



APPENDIX E: MODELLED INTERVENTION METHODOLOGY

In order to looking into the potential impacts of the proposed interventions in terms of changes in mode share and the use of sustainable modes, research has been undertaken to identify where similar schemes have been implemented and any outcomes that were identified. The research has focused on identifying examples from areas that are comparable with the Harrogate Relief Road Review study area, e.g. towns and urban areas in the UK with a population of less than 100,000. This was not always possible due to the availability of information and examples from larger towns and cities have been included where it is felt that they are still relevant. The research, together with knowledge and experience of the study team members, helped formulate possible percentage reductions to traffic levels that were applied in the traffic model scenarios.

Where measures are implemented as part of a package of interventions, their impact has potential to increase as certain measures can complement others. For example, the impact of a measure aimed at promoting the use of sustainable travel infrastructure will be augmented by the improvement or addition of an infrastructure measure. In this regard, it is important to note that the percentage reductions are not cumulative in that they would provide a total mode shift of all the individual measures added together, rather the percentage reductions relate specifically to the potential impact of a specific measure. This relates to a constraint in establishing the potential impact of individual schemes during the research because in practice measures are generally not implemented on their own so the changes in modal splits observed cannot be wholly attributed to one measure unless a suitable control has been used.

Package of Interventions					Interventions Included	Modelling Approach
A	B	C	D	E		
ü	ü		ü	ü	A1: Variable Messaging	Not replicated in the model
	ü			ü	A2: RTPI - public transport	Not replicated in the model
ü	ü		ü	ü	A3: Area wide signage strategy - potentially including tourist, HGV and wayfinding signage	Not replicated in the model
	ü				A4: Publicity campaigns and incentives for more sustainable travel	A reduction of 1% applied to all car trips with an origin and destination within Harrogate and Knaresborough urban areas
	ü				A5: Improved digital provision - Open Harrogate website and app, gamification/sustainable travel challenges	A reduction of 1% applied to all car trips with an origin and destination within Harrogate and Knaresborough urban areas
	ü				A6: Personalised journey planner	A reduction of 5% applied to all car trips with an origin and destination within Harrogate and Knaresborough urban areas

ü	ü			ü	<p>B1: Extend pedestrianisation of Harrogate central core (potentially peak time only - controlled by rising bollards)</p>	<p>Network change to ban vehicles on Parliament Street (from Montpellier Parade to Kings Road) and Montpellier Road. Zone access maintained on Montpellier Gardens and Montpellier Street for simplicity, no through traffic.</p> <p>Signals at Ripon Rd / Kings Rd / Crescent Rd altered to 90 sec cycle time, 25secs green to Ripon Rd 14 secs green to Crescent Rd 35 secs green to Kings Road</p>
ü	ü				<p>B2: Traffic Management/Low Emission Zone</p>	<p>Fixed penalty added to Generalised Costs for vehicles travelling into the area bounded by A61 and Victoria Avenue. Victoria Avenue included with congestion charge area.</p> <p>Toll of 100 (£1.00) added to Generalised Costs.</p>
	ü				<p>B4: Area wide travel planning - workplace travel plans, event management</p>	<p>A reduction of 3% applied to all car trips with an origin and destination within Harrogate and Knaresborough urban areas</p>
ü	ü		ü	ü	<p>B7: HGV ban at peak times/loading restrictions</p>	<p>HGVs banned from links in the area bounded by A61 and Victoria Avenue. HGVs banned on Victoria Avenue. Any HGV trips to town centre zones removed from model.</p>
ü	ü		ü	ü	<p>B8: Town centre 20mph speed limits/zone</p>	<p>Most links in town centre already coded at 36kph to reflect cruise speeds. Reduction to 20mph (32kph) unlikely to make a difference. Not replicated in model.</p>
	ü				<p>B9: Car sharing</p>	<p>A reduction of 1% applied to all car trips with an origin and destination within Harrogate town centre, Cardale Park, Hornbeam and Hospital</p>
	ü				<p>B10: Car clubs (Electric vehicles)</p>	<p>Not replicated in the model</p>
	ü				<p>B11: Work with schools to ameliorate the impact of school run (e.g. encourage sustainable school travel, review start/end times etc.)</p>	<p>A reduction of 1% applied to all car trips with an origin and destination within Harrogate and Knaresborough. AM peak model only</p>

ü	ü		ü	ü	C3: Network optimisation	Slight reduction in green time at gateway junctions into town centre.
ü	ü		ü	ü	C4: Area wide signal strategy review	Not replicated in the model
ü	ü				D1: Area wide review of car parking management, supply and charging and development of area wide strategy	A reduction of 20% applied to all car trips to /from Harrogate town centre, and zones within Harrogate and Knaresborough. 10% (half the reduction) to be reallocated to peripheral town centre zones
	ü			ü	E1: Bus/rail station interchange development and public realm improvements	Not replicated in the model
	ü				E4: Focus on new developments providing sustainable transport options	Forecast models contain committed developments (as of 2015), with trip rates applied based on HBC or relevant TA. A reduction may have already been applied to the development sites. For this stage (OAR) this reduction is not applied.
	ü			ü	E11: Improved access to stations	A reduction of 2% applied to all car trips to /from Harrogate town centre, and zones containing Pannal, Hornbeam Park, Starbeck and Knaresborough rail stations
	ü			ü	F1: Implementation of the Cycling Infrastructure Plan for Harrogate, Knaresborough and surrounding area	A reduction of 1% applied to all car trips with an origin and destination within Harrogate and Knaresborough
	ü			ü	G1: Area wide public realm strategy	Banning of vehicles on Parliament Street (from Montpellier Parade to Kings Road) and Montpellier Road. Zone access maintained on Montpellier Gardens and Montpellier Street for simplicity, no through traffic.
		ü	ü	ü	C1: Harrogate Relief Road	Inner alignments (north and south 1 & 2) have been modelled.