

8 Transport and Access

8.1 Introduction

- 8.1.1 This chapter of the Environmental Statement (ES) assesses the effect of the proposed development on Traffic and Transport.
- 8.1.2 A Transport Assessment (TA) has been submitted as a standalone document with the planning application.
- 8.1.3 GTA Civils Ltd, whose transport engineers have a wealth of experience over many years of transport matters and traffic modelling in East Sussex, including the Bexhill & Hastings area, was commissioned to review the previously submitted ES transport chapter and advise the applicant whether to submit further information or clarification on traffic assessments prior to the application being reconsidered by the Planning Committee of Hastings Borough Council.
- 8.1.4 Key to carrying out the review was corroboration of the inputs to the traffic model utilised by East Sussex to assess the traffic impact of schemes being brought forward for planning permission, and examination of the use made of model outputs to inform transport and other assessment work.
- 8.1.5 At input level, a key inconsistency was that the previous traffic assessment had assumed that the new developments at Queensway Gateway had a development capacity of 23,000sqm for Planning Policy Areas LRA7 and LRA8 whereas the new Local Plan identifies their capacity as 12,000sqm. The 23,000 sq.m was a worst case figure that assumed much more intensive development than was proposed in the applicant's business case and was included in the Transport Assessment. This pre-dated the adoption of the allocations of a total of 12,000sqm to these sites in Policies LRA 7 and 8 of the now adopted Development Management Plan. Use of the higher 23,000sqm figure would have resulted in higher new traffic generations from the Queensway Gateway associated development, all of which feeds onto the highway network via QGW.
- 8.1.6 It also became apparent that there was a methodological error at output level in the formula previously employed to convert AM and PM peak hour traffic flows to AADT (AADT – Annual Average Daily Traffic - is defined as the total flow on a road over the whole year divided by the number of days in a year). The error would have exaggerated calculated AADTs for year 2016 by 7%. The AADT figure for each highway link is a fundamental input to the assessment of the air quality impacts of the proposals. The previous calculated AADTs would therefore have exaggerated the air quality impacts of the proposals, particularly so on key receptor sites on the A21 in the vicinity of QGW.
- 8.1.7 This updated and revised Environmental Statement Transport Chapter therefore includes the effects of changes (compared to the previous ES Transport Chapter) reducing the quantum of QGW associated development to a robust, achievable level of 12000 square metres, and amending the formula used to derive AADT estimates from modelled AM and PM peak hour flows to overcome the previous methodological error. The revised AADT estimates have been used in revisions to the Air Quality Chapter of the Environmental Statement.

8.2 Policy Context

The National Planning Policy Framework

- 8.2.1 Section 4 of the NPPF (2012) sets policies on providing sustainable transport as part of developments. Paragraph 30 of the NPPF states:
- “Encouragement should be given to solutions which support reductions in greenhouse gas emissions and reduce congestion”.*
- 8.2.2 NPPF advises in paragraph 32 that:
- “All developments that generate significant amounts of movement should be supported by a Transport Statement or Transport Assessment” and that “development should only be*

prevented or refused on transport grounds where the residual cumulative impacts of development are severe”.

The East Sussex Local Transport Plan

- 8.2.3 The East Sussex Local Transport Plan 3 (LTP3) was adopted in June 2011 and sets out the County Council’s vision and objectives up to 2026. The vision for LTP3 is:
“To make East Sussex a prosperous County where an effective, well managed transport infrastructure and improved travel choices help businesses to thrive and deliver better access to jobs and services, safer, healthier, sustainable and inclusive communities and a high quality environment”.
- 8.2.4 Specific transport objectives include the following:
- *“Improve strategic and local connectivity (...);*
 - *Reduce congestion by improving the efficiency of the transport network (...); and,*
 - *Improve access to jobs, services and leisure”.*
- 8.2.5 LTP3 identifies that the existing strategic road network is restricting economic growth through an inconsistency in the standard of road infrastructure. It states that a number of major schemes have been identified to help improve connectivity and break the perception that coastal towns are relatively removed from the rest of the South East.
- 8.2.6 Chapter 4 of the LTP3 sets out specific objectives for the Bexhill and Hastings area which include the following:
- *“Continue to promote and deliver the BHLR;*
 - *Deliver a package of complementary measures to the BHLR to enhance the positive impacts of the scheme (...);*
 - *Develop and implement the cycle route networks for Hastings and Bexhill, focussing on (...) links to existing and future residential and employment areas (...);*
 - *Continue to lobby for major strategic infrastructure improvements on the A21 to help deliver economic and housing growth in the Bexhill and Hastings area (...); and,*
 - *Investigate potential improvements across the transport network to facilitate housing and employment growth (...).”*
- 8.2.7 Paragraph 4.47 of the LTP3 identifies the need to provide strategic infrastructure stating:
“The strategic road network must be ‘fit for purpose’ in that it has the necessary capacity to reduce the amount of traffic using other, less suitable county roads”.
- 8.2.8 Paragraph 4.49 of the LTP3 lays emphasis on the importance of *pursuing*
“strategic road improvements to deliver sustainable growth in East Sussex”, including:
- *“A259 BHLR; and,*
 - *A21 Baldslow Link (...).”*

The Hastings Planning Strategy

- 8.2.9 The Hastings Planning Strategy, formerly known as the Core Strategy, was adopted by Hastings Borough Council in February 2014. It is at the heart of the emerging Hastings Local Plan 2011-2028 which will guide development up to 2028. The Local Plan is the Statutory Development Plan for the Borough of Hastings. It describes a vision and sets an overall framework for the future of the borough and is the basis for determining planning applications.
- 8.2.10 Among its strategic objectives, it aims at achieving and sustaining a thriving economy and providing an efficient and effective transport system.
- 8.2.11 Policies of particular relevance to the Queensway Gateway scheme have been reviewed and are as follows:

Policy DS2: Employment Growth

“To support the town’s role as a major employment centre and as the focus for economic regeneration, local economic growth and diversification will be met through the development of up to 70,000m² of employment floorspace between 2008 and 2028 and will be achieved by:

- (...) the development of Enviro21 Innovation parks in the Queensway Employment Corridor, circa 15,300m² (...).”

