised costs of the modes and the reference mode shares using an incremental logit model.

4.4.2 The spreadsheet produces forecast mode shares for rail and bus for bus and rail trips and composite public transport costs for input into DIADEM.

5 Sensitivity Tests

5.1 Modelling Parameters Sensitivity Test

5.1.1 As required by WebTAG unit 3.10 a sensitivity test has been run with increased DIADEM parameters. In a scheme aimed at congestion relief, the net economic benefit will be reduced by increases in the demand for car travel. Increasing the DIADEM lambda values will test the robustness of the result against increased demand. If the scheme remains well justified against these higher values then a conclusion that the scheme is beneficial will be robust against the effects of induced traffic. For this sensitivity test the DIADEM lambda parameters have been doubled.

5.2 High Growth Sensitivity Test

5.2.1 The Most Likely levels of housing and business developments are based on the South East Plan proposals and have been allocated to the forecast years of 2010 and 2025 based on a pattern of development derived from commitments and allocations as of 2004. The South East Plan also refers to further developments and these have been developed into a possible high growth set of housing and business assumptions. The main component in the High Growth level of development is the inclusion of approximately 1,000 houses and 48,000 sqm of commercial development within Rother. This level of residential development is implicit in the South East Plan provisions but its precise location is not yet set. The allocation of specific sites is a task for the district to undertake as part of the Local Development Framework process. The commercial element, whilst not explicitly identified in the draft South East Plan, represents what could be reasonably expected to follow the additional 1,000 houses to provide local employment opportunities and meet the objectives of the South East Plan's sub regional strategy for the Sussex Coast. Development at Bexhill could form one large development or a number of smaller sites over different areas such as west Bexhill, Little Common in Bexhill and Wilting Farm on the northwest edge of Hastings.

5.2.2 Until the South East Plan is adopted (currently anticipated in early 2008) there remains a degree of uncertainty over the final development requirement for the area, although the prospect of reduced requirement for the Bexhill Hastings area is considered highly unlikely.

The lack of certainty in the precise locations and level of this additional development together with its possible developer funded additional infrastructure requirements and implications leads to the conclusion that to presume a high growth scenario, reflecting a specific land allocation, would be premature and is not appropriate for use as a basis of the assessment within the ES or Regeneration Statement. The precise locations and levels of this additional development, the associated infrastructure, and its economic and environmental effects may become clearer as the South East Plan and the Local Development Framework processes unfold over the next 9-18 months.

6 Results

This chapter describes the results of the Most Likely traffic forecasts. The results of the DIADEM parameters sensitivity test are described in the following chapter

6.1 Final Matrix Totals

6.1.1 Following completion of the DIADEM runs, final matrix totals are output for highway vehicles and public transport passengers. The public transport passenger matrices can be split into car available bus and rail matrices using the forecast bus/rail split calculated within the public transport mode split spreadsheet. Public transport passenger trip totals for those without a car available can also be extracted from the transport mode split spreadsheet.

6.1.2 Tables 5.1 and 5.2 show the 2010 and 2025 resultant matrix totals for highway vehicles, and public transport passengers. The lgv and hgv trip totals have been excluded from the tables as these do not vary from those in Tables 3.7 to 3.9.

6.1.3 The highway vehicle totals include all vehicles in the network. The rail totals will include all passenger trips between the origins and destinations for which ticket data was requested as detailed in section 6.2 of the LMVR and the bus totals will only include passengers travelling on routes between Bexhill and Hastings.

6.1.4 The highway matrix totals in each time period and year increase with the introduction of the Scheme. Some of that increase is a transfer from public transport but there are also increases as a result of the trip frequency and re-distribution variable demand responses.

6.1.5 The public transport matrix totals show a very little change in bus and rail passengers in 2010 with the Scheme for those trips for which a car is not available.

Table 6-1: 2010 Results (vehs/passengers per hr)

Time Period	Mode	DM	DS
AM	Highway	27518	27747
	Rail car available	1947	1844
	Rail no car available	450	446
	Bus car available	161	159
	Bus no car available	137	141
IP	Highway	21924	21973
	Rail car available	906	886
	Rail no car available	341	337
	Bus car available	160	159
	Bus no car available	150	153
PM	Highway	27590	27774
	Rail car available	3003	2948
	Rail no car available	827	826
	Bus car available	125	122
	Bus no car available	105	106

Table 6-2: 2025 Results (vehs/passengers per hr)

Time Period	Mode	DM	DS
AM	Highway	29557	31040
	Rail car available	2137	2167
	Rail no car available	431	444
	Bus car available	184	209
	Bus no car available	150	174
IP	Highway	22903	23762
	Rail car available	978	998
	Rail no car available	325	332
	Bus car available	170	183
	Bus no car available	149	169
PM	Highway	28915	30502
	Rail car available	3169	3150
	Rail no car available	722	729
	Bus car available	125	130
	Bus no car available	97	105

6.1.6 These final matrices have been re-assigned to the highway and public transport networks to provide traffic forecasts with and without the Scheme.

6.2 Highway Impacts

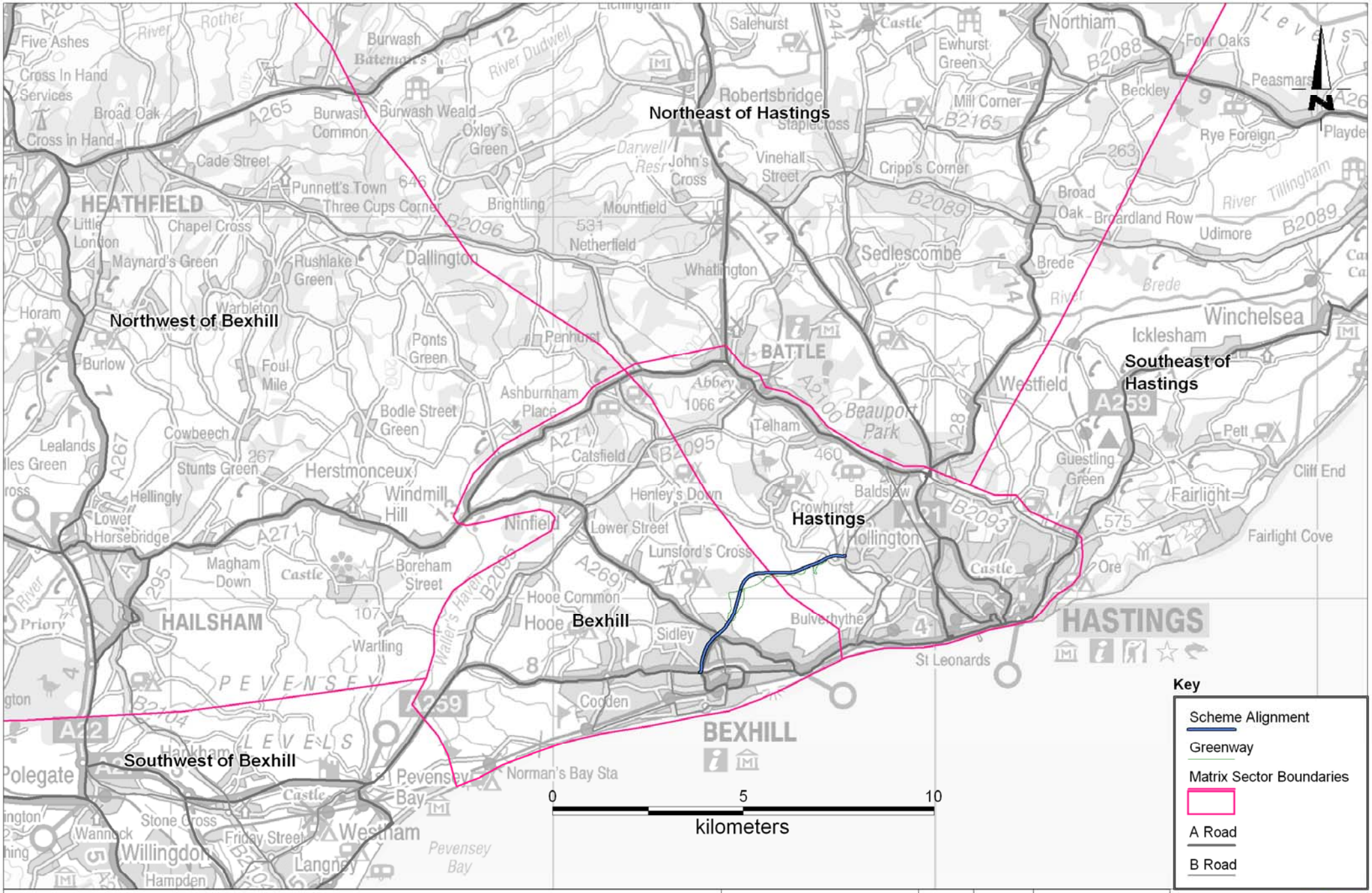
Changes in Overall Traffic Volumes and Trip Making

6.2.1 The overall trips on the network are shown in Table 6.3 and show that the increase in trips with the Scheme is 0.3% in 2010 and 3.2% in 2025.

Table 6-3: Overall Trips on the Network within the Study Area

No of daily trips (AADT)					
2010			2025		
DM	DS	% change	DM	DS	% change
389,368	390,545	0.3%	430,029	443,721	3.2%

6.2.2 Sector to sector movements have been analysed to evaluate the impact of the Scheme on trip making between sectors. Traffic model zones have been aggregated into the following six sectors: Bexhill urban area; Hastings urban area; northwest of Bexhill; southwest of Bexhill; northeast of Hastings; and, southeast of Hastings. These sectors are shown in Figure 6.1. Tables 6-4 to 6-6 show the trips for the 2010 Do Minimum and Do Something scenarios, and the difference between the two cases. Tables 6-7 to 6-9 show the 2025 cases.



BEXHILL TO HASTINGS LINK ROAD

Figure : 6.1	Scale	NTS	Carolyn Dwyer BEng (Hons), DipTrans, DMS, MIHT, MILT Assistant Director, Transport & Waste County Hall, St. Anne's Crescent Lewes, East Sussex BN7 1UE Telephone: 01273 481000
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Table 6-4: 2010 DM AADT trips between sectors

	Bexhill	**Hastings**	**Northwest of Bexhill**	**Southwest of Bexhill**	**Northeast of Hastings**	**Southeast of Hastings**
Bexhill	85,446	12,683	6,774	5,264	3,028	472
Hastings	14,390	177,890	4,840	5,450	15,880	4,662
Northwest of Bexhill	5,206	4,782	236	104	1,516	260
Southwest of Bexhill	4,936	4,165	163	47	1,463	266
Northeast of Hastings	2,817	14,624	1,310	1,370	1,368	786
Southeast of Hastings	660	4,461	117	158	719	1,053
Overall number of trips:		389,366	No. of trips across Bexhill-Hastings Screenline			59,747

The shaded cells of the tables show the trips that pass across the screenline between Bexhill and Hastings shown in

Table 6-10 Screenline Flows (AADT).

Table 6-5: 2010 DS AADT trips between sectors

	Bexhill	Hastings	Northwest of Bexhill	Southwest of Bexhill	Northeast of Hastings	Southeast of Hastings
Bexhill	83,734	13,673	7,389	5,077	3,496	523
Hastings	15,482	175,696	5,210	5,795	16,654	4,643
Northwest of Bexhill	5,160	4,954	236	102	1,582	284
Southwest of Bexhill	4,639	4,449	187	43	1,606	296
Northeast of Hastings	3,082	14,459	1,354	1,435	1,334	775
Southeast of Hastings	718	4,400	125	169	752	1,031
Overall number of trips:		390,554	No. of trips across Bexhill-Hastings Screenline			64,233

Table 6-6: 2010 Change in AADT trips between sectors

	Bexhill	Hastings	Northwest of Bexhill	Southwest of Bexhill	Northeast of Hastings	Southeast of Hastings
Bexhill	-1,712 (-2%)	990 (8%)	615 (9%)	-187 (-4%)	468 (15%)	51 (11%)
Hastings	1,092 (8%)	-2,194 (-1%)	370 (8%)	345 (9%)	774 (5%)	-19 (-0%)
Northwest of Bexhill	-46 (-1%)	172 (4%)	0 (0%)	-2 (-2%)	66 (4%)	24 (9%)
Southwest of Bexhill	-297 (-6%)	284 (7%)	24 (15%)	-4 (-9%)	143 (10%)	30 (11%)
Northeast of Hastings	265 (9%)	-165 (-1%)	44 (3%)	65 (5%)	-34 (-2%)	-11 (-1%)
Southeast of Hastings	58 (9%)	-61 (-1%)	8 (7%)	11 (7%)	33 (5%)	-22 (-2%)
Overall change in number of trips:		1,178	Overall change in No. of trips across Bexhill-Hastings Screenline			4,486

6.2.3 Over 3300 extra car trips travel across the screenline from Bexhill to Hastings and beyond, plus from Hastings to Bexhill and beyond as a result of the Scheme in 2010, an increase of 8%. Of these extra car trips, 53% are trips to and from work and 13% are trips on employers business.