Policy FA1: Strategic Policy for Western Area

“The following table sets out the overall indicative quantity of development for Western Area, which will be explored in further detail in the Development Management Plan.

Planning Focus Area	Employment - m ² of additional (net) employment land up to 2028
1 - Little Ridge and Ashdown	Mixed B1, B2, B8 – c.23,400m ² (at Queensway & Whitworth Road)

Extract from Table 2: The indicative quantity of development for Western Area

In Western Area, we will also:

- a) ensure development along the Queensway Employment Corridor meets high standards of environmental sustainability within what is practical and economically viable (...)
- d) be less strict in retaining premises in their existing land use (as defined by the relevant Land Use Classes Order) providing a sound employment based case can be made to secure employment development at Ponswood, Churchfields, Castleham and West Ridge (...)
- f) support the delivery of the proposed Bexhill-Hastings Link Road and A21 Baldslow Link improvements, and work to secure their timely provision (...)
- j) support the implementation of the strategic network of cycle routes to link communities and facilities, particularly from the Conquest Hospital down towards Hastings Town Centre and out to Combe Valley Countryside Park as identified on the Policies Map (...)

Policy T1: Strategic Road and Rail Schemes

“The Council will seek the earliest possible implementation of the following road and rail schemes that will reduce peripherality and support the regeneration of Hastings:

- Bexhill - Hastings Link Road
- Wider improvements to the A21 and A259 corridor (...)

Policy T2: Local Road Improvements

“The Council will safeguard land required for highway improvements, in particular:

- any land required to implement complementary measures for the Bexhill-Hastings Link Road
- any land required to implement highway improvements required as a result of the proposals in the Planning Strategy.

The Council’s role in both strategic and local road improvements is to work with partners, particularly the Highways Agency and East Sussex County Council to secure the timely delivery of these schemes.”

The Hastings Development Management Plan

- 8.2.12 The Revised Proposed Submission Development Management Plan version 2014 is the second key document prepared as part of the Hastings Local Plan 2011-2028. It identifies sites for development across the Borough and includes specific development policies to be used in the decision making process.
- 8.2.13 Policies of relevance to the proposed QGW scheme are as follows and illustrated in:

Policy LRA7 – Land at the Junction of The Ridge West and Queensway

“Land at the junction of The Ridge West and Queensway is allocated for employment (B use classes) development (Possible floorspace (gross): 6,000m²).

The Council expects development proposals for this site to:

(...) (v) Be supported by a Transport Assessment and Travel Plan. The Transport Assessment will need to take account of the site’s proximity to The Ridge. Proposals should indicate how the conclusions and recommendations of the Report have been incorporated. This is likely to include new access and through routes. Potentially development may be required to contribute to improvements on The Ridge. (...)”

Policy LRA8 – Land in Whitworth Road, The Ridge West

“Land in Whitworth Road, The Ridge West is allocated for employment (B use classes) development (Possible floorspace (gross): 6,000m²).

The Council expects development proposals for this site to:

(...) (vi) Be supported by a Transport Assessment and Travel Plan. The Transport Assessment will need to take account of the site’s proximity to The Ridge. Proposals should indicate how the conclusions and recommendations of the Assessment have been incorporated. Potentially development may be required to contribute to improvements on The Ridge. (...)”

8.3 Methodology

Construction Phase

- 8.3.1 The assessment of the environmental effects of the traffic associated with the construction has been based on the potential requirements for materials and labour to construct the QGW.
- 8.3.2 Construction vehicle trips have been generated using the anticipated volumes of construction material required over the course of the construction period, converted into HGV numbers.
- 8.3.3 It is noted that this assessment is only an approximation of the required construction movements and that a detailed Construction Management Plan would be completed once a contractor is appointed, detailing the specific number and routing of vehicles to and from the site.

Operational Phase

- 8.3.4 The road network is due to undergo significant changes in traffic demand and distribution across the network as a result of the Bexhill to Hasting Link Road (BHLR) and the North East Bexhill Gateway Road (NEBGR) and these schemes have been included as committed road schemes.
- 8.3.5 Improvement schemes for the A2100 The Ridge West / B2092 Queensway junction, and for the A2100 The Ridge / Harrow Lane junction, are to be delivered by ESCC as part of the BHLR Complementary Measures.
- 8.3.6 This impact assessment has been carried out on the basis that, as part of the delivery of QGW, the existing junctions of Junction Road with A2100 The Ridge, with Whitworth Road, and with A21 Sedlescombe Road would all be closed, with the Whitworth Road area served by new accesses from QGW. The assessment reported in the planning application does not include any changes to Maplehurst Road; possible partial or full closure would be separately promoted by ESCC if appropriate following further assessment and consultation and at some future date. The traffic flows on a number of routes within the model area are lower if Maplehurst Road remains open. However, both sets of figures for Maplehurst Road (open and closed) are presented within this report with the worst case figures (Maplehurst Road closed) used in this ES assessment.

Transport Models

8.3.7 Traffic data for future years has been provided by the Bexhill and Hasting Strategic Transport Model managed by ESCC/Mott MacDonald. The traffic flows provided represent 2016 and 2028 'Do-Minimum' and 'Do-Something' scenarios. Table 8.1 shows the development and highways improvements included in each of the 'Do-Minimum' and 'Do Something' scenarios for 2016 and 2028.

Table 8.1: Definition of Traffic Scenarios

Year	Scenario Name	Highway Network	Local Development
2016	Do-Minimum	BHLR / NEBGR included QGW not included	Committed development to 2016
2016	Do-Something	BHLR / NEBGR included QGW included together with closure of Junction Road	23,000m ² of B1
2028	Do-Minimum	BHLR / NEBGR included QGW not included	Committed development to 2028
2028	Do-Something	BHLR / NEBGR included QGW included together with closure of Junction Road	23,000m ² of B1

8.3.8 Detailed junction capacity assessments have been carried out with the Transport Research Laboratory (TRL) software Junction 8 version 8.0.1.305.

Assessment of Significance

8.3.9 The assessment of significance is based upon the 'Guidelines for Environmental Assessment of Road Traffic' (Institute of Environmental Assessment [IEA], 1993) and guidance issued by the Department for Transport (DfT).

8.3.10 The assessment of the transport effects of a development is guided by criteria of impact and receptor sensitivity. The question of the significance of an effect depends upon both the sensitivity of the receptor (e.g. junction, road link) and the degree to which the receptor would be affected (i.e. extent of magnitude of impact).

Receptor Sensitivity

8.3.11 The assessment has considered all elements of the baseline receptors that are considered to be sensitive to the transport impact of the QGW proposals. The baseline elements assessed are as follows.

8.3.12 Receptors likely to be affected by the proposed development include:

- Users of highway infrastructure;
- Users of pedestrian infrastructure.

8.3.13 For users of highway infrastructure sensitivity will vary according to the classification of the highway infrastructure. The table below defines the highway receptors categories, which have been classified on a scale from 'high' to 'low' value.

Table 8.2: Definition of Highway Infrastructure Sensitivity

Highway Receptor Sensitivity/Value	Highway Infrastructure
High	Links and junctions at A-roads
Medium	Links and junctions at B-roads

Low	Links and junctions at local distributor roads
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8.3.14 For users of pedestrian infrastructure the local highway network within the vicinity of QGW has been considered. This includes A21 Sedlescombe Road North, A2100 The Ridge West and B2092 Queensway.

Table 8.3: Definition of Pedestrian Infrastructure Sensitivity

Example Receptor	Sensitivity of receptor
Accident Black Spots	High
Residential	Medium
Shopping Areas	Medium
Open Spaces	Low

Magnitude of Effects and Significance Criteria

8.3.15 The IEA guidelines recommend a list of potentially important items called significance criteria to be assessed. The list of significance criteria used in the assessment is the following:

- Pedestrian Severance;
- Fear and Intimidation;
- Driver Delay;
- Pedestrian Delay;
- Pedestrian Loss of Amenity; and,
- Accidents and Safety.

8.3.16 Each criterion measures the magnitude of effects in a different way; the significance criteria are presented in further detail below.

8.3.17 **Severance** can be described as the perceived divisions that can occur within a community when it becomes separated by a traffic route. Elderly people and children are more sensitive to severance than others.

8.3.18 The measurement for assessing severance is difficult to predict as *“the correlation between the extent of severance and the physical barrier of a road is not clear and there are no predictive formulae which give simple relationships between traffic factors and levels of severance”* (Guidelines for the Environmental Assessment of Road Traffic, IEA, 1993).

8.3.19 The threshold for assessing severance is based on changes in traffic flows of 30%, 60% and 90% are regarded as producing ‘slight’, ‘moderate’ and ‘substantial’ changes in severance respectively. Traffic levels between the 2028 ‘Do-Minimum’ and 2028 ‘Do-Something’ scenarios have been compared.

8.3.20 **Fear and Intimidation** are caused by a number of factors, including a combination of volume of traffic, its HGV composition, its proximity to people and the lack of protection caused by such factors as narrow footway widths.

8.3.21 For the assessment of fear and intimidation, the thresholds summarised in the table below have been adopted. The thresholds are based upon the conclusions of the 1981 study by Crompton and Gilbert entitled ‘Pedestrian Delays, Annoyance and Risk’. These thresholds define the degree of hazard to pedestrians by average traffic flow, 18 hour heavy vehicle flow and average speed over an 18 hour day.

Table 8.4: Fear and Intimidation Magnitudes

Magnitude	Average traffic flow over 18 hr day [vehicles/hour]	Total 18 hr HGV flow	Average speed over 18 hr day [miles/hour]
Extreme	1,800 +	3,000 +	20 +
Great	1,200 – 1,800	2,000 – 3,000	15 – 20
Moderate	600 – 1,200	1,000 – 2,000	10 – 15