Table 6-7: 2025 DM AADT trips between sectors

	Bexhill	Hastings	Northwest of Bexhill	Southwest of Bexhill	Northeast of Hastings	Southeast of Hastings
Bexhill	91,515	13,147	8,511	6,098	3,411	516
Hastings	14,694	195,041	5,983	5,991	19,081	5,184
Northwest of Bexhill	6,225	5,710	299	134	1,819	301
Southwest of Bexhill	5,759	4,769	259	57	1,780	299
Northeast of Hastings	3,065	16,087	1,564	1,520	1,552	909
Southeast of Hastings	666	5,044	133	161	864	1,161
Overall number of trips:		430,029	No. of trips across Bexhill-Hastings Screenline			65,529

Table 6-8: 2025 DS AADT trips between sectors

	Bexhill	Hastings	Northwest of Bexhill	Southwest of Bexhill	Northeast of Hastings	Southeast of Hastings
Bexhill	97,375	15,852	8,630	5,826	4,141	601
Hastings	17,327	193,459	6,251	6,495	19,308	5,399
Northwest of Bexhill	6,222	5,964	303	134	1,947	336
Southwest of Bexhill	5,384	5,117	236	53	1,929	348
Northeast of Hastings	3,557	17,017	1,663	1,671	1,680	953
Southeast of Hastings	793	5,223	144	184	918	1,277
Overall number of trips:		443,717	No. of trips across Bexhill-Hastings Screenline			74,320

This includes trips generated by the North East Bexhill Development and the housing development in West St Leonards, both of which are dependent on the Scheme.

Table 6-9: 2025 Change in AADT trips between sectors

	Bexhill	Hastings	Northwest of Bexhill	Southwest of Bexhill	Northeast of Hastings	Southeast of Hastings
Bexhill	5,860 (6%)	2,705 (21%)	119 (1%)	-272 (-4%)	730 (21%)	85 (16%)
Hastings	2,633 (18%)	-1,582 (-1%)	268 (4%)	504 (8%)	227 (1%)	215 (4%)
Northwest of Bexhill	-3 (-0%)	254 (4%)	4 (1%)	0 (0%)	128 (7%)	35 (12%)
Southwest of Bexhill	-375 (-7%)	348 (7%)	-23 (-9%)	-4 (-7%)	149 (8%)	49 (16%)
Northeast of Hastings	492 (16%)	210 (1%)	99 (6%)	151 (10%)	128 (8%)	44 (5%)
Southeast of Hastings	127 (19%)	179 (4%)	11 (8%)	23 (14%)	54 (6%)	116 (10%)
Overall number of trips:		13,688	No. of trips across Bexhill-Hastings Screenline			8,791

6.2.4 In 2025 extra trips are generated by the additional developments dependent on the Scheme. This combined with the variable demand impact of the Scheme results in a greater difference in trip numbers between the DM and DS scenarios in 2025 than in 2010.

Specific Impacts

6.2.5 There is a reduction in trips on other east-west routes as traffic diverts to the Scheme, although there is also an overall increase in trips across the screenline between Bexhill and Hastings.

6.2.6 Table 6-10 Screenline Flows **(AADT)** below shows the comparison of east west traffic across a screenline between Bexhill and Hastings. In 2010, traffic flows are reduced by 33% on the existing A259 Glyne Gap between Bexhill and Hastings, and by over 40% on the rural roads through Henleys Down, Catsfield and Crowhurst between the two towns. There is however an overall small increase in east west movements across the screenline of 5% with the Scheme.

6.2.7 In 2025, as there is more traffic on the network, there will be less reduction of traffic along the A259 coast road, although the rural roads will still be benefiting greatly with reductions in traffic of 36% on the B2095 and 68% on Henleys Down. There is an increase of 11% of traffic overall across the east west screenline with the Scheme.

Table 6-10 Screenline Flows (AADT)[1]

Location	2010			2025		
	Do-Minimum	Do-Something	% change	Do-Minimum	Do-Something	% change
A271	15,300	13,300	-13%	15,500	14,400	-7%
B2095	10,200	5,600	-45%	12,900	8,200	-36%
Henleys Down	4,400	2,600	-41%	9,600	3,100	-68%
BHLR	-	22,100	-	-	26,600	-
A259 Glyne Gap	32,000	21,600	-33%	31,300	24,600	-21%
TOTAL SCREENLINE	**61,900**	**65,200**	5%	**69,300**	**76,900**	11%

The total trips across the screenline differ slightly from those in Table 4.2 as these flows are rounded to the nearest 100 vehicles.

6.2.8 Figure 6-2, Figure 6-3 and Figure 6-4 show the AADT traffic flows on key links within the study area. In both 2010 and 2025 forecast years, the Do Something results in a significant reduction in traffic along the A259 through Glyne Gap. There would be an overall reduction in traffic along the A259 through Hastings.

6.2.9 The Scheme results in a significant reduction in traffic along the A259 through Glyne Gap. The reduction in traffic along the A259 continues from the Belle Hill junction, along Glyne Gap and through Hastings along the seafront. Roads such as Harley Shute Road in the southwest corner of

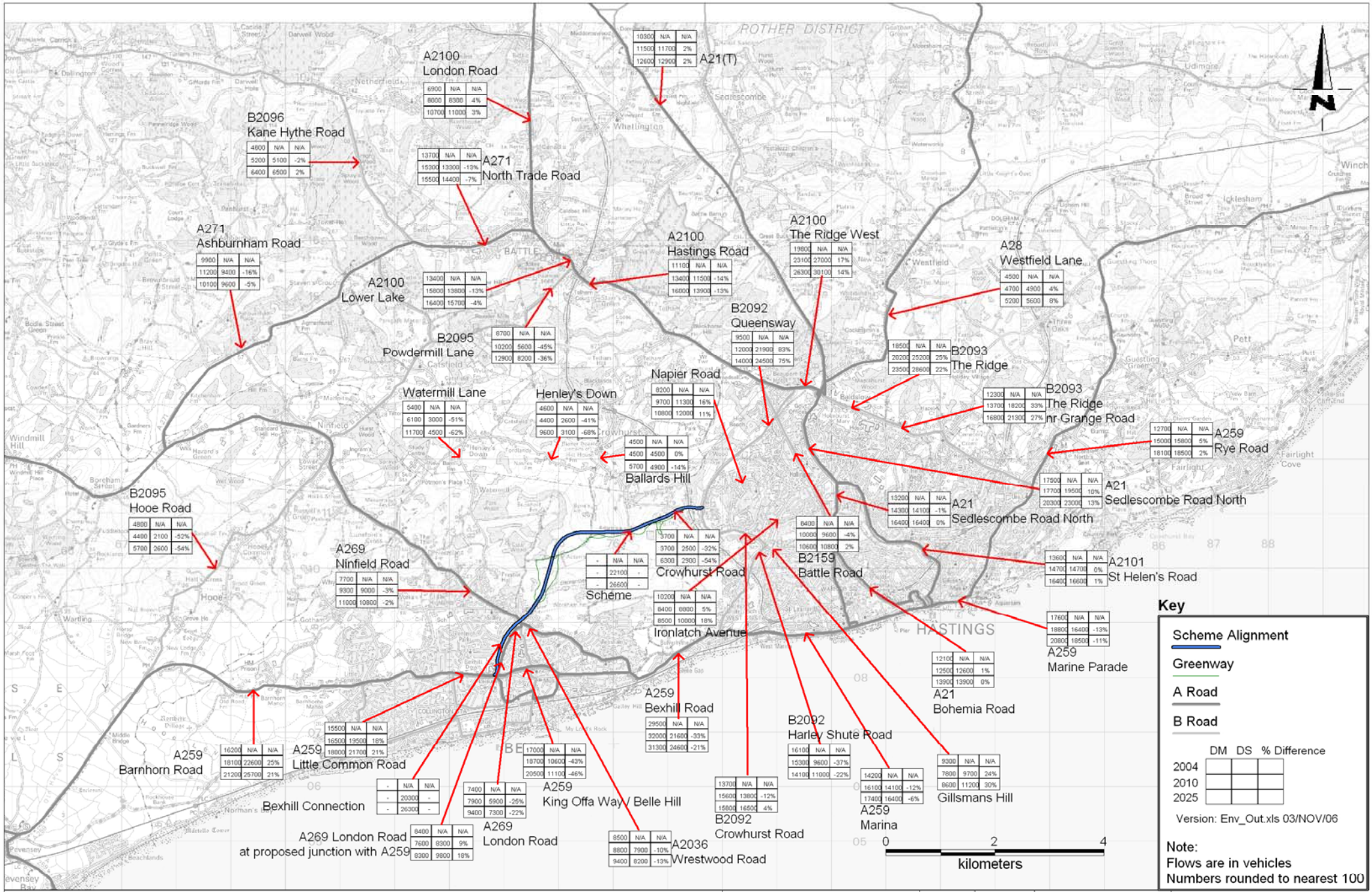
[1] AADT=Annual Average Daily Traffic

Hastings, and the A2036 on the east side of Bexhill also benefit from reduced traffic levels.

6.2.10 Traffic levels also reduce significantly through Crowhurst as traffic transfers to the Scheme. Traffic levels reduce on the A271 and B2095 to the north of Bexhill and Hastings reduce and consequently reduces traffic levels through Battle.

6.2.11 In Bexhill, the A259 shows increased traffic levels with the Scheme on the west side of Bexhill as this is used by traffic travelling between Bexhill and Hastings via either Glyne Gap or the BHLR, transferring from previous routes further north. Traffic using the A269 London Road south of Woodsgate Park increase with the Scheme as this route provides direct access to the Scheme. Traffic flows also increase on St Marys Lane. This extra traffic includes traffic which has diverted from Holliers Hill and London Road as a result of the signal junctions included as part of the Complementary Measures at the junctions of Ninfield Road/Wrestwood Road/London Road and London Road/Holliers Hill. The final design of the Complementary Measures may result in only the Ninfield Road/Wrestwood Road/London Road junction being signalised. This would reduce delays through this area and in turn may reduce the transfer to St Mary's Lane.

6.2.12 Within Hastings, traffic levels along B2092 Queensway and B2093 The Ridge increase with traffic travelling via the Scheme along Queensway and down The Ridge to access the north east part of Hastings, some of which previously travelled along the seafront. The increased number of trips between Bexhill and Hastings results in traffic increases in the Hollington area of Hastings. Traffic flows on Chowns Hill on the east side of Hastings also increase with the Scheme. The extra traffic using this route has transferred from the A271 or B2095 and routes east of Battle via other minor roads to get to the A259 east of Guestling Green. With the Scheme the traffic routes via the Scheme, along The Ridge and up Chowns Hill. The maximum hourly increase in flows is 82 vehs per hour in the pm peak in 2025.