- 8.3.22 The Annual Average Weekday 18-hour two-way traffic flows along each link in the ‘2028 Do-Something’ scenario have been calculated on the basis of the AM and PM peak traffic flows received from ESCC/Mott MacDonald and factored to 18 hours using factors derived from the “Traffic distribution by time of day on all roads in Great Britain, 2013” table by the Department for Transport.
- 8.3.23 Where the average traffic flow over 18 hours falls into the same category during both the ‘2028 Do-Minimum’ and ‘2028 Do-Something’ scenarios, the impact will be classed as ‘minor’. Where there is a change in category from the ‘2028 Do-Minimum’ to the ‘2028 Do-Something’ scenarios, the impact on fear and intimidation will be classed as ‘major’.
- 8.3.24 **Driver Delay** – Traffic and driver delays to non-development traffic on the highway network can occur at key junctions in close proximity to the application site. Driver delay is determined by capacity analysis, using Department of Transport (DfT) approved software packages. Delays are only likely to be significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the system.
- 8.3.25 The assessment of driver delay has been based upon junction capacity assessments using appropriate junction modelling software. Junctions 8 is a computer modelling programme that allows the performance of priority roundabouts and priority junctions to be assessed.
- 8.3.26 Where the junction capacity results show the junction is anticipated to operate within capacity during the ‘Do-Something’ scenario, the impact of driver delay will be classed as **‘negligible’**.
- 8.3.27 Where the junction capacity results show the junction is anticipated to operate over capacity during both the ‘2028 Do-Minimum’ and ‘2028 Do-Something’ scenarios, the impact of driver delay will be classed as **‘minor’**.
- 8.3.28 Where the junction capacity results show the junction is anticipated to operate within capacity during the ‘2028 Do-Minimum’ scenario, but over capacity during the ‘2028 Do-Something’ scenario, the impact of driver delay will be classed as **‘Major’**.

Table 8.5: Driver Delay Magnitudes

Do-Minimum	Do-Something	Impact of Driver Delay
Operate within capacity	Operate within capacity	Negligible
Operate over capacity	Operate over capacity	Minor
Operate within capacity	Operate over capacity	Major

- 8.3.29 **Pedestrian Delay** – Increases in traffic flows can lead to greater delays to pedestrians seeking to cross roads. Professional judgement has been used to determine whether pedestrian delays on the local footpaths, if any, would be significant.
- 8.3.30 However, given the range of local factors and conditions which can influence pedestrian delay, the IEA does not recommend that thresholds be used as a means to establish the significance of pedestrian delay.

- 8.3.31 It is advised in the guidance that assessors use professional judgement to determine whether pedestrian delay is a significant impact. The guidance highlights changes in the volume, composition or speed of traffic may affect the ability of people to cross roads.
- 8.3.32 **Pedestrian Loss of Amenity** – This topic is described in the guidance as ‘relative pleasantness of a journey’. It is affected by traffic flow, traffic composition, footway width and separation from traffic. The guidelines suggest that the significance of changes in pedestrian amenity would be where the traffic flow (or its lorry component) is halved or doubled.
- 8.3.33 **Accidents and Safety** - Increases in traffic flows can lead to a higher level of, or more severe, accidents. This document suggests ‘major’ is defined as junctions that have experienced more than ten personal injury accidents in a three year period.

Significance Criteria

- 8.3.34 The magnitude of effects and receptor sensitivity will be compared to estimate the significance of the effect. As there are no published standard criteria, Table 8.6 below includes a range of criteria to allow the specific characteristics of each effect to be considered on an individual basis.

Table 8.6: Significance Criteria

Magnitude	Sensitivity of Receptor		
	High	Medium	Low
Major/Substantial	Major	Major / Moderate	Moderate
Moderate	Major / Moderate	Moderate	Minor
Minor/Slight	Moderate	Minor	Minor / Not Significant
Negligible	Minor	Minor / Not Significant	Not Significant

8.4 Baseline Conditions

- 8.4.1 The baseline describes the existing transport situation within the vicinity of the site, including the extant BHLR.
- 8.4.2 The development site is located in the Baldslow area of Hastings, approximately 4km to the northwest of Hastings town centre. To the north of the proposed QGW lies a cluster of industrial buildings and warehouses and a scrapyards accessed from the A2100 The Ridge West and Whitworth Road. To the south of the development site lies the Sedlescombe Road branch of Sainsbury’s and its car park. Further west, the site is bounded to the north and the south by undeveloped land which has been allocated for employment related development in the Local Plan.

Walking and Cycling

- 8.4.3 No specific cycle facilities or dedicated lanes exist in the vicinity of the proposed scheme. There is however a segregated left-turn cycle lane from the A28 Westfield Lane into Maplehurst Road.

Public Transport

- 8.4.4 Most local bus routes run along the A2100/B2093 The Ridge, the A21 Sedlescombe Road North and Harrow Lane, as they terminate at Conquest Hospital, which lies off the B2093 The Ridge, approximately 1km to the east. Fewer routes run along the A2100 The Ridge West, the A21 Ebdens Hill and the A28 Westfield Lane. Junction Road constitutes an interchange for the routes operating between the A21 Sedlescombe Road North and the A2100/B2093 The Ridge.

Highway Network

- 8.4.5 The proposed QGW will link the A21 Sedlescombe Road North to the B2092 Queensway. Figure 3 shows the existing routes connecting A2100 The Ridge West, B2093 The Ridge East

and B2092 Queensway to the A21 Sedlescombe Road via Junction Road. The speed limit varies from 30 mph on The Ridge East, 40 mph on the A21 Sedlescombe Road and National Speed Limit on Queensway.

- 8.4.6 The Bexhill to Hasting Link Road (BHLR) and the North East Bexhill Gateway Road (NEBGR) schemes received planning permission respectively in July 2009 and September 2013. They are currently being built and are set to open later in 2015.

8.5 Assessment and Mitigation of Construction Effects

- 8.5.1 The construction phase is programmed to last from January 2016 to June 2017.
- 8.5.2 During the construction stage of the proposed development, the following potential direct impacts are likely:
- Heavy goods vehicle (HGV) vehicle trips to remove/deliver cut, fill and materials;
 - Temporary closure of pedestrian footways;
 - Dirt and mud on road services; and
 - Construction workers accessing the application site.
- 8.5.3 Indirect or secondary impacts such as noise, dust and vehicle emissions are also likely, however these are dealt with in Chapter 9: Noise & Vibration and Chapter 10: Air Quality, of this ES.
- 8.5.4 The routes to be used by construction traffic and the site access/egress arrangement are to be agreed with HBC prior to commencement of works. However, construction works is planned to start from the west making B2092 Queensway the main entry to the construction site.
- 8.5.5 This implies construction traffic to/from the east, south and west would be able to access the site via B2093/A2100 The Ridge and/or B2092 Queensway while traffic to/from the north would access the site via the A21, Junction Road, A2100 The Ridge West and B2092 Queensway.

Assessment of Construction Effects

- 8.5.6 Construction will generate a short-term increase in in HGV movements on the highway in proximity to the application site. Potential transportation and access related impacts comprise temporary disruption to road users and pedestrians due to vehicles accessing and egressing the application site.
- 8.5.7 To assess the likely environmental effects of the construction of QGW assumptions have been made with regard to the required movements of vehicles during the construction phase of development. The assumptions and calculation used are provided in **Appendix C.1** whilst a summary of estimated movements is provided below:
- Earthworks – 3,100 two-way vehicle trips;
 - Construction – 1,100 two-way vehicle trips; and,
 - Staff – 6,000 two-way vehicle trips.
- 8.5.8 Average number of vehicle trips during the earthworks phase is estimated to be approximately 22 two-way trips while deliveries for the construction phase is likely to generate up to 15 two-way trips per day. Additionally staff members are likely to generate approximately 20 daily two-way vehicle movements.

Significance

- 8.5.9 **Driver delay** – The potential for an average 42 two-way trips per day is considered unlikely to have a significant impact on driver delay through the local highway network. However, temporary narrowing of lanes/lane closures in order to create safe working areas for certain phases of works could cause temporary delay. The most critical phase has been identified as

the construction of the roundabout with the A21 Sedlescombe Road, scheduled to last for approximately 2 months.

- 8.5.10 In terms of highway classification, receptor sensitivity has been identified as 'high' for connecting A-roads and the magnitude of impact has been identified as 'negligible'. The significance of driver delay during construction is defined as '*minor*'.
- 8.5.11 **Accidents and Safety** - Construction traffic will be accessing the site throughout the working day and is not anticipated to increase any rates of accident on the local highway network. The phases of works are unlikely to increase the accident frequency and the number of additional trips during construction, is negligible.
- 8.5.12 Construction works is planned to start from the west making B2092 Queensway the main entry to the construction site. Receptor sensitivity has been identified as 'medium' for B2092 Queensway. The significance is therefore defined as '*not significant*'.

8.6 Assessment and Mitigation of Operation & Cumulative Effects

- 8.6.1 The estimation of potential impacts on the local road network has been informed by the ESCC Bexhill and Hasting Strategic Transport Model.

Trip Generation

- 8.6.2 The proposed QGW is expected to carry new development trips in addition to reassigned trips. The strategic transport model predicts that the proposed QGW associated development will generate approximately 181 development trips (vehicles) during the AM peak hour and 145 development trips (vehicles) during the PM peak hour, based on 12,000 square metres buildings being developed north and south of the proposed QGW.
- 8.6.3 Taking account of existing development (eg Whitworth Road & Sainsbury's), total new and existing development trips accessing QGW would be approximately 482 vehicles / hour in the AM peak and 515 vehicles / hour in the PM peak.

Assessment of Operation & Cumulative Effects

- 8.6.4 Traffic flows on key links in the assessment area, in terms of AADTs, and changes as a result of QGW in the Do Something (DS) scenario, are shown in Table 8.7 for both 2016 and 2028 forecast years, together with 2014 base year flows for comparison.

Table 8.7: AADT Traffic flows on key links

AADT (Vehicles / day)			2014 base	2016 DM	CHANGE 2016DM to DS (Maplehurst Road CLOSED)		2016 DS (Maplehurst Road Closed)	2016 DS (Maplehurst Road Open)
					number	%age		
A21	Sedlescombe Rd	North of A28	18,861	20,215	359	2%	20,574	21,961
A21	Sedlescombe Rd	North of Junction Rd	20,029	21,548	6,312	29%	27,860	24,944
A21	Sedlescombe Rd	Junction Rd - QGW	17,941	18,416	9,444	51%	27,860	24,944
A21	Sedlescombe Rd	South of QGW	17,941	18,416	4,501	24%	22,917	22,445
B2092	Queensway	North of QGW	13,290	23,769	2,394	10%	26,163	22,660
B2092	Queensway	South of QGW	11,585	25,211	3,151	12%	28,362	27,882
A2100	The Ridge	West of Queensway	12,509	11,889	2,358	20%	14,247	14,241
A2100	The Ridge	East of Queensway	22,078	27,497	-5,607	-20%	21,890	18,065
	The Ridge	Junction Rd to Maplehurst Rd	14,967	22,611	-727	-3%	21,884	18,065
	The Ridge	Maplehurst Rd to Harrow Lane	17,236	22,708	-730	-3%	21,978	22,138
	Maplehurst Rd	all	6,071	5,280	n/a	n/a	0	4,146
B2159	Battle Road	under Queensway	9,502	8,808	-1,629	-18%	7,179	6,674
	Harrow Lane	south of The Ridge	8,978	9,419	-1,706	-18%	7,713	8,015
	Junction Rd	West of Whitworth Rd	10,736	8,829	n/a	n/a	0	0
	Junction Rd	East of Whitworth Rd	9,561	8,129	n/a	n/a	0	0
	QGW	west end (at Queensway)	0	0	n/a	n/a	24,005	20,359
	QGW	east end (at A21)	0	0	n/a	n/a	23,838	20,227