BEXHILL TO HASTINGS LINK ROAD

Figure : 6.2	Scale	NTS	Carolyn Dwyer BEng (Hons), DipTrans, DMS, MIHT, MILT Assistant Director, Transport & Waste County Hall, St. Anne's Crescent Lewes, East Sussex BN7 1UE Telephone: 01273 481000
Traffic Flows on Key Links within the Study Area	Sheet	1 of 1	
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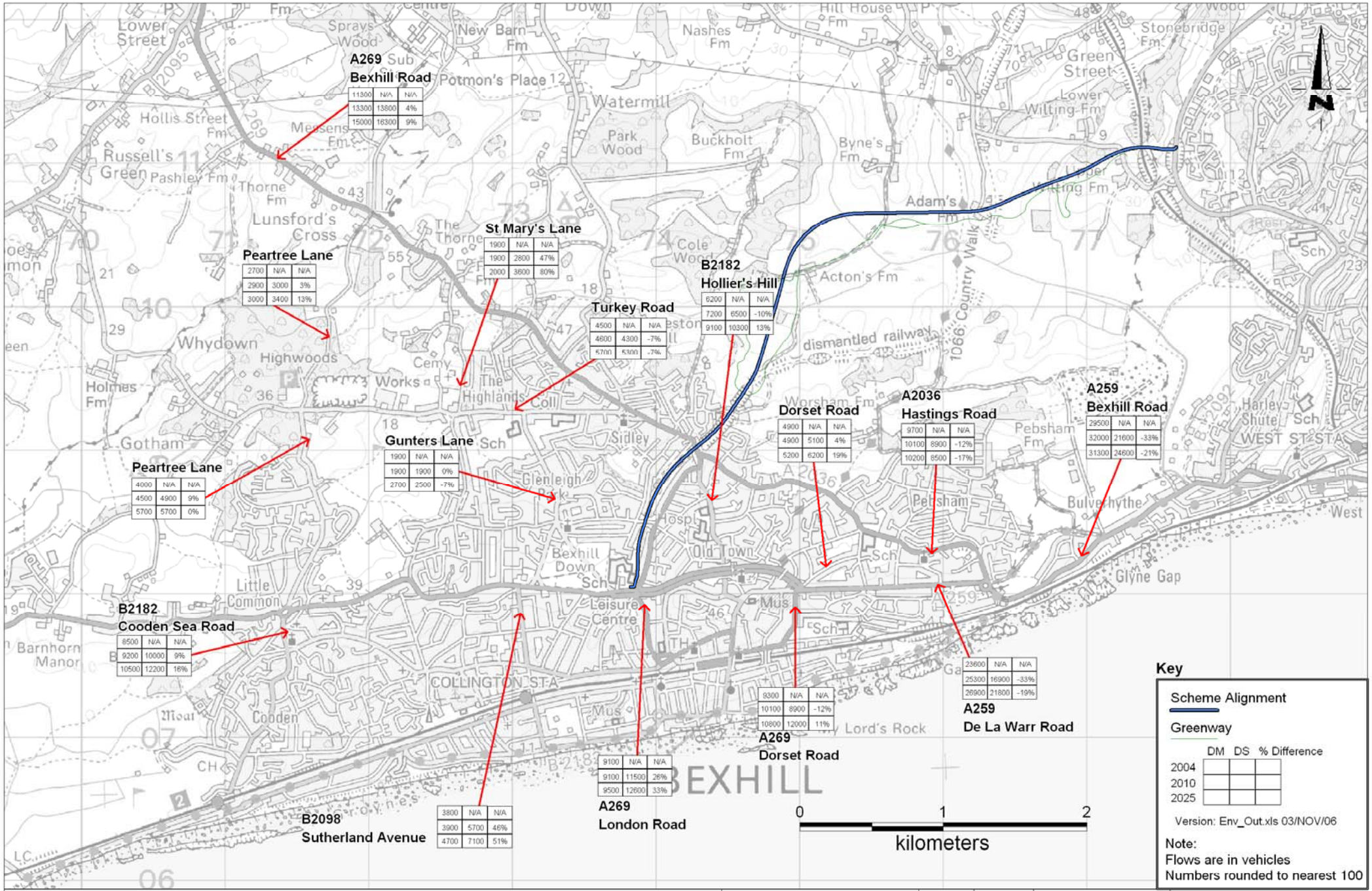

BEXHILL TO HASTINGS LINK ROAD

Figure : 6.3	Scale	NTS	Carolyn Dwyer BEng (Hons), DipTrans, DMS, MIHT, MILT Assistant Director, Transport & Waste County Hall, St. Anne's Crescent Lewes, East Sussex BN7 1UE Telephone: 01273 481000
Traffic Flows on Key Links in Bexhill	Sheet	1 of 1	
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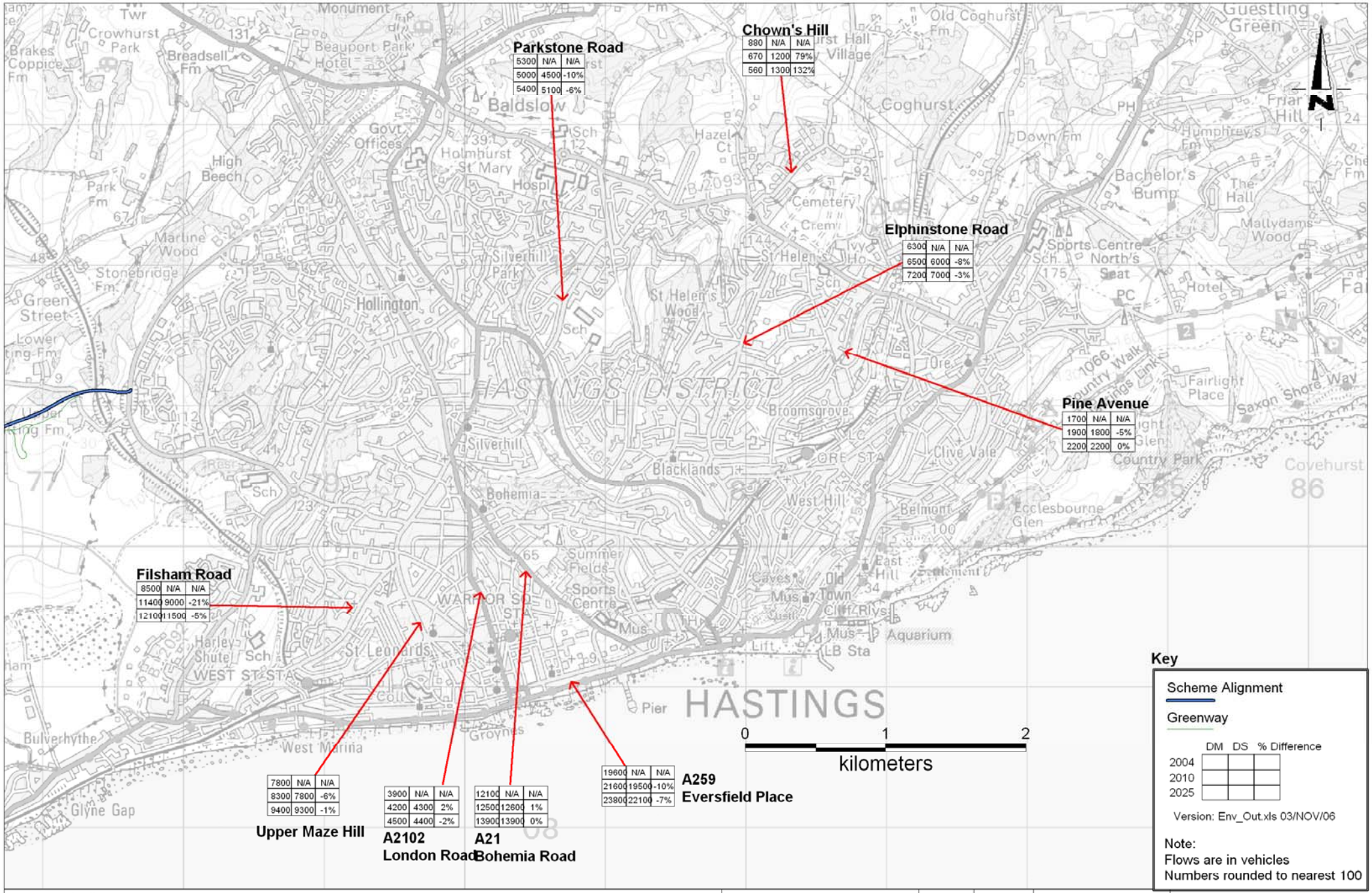

BEXHILL TO HASTINGS LINK ROAD

Figure : 6.4	Scale	NTS	Carolyn Dwyer BEng (Hons), DipTrans, DMS, MIHT, MILT Assistant Director, Transport & Waste County Hall, St. Anne's Crescent Lewes, East Sussex BN7 1UE Telephone: 01273 481000
Traffic Flows on Key Links in Hastings	Sheet	1 of 1	
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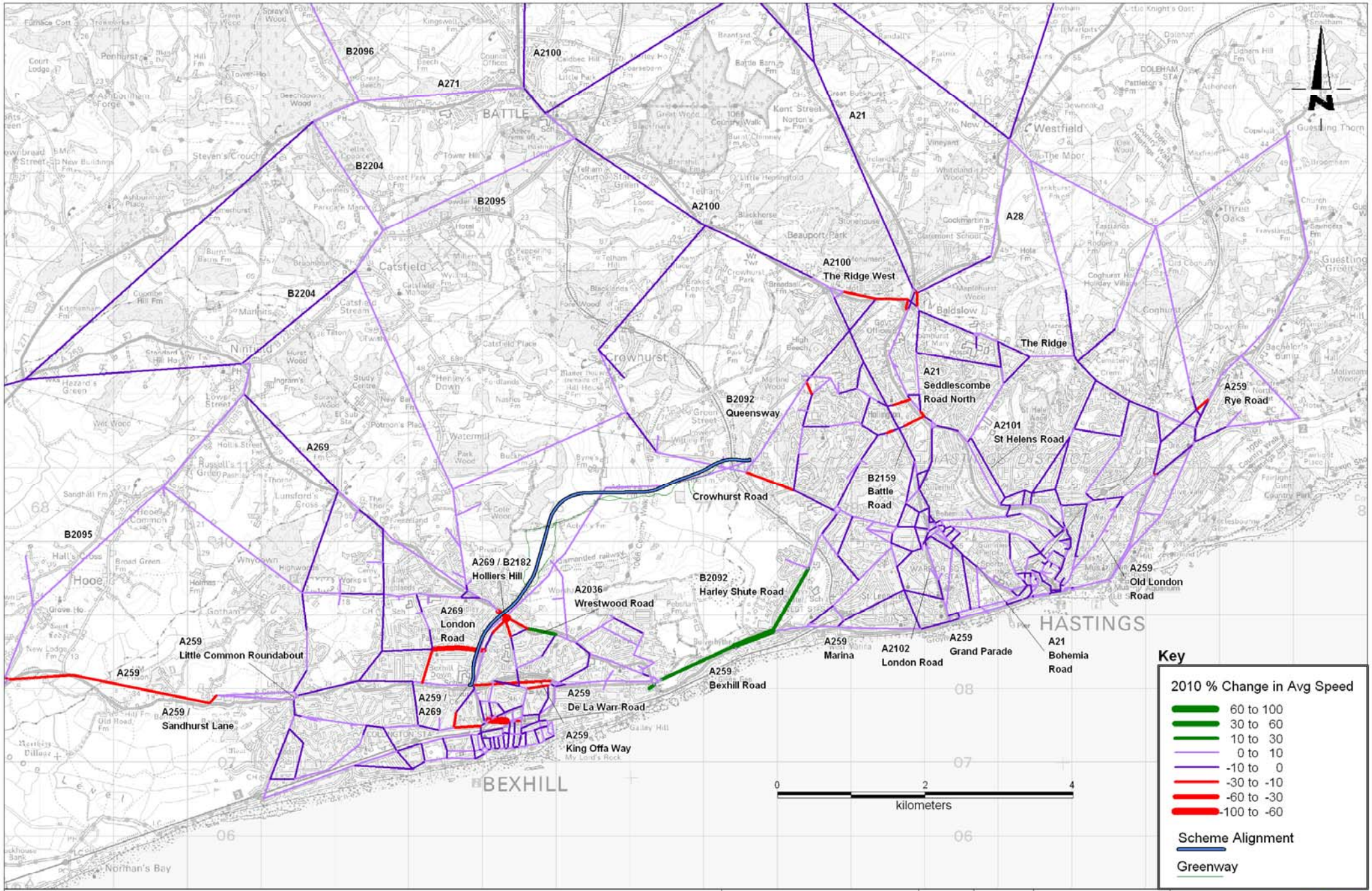
Speeds

6.2.13 Figure 6-5 and Figure 6-6 show the percentage change in average travel speed on the highway network for 2010 and 2025. In 2010, there are significant speed increases with the Scheme along A259 through Glyne Gap and up Harley Shute Road. There are also speed increases along the most sections of the A259 along Hastings seafront. Speed decreases occur in Bexhill in the local area around the Belle Hill junction and along the A259 west of Bexhill centre. Speed decreases also occur near the junctions of Holliers Hill/London Road and London Road/Wrestwood Road. These junctions are signalised as part of the Complementary Measures associated with the Scheme. In 2025, the speed changes show a similar pattern. However speed increases are proportionally greater along the A271 and B2095.