AADT (Vehicles / day)			2014 base	2028 DM	CHANGE 2028DM to DS (Maplehurst Road CLOSED)		2028 DS (Maplehurst Road Closed)	2028 DS Maplehurst Road Open)
					number	%age		
A21	Sedlescombe Rd	North of A28	18,861	20,676	1,094	5%	21,770	24,256
A21	Sedlescombe Rd	North of Junction Rd	20,029	23,599	6,751	27%	30,350	27,394
A21	Sedlescombe Rd	Junction Rd - QGW	17,941	20,198	10,152	50%	30,350	27,394
A21	Sedlescombe Rd	South of QGW	17,941	20,198	3,281	16%	23,479	23,270
B2092	Queensway	North of QGW	13,290	24,545	1,234	5%	25,779	23,520
B2092	Queensway	South of QGW	11,585	25,114	3,819	15%	28,933	29,068
A2100	The Ridge	West of Queensway	12,509	14,532	2,150	15%	16,682	16,495
A2100	The Ridge	East of Queensway	22,078	28,643	-6,144	-21%	22,499	19,416
	The Ridge	Junction Rd to Maplehurst Rd	14,967	24,484	-1,991	-8%	22,493	19,416
	The Ridge	Maplehurst Rd to Harrow Lane	17,236	24,224	-1,647	-7%	22,577	23,908
	Maplehurst Rd	all	6,071	4,437	n/a	n/a	0	4,516
B2159	Battle Road	under Queensway	9,502	9,384	-1,603	-17%	7,781	7,620
	Harrow Lane	south of The Ridge	8,978	8,808	-299	-3%	8,509	7,882
	Junction Rd	West of Whitworth Rd	10,736	8,350	n/a	n/a	0	0
	Junction Rd	East of Whitworth Rd	9,561	7,549	n/a	n/a	0	0
	QGW	west end (at Queensway)	0	0	n/a	n/a	24,345	21,967
	QGW	east end (at A21)	0	0	n/a	n/a	23,900	22,947

- 8.6.5 Illustrated by the differences between 2014 base year and 2016 Do Minimum, Table 8.7 shows that opening of BHLR will lead to increased traffic on Queensway and The Ridge. Predicted further changes at 2016 arising from QGW can be summarised as traffic reductions on much of The Ridge, on Maplehurst Road, on Battle road and on Harrow Lane, with a further modest increase in flow on Queensway south of its proposed junction with QGW, and increases of varying levels on the A21. The same overall pattern is evident when comparing 2028 Do Minimum and Do Something.
- 8.6.6 A set of local junctions was selected for junction capacity analyses based on a detailed review of the strategic transport model 2016 and 2028 outputs, and in consultation with ESCC. The following junctions were selected owing to indications of poor performance in the strategic transport modelling:
- A21 Ebden's Hill/A28 Westfield Lane;
 - A2100 The Ridge/Harrow Lane;
 - A2100 The Ridge West/B2092 Queensway; and,
 - B2092 Queensway/Napier Road.

Significance

- 8.6.7 **Severance** – Severance is related to changes in the AADT on a link. The magnitude of change in AADT traffic flow between the '2028 Do-Minimum' and '2028 Do-Something' scenarios has been assessed.
- 8.6.8 The modelling forecasts an increase in daily AADT flow of 50% on the A21 Sedlescombe Road between the proposed junction with QGW and the former junction with Junction Road; this magnitude of change is considered 'moderate'. At all other links (including on the A21 south of QGW and north of Junction Road) the forecast increase is less than 30% and the magnitude of change is considered 'slight'.
- 8.6.9 Due to residential developments, receptor sensitivity is defined as 'medium' for the A21 Sedlescombe Road, A2100 The Ridge West and the B2092 Queensway.
- 8.6.10 The significance of pedestrian severance is therefore defined as '*minor*' apart from the A21 between QGW & Junction Road only where the impact is judged as '*moderate*'.
- 8.6.11 **Fear and Intimidation** – As shown in para 8.3.21, Fear and Intimidation is related to the 18 hour Annual Average Weekday (AAWT) traffic flow on a link (the 18 hour AAWT is the average flow over a whole year for weekdays between the hours of 0600 and 2400). Table 8.8 shows the 18hour AAWTs in 2028 for key local links.