BEXHILL TO HASTINGS LINK ROAD

Figure : 6.5	Scale	NTS	Carolyn Dwyer BEng (Hons), DipTrans, DMS, MIHT, MILT Assistant Director, Transport & Waste County Hall, St. Anne's Crescent Lewes, East Sussex BN7 1UE Telephone: 01273 481000
Change in Average Travel Speed 2010	Sheet	1 of 1	
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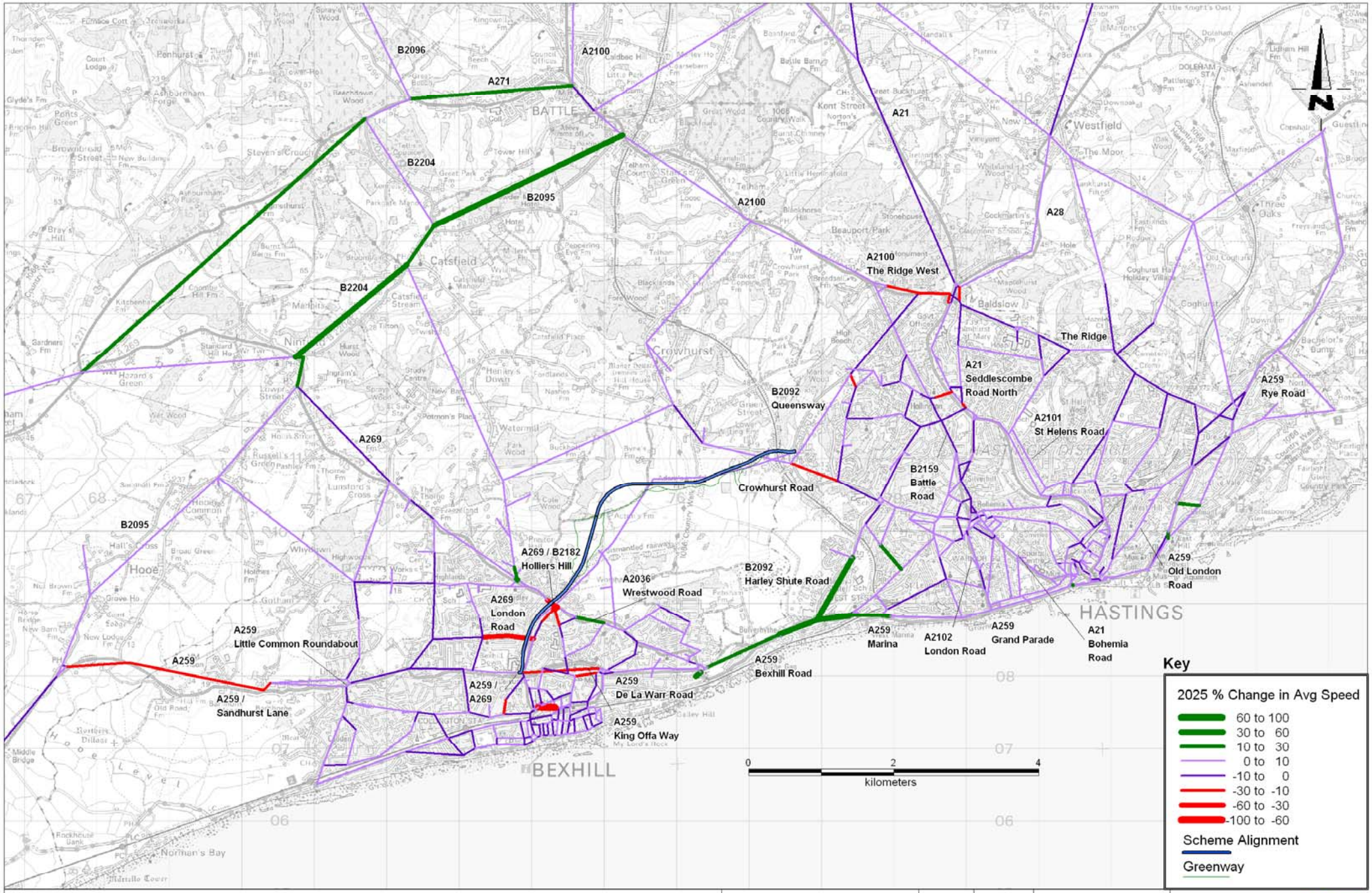

BEXHILL TO HASTINGS LINK ROAD

Figure : 6.6	Scale	NTS	Carolyn Dwyer BEng (Hons), DipTrans, DMS, MIHT, MILT Assistant Director, Transport & Waste County Hall, St. Anne's Crescent Lewes, East Sussex BN7 1UE Telephone: 01273 481000
Change in Average Travel Speed 2025	Sheet	1 of 1	
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Delays

6.2.14 Figure 6-7 and Figure 6-8 show change in vehicle delays at junctions in the AM peak in 2010 and 2025 respectively. Changes in vehicular delay are shown for all junctions in the simulation area of the traffic model. Junctions are not modelled explicitly in the buffer areas of the traffic model. The figures show that with the Scheme where traffic levels increase there is a corresponding increase in vehicle delays and where traffic levels reduce with the Scheme there is a corresponding decrease in vehicle delays.

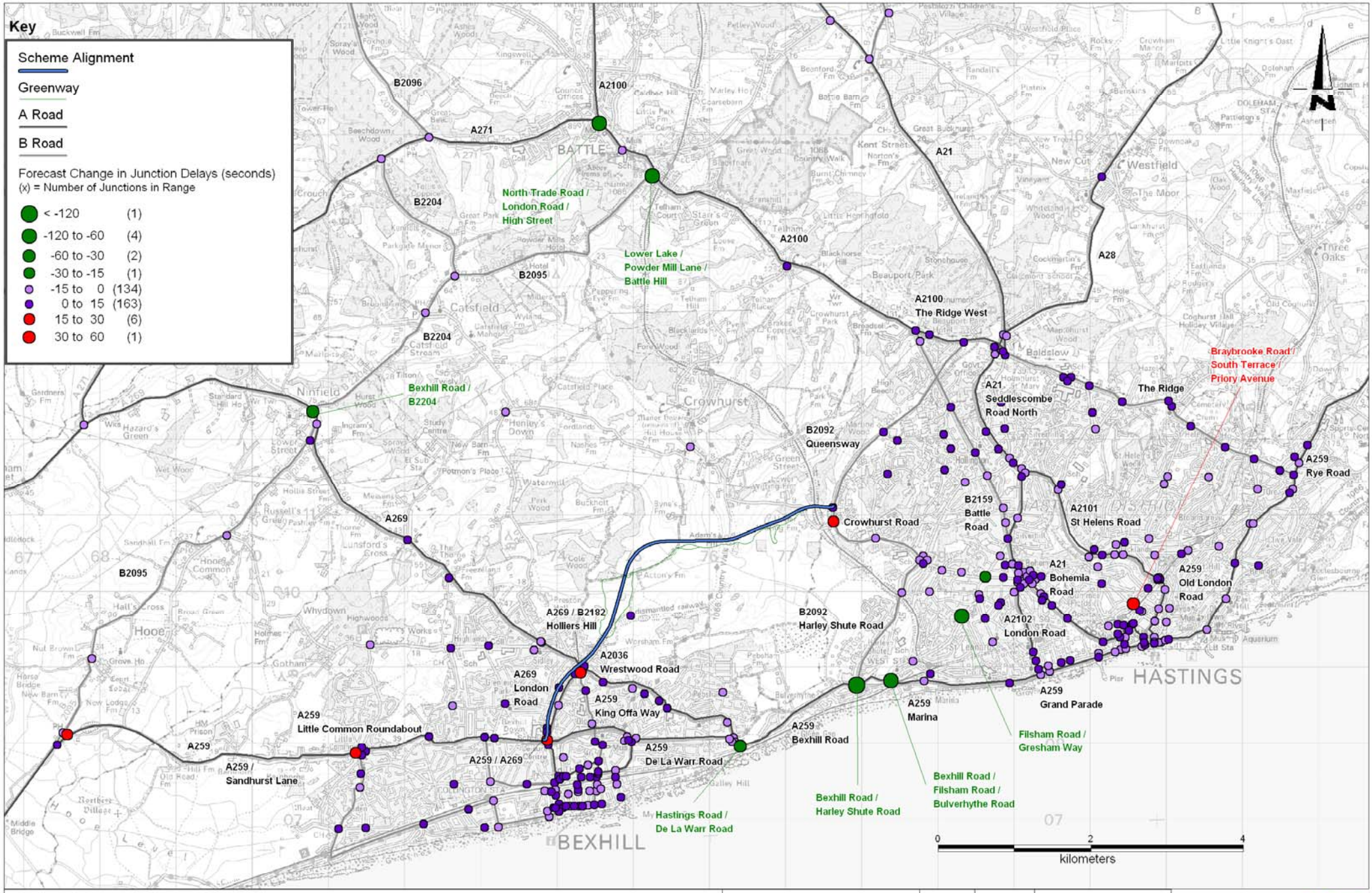
6.2.15 In 2010 there are significant delay savings at the junctions of A259 with the A2036 on the western end of Glyne Gap and with Harley Shute Road and Filsham Road at the eastern end of Glyne Gap. There are also significant delay savings for the junctions to the north and south of Battle on the A2100 and for the B2204 with A269 Bexhill Road.

6.2.16 The junctions of the A259 with the B2095 west of Bexhill, Little Common Roundabout and the Belle Hill (A259/A269) junction all suffer increased delays with the Scheme. This is due to the extra traffic switching to this route to access the Scheme instead of travelling via other routes. In addition the signalising of the junction of Holliers Hill and London Road (A269) as part of the Complementary Measures results in extra junction delays.

6.2.17 In Hastings two junctions suffer increased delays, the Braybrooke Road/South Terrace junction and the Crowhurst Road/Queensway junction. The Braybrooke Road increased delays are due to the westbound Braybrooke Road traffic flows increasing by around 40 vehicles resulting in this approach becoming overcapacity. The delays increase at Crowhurst Road as has been assumed that this junction becomes signalised with the Scheme and therefore traffic on Queensway which does not suffer delays at the priority junction has to stop at the signal junction.

6.2.18 In 2025 there are significant junction delay savings again at the junctions of A259 with the A2036 on the western end of Glyne Gap and with Harley Shute Road and Filsham Road at the eastern end of Glyne Gap. There are also again significant delay savings for the junctions to the north and south of Battle on the A2100 and for the B2204 with A269 Bexhill Road. Additional junctions within the St Leonards area of Hastings also experience significant junction delay savings. The Crowhurst Road/Queensway junction experiences less delays with the Scheme in 2025. This is because the delays for the larger amount of traffic from Crowhurst Road at a priority junction without the Scheme are greater than the delays for all traffic with Scheme at a signalised junction.

6.2.19 Again in 2025, the junctions of the A259 with the B2095 west of Bexhill, Little Common Roundabout and the Belle Hill (A259/A269) junction all suffer increased delays with the Scheme. In Hastings part of the Baldslow interchange suffers from extra junction delays with the Scheme.



BEXHILL TO HASTINGS LINK ROAD

Figure : 6.7	Scale	NTS	Carolyn Dwyer BEng (Hons), DipTrans, DMS, MIHT, MILT Assistant Director, Transport & Waste County Hall, St. Anne's Crescent Lewes, East Sussex BN7 1UE Telephone: 01273 481000
Change in Vehicular Delay at Junction 2010 AM Peak	Sheet	1 of 1	
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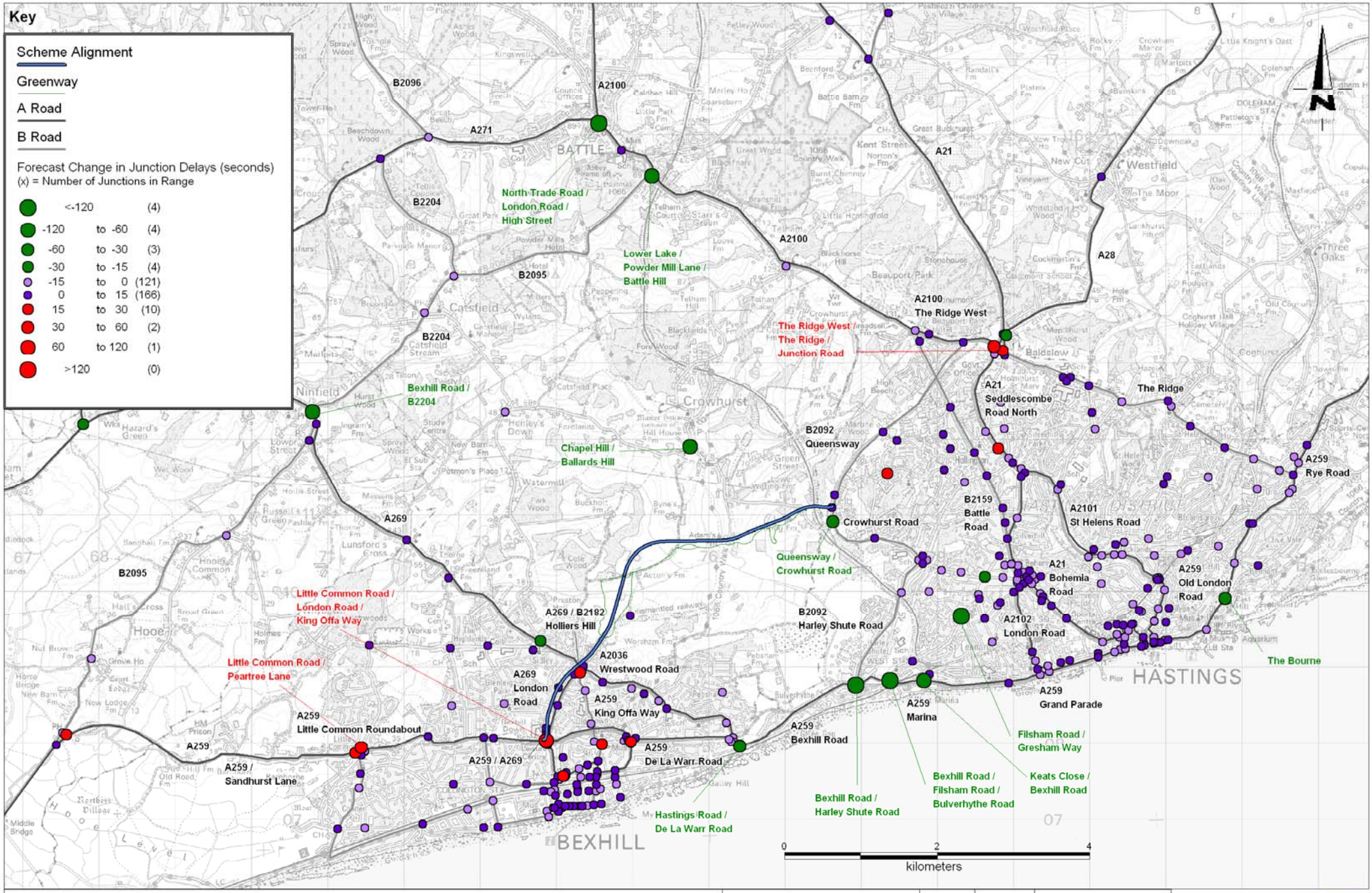

BEXHILL TO HASTINGS LINK ROAD

Figure : 6.8	Scale	NTS	Carolyn Dwyer BEng (Hons), DipTrans, DMS, MIHT, MILT Assistant Director, Transport & Waste County Hall, St. Anne's Crescent Lewes, East Sussex BN7 1UE Telephone: 01273 481000
Change in Vehicular Delay at Junctions 2025 AM Peak	Sheet	1 of 1	
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Journey Times along the A259

6.2.20 Table 6-11 sets out the modelled journey times between the A259 at Belle Hill junction in Bexhill and the A259 at the A21 junction in Hastings, for both buses and other traffic.