Table 0.8: 18hour AAWT Traffic flows on key links

18hr AAWT average hourly flow (Vehicles / hour)			2014 base	2028 DM	2028 DS (Maplehurst Road Closed)	CHANGE 2028DM to DS (Maplehurst Road CLOSED)	
						number	%age
A21	Sedlescombe Rd	North of A28	1,040	1,141	1,201	141	5%
A21	Sedlescombe Rd	North of Junction Rd	1,105	1,302	1,674	372	29%
A21	Sedlescombe Rd	Junction Rd - QGR	990	1,114	1,674	560	50%
A21	Sedlescombe Rd	South of QGR	990	1,114	1,295	181	16%
B2092	Queensway	North of QGR	733	1,354	1,422	68	5%
B2092	Queensway	South of QGR	639	1,385	1,596	211	15%
A2100	The Ridge	West of Queensway	690	802	920	118	15%
A2100	The Ridge	East of Queensway	1,218	1,580	1,241	-339	-21%
	The Ridge	Junction Rd to Maplehurst Rd	826	1,351	1,241	-110	-8%
	The Ridge	Maplehurst Rd to Harrow Lane	951	1,336	1,245	-91	-7%
	Maplehurst Rd	all	335	245	0	0n/a	n/a
B2159	Battle Road	under Queensway	524	518	429	-89	-17%
	Harrow Lane	south of The Ridge	495	486	469	-17	-3%
	Junction Road	West of Whitworth Rd	592	461	0	n/a	n/a
	Junction Road	East of Whitworth Rd	527	416	0	n/a	n/a
	QGR	west end (at Queensway)	0	0	1,343	n/a	n/a
	QGR	east end (at A21)	0	0	1,318	n/a	n/a



8.6.12 The A21 Sedlescombe Road, A2100 The Ridge West (east of Queensway) and the B2092 Queensway are expected to have an average traffic flow over the 18 hour day at the region of 1,100-1,600 vehicles/hour giving all those links a level of fear and intimidation defined as 'moderate' or 'great' for the 'Do-Minimum' and 'Do-Something' scenarios.

8.6.13 Where the average traffic flow over 18 hours falls into the same category during both the 2028 'Do-Minimum' and 2028 'Do-Something' scenarios, the impact will be classed as 'minor'. Where there is a change in category from the '2028 Do-Minimum' to the '2028 Do-Something' scenarios, the impact on fear and intimidation will be classed as 'major'. Of the 10 highway links assessed on A21 Sedlescombe Road, A2100 The Ridge West (east of Queensway) and the B2092 Queensway, 3 change category upwards (major negative), 6 remain in the same category (minor) and 1 changes category downwards (major positive). The overall impact, given the small absolute levels of change involved, is minor.

8.6.14 Due to residential developments receptor sensitivity is defined as 'medium' for the A21 Sedlescombe Road, A2100 The Ridge West and the B2092 Queensway. The significance of fear and intimidation is therefore defined as '*minor*'.

8.6.15 **Driver Delay** – The assessment indicates that the assessed local junctions on the strategic network are predicted to perform poorly either without the proposed QGW or with the proposed QGW in 2016 and 2028. The results for the 'Do-Minimum' scenario indicate that, with the exception of B2092 Queensway/Napier Road in the AM peak, all junctions are predicted to be above capacity as indicated by having RFC values above the acceptable threshold of 0.85.

Table 8.9: 'Do-Minimum' scenario results on Driver Delay

Junction	Results	Comment
A21 Ebden's Hill / A28 Westfield Lane	Maximum RFC at 0.90 for the 2016 AM peak and above 1 for other peaks	Acceptable thresholds exceeded
A2100 The Ridge / Harrow Lane	Maximum RFC above 1 at all peaks	Acceptable thresholds exceeded
A2100 The Ridge West/B2092 Queensway	Maximum RFC is at 0.99 for the 2016 PM peak and above 1 at other peaks	Acceptable thresholds exceeded
B2092 Queensway/Napier Road	Maximum RFC is at 0.59 at the 2016 AM peak, 0.41 at the 2028 AM peak and above 1 at both 2016 and 2028 PM peaks	Within acceptable thresholds at AM peaks, acceptable thresholds exceeded at PM peaks

8.6.16 The results for the 'Do-Something' scenario show that with the exception of B2092 Queensway/Napier Road at the AM peaks all junctions are predicted to be above capacity.

Table 8.10: 'Do-Something' scenario results on Driver Delay

Junction	Results	Comment
A21 Ebden's Hill / A28 Westfield Lane	Maximum RFC above 1 at all peaks	Slight detrimental impact and acceptable thresholds exceeded
A2100 The Ridge / Harrow Lane	Maximum RFC above 1 at all peaks	Negligible impact and acceptable thresholds exceeded
A2100 The Ridge West/B2092 Queensway	Maximum RFC at 0.99 at the 2016 AM peak, 0.96 at the 2016 PM peak and above 1 at other peaks	Negligible impact and acceptable thresholds exceeded
B2092 Queensway/Napier Road	Maximum RFC at 0.74 at the 2016 AM peak, 0.71 at the 2028 AM peak and above 1 at both PM peaks	Slight detrimental impact and acceptable thresholds exceeded

8.6.17 The performance of the B2092 Queensway/Napier Road junction appears to respond to the proposed QGW in terms of a relative reduction in performance in the AM peak for 2016 and 2028.

8.6.18 As explained earlier, where the junction capacity results show the junction is anticipated to operate over capacity during both the 'Do-Minimum' and 'Do-Something' scenarios, the impact of driver delay will be classed as '*minor*'. Nonetheless the inclusion of QGW in the network does improve overall operating conditions throughout this part of the Hastings network by removing congestion concentrations, for example queuing and delays at The Ridge/Junction Road junction

8.6.19 In terms of highway classification, receptor sensitivity is defined as 'medium' and the overall significance of driver delay is defined as '*not significant*'.