6.2.21 For non bus traffic in all time periods, 2010 forecast journey times along the A259 are reduced with the introduction of the Scheme to less than the existing journey times in 2004. In 2025 all A259 journey times with the Scheme are less than existing 2004 journey times except eastbound am peak and inter-peak. In the AM peak, the eastbound journey timess through Glyne Gap are higher than those in 2004 due in part to the West St Leonards development. In 2025, the bus priority measures along the A259 are also in place and highway capacity would therefore be reduced for non-bus traffic.

6.2.22 Bus journey times also reduce along the route to similar levels of non-bus traffic. In the eastbound direction, the bus lane is some 200m long giving a saving of between 15 and 45 seconds. In the westbound direction, the 680m of bus lane provide similar additional journey time savings to buses of between 15 and 45 seconds.

Table 6-11: A259 Journey Time (Belle Hill to A259/A21 Hastings Town Centre)

Forecast Year	Time Period	Eastbound			Westbound		
		DM	DS		DM	DS	
		All traffic	buses	Other traffic	All traffic	buses	Other traffic
		(minutes)			(minutes)		
2004	AM	16	-		20		-
	IP	14	-		15		-
	PM	17	-		19		-
2010	AM	20	14	14	20	14	14
	IP	17	13	13	15	13	13
	PM	18	13	13	18	15	15
2025	AM	25	19	19	27	17	17
	IP	20	14	15	22	13	14
	PM	19	14	14	24	15	16

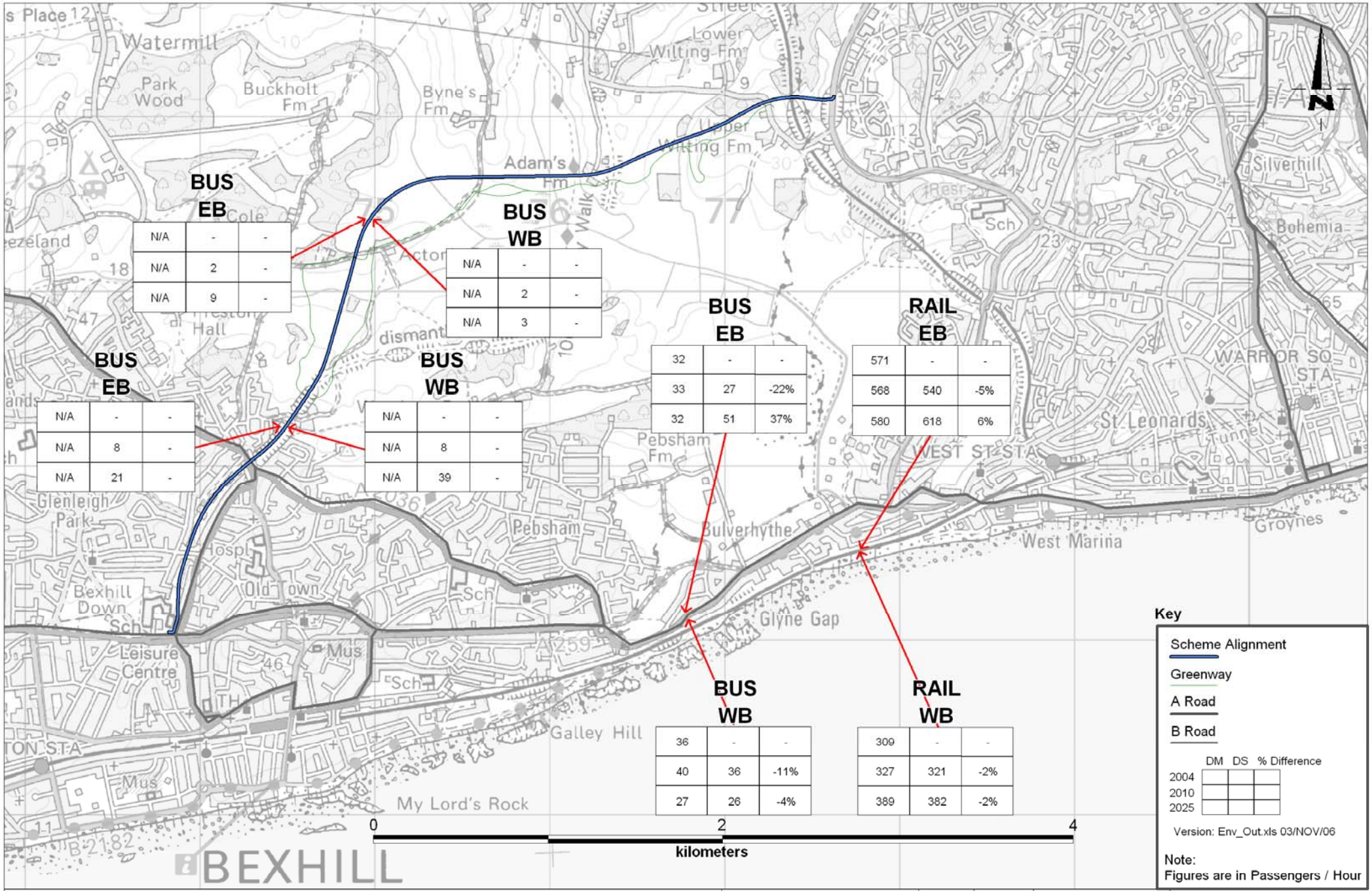
6.3 Public Transport Impacts

6.3.1 Figure 6-9: AM Peak Public Transport Passenger Flows, Figure 6-10: Interpeak Public Transport Passenger Flows And Figure 6-11: PM Peak Public Transport Passenger Flows show the number of bus and rail passengers travelling through Glyne Gap in the Scheme opening year and design year for each time period modelled with and without the Scheme.

6.3.2 These show that with the Scheme in place, bus passenger flows remain very similar between Bexhill and Hastings in both directions in 2010. A small number of

passengers transfer to the proposed new bus route along the Scheme into Hastings. In 2010 there is again very little change in the number of rail passengers with the Scheme.

6.3.3 In 2025 both bus and rail passengers between Bexhill and Hastings increase as a result of the increased level of development.



BEXHILL TO HASTINGS LINK ROAD

Figure : 6.9	Scale	NTS	Carolyn Dwyer BEng (Hons), DipTrans, DMS, MIHT, MILT Assistant Director, Transport & Waste County Hall, St. Anne's Crescent Lewes, East Sussex BN7 1UE Telephone: 01273 481000
AM Peak Public Transport Passenger Flows	Sheet	1 of 1	
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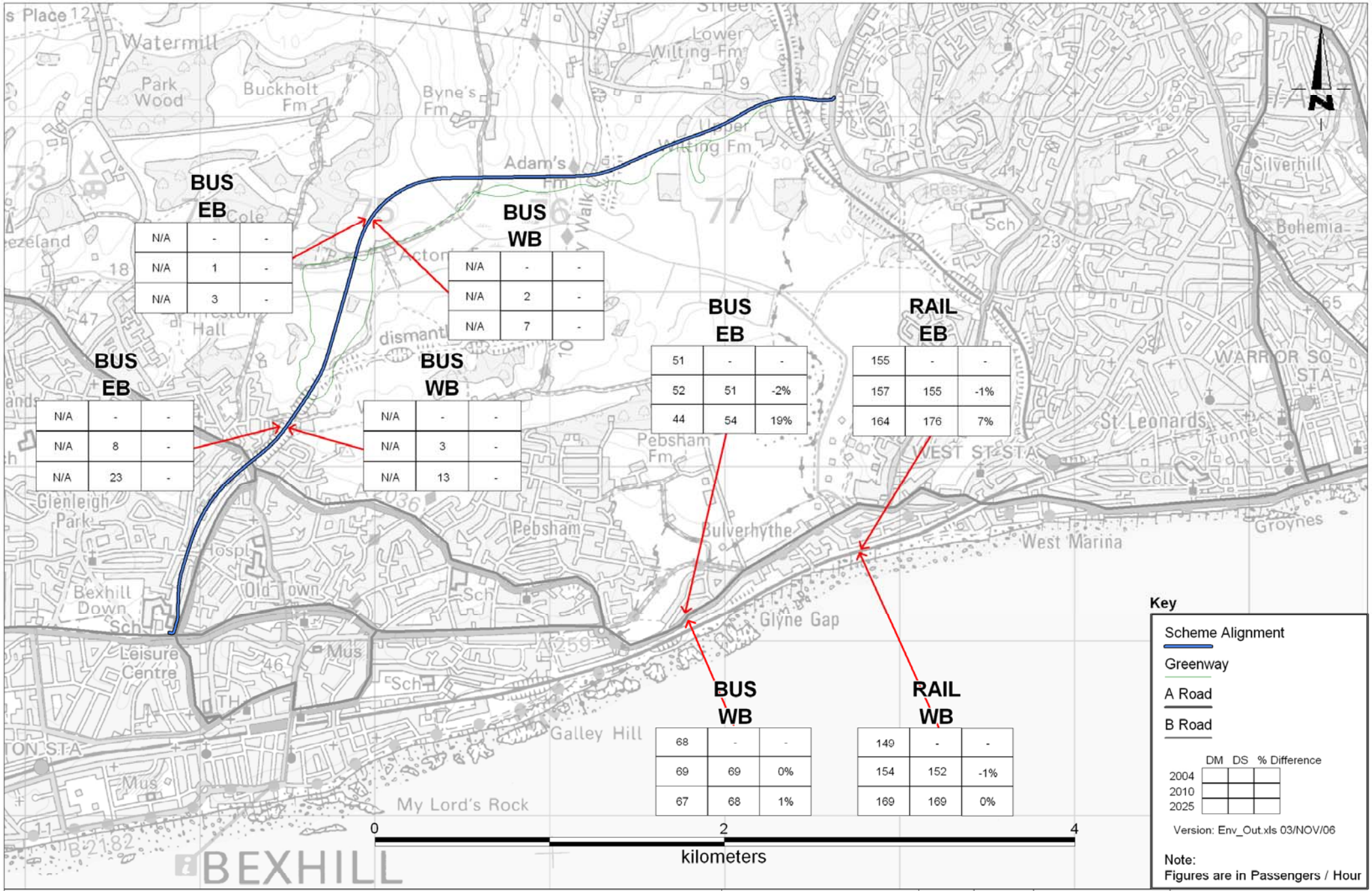

BEXHILL TO HASTINGS LINK ROAD

Figure : 6.10	Scale	NTS	Carolyn Dwyer BEng (Hons), DipTrans, DMS, MIHT, MILT Assistant Director, Transport & Waste County Hall, St. Anne's Crescent Lewes, East Sussex BN7 1UE Telephone: 01273 481000
Inter-Peak Public Transport Passenger Flows	Sheet	1 of 1	
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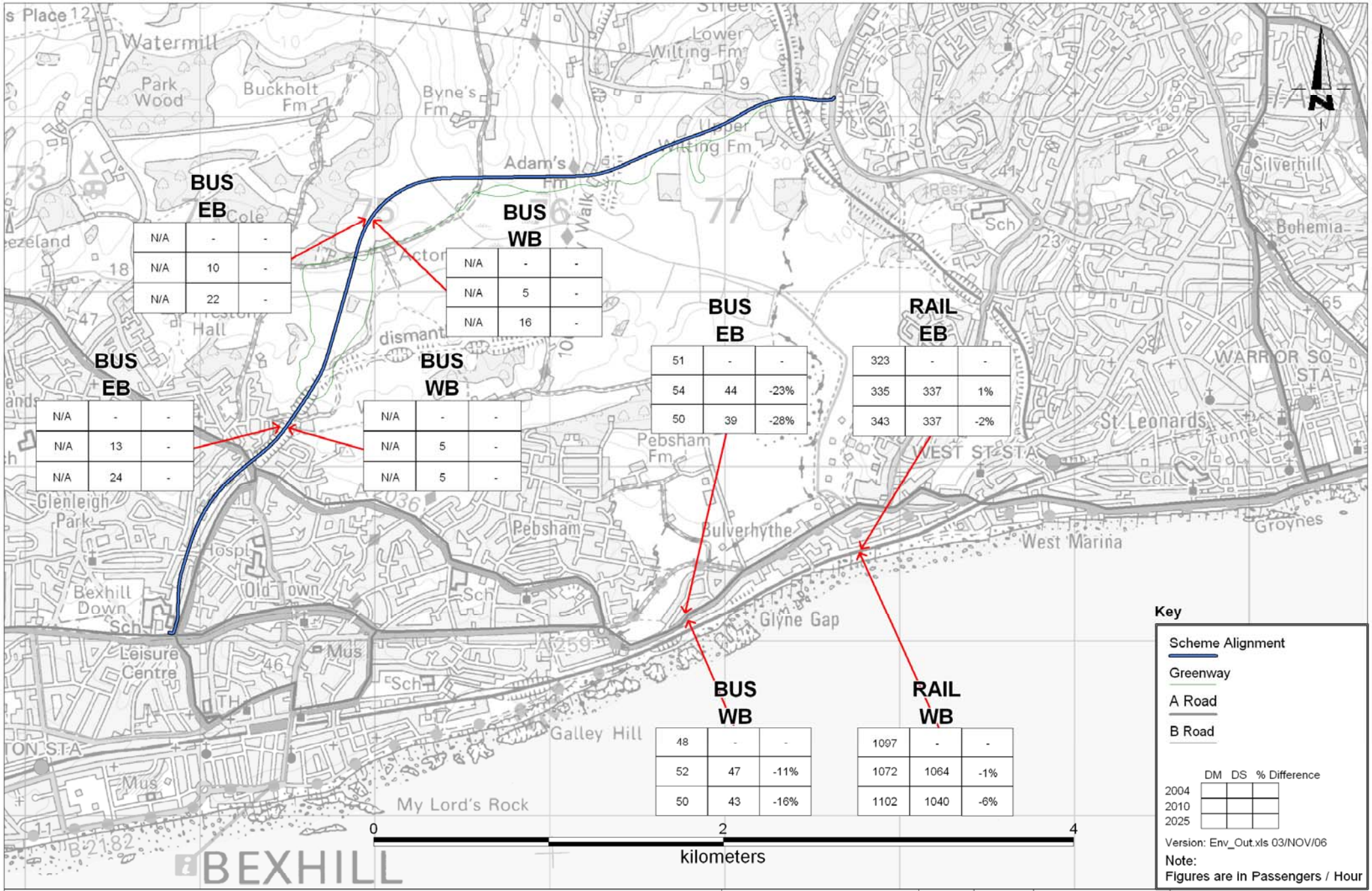

BEXHILL TO HASTINGS LINK ROAD

Figure : 6.11	Scale	NTS	Carolyn Dwyer BEng (Hons), DipTrans, DMS, MIHT, MILT Assistant Director, Transport & Waste County Hall, St. Anne's Crescent Lewes, East Sussex BN7 1UE Telephone: 01273 481000
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7 Modelling Parameters Sensitivity Results

7.1.1 Figures 7.1 to 7.3 show the highway flows with the revised DIADEM input parameters. The revised parameters allow for greater increases in traffic with the Scheme and hence test the robustness of the Scheme. Table 7.1 shows the revised flows across the screenline between Bexhill and Hastings

7.1.2 The 2010 Do Minimum flow levels across the screenline are similar to the Most Likely assessment. The 2010 Do Something flow levels are another 7% higher than the Most Likely leading to an increase of 12% in flows across the screenline with the Scheme. The same pattern occurs in 2025 with Do Something flows 4% higher than the Most Likely equivalent leading to a 17% increase in flows across the screenline with the Scheme.

Table 7-1: Screenline Flows (AADT)[2]

Location	2010			2025		
	Do-Minimum	**Do-Something**	**% change**	**Do-Minimum**	**Do-Something**	**% change**
A271	15,100	13,400	-11%	15,300	14,400	-6%
B2095	10,600	6,600	-38%	12,700	8,900	-30%
Henleys Down	4,500	2,600	-42%	8,500	3,300	-61%
BHLR		24,100			28,100	
A259 Glyne Gap	32,100	23,300	-27%	31,800	25,300	-20%
TOTAL SCREENLINE	**62,300**	**70,000**	**12%**	**68,300**	**80,000**	**17%**

7.1.3 Total trips on the network increase with the Scheme by 0.5% in 2010 and 3.3% compared to 0.3% and 3.2% respectively for the Most Likely assessment.

7.1.4 Traffic flow increases and decreases occur in the same locations in this sensitivity test as in the Most Likely assessments. The results for this sensitivity test however show reduced percentage traffic reductions and larger traffic increases over the equivalent Most Likely percentage differences.

7.1.5 Significant traffic reductions continue to occur along the A259 through Glyne Gap. The reduction in traffic along the A259 continues from the Belle Hill junction, along Glyne Gap and through Hastings along the seafront. Roads such as Harley Shute Road in the southwest corner of Hastings, and the A2036 on the east side of Bexhill also benefit from reduced traffic levels. Traffic levels also reduce significantly through Crowhurst as traffic transfers to the Scheme. Traffic levels reduce on the A271 and B2095 to the north of Bexhill and Hastings reduce and consequently reduces traffic levels through Battle.

[2] AADT=Annual Average Daily Traffic

7.1.6 Roads in Bexhill showing increased traffic levels with the Scheme include the A259 on the west side of Bexhill which is used by traffic travelling between Bexhill and Hastings via either Glyne Gap or the BHLR. Traffic using the A269 London Road south of Woodsgate Park increase with the Scheme as do traffic flows on St Marys Lane.

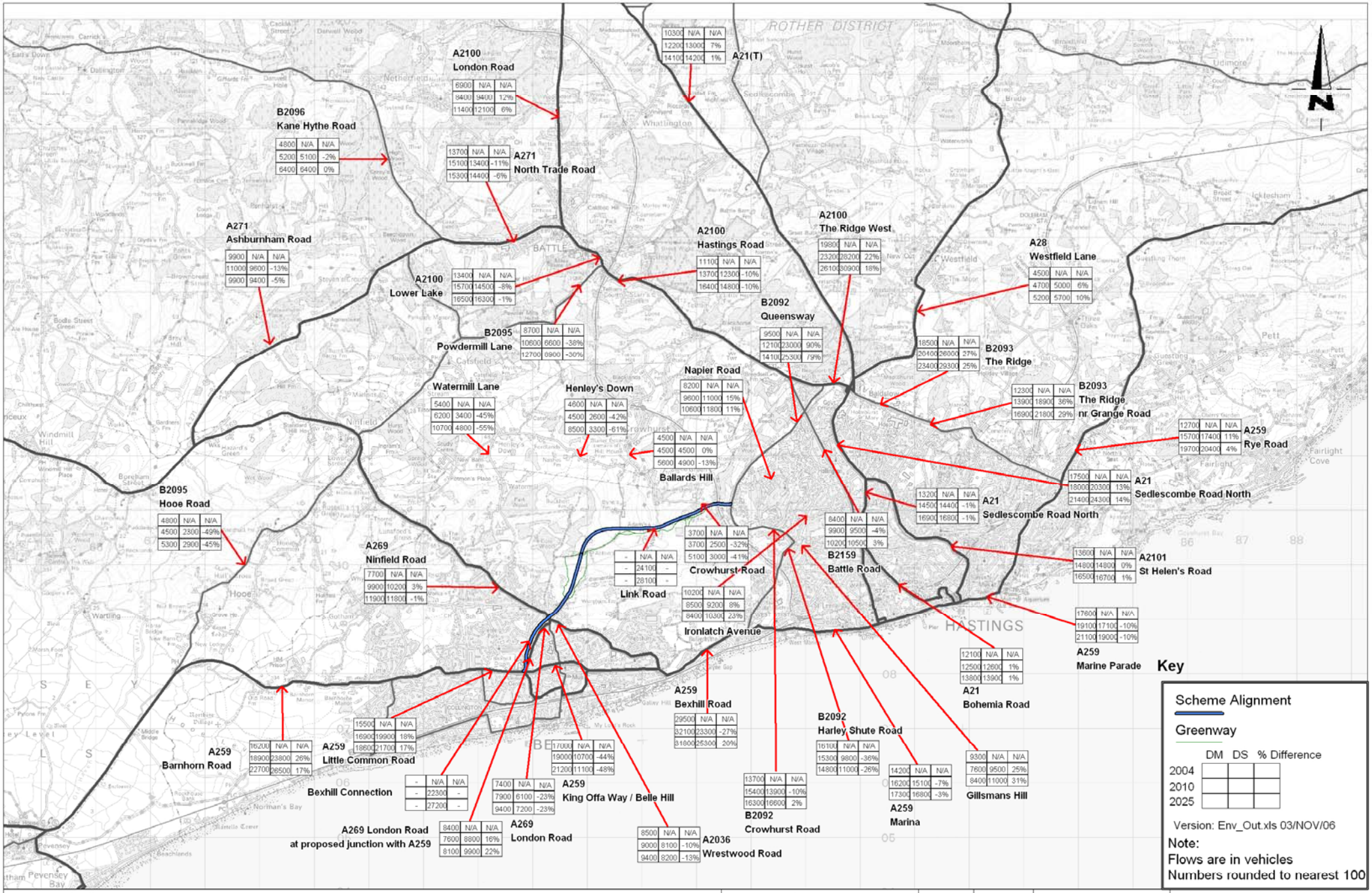
7.1.7 Within Hastings, traffic levels along B2092 Queensway and B2093 The Ridge increase. The increased number of trips between Bexhill and Hastings results in traffic increases in the Hollington area of Hastings. Traffic flows on Chowns Hill on the east side of Hastings also increase with the Scheme.

7.1.8 Analysis shows that trip lengths increase significantly with the revised DIADEM parameters. Table 7.2 shows the network wide vehicle kilometres at an AADT level for the Most Likely and sensitivity test assessments. For both sets of assessments, vehicle kilometres increase with the Scheme, but for the modelling parameters sensitivity test the increase is greater.

Table 7-2: Comparison of vehicle kilometres

	Most Likely	Sensitivity Test	% change
Do Minimum 2010	4,450,084	4,803,099	7.93%
Do Something 2010	4,722,470	5,482,020	16.08%
Do Minimum 2025	5,320,585	6,040,343	13.53%
Do Something 2025	5,515,501	6,276,026	13.79%

7.1.9 Figures 7.4 to 7.6 show the public transport flows following the DIADEM parameters sensitivity test. The bus flows for each direction, location and scenario are within one passenger of the Most Likely results in Figures 6.9 to 6.11. The rail passenger flows remain similar for the interpeak in both directions as well as the westbound am and eastbound pm peak flows. More rail trips transfer to the highway network in the eastbound direction in the am peak and in the westbound direction in the pm peak with the Scheme with the revised modelling parameters.