- 8.6.20 **Pedestrian Delay** – There are currently no dedicated pedestrian crossings across the links or at the junctions with the exception of:
- the junctions of the A2100 The Ridge with Harrow Lane and the A2100 The Ridge West with the B2092 Queensway where central refuges and dropped kerbs with tactile paving exist;
 - the signalised junction of the A21 Sedlescombe Road with John Macadam Way (which grants access to the Sainsbury's supermarket) where signalised crossings exist.
- 8.6.21 It is not expected that the changes in traffic flows will affect pedestrians seeking to cross the roads as the majority of pedestrian traffic occurs between residential areas and local bus stops as well as local shops (including the Sainsbury's supermarket), along both the A2100 The Ridge West and the A21 Sedlescombe Road North, which are served by crossings at junctions where traffic stops or slows down.
- 8.6.22 As a result, it is considered that the effect of the development on pedestrian delay would be '**not significant**'.
- 8.6.23 **Pedestrian Loss of Amenity** – The QGW will change the amenity of the site for pedestrians due to the introduction of traffic into existing open space. However, the provision of the QGW will overall not change the amenity of the vicinity of the site along the links and at the junctions mentioned above. The QGW will be accompanied by footways improving access to the Sainsbury's supermarket.
- 8.6.24 It is therefore considered that the overall effect of the development on the pedestrian loss of amenity is '**not significant**'.

Mitigation Measures Construction Phase

- 8.6.25 The site working hours will be discussed and agreed with the HBC but have been assumed to be as follows, in line with HBC guidance:
- 08.00 – 18.00 Monday to Friday;
 - 08.00 – 13.00 Saturday;
 - No times on Sundays or Bank Holidays.
- 8.6.26 All works will be within the agreed hours, unless or in the event of exceptional circumstances such as:
- An emergency or health and safety issue demands continuation of works;
 - Completion of an operation that would otherwise cause greater interference with the environment/general public if left unfinished;
 - A requirement to complete concrete pours due to unforeseen overruns caused by, for example, offsite batching plant issues and traffic delays; and/or
 - Weekend periods when partial road closures may be required for works in order to limit disruption to traffic during a weekday when the area will be busier.
- 8.6.27 Although night-time working will not normally be undertaken, it is expected that some deliveries may take place at night and that certain works may be undertaken during this period.
- 8.6.28 Access routes to and from the site to be used by heavy goods vehicles (HGVs) will be agreed with HBC to minimise disruption to the road and pedestrian network.
- 8.6.29 Any local traffic management measures for site access will be agreed with HBC. The level of daily and peak construction vehicle trips is relatively small considering the capacity of the surrounding road network, it is therefore anticipated that there would be no significant impact on the capacity of the surrounding junctions.

Mitigation Measures Operation Phase

- 8.6.30 As a result of the Transport Assessment there is no junction performance impact to mitigate against, as there is no acceptable level of performance (without the QGW) for the proposed QGW to seek to return to, by way of mitigation.
- 8.6.31 On this basis, there is no case to require mitigation measures beyond the proposed QGW as currently defined/designed.
- 8.6.32 Nonetheless the inclusion of QGW in the network does improve overall operating conditions throughout this part of the Hastings network by removing congestion concentrations, for example queuing and delays at The Ridge/Junction Road junction..

8.7 Summary

- 8.7.1 The essential benefit of the introduction of the proposed QGW is that it will provide access to new employment land. In addition the proposed QGW effectively completes the BHLR route between the A259 in Bexhill and the A21 in Hastings. The inclusion of QGW in the network does improve overall operating conditions throughout this part of the Hastings network, reducing journey time variability and the impacts of congestion, queues and delays (eg at Junction Road with The Ridge junction).
- 8.7.2 The assessment indicates that the combination with the proposed QGW is predicted to offer benefits in terms of access to new local employment land, enabling local traffic to reroute onto more appropriate links, and helps complete the BHLR between the A259 in Bexhill and the A21 in Hastings.
- 8.7.3 Additionally, traffic flows between the B2092 Queensway and the A21 Sedlescombe Road North will benefit from shorter trip lengths.
- 8.7.4 The average number of vehicle trips during the earthworks phase is estimated to be approximately 22 two-way trips while deliveries for the construction phase is likely to generate up to 15 two-way trips per day. Additionally staff members are likely to generate approximately 20 daily two-way vehicle movements.
- 8.7.5 It is considered that the impact of construction traffic as a result of the construction of the QGW is '**minor**' with regard to both driver delay and accidents/safety.
- 8.7.6 The proposed QGW is designed to have three roundabout junctions. The proposed QGW roundabouts are predicted to operate within acceptable thresholds in 2016 and 2028, based on current traffic growth estimates.
- 8.7.7 Based on the outputs from the highway model, selected junctions on the local network in 2016 and 2028 have been assessed in detail. The assessment of these junctions indicates that these junctions are predicted to be at/above operational capacity with or without the proposed QGW in both 2016 and 2028, with the exception of the B2092 Queensway/Napier Road junction where an impact due to the proposed QGW in the AM peak is identified.
- 8.7.8 It is considered that the impact of the proposed QGW during operation would be '**minor**' on pedestrian severance (other than for the short section of A21 between QGW and Junction Road where it would be 'moderate'), '**minor**' on fear and intimidation, and '**not significant**' on driver delay, pedestrian delay and loss of amenity.
- 8.7.9 The traffic flows are lower if Maplehurst Road remains open as shown in Table 8.7 above. Within this supplemental ES the Maplehurst Road **closed** figures have been used to represent the worst case.
- 8.7.10 Further improvement to the local highway network is being developed separately through the ESCC's 'The Ridge sustainable transport improvements programme'. These projects, together with BHLR and QGW, will help improve the performance of the local highway network in future years.

8.8 References

- “Guidelines for the Environmental Assessment of Road traffic”, Institute of Environmental Assessment, 1993
- “Design Manual for Roads and Bridges”, Volume 11, Section 3, Department for Transport