BEXHILL TO HASTINGS LINK ROAD

Figure : 7.1

Modelling Parameters Sensitivity Test Trafic Flows on Key Links within the Study Area

Scale	NTS
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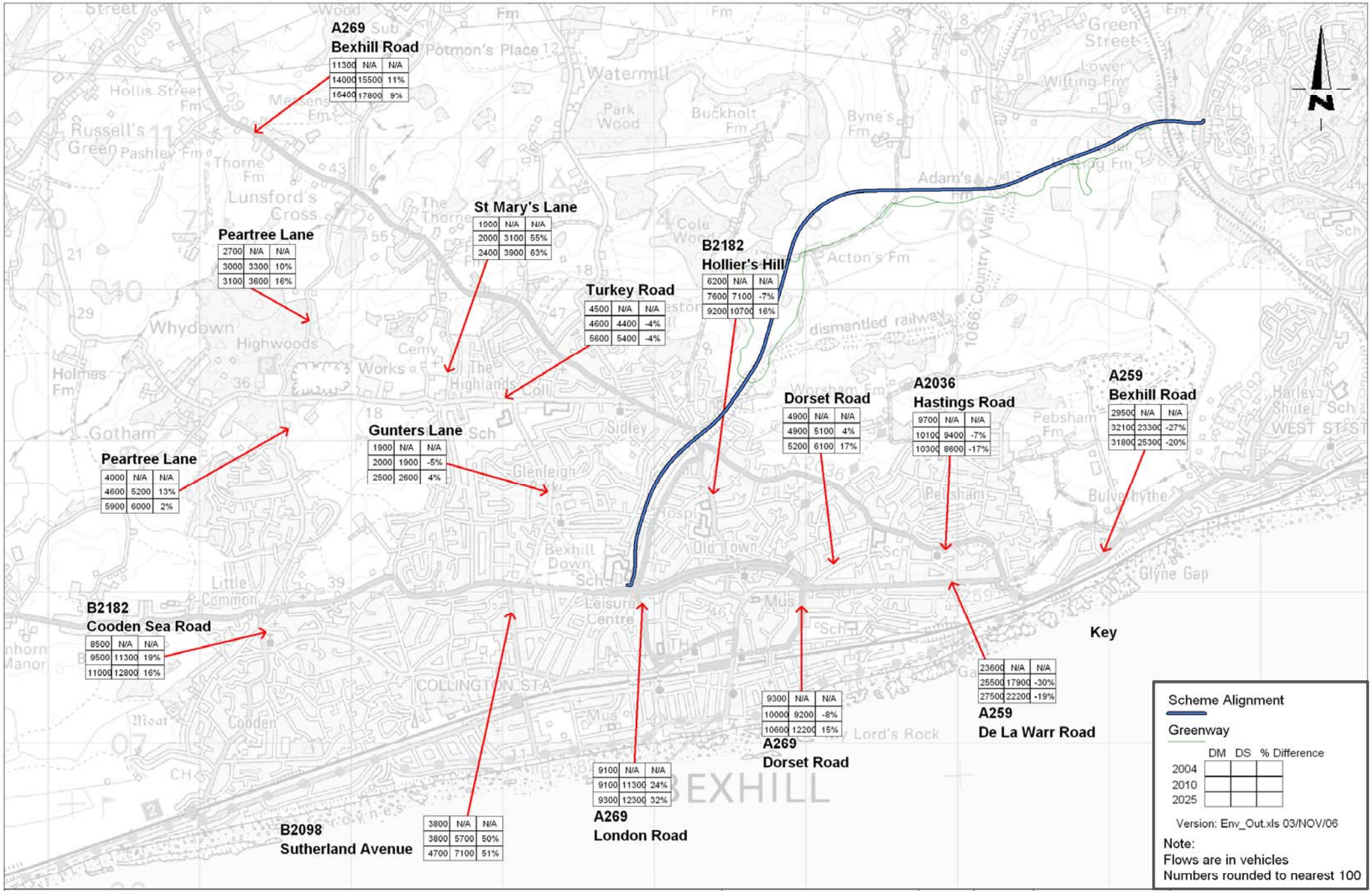

BEXHILL TO HASTINGS LINK ROAD

Figure : 7.2	Scale	NTS	Carolyn Dwyer BEng (Hons), DipTrans, DMS, MIHT, MILT Assistant Director, Transport & Waste County Hall, St. Anne's Crescent Lewes, East Sussex BN7 1UE Telephone: 01273 481000
Modelling Parameters Sensitivity Test Traffic Flows on Key Links in Bexhill	Sheet	1 of 1	
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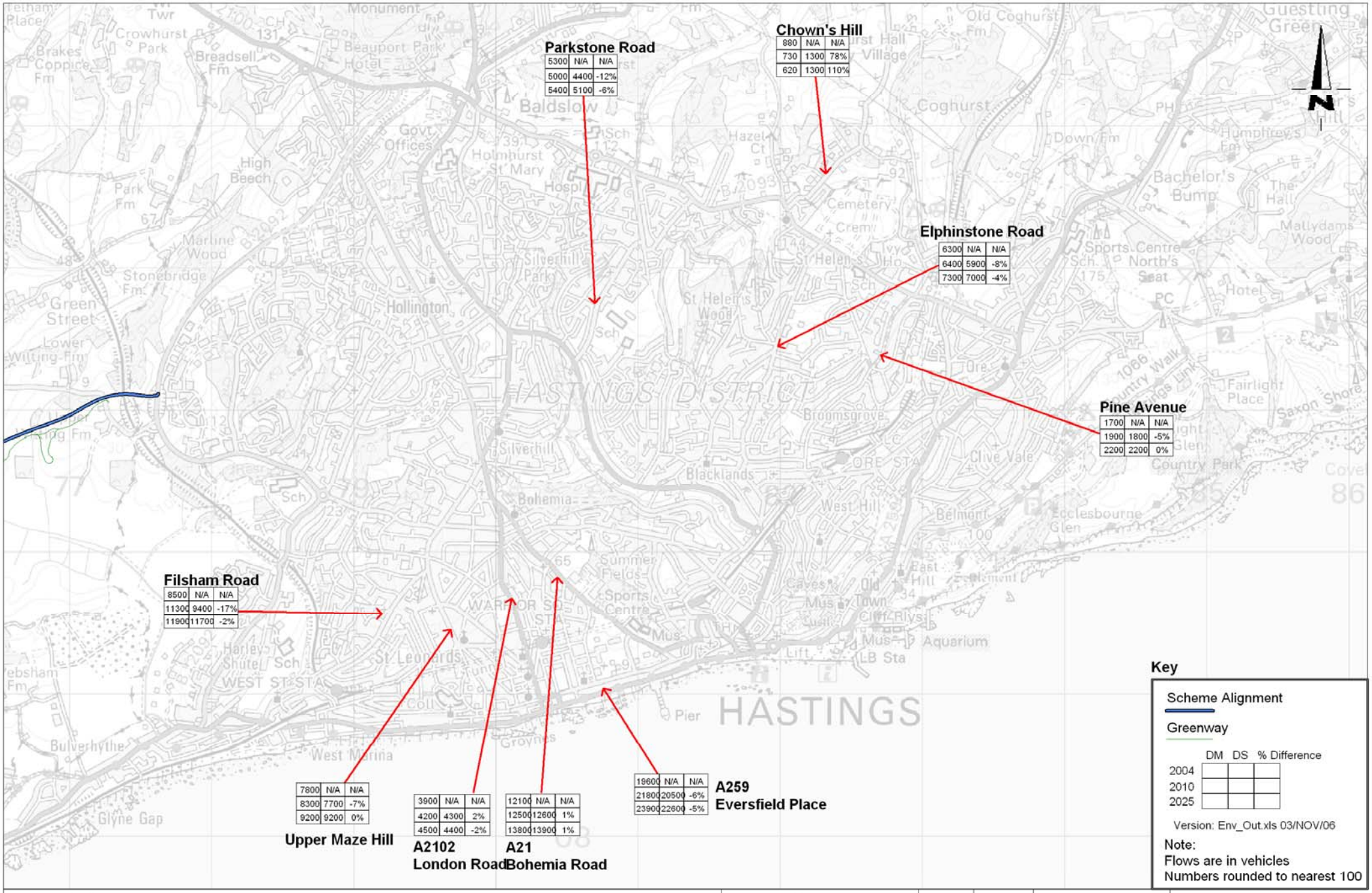

BEXHILL TO HASTINGS LINK ROAD

Figure : 7.3

Modelling Parameters Sensitivity Test Traffic Flows on Key Links in Hastings

Scale	NTS	
Sheet	1 of 1	
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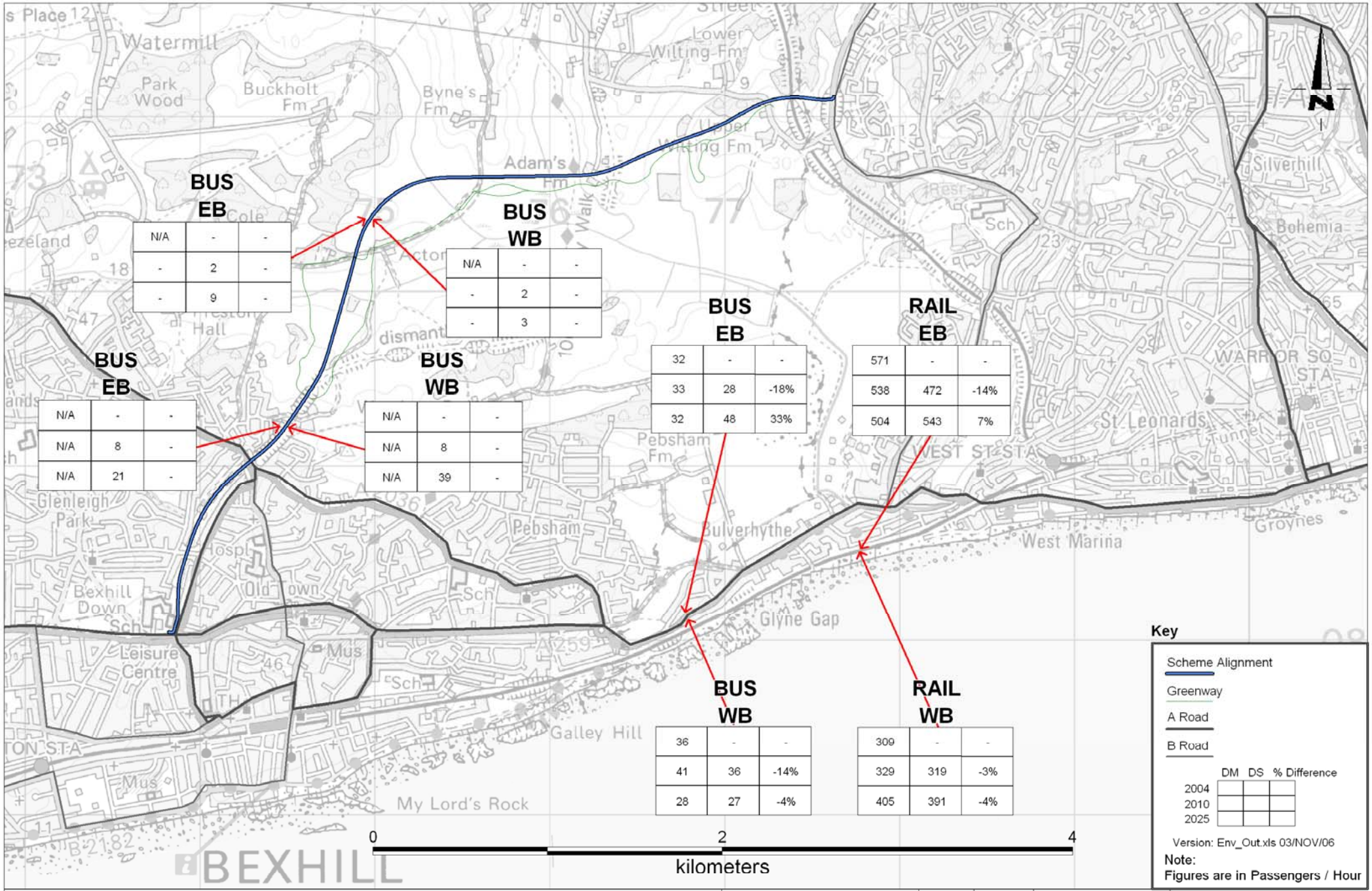

BEXHILL TO HASTINGS LINK ROAD

Figure : 7.4	Scale	NTS	Carolyn Dwyer BEng (Hons), DipTrans, DMS, MIHT, MILT Assistant Director, Transport & Waste County Hall, St. Anne's Crescent Lewes, East Sussex BN7 1UE Telephone: 01273 481000
Modelling Parameters Sensitivity Test AM Peak Public Transport Passenger Flows	Sheet	1 of 1	
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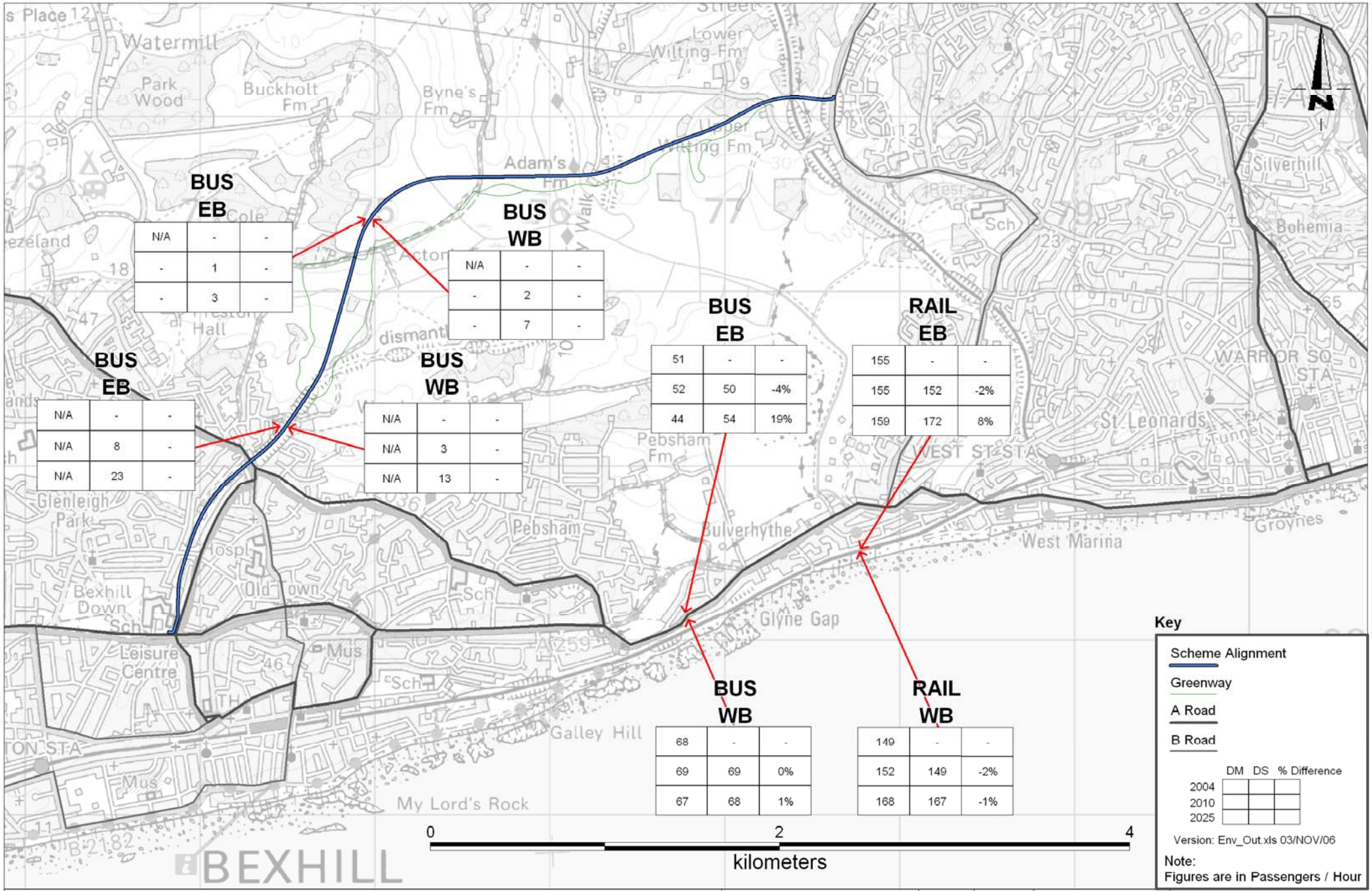

BEXHILL TO HASTINGS LINK ROAD

Figure : 7.5	Scale	NTS	Carolyn Dwyer BEng (Hons), DipTrans, DMS, MIHT, MILT Assistant Director, Transport & Waste County Hall, St. Anne's Crescent Lewes, East Sussex BN7 1UE Telephone: 01273 481000
Modelling Parameters Sensitivity Test Interpeak Public Transport Passenger Flows	Sheet	1 of 1	
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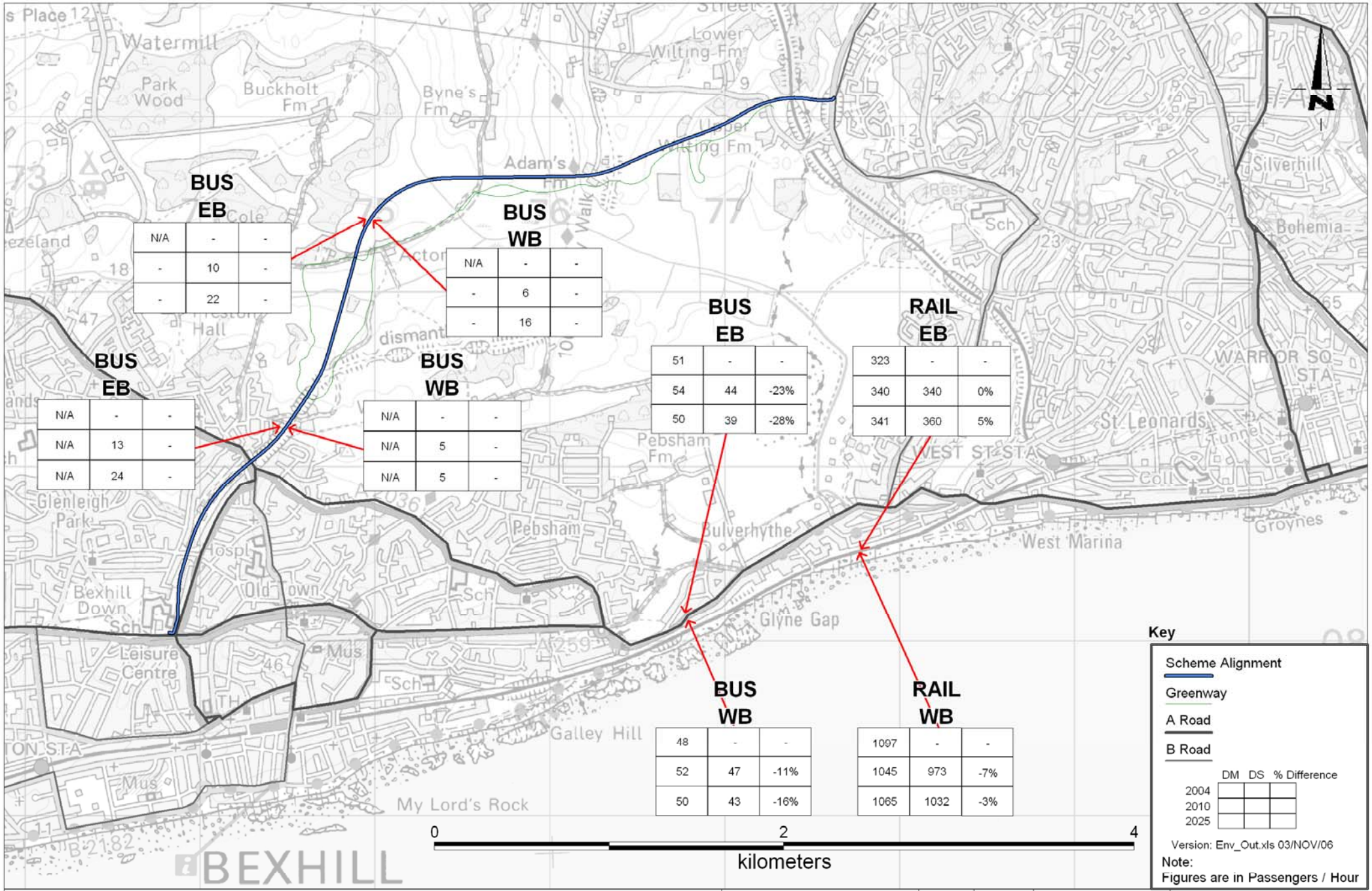

BEXHILL TO HASTINGS LINK ROAD

Figure : 7.6	Scale	NTS	Carolyn Dwyer BEng (Hons), DipTrans, DMS, MIHT, MILT Assistant Director, Transport & Waste County Hall, St. Anne's Crescent Lewes, East Sussex BN7 1UE Telephone: 01273 481000
Modelling Parameters Sensitivity Test PM Peak Public Transport Passenger Flows	Sheet	1 of 1	
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8 Summary and Conclusions

8.1.1 Traffic forecasts have been prepared for the proposed Scheme for an opening year of 2010 and a design year of 2025 following WebTAG and DMRB Volume 12 guidance. The traffic models cover the am peak hour, average inter-peak hour and the pm peak hour to ensure the traffic characteristics associated with the urban centre of Hastings and Bexhill are modelled accurately.

8.1.2 The highway traffic model do minimum network includes two local schemes already implemented. The do minimum public transport model uses the same bus and rail timetables as the base year model with changes made to bus journey times to reflect increased traffic levels in future years.

8.1.3 The do something, i.e. with Scheme, highway network includes the Scheme, associated complementary traffic measures and a developer funded connection from the Scheme onto the A2036 Wrestwood Road. The do something public transport network has no changes to the rail services but assumes the introduction of a new bus route along the Scheme.

8.1.4 Forecast highway and public transport trip matrices have been built using housing, business and job information provided by East Sussex County Council. The TRICS database has been used to provide trip rates for the specific housing and business development information provided. TEMPRO has been used to provide growth factors for trips in zones outside of Bexhill and Hastings. In 2010 the forecast housing and business development is assumed to be the same with or without the Scheme. In 2025 however a number of specific housing and business developments are dependant on the Link Road and therefore are not included in the do minimum trip matrices.

8.1.5 DIADEM has been used to produce the traffic forecasts with variable demand responses of modal split, trip frequency and re-distribution assessed.

8.1.6 The traffic forecast results show that the overall number of trips on the network increases with the Scheme by 0.3% in 2010 and by 3.2% in 2025 over the Do Minimum (i.e. without the Scheme). Between Bexhill and Hastings traffic levels increase by 5% in 2010 and 11% in 2025 with the Scheme.

8.1.7 The forecasts show that the Scheme achieves large reductions in traffic along the A259 Glyne Gap between the two towns. Traffic volumes are also reduced on the A259 seafront route through Hastings. Traffic volumes on Harley Shute Road and the A2036 on the east side of Bexhill are also reduced as traffic transfers to use the Scheme. In 2010, traffic flows are reduced by 33% on the existing A259 Glyne Gap between Bexhill and Hastings. In 2025, as there is more traffic overall on the network, the reduction of traffic along the A259 coast road will be less great than in 2010 compared with the Do Minimum.

8.1.8 There are also large reductions in traffic on rural roads to the north of Bexhill and Hastings as traffic transfers to the Scheme. This results in less traffic trough the local villages, including Crowhurst. Traffic levels also reduce on the A271 and B2095 to the north of Bexhill and Hastings and this also reduces traffic levels through Battle. In 2010, although there are some 5% more east-west movements between the two towns, traffic is reduced by over 40% on the rural roads through Henleys Down, Catsfield and Crowhurst between the two towns. In 2025, the rural roads would still be benefiting greatly with reductions in traffic of 36% on the B2095 and 68% on Henleys Down, in spite of an overall increase of 11% in traffic overall across the east west screenline with the Scheme.

8.1.9 Traffic is forecast to increase on some roads in Bexhill with the Scheme and includes the A259 Little Common Road on the west side of Bexhill, and some local roads parallel to the Bexhill Connection and approaching the Scheme. Traffic using the A269 London Road south of Woodsgate Park increase with the Scheme as this route provides direct access to the Scheme.

8.1.10 Within Hastings, traffic levels along B2092 Queensway and B2093 The Ridge are forecast to increase with traffic travelling via the Scheme along Queensway and down The Ridge to access the north east part of Hastings, some of which previously travelled along the seafront. The increased number of trips between Bexhill and Hastings results in traffic increases in the Hollington area of Hastings.

8.1.11 In general, journey speeds and delays at junctions are also improved with the Scheme on the A259 between the two towns. There are also again significant delay savings for the junctions to the north and south of Battle on the A2100 and for the B2204 with A269 Bexhill.

8.1.12 The junctions of the A259 with the B2095 west of Bexhill, Little Common Roundabout and the Belle Hill (A259/A269) junction will experience increased delays with the Scheme. In Hastings part of the Baldslow interchange suffers from extra junction delays with the Scheme.

8.1.13 Bus journey times will be considerably improved along the A259 between the two towns in 2010 and would improve over current day journey times. It is expected that the bus priority measures would be implemented post 2010 and would therefore continue to benefit buses in future years. The Scheme is forecast to have a little impact on bus and rail patronage along the A259 corridor between the two towns and bus and rail passenger flows remain similar between Bexhill and Hastings. A small number of passengers are to forecast to transfer to the proposed new bus route along the Scheme. In the 2025 forecasts, there are more bus and rail passengers between Bexhill and Hastings. This is largely attributed to the new housing and commercial developments.

8.1.14 A sensitivity test with increased DIADEM variable demand parameters has been run to ensure the Scheme is robust. For schemes that are forecast to reduce congestion increased parameters give increased

elasticities and therefore test the robustness of the Scheme against increased induced traffic.

8.1.15 The results of the modelling parameters sensitivity test show flow increases and decreases with the Scheme in the same locations as the Most Likely assessment. Trips across the screenline between Bexhill and Hastings increase further with the Scheme resulting in 12% more screenline trips with the Scheme in 2010 and 17% more trips with the Scheme in 2025. Comparison of the network wide vehicle kilometres shows that vehicle kilometres increase with the Scheme, but for the modelling parameters sensitivity test the increase is greater.